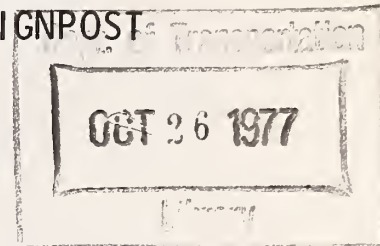


HE
18.5
.A37
no.
DOT-
TSC-
UMTA-
77-
31/11

PORT NO. UMTA-MA-06-0041-77-9

A COMPREHENSIVE FIELD TEST AND
EVALUATION OF AN ELECTRONIC SIGNPOST
AVM SYSTEM
Volume II: Appendix



G. W. Gruver

Hoffman Information Identification Inc.
Fort Worth TX 76107



AUGUST 1977
FINAL REPORT

DOCUMENT IS AVAILABLE TO THE U.S. PUBLIC
THROUGH THE NATIONAL TECHNICAL
INFORMATION SERVICE, SPRINGFIELD,
VIRGINIA 22161

Prepared for
U.S. DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION
Office of Technology Development and Deployment
Washington DC 20590

NOTICE

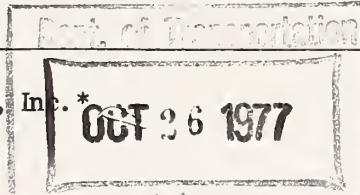
This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

NOTICE

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

HE
18.5
P33
DOT
TSC
UMTA
77-31

1. Report No. UMTA-MA-06-0041-77-9		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle A COMPREHENSIVE FIELD TEST AND EVALUATION OF AN ELECTRONIC SIGNPOST AVM SYSTEM Volume II: Appendix				5. Report Date August 1977	
				6. Performing Organization Code DOT-TSC-UMTA-77-31/II	
7. Author(s) George W. Gruver				8. Performing Organization Report No. RO-77-0026	
9. Performing Organization Name and Address Hoffman Information Identification, Inc.* Fort Worth TX 76107				10. Work Unit No. (TRANS) UM711/ R7716	
				11. Contract or Grant No. DOT-TSC-1237	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Urban Mass Transportation Administration Office of Technology Development and Deployment Washington DC 20590				13. Type of Report and Period Covered Final Report Sept 1976 - Mar. 1977	
				14. Sponsoring Agency Code	
15. Supplementary Notes *Under contract to: U.S. Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142					
16. Abstract <p>A comprehensive test of a direct proximity electronic signpost AVM system was conducted under operational conditions in downtown Philadelphia. Tests involved operation of a test vehicle while operating as a random route vehicle; e.g., police, taxi, and a fixed route vehicle; e.g., a transit bus. During random route tests, the vehicle operated on an unrestricted basis in a designated area in which the Hoffman overlapping signpost AVM system was installed. The vehicle's location was computed every 0.5 second by the AVM system and compared with its actual location at designated "checkpoints" in the random route area. In the random route tests, the system showed the capability of locating the vehicle to within 282 feet, at 95 percent of the sample points under a wide range of urban and environmental conditions.</p> <p>Fixed route tests involved operation as a transit bus. An odometer and 15 signposts provided the vehicle's location to within 105 feet at 95% of the sample points along a 13 mile route. The time of passage of designated bus schedule "timepoint" was automatically determined to within 11 seconds 95 percent of the time.</p> <p>This report contains two volumes. Volume I constitutes the test results.</p>					
17. Key Words Automatic Vehicle Location System (AVL), Automatic Vehicle Monitoring System (AVM), Electronic Signpost, Direct Proximity, Random Route AVM, Fixed Route AVM, Multi-User AVM				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE U.S. PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22161	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 348	22. Price



PREFACE

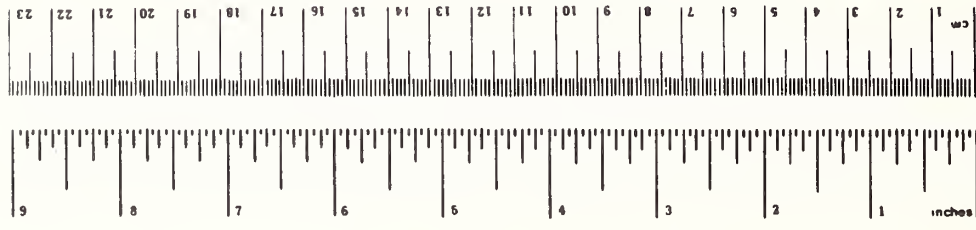
During the winter of 1976-77, four different techniques for automatically locating land vehicles were tested in both the low- and high-rise regions in Philadelphia, Pa. The tests were carried out by four different companies under separate contracts to the United States Department of Transportation, Transportation Systems Center. The tests were designed to evaluate the techniques for their applicability as location subsystems for automatic vehicle monitoring systems. This document represents one of the contractors' final report. A summary report on all systems tested is available as Report No. UMTA-MA-06-0041-77-2. This report describes the Phase I program which involved the installation and test of the Hoffman AVM System. Dr. George W. Gruver, the program director for Hoffman, prepared the report and personally conducted most of the testing. Ron Waits developed all of the program software and processed the test data. Jerry McKinney was in charge of the location and test equipment deployment and also performed most of the driving during formal tests.

We want to thank all of the technical, program, and contract personnel at the DOT. In particular the personnel in the offices of Messrs Blood, Symes, and Nelson were very helpful and enthusiastic. A special thanks is given to Bernie Kliem, our technical monitor and Joe Herlihy, who helped monitor our test. Also, Mr. Jack Ludwick of the Mitre Corporation helped make our software task much easier. We would also like to thank the many people in the City of Philadelphia who assisted us in deploying and housing our equipment.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
m ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
teaspoon	teaspoons	5	milliliters	ml
Tablespoon	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	Cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C



Approximate Conversions from Metric Measures

When You Know	Multiply by	To Find	Symbol	
LENGTH				
millimeters	0.04	inches	in	
centimeters	0.4	inches	in	
meters	3.3	feet	ft	
kilometers	1.1	yards	yd	
	0.6	miles	mi	
AREA				
square centimeters	0.16	square inches	m ²	
square meters	1.2	square yards	yd ²	
square kilometers	0.4	square miles	mi ²	
hectares (10,000 m ²)	2.5	acres		
MASS (weight)				
grams	0.036	ounces	oz	
kilograms	2.2	pounds	lb	
tonnes (1000 kg)	1.1	short tons		
VOLUME				
milliliters	0.03	fluid ounces	fl oz	
liters	2.1	pints	pt	
liters	1.06	quarts	qt	
liters	0.26	gallons	gal	
cubic meters	35	cubic feet	ft ³	
cubic meters	1.3	cubic yards	yd ³	
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.	INTRODUCTION	1-1
2.	EXECUTIVE SUMMARY	2-1
2.1	HI ³ AVM Technique	2-2
2.2	Phase I Test Program	2-5
2.3	Test Results	2-6
3.	RANDOM ROUTE	3-1
3.1	Random Route Tests	3-1
3.1.1	Random Route Log Sheets	3-1
3.1.2	Random Route Test Data	3-13
3.2	Random Route Data Processing Results	3-28
3.2.1	Location Subsystem (Checkpoint) Results	3-28
3.2.2	AVM System (Pseudo Checkpoint) Results	3-42
3.2.3	Random Route One-Tenth Mile Averages	3-64
3.3	Random Route Data Processing Requirements	3-69
4.	FIXED ROUTE	4-1
4.1	Fixed Route Tests	4-1
4.1.1	Fixed Route Test Log Sheets	4-1
4.1.2	Fixed Route Test Data	4-39
4.2	Fixed Route Data Processing Results	4-72
4.2.1	Location Subsystem (Checkpoint) and AVM System (Timepoint) Results	4-72
4.2.2	AVM System (Pseudo Checkpoint) Results	4-148
4.2.3	Fixed Route One-Tenth Mile Averages	4-228
4.2.4	Off-Route Declaration	4-244
4.3	Fixed Route Data Processing Requirements	4-250
4.4	FRLS and FRSYS Flow Charts	4-253
5.	REPORT OF INVENTIONS APPENDIX	5-1

1. INTRODUCTION

The application of Automatic Vehicle Monitoring (AVM) to enhance the management of mobile resources has, in recent years, become a subject of continued interest to all types of fleet vehicle operations. Transit, police, cargo, and mining operations have been involved in the development of AVM systems and are currently gathering data pertinent to quantifying the cost/benefits of AVM in a variety of commercial and service operations.

The United States Department of Transportation (DOT) has been interested in AVM for nearly a decade; this interest being directed, in particular, to improving transit and para-transit management activities. Under the sponsorship of the Urban Mass Transportation Authority (UMTA), the DOT is currently attempting to quantify the improvements which AVM can provide to transit, para-transit, and other types of fleet operations. This report contains the interim results obtained by Hoffman Information Identification Inc. (HI³) of Fort Worth, Texas, as a contractor to the Transportation Systems Center of the DOT on the UMTA Multi-User AVM Contract DOT-TSC-1237. This report covers the activities of Phase I which involved the installation and test of a HI³ AVM System in the City of Philadelphia during the winter of 1976-1977. These tests represent the most extensive tests ever performed on an AVM system which can locate vehicles which operate either as fixed-route vehicles (transit) or as random-route vehicles (police, para-transit, taxi, etc.).

Volume I of this report contains a description of all test configurations, test procedures, location algorithms, data processing, and test results. This Appendix contains the test log sheets, test data and detailed data processing results corresponding to all Phase I tests.

Section 2 of this Appendix is an executive summary of the Phase I program. Section 3 contains pertinent random-route data and data processing results. Section 4 contains fixed-route data and data processing results.

2. EXECUTIVE SUMMARY

In September 1976, the Transportation Systems Center of the U. S. Department of Transportation entered into contracts with four companies for the design, development and deployment of a multi-user Automatic Vehicle Monitoring (AVM) System which can be deployed in any city. Hoffman Information Identification Incorporated (HI³) of Fort Worth, Texas, a wholly owned subsidiary of Hoffman Electronics Corporation, was one of these four companies. The program, sponsored by the Urban Mass Transportation Administration (UMTA) is referred to as Multi-User AVM since it is intended to provide AVM benefits to a multiplicity of users, including those fleets of vehicles which generally travel on fixed routes (transit) and those which may travel random routes (taxis, para-transit, dial-a-ride, police, pick-up and delivery, etc.).

The objectives of the Multi-User AVM program were to design, implement, and operate a multi-user AVM system in Los Angeles for the purpose of making a quantitative evaluation of AVM effectiveness, first for transit and para-transit, and second for other AVM users. From the outset, the program was divided into two phases. Phase I, which Hoffman completed on 28 February 1977, involved the demonstration and test of each contractor's vehicle location subsystem in Philadelphia, Pa. Phase II, which will be performed by one of the four contractors, will include the design, development, implementation, test, and operational support of a modern transit management system using a reliable, economical AVM system. The Phase II program will be conducted in conjunction with the Southern California Rapid Transit District (SCRTD) and other users, to be specified, in the Los Angeles area. The primary objective set for Phase I was that of quantifying through formal controlled tests, the ability of each contractor's AVM system to meet specified vehicle location and bus time-of-passage requirements.

The results presented in Volume I of this report show that the HI³ AVM system proposed for Phase II can provide a transit dispatcher with the location of all buses to within an accuracy of 105 feet 95 percent of the time. The average error in bus location was less than 50 feet for all Phase I tests. As an aid to providing improved service through adherence to schedule, the HI³ AVM system can provide the time-of-passage of buses to within 11 seconds for 95 percent of the occurrences in which the bus fleet passes predesignated "timepoints." The average time-of-passage error for Phase I was 3.9 seconds. The same HI³ AVM system can provide a dispatcher with the location of each unit of a fleet of random route vehicles, e. g., police, taxi, etc., to within 282 feet 95 percent of the time.

The overall goal of HI³ during Phase I was to demonstrate the reliable and accurate performance of the HI³ nationwide AVM system under conditions to be expected in the operation of a multi-user AVM system in any city in the United States. During previous UMTA AVM development programs, beginning

in 1970 with the "Monitor CTA" and including tests of several different location techniques in Philadelphia in 1972, UMTA and TSC developed a high degree of understanding of the requirements for a multi-user AVM system. In establishing the Statement of Work for Phase I, these requirements were translated into an explicit set of vehicle location test requirements. In response to these requirements, HI³ prepared a Location Subsystem Test Requirements Plan which formed the basis for all Phase I tests, data processing and analyses.

Phase I tests were divided into two primary categories: (1) random route tests, and (2) fixed route tests. Volume I of this report is organized in the same order in which HI³ tests were conducted. A third category involved special case tests. These tests were conducted at various times throughout Phase I in Fort Worth, Texas, and in Philadelphia, Pa.

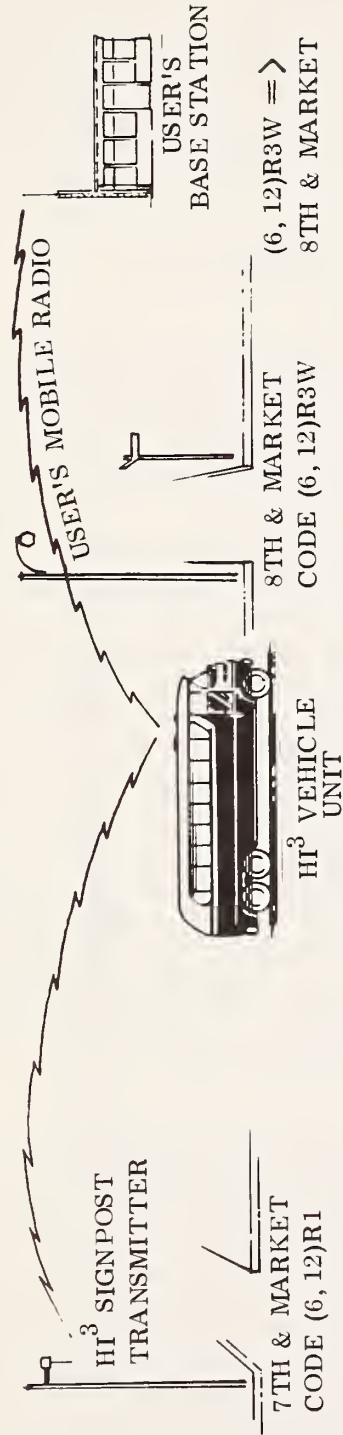
2.1 HI³ AVM TECHNIQUE

HI³ proposed to use a direct proximity signpost AVM system during Phase II and all Phase I tests were conducted through the use of Phase II signpost system. As illustrated in Figure 2-1, the HI³ AVM system receives basic location information, in the vehicle, as a result of the vehicle equipment receiving digitally coded RF transmissions from electronic "signposts." Each signpost transmits a unique 16-BIT code which represents an address (or an X, Y coordinate) in the city analogous to visual street sign identification. The vehicle's proximity to one or more of the signposts results in a simple location region code being stored in the vehicle. This location region code is transmitted to the base station over a mobile radio under base station computer control. At the base station, a simple table look-up by the computer determines a unique street address or X, Y coordinate pair as the vehicle's current location.

HI³ signposts are battery powered and transmit at a frequency of 49.860 MHz. As a result of the extremely low power output requirements, they may be operated without a license as low power devices under Part 15 of the FCC rules. The use of lithium batteries provides a 7-10 year operating lifetime without battery replacement, and this is achieved over the temperature environment from -55 to 175 degrees F.

When installed in a city, all users (transit, para-transit, taxi, police, pick-up and delivery, etc.) simultaneously share the use of the HI³ signpost system. This is illustrated in Figure 2-2. Although a number of companies have proposed the use of signposts, a unique feature of the HI³ approach is the use of overlapping signposts to create additional location regions, thereby reducing the number of signposts required to achieve a specified location accuracy within a given area.

The overlap technique has been previously tested by HI³ in Los Angeles as part of the Cargo Security System and an overlapping signpost AVM system developed by HI³ is currently operational in the Huntington Beach, California Police Department. Although proven during those two programs, the UMTA



SIGNPOST SYSTEM PROVIDES EACH VEHICLE WITH LOCATION REGION CODE

LOCATION REGION CODE IS TRANSMITTED TO USER'S BASE STATION OVER USER'S ASSIGNED MOBILE RADIO FREQUENCY

USER'S BASE STATION TRANSLATES LOCATION REGION CODE INTO A UNIQUE STREET ADDRESS

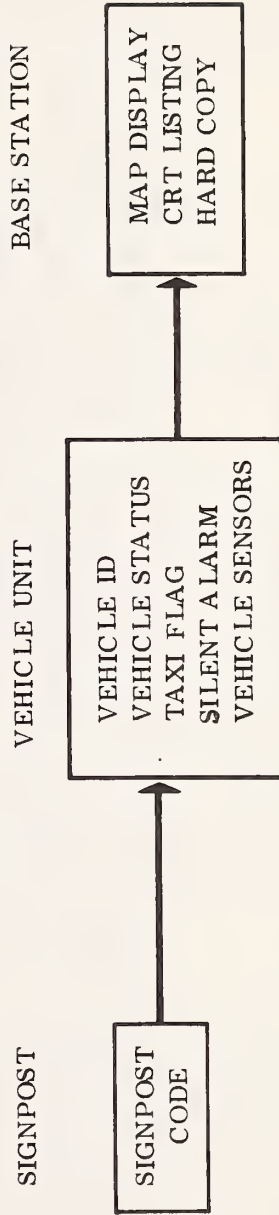


FIG. 2-1 HI³ MULTI-USER AVM BASIC PRINCIPLE OF OPERATION

DIRECT RF PROXIMITY SIGNPOSTS PROVIDE ALL USER VEHICLES WITH LOCATION ADDRESSES AND ARE BASIC SOURCE OF BUS SCHEDULE INFORMATION.

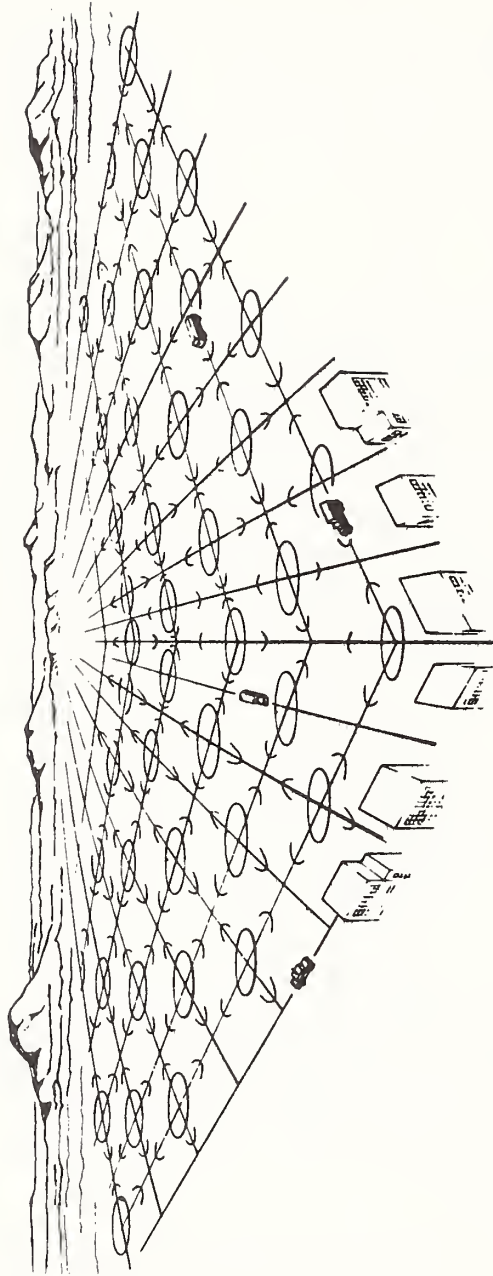


FIG. 2-2 HI³ MULTI-USER AVM BASIC APPROACH

Phase I test program required the most comprehensive demonstration of the HI³ overlap technique to date. The results obtained proved conclusively that the HI³ AVM system proposed for Phase II can meet or exceed all of the location subsystem and system level specifications set forth in the UMTA Multi-User AVM Specification. In addition, the HI³ AVM system is a nationwide system and can be operated in any city (where 99.99% of users operate) and can be interfaced with a Loran receiver for special "over the road" applications. The nationwide feature is a result of the use of 49.860 MHz which is applicable throughout the United States.

2.2 PHASE I TEST PROGRAM

The Phase I test program involved the installation of a HI³ AVM location subsystem in Philadelphia to provide random-route coverage of an area and fixed-route coverage of a simulated bus route. The area and the route were selected by TSC. The location subsystem was to provide a basic location accuracy of at least 300 feet at 95 percent and 450 feet at 99.5 percent of all locations in the random route coverage area and along the specified fixed route. In order to establish the performance of the HI³ location subsystem, a test vehicle, in which was installed a HI³ AVM vehicle unit, was repeatedly driven over routes selected by TSC while recording on cassettes every half-second, the output of the vehicle unit location register. During each test run, manual event markers were used to mark (record on cassette) the passage of physical landmarks called "checkpoints." Checkpoints were designated by TSC after installation of the location subsystem was complete. The X, Y coordinates of these checkpoints become the reference against which the performance of the AVM system was measured. During off-line data processing, the radial error between the X, Y coordinates of the checkpoint and the X, Y coordinates as computed through use of the AVM technology was computed. For example, during each of 10 random route test runs, each of which was over 11 miles in length, the passage of 62-63 checkpoints was recorded. All information necessary to compute the X, Y coordinates of the vehicle, as determined by the AVM system, were also recorded on cassette. At the end of 10 such runs, the cassettes were processed to determine the location error at each point. The processing was identical to that proposed for Phase II.

Fixed route tests involved the same activities as random route tests, however, an odometer was used to determine the vehicle's location along the fixed route after being automatically reset at signposts spaced approximately one mile apart along the route. In addition to the marking of TSC checkpoints, manual entries were made to document passage of the vehicle by "timepoints" which were designated by TSC to represent typical transit route timepoints. Further, the opening and closing of the door was simulated at approximately one-half of the 15 timepoints on each of 33 fixed route test runs. During off-line processing, the location errors and the errors between the actual time of passage by each timepoint and the time of passage estimated by use of the AVM system were computed. The AVM system was to determine the time of passage of the vehicle at timepoints to ± 15 seconds for 95 percent and ± 60 seconds for 99.5 percent of all such occurrences.

A total of 10 random route test runs were performed. This resulted in 622 checkpoint samples at which location errors were computed. When these same data were also processed through an AVM system simulation a total of 2235 samples were obtained corresponding to 1 sample every 20 seconds during the 10 runs. This simulation included the injection of communication errors into 5 percent of the samples. The HI³ Phase II technique for detection and correction of these errors was simulated. Two different random routes were traveled involving passage through tunnels, along narrow streets through high-rise "canyons" and along wide boulevards. All tests were conducted under normal traffic conditions in downtown Philadelphia. A TSC Monitor was in the test vehicle during all tests.

A total of 33 fixed route test runs were performed over a 13 mile route. Each test provided data at 76 checkpoints and 15 timepoints. When processed through the AVM system simulation, a total of 7459 pseudo checkpoint samples were obtained.

Formal demonstrations of the HI³ AVM system were conducted in Philadelphia on 15 and 28 December 1976 for UMTA personnel and their guests. These demonstrations involved operation of the HI³ test vehicle in the random route area with 6-8 observers on board. All such demonstrations involved operation as a random-route vehicle with the vehicle location being provided in a real-time on the on-board CRT. All demonstrations were 100 percent successful.

2.3 TEST RESULTS

All random route and fixed route data taken during the Phase I tests were processed by HI³ to determine the AVM systems performance. Data processing was performed off-line using an exact simulation of the proposed Phase II location subsystem and AVM communication system. These data show conclusively that the HI³ AVM system can meet or exceed all performance criteria set for Phase II. These results are summarized in Table 2-1.

Figure 2-3 contains cumulative error distributions of random route and fixed route test data results. When translated into an operational system for random route vehicles, these data indicate that under similar urban conditions, a police dispatcher would know, with a 95 percent confidence level, the location of each and every AVM-equipped vehicle to within 282 feet. Similarly, the fixed route data indicates that a bus dispatcher would have at his fingertips the location and schedule performance of every bus on all routes to within 105 feet and to within 11 seconds at a 95 percent confidence level. The application of this information to providing increased service, improved response time, better schedule adherence, etc., forms the basis for the entire Phase II program.

TABLE 2-1 SUMMARY RESULTS OF PHASE I TESTING

LOCATION SUBSYSTEM LOCATION ACCURACY:	Specification (feet)	HI ³ Results (feet)
<u>Random Route:</u> 622 samples 95% of samples less than 99.5% of samples less than Average error, all samples	300 450 ---	242 461 91
<u>Maximum Average Error Over One-Tenth Mile Segment</u>	450	315
<u>Fixed Route:</u> 2313 samples 95% of all samples less than 99.5% of all samples less than Average error, all samples	300 450 ---	107 156 50
<u>Maximum Average Error Over One-Tenth Mile Segment:</u>	450	256
AVM SYSTEM LOCATION ACCURACY:		
<u>Random Route:</u> 2235 samples 95% of samples less than 99.5% of samples less than Average error, all samples	300 450 ---	282 464 114
<u>Fixed Route:</u> 7459 samples 95% of samples less than 99.5% of samples less than Average error, all samples	300 450 ---	105 188 48
AVM TIMEPOINT PERFORMANCE: 451 samples	Specification (seconds)	HI³ Results (seconds)
95% of samples less than 99.5% of samples less than Average error	15 60 --	11 24 3.9

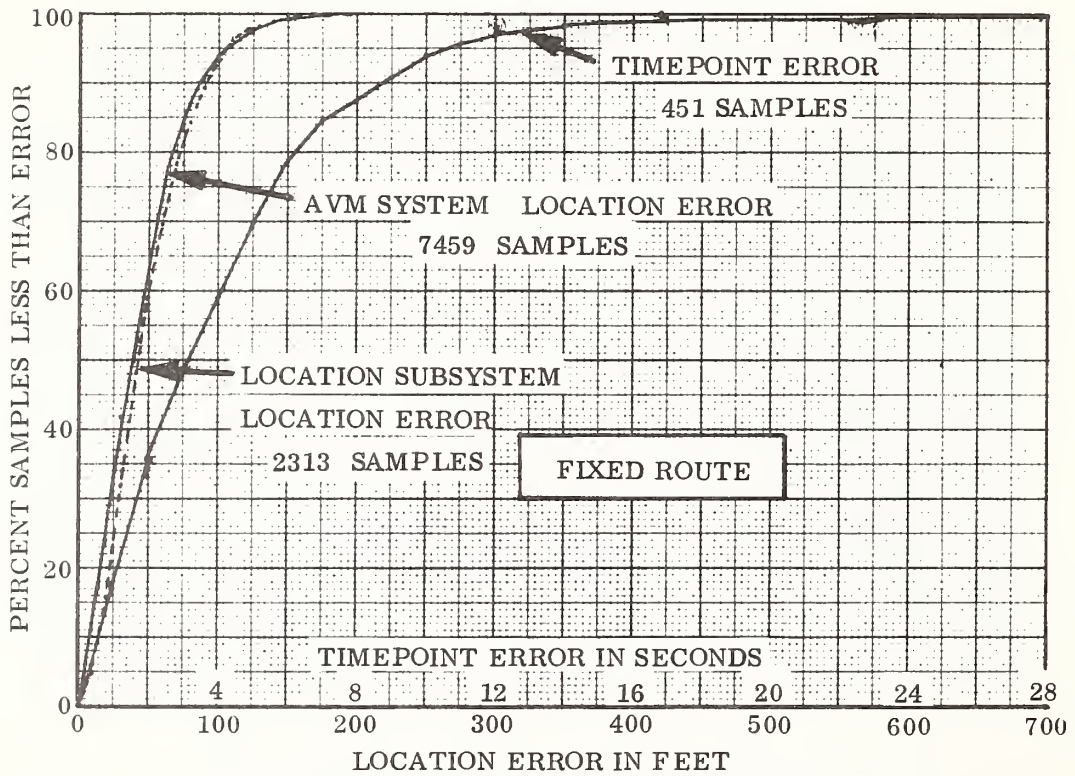
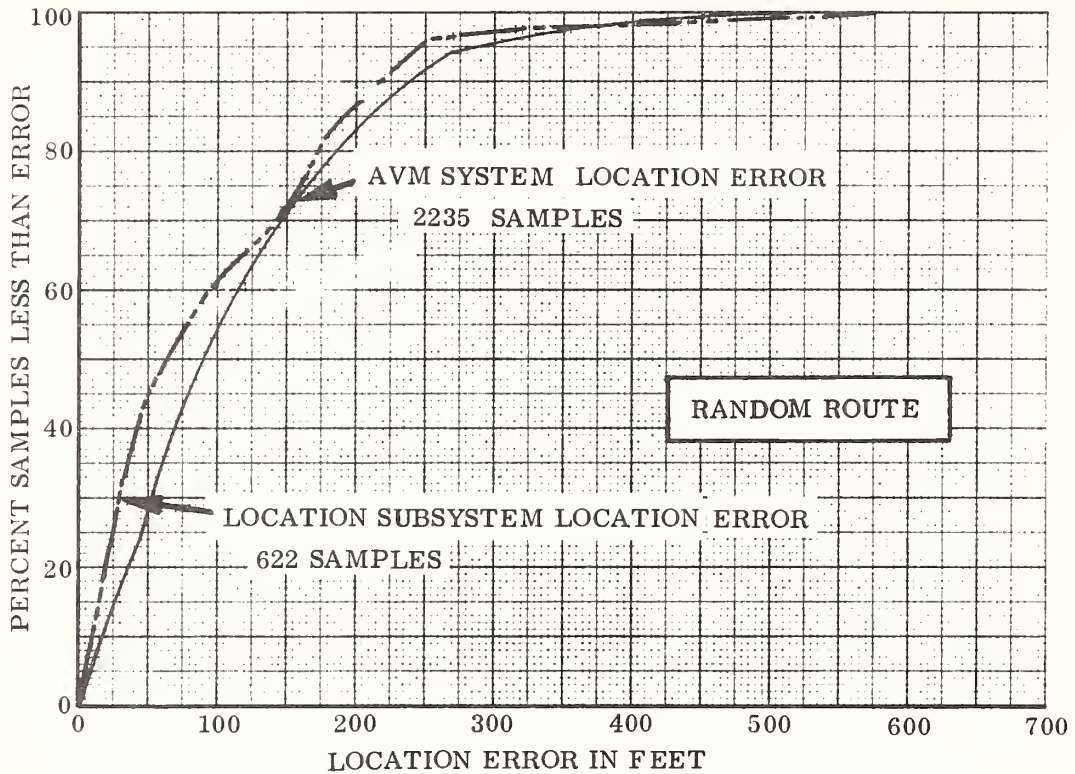


FIG. 2-3 DEMONSTRATED AVM SYSTEM PERFORMANCE

3. RANDOM ROUTE

3.1 RANDOM ROUTE TESTS

3.1.1 Random Route Log Sheets

During each test run, a log sheet was filled out describing the test conditions and any anomalies observed during the test run. Test log sheets for Random Route Runs 1-10 are contained in this subsection.

Hoffman

TEST DATA LOG

TEST RUN NO. 1

SHEET NO. 1 OF 1

TYPE OF TEST: Random Route

DATE: 12-7-76 START 1341
CONF. 1715

BRIEF NARRATIVE DESCRIPTION OF TEST RUSH HOUR TRAFFIC. WET STREETS, APPROX 50°F
NO RAIN DURING RUN
ELAPSE TIME 1HR 34 MIN.

ROUTE IDENTIFICATION: TSC Route (Primary)

EVENT MARKER NUMBER: 1 - 63 IN ORDER:

- C.P. 30 EVENT MARKER HIT EARLY (APPROX 75') used EE30
- C.P. 45 FOLLOWING TROLLEY
- C.P. 56 FOLLOWING BUSES

Test delayed 24 hours due to discovery of Vehicle Unit audio pass band out of tolerance. Resulted in degraded ability to decode signposts at temperatures below freezing. Signpost FSK frequencies change with temperature. Vehicle unit was sent to Fort Worth with a signpost to determine problem. Solution is to reset vehicle unit audio passband to provide 6 percent design passband tolerance. Unit was providing only 4% variation in capture band.

- Provider TSC monitor following items 1. list of HI Turn Intersections
1. Listing of Signpost Data Base
 2. Map showing current signpost deployment
 3. Identification of Primary Checkpoints

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 2

VEHICLE UNIT THRESHOLD LEVELS: 1 -59dBm 2 -72dBm 3 -82dBm

ODOMETER CAL: 997 FPP 2 5TH WHEEL CAL X FPP X

R1 DROPOUT SWITCH: Off/On Off OTHER: _____

TEMPERATURE: 40° PRECIPITATION: clean ROAD CONDITIONS: Wet

TEST TAPE NO(S). 1-1 ; 1-2

FILE NO. 1

SAMPLE RATE: 0.5

TEST DIRECTOR Gray W. Shaver

RUN TIME: 1 hour 34 min.

TSC MONITOR Rand W. A. Klein

TEST DATA LOG

TEST RUN NO. 2

SHEET NO. 1 OF 1

START TIME 1735
END TIME 1848

TYPE OF TEST: Hoffman Random Route DATE: 12-7-76

BRIEF NARRATIVE DESCRIPTION OF TEST TEMP 47°
ROAD ~~WET~~ ~~WET~~ STREETS DRY

ROUTE IDENTIFICATION: TSC Primary

EVENT MARKER NUMBER: 1-63 - IN ORDER - NO ERRORS IN ENTRY

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 2

VEHICLE UNIT THRESHOLD LEVELS: 1-59dB_m 2-72dB_m 3-82dB_m

ODOMETER CAL: 997 FPP 2 5TH WHEEL CAL X FPP X

R1 DROPOUT SWITCH: Off/On Off OTHER: _____

TEMPERATURE: 48°F PRECIPITATION: None ROAD CONDITIONS: Wet

TEST TAPE NO(S). 2-1 ; 2-2 FILE NO. 7

SAMPLE RATE: 0.5

RUN TIME: 1 HR: 13 MIN. TEST DIRECTOR Glenn W. Grun

TSC MONITOR to W.A. Klein

TEST DATA LOG

TEST RUN NO. 3

SHEET NO. 1 OF 1 TIME START 1856
TIME END 2005

TYPE OF TEST: Hoffman Random Route DATE: 12-7-76

BRIEF NARRATIVE DESCRIPTION OF TEST _____

TEMP 46° @ VEHICLE

ROUTE IDENTIFICATION: TSC Primary

EVENT MARKER NUMBER: 1-63

ERROR - AT 2222 TR34 WAS ENTERED INSTEAD OF TR44 CORRECTION MADE BY ENTERING EE34 and entering TR44

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 2

VEHICLE UNIT THRESHOLD LEVELS: 1-59 db_a 2 - 72 db_a 3 - 82 db_a

ODOMETER CAL: 777 FPP 2 5TH WHEEL CAL X FPP X

R1 DROPOUT SWITCH: Off ~~On~~ OFF OTHER: _____

TEMPERATURE: 40° PRECIPITATION: None ROAD CONDITIONS: Wet

TEST TAPE NO(S). 3-1 ; 3-1 FILE NO. 1

SAMPLE RATE: 0.5

RUN TIME: 1 hour 9 min TEST DIRECTOR George W. Greve

TSC MONITOR Richard A. Klian

T E S T D A T A L O G

TEST RUN NO. 4

SHEET NO. 1 OF 1

TYPE OF TEST: Huffman Random Route

DATE: 12-7-76

BRIEF NARRATIVE DESCRIPTION OF TEST TIME START 2025 END 2150
TEMP 46°F, DRY WINDY,

ROUTE IDENTIFICATION: TSC Primary Route

EVENT MARKER NUMBER: 1-63 in segment

TIME 31 MIN 41 SEC AT C.P. 25 THIRD C.P. 28 TROLLEY CAR
FOLLOWING DIRECTLY BEHIND TEST VEHICLE.

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 2

VEHICLE UNIT THRESHOLD LEVELS: 1 -59 dBm 2 -72 dBm 3 -82 dBm

ODOMETER CAL: 997 FPP 2 5TH WHEEL CAL X FPP X

R1 DROPOUT SWITCH: Off/On Off

OTHER: _____

TEMPERATURE: 45° PRECIPITATION: none ROAD CONDITIONS: Wet

TEST TAPE NO(S). 4-1 ; 4-2

FILE NO. 1

SAMPLE RATE: 0.5

RUN TIME: 1HR-25 MIN.

TEST DIRECTOR George Wilbur

TSC MONITOR B.W.A. Klein

TEST DATA LOG

TEST RUN NO. 5

SHEET NO. 1 OF 1

TYPE OF TEST: Alfama Random Route

DATE: 11-7-76

BRIEF NARRATIVE DESCRIPTION OF TEST START 2156 END 2257
TEMP 41°F

ROUTE IDENTIFICATION: TSC Primary

9 MILES 3,559 FEET

EVENT MARKER NUMBER: 1-63 in Sequence

Attempted high speed run - Limited by traffic lights and turns.

During Runs 1-5 on 11-7-76, the TSC checkpoint computers were not loaded in the data recording software.

Tapes 5-1 and 5-2 contain previously recorded data, which should be ignored after end of file put on by RANDOM.

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 2

VEHICLE UNIT THRESHOLD LEVELS: 1-59dBm 2-72dBm 3-82dBm

ODOMETER CAL: 997 FPP 2 5TH WHEEL CAL y FPP x

R1 DROPOUT SWITCH: Off/On Off OTHER: _____

TEMPERATURE: 41°F PRECIPITATION: none ROAD CONDITIONS: Wet

TEST TAPE NO(S). 5-1 and 5-2

FILE NO. 1

SAMPLE RATE: 0.5

TEST DIRECTOR George W. Munk

RUN TIME: 1 hour 1 min

TSC MONITOR Paul W.A. Klein

TEST DATA LOG

START 0945
END 1055

TEST RUN NO. 6

SHEET NO. 1 OF 2

TYPE OF TEST: Random Route (Huffman) DATE: 12-14-76

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: TSC Secondary Random Route

EVENT MARKER NUMBER: 1-62 in order

Test delayed 3 days in order to send Vehicle Unit to Fort Worth to lower clock frequency to compensate for normal drift in assigned VCO frequencies with temperature. Normally, assigned FSK frequencies are set using a standard HI vehicle receiver and field strength meter combination. In just operation in temperature chamber is checked with this test unit. HI vehicle units have their clock frequency set at 204KHz as does the test unit. However, the test unit is battery operated and as a result of the current requirement of the field strength meter, the battery voltage drops to approximately 10 volts, thereby causing the test unit clock frequency to drop to 198KHz. As the assigned operates at lower temperatures this 198KHz frequency provides an adequate capture bandwidth for receiving and decoding the signals, since the normal vehicle units operate from the vehicle battery, their voltage remains at approximately 13.5 volts and their clock frequency remains at 204KHz. By testing the vehicle units with cold-soaked signals, it was found that their clock frequency should be initially set at 198KHz. This adjustment was made and calibration tests made in Philadelphia demonstrated design operation was achieved.

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -59dBm 2 -72dBm 3 -82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL K FPP 1

R1 DROPOUT SWITCH: Off/On Off OTHER: _____

TEMPERATURE: 28° PRECIPITATION: None ROAD CONDITIONS: Dry

TEST TAPE NO(S). 6-1 and 6-2 FILE NO. 1

SAMPLE RATE: 0.5

RUN TIME: 1hr 10min TEST DIRECTOR: George W. Kruse

TSC MONITOR: Samuel A. Klein

DISTANCE 9-4280

TEST DATA LOG

TEST RUN NO. 6

SHEET NO. 2 OF 2

TYPE OF TEST: Randon Route (Hoffman)

DATE: 12-14-76

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION: TSC Route (Secondary)

EVENT MARKER NUMBER: Three signposts coded 19, 13, 15, 13; and 8, 7 were also taken to Fort Worth with the vehicle unit. These signposts were found to be working perfectly and were not modified. On 12-13-76 they were reinstalled at their normal locations.

At approximately 8 AM on 12-13-76 the street light at the Northwest corner of Race and 9th street was hit by a bus and the HI² vehicle unit and pole removed by the Philadelphia street light repair crew. As of 1630 on 12-13-76, the disposition of the signpost was being traced by Mr. W. Behrend of the City of Philadelphia Street Lighting Department. HI² personnel received a spare signpost with the code (8.10) of the removed signpost and installed same at 1700 on 12-13-76.

TSC CHECKPOINTS NOT LEADED IN COMPUTER

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-59 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL < FPP <

R1 DROPOUT SWITCH: Off/On off

OTHER: _____

TEMPERATURE: _____ PRECIPITATION: _____

ROAD CONDITIONS: _____

TEST TAPE NO(S). 6-1 and 6-2

FILE NO. _____

SAMPLE RATE: 0.5

TEST DIRECTOR George W. Gurner

RUN TIME: _____

TSC MONITOR David W. H. Kline

TEST DATA LOG

START 1105
END 1235

TEST RUN NO. 7

SHEET NO. 1 OF 1

TYPE OF TEST: Hoffman Random Route DATE: 12-14-76

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: TSC Route (Secondary)

EVENT MARKER NUMBER: 1-62 in order

TSC CHECKPOINTS NOT LISTED IN COMPUTER

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -57db 2 -72db 3 -82db

ODOMETER CAL: 977 FPP 2 5TH WHEEL CAL X FPP X

R1 DROPOUT SWITCH: Off/On Off OTHER: _____

TEMPERATURE: 38° PRECIPITATION: None ROAD CONDITIONS: Dry

TEST TAPE NO(S). 7-1 and 7-2 FILE NO. 1

SAMPLE RATE: 0.5

RUN TIME: 1hr 30min TEST DIRECTOR George W. Sherry

TSC MONITOR Bernard W. A. Klum

Distance 3-4540

TEST DATA LOG 12 40

TEST RUN NO. 8

SHEET NO. 1 OF 14

TYPE OF TEST: Huffman Random Route DATE: 12-14-76

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: TSC Route (Secondary)

EVENT MARKER NUMBER: 1-62 in order

TSC OPERATIONS NOT CONDUCTED IN CONDUCTOR

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-52dBm 2-72dBm 3 - 82dBm

ODOMETER CAL: 373 FPP 2 5TH WHEEL CAL X FPP X

R1 DROPOUT SWITCH: Off/On off OTHER: _____

TEMPERATURE: 36°-33' PRECIPITATION: NONE ROAD CONDITIONS: DRY

TEST TAPE NO(S). 8-1 and 8-2 FILE NO. 1

SAMPLE RATE: 0.5 TEST DIRECTOR: Georges Turner

RUN TIME: HR - 29 MIN TSC MONITOR: Samuel Williams

DISTANCE 3-4137

TEST DATA LOG 14 20
15 38

TEST RUN NO. 9

SHEET NO. 1 OF 1

TYPE OF TEST: Huffman Random Route

DATE: 12-14-76

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: TSC Route (Secondary)

EVENT MARKER NUMBER: 1-62 in order

TSC CHECKPOINTS NOT LOADED IN CALIBRATION

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1- 92dBm 2- 72dBm 3- 82dBm

ODOMETER CAL: 379 FPP 2 5TH WHEEL CAL X FPP X

R1 DROPOUT SWITCH: Off/On off OTHER: _____

TEMPERATURE: 58 F PRECIPITATION: NONE ROAD CONDITIONS: DRY

TEST TAPE NO(S). 9-1 and 9-2 FILE NO. 1

SAMPLE RATE: 0.5 TEST DIRECTOR: George W. Brewer

RUN TIME: 1 HR - 15 MIN. TSC MONITOR: Steven W. Kuen

DISTANCE 9-4170

TEST DATA LOG

START 1705
End 1818

TEST RUN NO. 10 SHEET NO. 1 OF

TYPE OF TEST: Huffman Random Route DATE: 12-17-76

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: TSC Route (Secondary)

EVENT MARKER NUMBER: 1-62 in order
TSC checkpoints not loaded in computer

Note: after CP 20 insert: ~~Turn right on 10th~~
Turn right on road
Turn right on 10th

~~after course insert: Turn right on 10th~~
Turn right on road

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-59dBm 2-72dBm 3-82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL x FPP x

R1 DROPOUT SWITCH: Off/On Off OTHER: _____

TEMPERATURE: 36° PRECIPITATION: None ROAD CONDITIONS: Dry

TEST TAPE NO(S). 10-1 and 10-2 FILE NO. 1

SAMPLE RATE: 0.5

RUN TIME: 1hr. 13min TEST DIRECTOR George W. Hunter

DISTANCE 9mi 4990 TSC MONITOR Sam W. A. Klein

3. 1. 2 Random Route Test Data

This subsection contains a complete dump of the data recorded during Random Route Run 7 and the first page of the similar dumps of Runs 1-6 and 8-10. Only those records which contain (1) a change in signpost region code or (2) an event marker are shown in these dumps. A complete dump of every record of Run 4 fills 218 pages.

.L CT0:DUMPUM.LDA

.ST14156

Primary

RUN 001 SAMPLE RATE 00.5 YEAR 76 MONTH 12 DAY 07 HOUR 15 MIN 41

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
TA 064	00	00	R1	0 00000	F 00000	T 02 39
000	06	12	R1	0 00076	F 00000	T 03 07
CP 001	06	12	R1	0 00189	F 00000	T 03 50
000	06	12	R2 N	0 00271	F 00000	T 03 59
000	06	12	R3 N	0 00338	F 00000	T 04 06
000	08	12	R2 S	0 00360	F 00000	T 04 09
000	08	12	R3 S	0 00368	F 00000	T 04 10
000	08	12	R2 S	0 00406	F 00000	T 04 14
000	08	12	R2 N	0 00483	F 00000	T 04 26
000	08	12	R1	0 00483	F 00000	T 04 31
000	08	12	R2 N	0 00483	F 00000	T 04 34
000	08	12	R2 S	0 00485	F 00000	T 04 54
000	08	12	R2 N	0 00487	F 00000	T 04 56
000	08	12	R1	0 00487	F 00000	T 04 57
000	08	12	R2 N	0 00487	F 00000	T 04 58
000	08	12	R1	0 00487	F 00000	T 04 59
000	08	12	R2 N	0 00487	F 00000	T 05 02
000	08	12	R1	0 00489	F 00000	T 05 04
000	06	12	R3 N	0 00507	F 00000	T 05 09
000	08	12	R1	0 00513	F 00000	T 05 10
TA 045	08	12	R1	0 00546	F 00000	T 05 17
000	08	12	R2 W	0 00652	F 00000	T 05 30
000	08	12	R2 N	0 00693	F 00000	T 05 35
000	08	12	R2 W	0 00705	F 00000	T 05 36
000	08	12	R3 W	0 00712	F 00000	T 05 37
000	15	16	R2 N	0 00730	F 00000	T 05 41
000	08	10	R2 E	0 00731	F 00000	T 05 42
000	15	16	R2 N	0 00741	F 00000	T 05 48
000	08	10	R3 E	0 00751	F 00000	T 05 50
000	08	10	R2 E	0 00754	F 00000	T 05 50
TA 044	08	10	R2 E	0 00764	F 00000	T 05 52
000	15	16	R1	0 00777	F 00000	T 05 55
CP 002	15	16	R1	0 00922	F 00000	T 06 11
000	15	16	R2 S	0 00937	F 00000	T 06 13
000	06	12	R3 W	0 01134	F 00000	T 06 44
TA 063	06	12	R3 W	0 01137	F 00000	T 06 45
000	06	10	R2 E	0 01197	F 00000	T 06 54
000	06	10	R1	0 01242	F 00000	T 06 59
000	06	10	R2 E	0 01252	F 00000	T 07 00
000	06	10	R1	0 01262	F 00000	T 07 01
CP 003	06	10	R1	0 01362	F 00000	T 07 11
000	06	10	R2 W	0 01480	F 00000	T 07 26
000	06	10	R1	0 01485	F 00000	T 07 26
CP 004	13	15	R1	0 01602	F 00000	T 07 43
000	06	10	R3 W	0 01610	F 00000	T 07 44
000	06	08	R2 E	0 01712	F 00000	T 07 55
000	06	08	R1	0 01740	F 00000	T 07 58
TA 060	06	08	R1	0 01821	F 00000	T 08 21
TA 050	06	08	R1	0 01986	F 00000	T 08 48

.L CTO:DUMPUM.LDA

Primary

.ST 14156

RUN 002 SAMPLE RATE 00.5 YEAR 76 MONTH 12 DAY 07 HOUR 17 MIN 31

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
	000	04	12	R3 N	0 00171	F 00000 T 00 37
	000	00	00	R1	0 00000	F 00000 T 00 47
TA	064	00	00	R1	0 00000	F 00000 T 00 54
	000	06	12	R1	0 00115	F 00000 T 01 21
CP	001 ✓	06	12	R1	0 00199	F 00000 T 01 35
	000	08	12	R2 S	0 00399	F 00000 T 01 54
	000	08	12	R1	0 00494	F 00000 T 02 04
TA	045	08	12	R1	0 00551	F 00000 T 02 46
	000	08	12	R2 N	0 00658	F 00000 T 02 59
	000	08	12	R2 W	0 00664	F 00000 T 03 00
	000	08	12	R2 N	0 00669	F 00000 T 03 00
	000	08	12	R2 W	0 00684	F 00000 T 03 02
	000	08	12	R2 N	0 00704	F 00000 T 03 04
	000	08	10	R2 E	0 00750	F 00000 T 03 13
	000	15	16	R2 N	0 00751	F 00000 T 03 15
	000	08	12	R3 W	0 00758	F 00000 T 03 20
TA	044	08	10	R2 E	0 00763	F 00000 T 03 24
	000	15	16	R2 N	0 00767	F 00000 T 03 25
	000	08	12	R3 W	0 00769	F 00000 T 03 26
	000	15	16	R1	0 00782	F 00000 T 03 29
CP	002 ✓	15	16	R1	0 00925	F 00000 T 03 47
	000	15	16	R2 S	0 00979	F 00000 T 03 53
	000	13	16	R3 N	0 01063	F 00000 T 04 03
TA	063	13	16	R3 N	0 01137	F 00000 T 04 27
	000	06	12	R2 W	0 01137	F 00000 T 04 27
	000	06	10	R3 E	0 01141	F 00000 T 04 31
	000	06	10	R2 E	0 01147	F 00000 T 04 33
	000	06	10	R3 E	0 01153	F 00000 T 04 34
	000	06	12	R2 W	0 01164	F 00000 T 04 37
	000	06	12	R3 W	0 01169	F 00000 T 04 38
	000	06	10	R2 E	0 01186	F 00000 T 04 43
	000	06	12	R3 W	0 01258	F 00000 T 04 56
	000	06	10	R2 E	0 01262	F 00000 T 04 58
	000	06	10	R1	0 01263	F 00000 T 04 58
	000	06	10	R3 E	0 01264	F 00000 T 04 59
	000	06	10	R1	0 01264	F 00000 T 05 06
	000	06	12	R3 W	0 01281	F 00000 T 05 33
	000	06	10	R1	0 01284	F 00000 T 05 34
	000	06	10	R2 E	0 01294	F 00000 T 05 35
	000	06	10	R1	0 01310	F 00000 T 05 37
CP	003 ✓	06	10	R1	0 01365	F 00000 T 05 44
	000	06	10	R2 W	0 01475	F 00000 T 05 59
	000	06	10	R1	0 01477	F 00000 T 05 59
	000	06	10	R2 W	0 01485	F 00000 T 06 07
	000	06	10	R1	0 01487	F 00000 T 06 07

	FIFTH WHEEL	FEET/PULSE	0002	ODDOMETER	FEET/PULSE	0002
TA 064	00	00	R1	0 00000	F 00000	T 01 13
000	06	12	R1	0 00096	F 00000	T 01 31
CP 001	06	12	R1	0 00207	F 00000	T 01 45
000	08	12	R3 S	0 00364	F 00000	T 02 01
000	06	12	R2 N	0 00376	F 00000	T 02 02
000	06	12	R3 N	0 00381	F 00000	T 02 03
000	08	12	R2 S	0 00421	F 00000	T 02 06
000	06	12	R2 N	0 00432	F 00000	T 02 07
000	08	12	R2 S	0 00438	F 00000	T 02 08
000	08	12	R1	0 00523	F 00000	T 02 16
TA 045	08	12	R1	0 00553	F 00000	T 02 29
000	10	12	R3 S	0 00573	F 00000	T 02 57
000	08	12	R1	0 00595	F 00000	T 03 00
000	08	12	R2 N	0 00670	F 00000	T 03 09
000	08	12	R2 W	0 00675	F 00000	T 03 09
000	08	12	R1	0 00679	F 00000	T 03 10
000	08	10	R3 E	0 00732	F 00000	T 03 15
000	08	10	R2 E	0 00762	F 00000	T 03 19
000	08	10	R3 E	0 00764	F 00000	T 03 20
000	15	16	R2 N	0 00771	F 00000	T 03 26
TA 044	15	16	R2 N	0 00771	F 00000	T 03 29
000	08	12	R3 W	0 00771	F 00000	T 03 31
000	15	16	R1	0 00783	F 00000	T 03 42
CP 002	15	16	R1	0 00938	F 00000	T 04 01
000	15	16	R2 S	0 00962	F 00000	T 04 04
000	15	00	R3 S	0 01000	F 00000	T 04 09
000	06	10	R2 E	0 01145	F 00000	T 04 27
000	06	10	R3 E	0 01147	F 00000	T 04 27
TA 063	06	10	R3 E	0 01152	F 00000	T 04 29
000	06	10	R2 E	0 01163	F 00000	T 04 31
000	06	12	R2 W	0 01168	F 00000	T 04 32
000	06	12	R3 W	0 01177	F 00000	T 04 34
000	06	10	R2 E	0 01190	F 00000	T 04 36
000	06	10	R3 E	0 01194	F 00000	T 04 36
000	06	10	R2 E	0 01205	F 00000	T 04 38
000	06	10	R1	0 01265	F 00000	T 04 45
000	06	10	R2 E	0 01274	F 00000	T 04 46
000	06	12	R3 W	0 01279	F 00000	T 04 46
000	06	10	R2 E	0 01284	F 00000	T 04 47
000	06	10	R1	0 01289	F 00000	T 04 47
CP 003	06	10	R1	0 01375	F 00000	T 04 56
000	06	10	R2 W	0 01506	F 00000	T 05 11
000	06	10	R1	0 01510	F 00000	T 05 12
000	06	10	R2 W	0 01524	F 00000	T 05 16
000	06	08	R3 E	0 01588	F 00000	T 05 36
000	13	15	R2 N	0 01605	F 00000	T 05 38
CP 004	13	15	R2 N	0 01616	F 00000	T 05 39
000	13	15	R1	0 01619	F 00000	T 05 40
000	06	10	R3 W	0 01623	F 00000	T 05 40
000	06	08	R2 E	0 01668	F 00000	T 05 47
000	06	08	R3 E	0 01675	F 00000	T 05 48
000	06	08	R1	0 01724	F 00000	T 05 54

.L CTO:DUMPUM.LDA

.ST 14156 *Primary*

RUN 004 SAMPLE RATE 00.5 YEAR 76 MONTH 12 DAY 07 HOUR 20 MIN 36

FIFTH WHEEL FEET/PULSE 0002			ODOMETER FEET/PULSE 0002			
TA 058	00	00	R1	0	00000	F 00000 T 00 37
EE 058	00	00	R1	0	00006	F 00000 T 00 47
	000	06	12	R1	0	00125 F 00000 T 01 04
TA 064	06	12	R1	0	00160	F 00000 T 01 10
CP 001	06	12	R1	0	00202	F 00000 T 01 17
	000	08	12	R3 S	0	00369 F 00000 T 01 33
	000	08	12	R2 S	0	00375 F 00000 T 01 34
	000	08	12	R3 S	0	00385 F 00000 T 01 35
	000	06	12	R2 N	0	00406 F 00000 T 01 37
	000	08	12	R3 S	0	00411 F 00000 T 01 37
	000	06	12	R2 N	0	00427 F 00000 T 01 39
	000	08	12	R2 S	0	00437 F 00000 T 01 40
	000	08	12	R2 N	0	00473 F 00000 T 01 43
	000	08	12	R2 S	0	00498 F 00000 T 01 46
	000	08	12	R1	0	00512 F 00000 T 01 47
TA 045	08	12	R1	0	00561	F 00000 T 01 54
	000	08	12	R2 W	0	00685 F 00000 T 02 11
	000	08	12	R2 N	0	00694 F 00000 T 02 12
	000	08	12	R2 W	0	00716 F 00000 T 02 15
	000	10	12	R3 S	0	00728 F 00000 T 02 16
	000	15	16	R2 N	0	00743 F 00000 T 02 18
	000	08	10	R3 E	0	00768 F 00000 T 02 22
	000	08	10	R2 E	0	00771 F 00000 T 02 22
	000	08	10	R3 E	0	00773 F 00000 T 02 23
TA 044	08	10	R3 E	0	00780	F 00000 T 02 24
	000	15	16	R1	0	00787 F 00000 T 02 26
CP 002	15	16	R1	0	00935	F 00000 T 02 46
	000	15	16	R2 S	0	00973 F 00000 T 02 52
	000	15	16	R3 S	0	00995 F 00000 T 02 55
TA 063	15	16	R3 S	0	01149	F 00000 T 03 20
	000	06	12	R2 W	0	01155 F 00000 T 03 21
	000	06	12	R3 W	0	01161 F 00000 T 03 23
	000	06	12	R2 W	0	01167 F 00000 T 03 24
	000	06	12	R3 W	0	01172 F 00000 T 03 25
	000	06	10	R2 E	0	01202 F 00000 T 03 30
	000	06	10	R1	0	01255 F 00000 T 03 37
	000	06	10	R3 E	0	01271 F 00000 T 03 39
	000	06	10	R1	0	01275 F 00000 T 03 39
	000	06	08	R3 E	0	01376 F 00000 T 04 21
CP 003	06	08	R3 E	0	01381	F 00000 T 04 22
	000	06	10	R1	0	01386 F 00000 T 04 23
	000	06	10	R2 E	0	01504 F 00000 T 04 38
	000	06	10	R2 W	0	01509 F 00000 T 04 38
	000	06	10	R3 W	0	01578 F 00000 T 05 08
	000	06	08	R2 E	0	01602 F 00000 T 05 12
CP 004	13	15	R2 N	0	01608	F 00000 T 05 13
	000	06	08	R2 E	0	01618 F 00000 T 05 14
	000	06	08	R3 E	0	01625 F 00000 T 05 15
	000	06	08	R2 E	0	01644 F 00000 T 05 18
	000	06	10	R3 W	0	01665 F 00000 T 05 20
	000	06	10	R2 W	0	01669 F 00000 T 05 21
	000	06	10	R3 W	0	01674 F 00000 T 05 21

.L CT0:DUMPUM.LDA

.ST 14156

RUN 005 SAMPLE RATE 00.5 YEAR 76 MONTH 12 DAY 07 HOUR 23 MIN 56

	FIFTH WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002	
TA 064	00	00	R1	0 00000	F 00000	T 00 18	
EE 064	00	00	R1	0 00000	F 00000	T 00 23	
	000	06	12	R1	0 00132	F 00000	T 00 44
TA 064	✓ 06	12	R1	0 00185	F 00000	T 01 13	
CP 001	✓ 06	12	R1	0 00208	F 00000	T 01 16	
	000	08	12	R2 S	0 00461	F 00000	T 01 40
	000	08	12	R1	0 00516	F 00000	T 01 45
TA 045	08	12	R1	0 00556	F 00000	T 01 49	
	000	06	12	R3 N	0 00572	F 00000	T 01 52
	000	08	12	R1	0 00575	F 00000	T 01 53
	000	08	12	R2 W	0 00667	F 00000	T 02 04
	000	08	12	R1	0 00672	F 00000	T 02 04
	000	08	12	R2 N	0 00678	F 00000	T 02 05
	000	08	12	R2 W	0 00704	F 00000	T 02 07
	000	08	12	R2 N	0 00709	F 00000	T 02 08
	000	08	12	R3 W	0 00763	F 00000	T 02 15
	000	08	10	R2 E	0 00767	F 00000	T 02 16
TA 044	08	12	R3 W	0 00775	F 00000	T 02 19	
	000	15	16	R1	0 00785	F 00000	T 02 21
CP 002	✓ 15	16	R1	0 00943	F 00000	T 02 40	
	000	15	16	R2 S	0 00956	F 00000	T 02 42
TA 063	15	16	R2 S	0 01141	F 00000	T 03 04	
	000	06	12	R3 W	0 01147	F 00000	T 03 05
	000	06	12	R2 W	0 01156	F 00000	T 03 06
	000	06	10	R2 E	0 01162	F 00000	T 03 07
	000	06	10	R1	0 01254	F 00000	T 03 19
	000	06	10	R2 E	0 01262	F 00000	T 03 20
	000	✓ 06	10	R1	0 01274	F 00000	T 03 21
CP 003	✓ 06	10	R1	0 01371	F 00000	T 03 33	
	000	06	08	R3 E	0 01478	F 00000	T 03 45
	000	✓ 06	10	R1	0 01509	F 00000	T 03 49
	000	✓ 06	10	R2 W	0 01510	F 00000	T 03 50
CP 004	✓ 13	15	R2 N	0 01606	F 00000	T 04 18	
	000	06	10	R3 W	0 01610	F 00000	T 04 19
	000	06	08	R2 E	0 01642	F 00000	T 04 23
	000	06	10	R3 W	0 01646	F 00000	T 04 24
	000	06	08	R2 E	0 01676	F 00000	T 04 27
	000	06	08	R1	0 01707	F 00000	T 04 31
	000	06	08	R2 E	0 01728	F 00000	T 04 34
	000	06	08	R1	0 01741	F 00000	T 04 35
TA 060	06	08	R1	0 01826	F 00000	T 04 56	
TA 050	06	08	R1	0 01981	F 00000	T 05 16	
	000	✓ 15	14	R1	0 01993	F 00000	T 05 18
CP 005	✓ 15	14	R1	0 02007	F 00000	T 05 21	
	000	15	11	R3 E	0 02217	F 00000	T 05 48
TA 049	15	11	R3 E	0 02224	F 00000	T 05 50	
CP 006	15	11	R3 E	0 02299	F 00000	T 06 03	
	000	15	13	R2 S	0 02353	F 00000	T 06 12
	000	15	13	R3 S	0 02364	F 00000	T 06 16
TA 059	15	13	R3 S	0 02391	F 00000	T 06 21	
	000	15	13	R2 W	0 02402	F 00000	T 06 24

Secondary

B.K. 12/15/76

.L CTO:DUMFUM.LDA

.ST 14156

RUN 006 SAMPLE RATE 00.5 YEAR 76 MONTH 12 DAY 14 HOUR 09 MIN 45'

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
	000	06	12	R1	0 00122	F 00000 T 01 07
TA	064	06	12	R1	0 00210	F 00000 T 01 16
←CP	001	06	12	R1	0 00239	F 00000 T 01 20
	000	08	12	R3 S	0 00398	F 00000 T 01 33
	000	08	12	R1	0 00495	F 00000 T 01 41
←CP	002	08	12	R1	0 00587	F 00000 T 01 56
	000	08	12	R2 N	0 00702	F 00000 T 02 12
	000	08	12	R1	0 00723	F 00000 T 02 14
	000	08	12	R3 N	0 00733	F 00000 T 02 15
	000	10	12	R1	0 00852	F 00000 T 02 33
	000	10	12	R2 S	0 00857	F 00000 T 02 39
	000	10	12	R1	0 00861	F 00000 T 02 40
	000	10	12	R2 S	0 00877	F 00000 T 02 43
	000	10	12	R1	0 00890	F 00000 T 02 44
←CP	003	10	12	R1	0 00935	F 00000 T 02 50
TA	029	10	12	R1	0 00998	F 00000 T 02 57
	000	10	12	R2 S	0 01080	F 00000 T 03 04
	000	10	12	R2 N	0 01093	F 00000 T 03 05
TA	080	10	12	R2 N	0 01119	F 00000 T 03 07
	000	12	12	R1	0 01209	F 00000 T 03 15
TA	019	12	12	R1	0 01268	F 00000 T 04 17
	000	12	12	R2 W	0 01339	F 00000 T 04 27
	000	12	12	R1	0 01348	F 00000 T 04 28
←CP	004	12	12	R1	0 01352	F 00000 T 04 29
TA	018	19	16	R2 S	0 01410	F 00000 T 04 37
	000	12	10	R3 E	0 01446	F 00000 T 04 42
	000	19	16	R2 S	0 01478	F 00000 T 04 45
	000	17	16	R2 N	0 01484	F 00000 T 04 45
	000	19	16	R3 S	0 01490	F 00000 T 04 46
	000	17	16	R1	0 01526	F 00000 T 04 49
←CP	005	17	16	R2 S	0 01727	F 00000 T 05 08
	000	17	16	R3 S	0 01787	F 00000 T 05 19
	000	16	16	R2 N	0 01799	F 00000 T 05 21
	000	16	16	R3 N	0 01809	F 00000 T 05 22
	000	16	16	R2 N	0 01855	F 00000 T 05 28
	000	16	16	R1	0 01859	F 00000 T 05 28
	000	16	16	R2 S	0 02017	F 00000 T 05 48
	000	15	16	R3 N	0 02020	F 00000 T 05 49
TA	044	15	16	R3 N	0 02066	F 00000 T 06 25
	000	15	16	R1	0 02079	F 00000 T 06 28
←CP	006	15	16	R1	0 02088	F 00000 T 06 30
	000	08	10	R3 E	0 02098	F 00000 T 06 32
	000	08	12	R2 W	0 02112	F 00000 T 06 34
	000	08	10	R2 N	0 02184	F 00000 T 06 42
	000	08	10	R1	0 02221	F 00000 T 06 45
	000	08	10	R2 W	0 02372	F 00000 T 06 58
	000	08	10	R1	0 02377	F 00000 T 06 59
CP	007	08	10	R1	0 02416	F 00000 T 07 03
	000	08	10	R2 W	0 02430	F 00000 T 07 04
	000	00	00	00	0 02400	F 00000 T 07 10

LISTING OF RECORDED RANDOM ROUTE TEST DATA (CONT'D)

000	10	08	R3 N	0 03564	F 00000	T 25 32	TA 002	19	13	R1	0 02525	F 00000	T 35 08
000	10	08	R2 N	0 03569	F 00000	T 25 34	000	12	07	R2 E	0 02636	F 00000	T 35 24
000	12	08	R3 S	0 03570	F 00000	T 25 34	000	19	13	R2 S	0 02637	F 00000	T 35 30
000	12	08	R2 S	0 03576	F 00000	T 25 38	000	12	07	R2 W	0 02637	F 00000	T 35 36
CF 020	12	08	R2 S	0 03603	F 00000	T 26 15	000	12	07	R2 E	0 02637	F 00000	T 35 36
000	12	08	R1	0 03610	F 00000	T 26 16	000	19	13	R2 S	0 02637	F 00000	T 35 40
TA 013	12	08	R1	0 03705	F 00000	T 26 28	000	17	07	R2 E	0 02637	F 00000	T 35 43
000	12	08	R2 W	0 03762	F 00000	T 26 33	000	19	13	R2 S	0 02637	F 00000	T 35 45
000	12	08	R1	0 03769	F 00000	T 26 34	000	12	07	R2 E	0 02637	F 00000	T 35 46
000	19	15	R3 S	0 03820	F 00000	T 26 38	000	19	13	R2 S	0 02637	F 00000	T 35 58
000	12	08	R2 E	0 03876	F 00000	T 27 15	000	12	07	R2 E	0 02637	F 00000	T 36 00
TA 015	12	08	R2 E	0 03891	F 00000	T 27 17	000	19	13	R2 S	0 02637	F 00000	T 36 04
000	17	15	R2 N	0 03904	F 00000	T 27 19	000	12	07	R2 E	0 02637	F 00000	T 36 04
000	19	15	R3 S	0 03941	F 00000	T 27 24	000	19	13	R2 S	0 02637	F 00000	T 36 06
000	17	15	F1	0 03945	F 00000	T 27 24	000	12	07	R2 E	0 02637	F 00000	T 36 06
000	17	15	R2 N	0 03960	F 00000	T 27 26	000	19	13	R2 S	0 02642	F 00000	T 36 11
000	17	15	R1	0 03971	F 00000	T 27 27	000	12	07	R1	0 02645	F 00000	T 36 12
000	19	15	R3 S	0 03981	F 00000	T 27 28	000	12	07	R2 E	0 02653	F 00000	T 36 13
000	17	15	R1	0 03987	F 00000	T 27 28	000	12	07	R2 W	0 02667	F 00000	T 36 15
CF 021	17	15	R1	0 04052	F 00000	T 27 34	000	12	06	R3 E	0 02671	F 00000	T 36 16
000	17	15	R3 S	0 00070	F 00000	T 29 20	000	12	07	R2 W	0 02679	F 00000	T 36 17
000	17	15	R2 S	0 00102	F 00000	T 28 24	000	17	13	R3 N	0 02687	F 00000	T 36 18
000	16	15	R3 N	0 00121	F 00000	T 28 24	CF 028	17	13	R3 N	0 02696	F 00000	T 36 19
000	16	15	R2 N	0 00155	F 00000	T 28 29	000	12	07	R2 W	0 02742	F 00000	T 36 24
000	17	15	R3 S	0 00166	F 00000	T 28 30	000	17	13	R2 N	0 02749	F 00000	T 36 24
000	16	15	R1	0 00196	F 00000	T 28 32	000	17	13	R1	0 02774	F 00000	T 36 27
CF 022	16	15	R1	0 00308	F 00000	T 29 00	000	10	07	R3 N	0 02885	F 00000	T 37 13
000	15	15	R3 N	0 00351	F 00000	T 29 11	000	17	13	R1	0 02885	F 00000	T 37 14
000	15	15	R2 N	0 00434	F 00000	T 29 21	000	10	07	R3 N	0 02885	F 00000	T 37 15
000	16	15	R3 S	0 00438	F 00000	T 29 22	000	17	13	R1	0 02885	F 00000	T 37 15
000	15	15	R2 N	0 00448	F 00000	T 29 23	000	10	07	R3 N	0 02885	F 00000	T 37 21
000	15	15	R3 N	0 00455	F 00000	T 29 24	000	17	13	R1	0 02885	F 00000	T 37 26
000	15	15	R1	0 00460	F 00000	T 29 25	000	12	07	R3 S	0 02885	F 00000	T 37 33
000	15	15	R2 S	0 00585	F 00000	T 29 35	000	17	13	R1	0 02885	F 00000	T 37 34
TA 052	15	15	R1	0 00597	F 00000	T 29 38	000	12	07	R3 S	0 02949	F 00000	T 37 50
000	15	15	R1	0 00603	F 00000	T 29 39	000	17	13	R1	0 02954	F 00000	T 37 50
000	15	15	R2 S	0 00606	F 00000	T 29 40	000	17	13	R3 S	0 03036	F 00000	T 37 58
000	15	15	R2 W	0 00626	F 00000	T 29 44	000	17	13	R2 S	0 03077	F 00000	T 38 08
000	15	14	R3 E	0 00639	F 00000	T 29 46	000	16	13	R3 N	0 03079	F 00000	T 38 08
000	15	14	R2 E	0 00682	F 00000	T 29 51	000	17	13	R2 S	0 03087	F 00000	T 38 09
CF 023	15	14	R2 E	0 00784	F 00000	T 30 02	000	16	13	R3 N	0 03086	F 00000	T 38 10
000	15	14	R1	0 00787	F 00000	T 30 03	000	16	13	R1	0 03147	F 00000	T 38 24
000	15	13	R2 E	0 00981	F 00000	T 30 35	000	16	13	R3 N	0 03147	F 00000	T 38 24
CF 024	15	13	R1	0 01015	F 00000	T 30 39	000	16	13	R1	0 03147	F 00000	T 38 26
000	15	13	R2 W	0 01178	F 00000	T 31 41	000	16	13	R1	0 03148	F 00000	T 38 28
000	15	13	R3 W	0 01212	F 00000	T 31 44	000	16	13	R3 N	0 03148	F 00000	T 38 28
CF 025	15	13	R3 W	0 01250	F 00000	T 31 46	000	16	13	R1	0 03152	F 00000	T 38 40
TA 047	15	13	R3 W	0 01283	F 00000	T 31 50	000	32	27	R1	0 03213	F 00000	T 38 51
000	08	06	R2 S	0 01335	F 00000	T 32 02	000	16	13	R1	0 03213	F 00000	T 38 52
000	08	06	R1	0 01364	F 00000	T 32 07	000	32	27	R1	0 03213	F 00000	T 38 52
000	16	11	R1	0 01630	F 00000	T 32 45	000	16	13	R1	0 03213	F 00000	T 38 58
000	10	06	R1	0 01770	F 00000	T 33 04	CF 029	16	13	R1	0 03265	F 00000	T 39 15
000	10	06	R2 N	0 01866	F 00000	T 33 14	000	08	07	R1	0 03310	F 00000	T 39 22
CF 026	10	06	R2 N	0 01882	F 00000	T 33 16	000	16	13	R2 S	0 03319	F 00000	T 39 23
000	10	06	R1	0 01887	F 00000	T 33 16	000	15	13	R3 N	0 03321	F 00000	T 39 24
000	10	06	R2 N	0 01903	F 00000	T 33 16	000	16	13	R2 S	0 03322	F 00000	T 39 24
000	10	06	R1	0 01913	F 00000	T 33 19	000	08	07	R2 W	0 03323	F 00000	T 39 25
000	10	06	R3 N	0 01923	F 00000	T 33 20	000	16	13	R3 S	0 03331	F 00000	T 39 30
000	12	06	R3 S	0 01953	F 00000	T 33 23	000	08	07	R1	0 03331	F 00000	T 39 30
000	10	06	R2 N	0 01967	F 00000	T 33 24	000	16	13	R3 S	0 03331	F 00000	T 39 31
000	10	06	R3 N	0 01979	F 00000	T 33 24	000	08	07	R1	0 03331	F 00000	T 39 32
000	12	06	R2 S	0 01987	F 00000	T 33 27	000	16	15	R1	0 03331	F 00000	T 39 34
000	12	06	R1	0 02016	F 00000	T 33 31	000	08	07	R1	0 03331	F 00000	T 39 35
000	12	06	R2 N	0 02217	F 00000	T 34 11	000	16	13	R3 S	0 03331	F 00000	T 39 36
000	14	06	R2 S	0 02223	F 00000	T 34 15	000	08	07	R1	0 03331	F 00000	T 39 37
CF 027	14	06	R3 S	0 02228	F 00000	T 34 16	000	16	13	R3 S	0 03331	F 00000	T 39 37
000	12	06	R2 N	0 02259	F 00000	T 34 19	000	08	07	R1	0 03331	F 00000	T 39 38
TA 001	14	06	R2 S	0 02278	F 00000	T 34 21	000	16	13	R3 S	0 03331	F 00000	T 39 39
000	14	06	R2 S	0 02297	F 00000	T 34 23	000	00	07	R1	0 03331	F 00000	T 39 40
000	19	11	R1	0 02308	F 00000	T 34 25	000	15	13	R3 N	0 03331	F 00000	T 39 44
000	19	11	R2 S	0 02320	F 00000	T 34 26	000	15	13	R2 N	0 03331	F 00000	T 39 45
000	19	11	R1	0 02322	F 00000	T 34 28	000	08	07	R1	0 03331	F 00000	T 39 46
000	12	06	R3 N	0 02345	F 00000	T 34 29	000	15	13	R3 N	0 03331	F 00000	T 39 47
000	19	11	R1	0 02358	F 00000	T 34 34	000	08	07	R1	0 03331	F 00000	T 39 50
000	19	13	R2 W	0 02390	F 00000	T 34 37	000	15	13	R3 N	0 03331	F 00000	T 39 51
000	19	11	R3 E	0 02395	F 00000	T 34 42	000	08	07	R1	0 03331	F 00000	T 39 53
000	19	13	R1	0 02434	F 00000	T 34 43	000	16	13	R3 S	0 03331	F 00000	T 39 54
000	19	13	R2 W	0 02449	F 00000	T 34 44	000	16	13	R3 S	0 03345	F 00000	T 40 00
000	19	13	R1	0 02454	F 00000	T 34 45	000	08	07	R1	0 03347	F 00000	T 40 01
000	19	13	R2 W	0 02463	F 00000	T 34 47	TA 040	16	13	R3 S	0 03350	F 00000	T 40 02
000	19	13	R1	0 02483	F 00000	T 34 48	000	08	07	R1	0 03351	F 00000	T 40 02

LISTING OF RECORDED RANDOM ROUTE TEST DATA (CONT'D)

000	16	15	R1	0 03353	F 00000	T 40 03	000	08	07	R1	0 01865	F 00000	T 48 25
000	08	07	R1	0 03358	F 00000	T 40 05	TA 040	08	07	R1	0 01869	F 00000	T 48 26
000	08	07	R2 W	0 03417	F 00000	T 40 13	000	08	07	R2 N	0 01879	F 00000	T 48 28
000	08	06	R2 E	0 03426	F 00000	T 40 15	000	16	13	R3 S	0 01887	F 00000	T 48 30
000	08	06	R3 E	0 03434	F 00000	T 40 16	000	15	13	R2 N	0 01925	F 00000	T 48 35
000	08	07	R2 W	0 03437	F 00000	T 40 17	000	15	13	R1	0 01931	F 00000	T 48 36
000	08	07	R3 W	0 03444	F 00000	T 40 18	000	15	13	R2 N	0 01936	F 00000	T 48 37
000	08	07	R2 W	0 03446	F 00000	T 40 19	000	15	13	R1	0 01953	F 00000	T 48 46
000	08	06	R3 E	0 03451	F 00000	T 40 20	CF 037	15	13	R1	0 01970	F 00000	T 49 09
000	08	06	R1	0 03493	F 00000	T 40 25	000	15	13	R2 N	0 01995	F 00000	T 49 39
000	08	06	R3 E	0 03514	F 00000	T 40 27	000	15	13	R1	0 01995	F 00000	T 49 42
000	08	06	R1	0 03525	F 00000	T 40 28	000	15	13	R2 N	0 02010	F 00000	T 50 12
TA 039	08	06	R1	0 03572	F 00000	T 41 11	000	15	13	R1	0 02027	F 00000	T 50 19
000	16	11	R1	0 03729	F 00000	T 41 28	000	15	13	R2 S	0 02136	F 00000	T 51 22
000	10	06	R1	0 03884	F 00000	T 41 52	000	15	13	R1	0 02137	F 00000	T 51 24
CF 030	10	06	R1	0 03908	F 00000	T 41 55	000	15	13	R2 S	0 02143	F 00000	T 51 27
000	10	06	R2 N	0 03993	F 00000	T 42 06	000	15	13	R1	0 02144	F 00000	T 51 27
000	10	06	R1	0 04001	F 00000	T 42 07	000	60	55	R1	0 02148	F 00000	T 51 36
000	10	06	R2 N	0 04018	F 00000	T 42 09	000	15	13	R1	0 02148	F 00000	T 51 37
000	12	06	R3 S	0 04073	F 00000	T 42 15	000	15	13	R3 S	0 02179	F 00000	T 51 51
000	12	06	R2 S	0 04078	F 00000	T 42 16	000	15	13	R2 S	0 02191	F 00000	T 51 52
000	10	06	R3 N	0 00007	F 00000	T 42 25	000	15	13	R3 S	0 02195	F 00000	T 51 53
000	12	06	R1	0 00018	F 00000	T 42 29	000	15	13	R2 S	0 02206	F 00000	T 51 54
CF 031	12	06	R1	0 00051	F 00000	T 42 48	CF 038	13	13	R3 N	0 02214	F 00000	T 51 56
TA 007	12	06	R1	0 00114	F 00000	T 43 48	TA 059	13	13	R3 N	0 02233	F 00000	T 52 00
000	12	06	R2 E	0 00193	F 00000	T 43 58	000	06	06	R2 E	0 02311	F 00000	T 52 11
000	12	06	R1	0 00197	F 00000	T 43 58	000	06	06	R1	0 02352	F 00000	T 52 14
000	12	06	R2 E	0 00214	F 00000	T 44 00	TA 058	06	06	R1	0 02456	F 00000	T 53 04
000	12	07	R3 W	0 00232	F 00000	T 44 03	000	06	06	R2 N	0 02584	F 00000	T 53 20
000	12	06	R2 E	0 00238	F 00000	T 44 04	000	08	06	R3 S	0 02623	F 00000	T 53 27
000	12	07	R3 W	0 00244	F 00000	T 44 05	000	08	06	R2 S	0 02623	F 00000	T 53 28
000	12	07	R2 W	0 00250	F 00000	T 44 18	000	08	06	R3 S	0 02623	F 00000	T 53 31
000	12	07	R3 W	0 00265	F 00000	T 44 21	000	08	06	R2 S	0 02623	F 00000	T 53 35
000	12	07	R2 W	0 00311	F 00000	T 44 26	000	08	06	R3 S	0 02647	F 00000	T 53 41
000	12	08	R3 W	0 00321	F 00000	T 44 27	000	08	06	R2 S	0 02667	F 00000	T 53 43
000	12	07	R1	0 00326	F 00000	T 44 27	000	08	06	R1	0 02740	F 00000	T 53 51
000	12	06	R2 E	0 00364	F 00000	T 44 30	000	16	11	R1	0 02978	F 00000	T 54 11
000	12	07	R2 W	0 00371	F 00000	T 44 31	000	10	06	R2 S	0 03089	F 00000	T 54 24
000	12	07	R1	0 00384	F 00000	T 44 32	000	10	06	R1	0 03142	F 00000	T 54 36
000	12	08	R2 W	0 00398	F 00000	T 44 33	000	10	06	R2 N	0 03262	F 00000	T 54 47
000	12	08	R3 W	0 00413	F 00000	T 44 34	000	12	06	R3 S	0 03310	F 00000	T 54 50
000	12	07	R1	0 00421	F 00000	T 44 34	000	12	06	R2 S	0 03351	F 00000	T 54 53
000	12	07	R2 E	0 00451	F 00000	T 44 36	000	12	06	R1	0 03404	F 00000	T 54 58
000	12	08	R3 W	0 00459	F 00000	T 44 37	TA 007	12	06	R1	0 03476	F 00000	T 55 09
000	12	08	R2 W	0 00474	F 00000	T 44 38	000	12	06	R2 E	0 03567	F 00000	T 55 20
000	12	08	R1	0 00490	F 00000	T 44 39	000	12	07	R3 W	0 03606	F 00000	T 55 24
000	12	08	R2 W	0 00497	F 00000	T 44 39	000	12	06	R1	0 03612	F 00000	T 55 24
000	12	08	R1	0 00504	F 00000	T 44 40	000	12	06	R3 E	0 03617	F 00000	T 55 25
CF 032	12	08	R1	0 00526	F 00000	T 44 41	CF 039	12	06	R3 E	0 03709	F 00000	T 55 38
000	12	08	R2 E	0 00724	F 00000	T 45 05	000	12	07	R1	0 03714	F 00000	T 55 38
000	17	15	R3 N	0 00732	F 00000	T 45 06	000	24	15	R1	0 03750	F 00000	T 55 42
000	19	15	R2 S	0 00755	F 00000	T 45 08	000	12	07	R1	0 03756	F 00000	T 55 42
TA 015	19	15	R2 S	0 00792	F 00000	T 45 13	000	12	08	R3 W	0 03831	F 00000	T 55 48
000	17	15	R3 N	0 00799	F 00000	T 45 14	000	12	07	R1	0 03838	F 00000	T 55 48
000	17	15	R2 N	0 00814	F 00000	T 45 17	000	12	07	R3 E	0 03846	F 00000	T 55 49
000	17	15	R3 N	0 00831	F 00000	T 45 19	000	12	08	R1	0 03861	F 00000	T 55 50
000	17	15	R2 N	0 00839	F 00000	T 45 20	000	12	07	R3 E	0 03883	F 00000	T 55 51
CF 033	17	15	R3 N	0 00846	F 00000	T 45 21	000	48	35	R1	0 03891	F 00000	T 55 52
000	17	15	R1	0 00875	F 00000	T 45 25	000	12	08	R1	0 03906	F 00000	T 55 53
000	17	15	R2 S	0 01031	F 00000	T 45 50	CF 040	12	08	R1	0 03940	F 00000	T 55 55
000	17	15	R1	0 01038	F 00000	T 45 51	000	12	08	R2 E	0 04088	F 00000	T 56 10
000	16	15	R3 N	0 01107	F 00000	T 45 59	CF 041	12	08	R3 E	0 00062	F 00000	T 56 20
000	16	15	R2 N	0 01182	F 00000	T 46 07	000	19	15	R2 S	0 00125	F 00000	T 56 25
000	16	15	R1	0 01186	F 00000	T 46 08	000	12	10	R2 W	0 00169	F 00000	T 56 29
000	16	15	R2 N	0 01191	F 00000	T 46 09	000	19	16	R3 W	0 00200	F 00000	T 56 31
000	16	15	R1	0 01193	F 00000	T 46 09	000	12	10	R1	0 00219	F 00000	T 56 33
CF 034	16	15	R1	0 01251	F 00000	T 46 17	CF 042	12	10	R1	0 00296	F 00000	T 56 39
000	32	31	R1	0 01340	F 00000	T 46 28	TA 017	12	10	R1	0 00336	F 00000	T 56 42
000	15	15	R3 N	0 01356	F 00000	T 46 29	000	17	16	R3 N	0 00371	F 00000	T 56 45
TA 042	15	15	R3 N	0 01419	F 00000	T 46 37	000	17	16	R2 N	0 00590	F 00000	T 57 01
000	15	15	R2 N	0 01431	F 00000	T 46 39	000	17	16	R2 N	0 00650	F 00000	T 57 50
000	08	08	R2 E	0 01445	F 00000	T 46 42	TA 028	17	16	R3 N	0 00698	F 00000	T 57 57
000	08	08	R1	0 01449	F 00000	T 46 42	000	10	12	R2 W	0 00751	F 00000	T 58 01
000	17	17	R* C	0 01469	F 00000	T 46 45	000	10	12	R1	0 00812	F 00000	T 58 05
000	08	08	R1	0 01504	F 00000	T 46 48	000	10	12	R1	0 00864	F 00000	T 58 25
CF 035	08	08	R1	0 01689	F 00000	T 47 23	TA 029	10	12	R2 N	0 00985	F 00000	T 58 40
000	08	08	R2 W	0 01734	F 00000	T 47 28	000	10	12	R2 N	0 01004	F 00000	T 58 42
000	08	07	R1	0 01785	F 00000	T 47 34	TA 080	10	12	R3 N	0 01029	F 00000	T 58 45
CF 036	08	07	R1	0 01830	F 00000	T 48 12	CF 043	10	12	R3 N	0 01041	F 00000	T 58 47
000	08	06	R3 E	0 01849	F 00000	T 48 18	000	12	12	R1	0 01156	F 00000	T 59 05
000	08	07	R1	0 01850	F 00000	T 48 19	TA 019	12	12	R1	0 01183	F 00000	T 59 08
000	04	03	R3 S	0 01863	F 00000	T 48 24	000	12	12	R2 W	0 01321	F 00000	T 59 26

LISTING OF RECORDED RANDOM ROUTE TEST DATA (CONT'D)

CF 044	12	12	R2 W	0 01342	F 00000	T 59 51	000	19	13	R3 S	0 00680	F 00000	T 71 28
000	12	10	R3 E	0 01420	F 00000	T 59 58	000	12	07	R2 W	0 00695	F 00000	T 71 30
000	12	10	R2 E	0 01466	F 00000	T 60 01	000	19	13	R3 S	0 00700	F 00000	T 71 30
000	17	16	R3 N	0 01505	F 00000	T 60 04	000	12	07	R2 W	0 00706	F 00000	T 71 31
000	12	10	R1	0 01538	F 00000	T 60 07	000	19	13	R3 S	0 00716	F 00000	T 71 32
CF 045	12	10	R1	0 01562	F 00000	T 60 09	000	17	13	R2 N	0 00737	F 00000	T 71 34
000	12	10	R2 W	0 01755	F 00000	T 60 23	000	17	13	R1	0 00741	F 00000	T 71 34
000	12	10	R3 W	0 01777	F 00000	T 60 24	CF 053	17	13	R1	0 00896	F 00000	T 71 51
000	12	08	R2 E	0 01791	F 00000	T 60 25	000	17	13	R2 N	0 00946	F 00000	T 71 58
000	19	15	R3 S	0 01904	F 00000	T 60 35	000	17	13	R1	0 00950	F 00000	T 71 58
000	12	08	R2 W	0 01946	F 00000	T 60 39	TA 023	17	13	R1	0 00981	F 00000	T 72 03
000	12	08	R1	0 01951	F 00000	T 60 40	000	10	07	R1	0 00999	F 00000	T 72 07
000	12	08	R2 W	0 01966	F 00000	T 60 41	000	10	07	R3 E	0 01126	F 00000	T 72 19
000	12	08	R1	0 01971	F 00000	T 60 42	000	10	08	R1	0 01136	F 00000	T 72 20
000	12	08	R2 W	0 02030	F 00000	T 60 49	000	10	08	R2 W	0 01145	F 00000	T 72 21
TA 012	12	08	R1	0 02032	F 00000	T 60 50	000	10	08	R1	0 01148	F 00000	T 72 22
000	12	08	R3 N	0 02060	F 00000	T 60 55	000	10	07	R3 E	0 01156	F 00000	T 72 24
000	12	08	R2 W	0 02071	F 00000	T 60 57	000	10	08	R1	0 01156	F 00000	T 72 24
000	12	08	R1	0 02074	F 00000	T 60 57	CF 054	10	08	R1	0 01197	F 00000	T 72 54
000	12	08	R3 N	0 02086	F 00000	T 60 59	000	10	08	R2 E	0 01423	F 00000	T 74 12
CF 046	12	08	R3 N	0 02105	F 00000	T 61 01	TA 026	10	08	R2 E	0 01426	F 00000	T 74 13
000	12	08	R2 W	0 02115	F 00000	T 61 03	000	16	15	R3 N	0 01441	F 00000	T 74 15
000	12	08	R3 N	0 02119	F 00000	T 61 03	000	17	15	R2 S	0 01447	F 00000	T 74 16
000	14	08	R1	0 02157	F 00000	T 61 09	000	16	15	R3 N	0 01468	F 00000	T 74 19
000	14	08	R3 S	0 02159	F 00000	T 61 10	000	16	15	R2 N	0 01507	F 00000	T 74 26
TA 003	14	08	R2 S	0 02162	F 00000	T 61 10	000	16	15	R1	0 01514	F 00000	T 74 27
000	14	08	R3 S	0 02167	F 00000	T 61 11	000	16	15	R2 N	0 01518	F 00000	T 74 28
000	12	08	R2 N	0 02185	F 00000	T 61 15	000	16	15	R1	0 01522	F 00000	T 74 28
000	19	15	R1	0 02276	F 00000	T 61 25	000	16	15	R2 S	0 01688	F 00000	T 75 30
TA 004	19	15	R1	0 02394	F 00000	T 62 10	000	16	15	R1	0 01698	F 00000	T 75 32
CF 047	19	15	R1	0 02438	F 00000	T 62 16	000	16	15	R2 S	0 01702	F 00000	T 75 32
000	19	15	R2 S	0 02591	F 00000	T 63 26	000	15	15	R3 N	0 01712	F 00000	T 75 33
000	17	15	R3 N	0 02595	F 00000	T 63 26	000	15	15	R2 N	0 01740	F 00000	T 75 36
000	17	15	R2 N	0 02635	F 00000	T 63 30	000	15	15	R3 N	0 01753	F 00000	T 75 38
000	17	15	R1	0 02656	F 00000	T 63 32	000	15	15	R1	0 01775	F 00000	T 75 41
CF 048	17	15	R1	0 02745	F 00000	T 63 41	000	15	15	R2 N	0 01795	F 00000	T 75 44
000	16	15	R3 N	0 02855	F 00000	T 64 13	000	15	15	R1	0 01821	F 00000	T 75 47
000	17	15	R2 S	0 02862	F 00000	T 64 14	F 055	15	15	R1	0 01865	F 00000	T 75 52
000	16	15	R3 N	0 02866	F 00000	T 64 14	000	15	15	R2 S	0 02034	F 00000	T 76 21
000	17	15	R2 S	0 02898	F 00000	T 64 19	000	13	15	R3 N	0 02082	F 00000	T 76 28
000	16	15	R3 N	0 02906	F 00000	T 64 20	000	15	15	R2 S	0 02088	F 00000	T 76 29
000	16	15	R1	0 02965	F 00000	T 64 30	000	15	15	R3 S	0 02093	F 00000	T 76 30
TA 033	16	15	R1	0 03033	F 00000	T 64 38	000	13	15	R2 N	0 02096	F 00000	T 76 31
000	16	15	R2 W	0 03139	F 00000	T 64 54	000	15	15	R3 S	0 02097	F 00000	T 76 59
000	16	14	R3 E	0 03150	F 00000	T 64 55	000	13	15	R2 N	0 02109	F 00000	T 77 02
000	16	14	R1	0 03253	F 00000	T 65 11	000	15	15	R3 S	0 02117	F 00000	T 77 03
000	16	14	R3 E	0 03265	F 00000	T 65 13	000	13	15	R2 N	0 02127	F 00000	T 77 05
000	16	14	R1	0 03276	F 00000	T 65 15	000	13	15	R1	0 02137	F 00000	T 77 08
CF 049	16	14	R1	0 03317	F 00000	T 65 20	000	13	15	R2 N	0 02138	F 00000	T 77 08
000	16	14	R2 W	0 03376	F 00000	T 65 27	A 061	13	15	R2 N	0 02141	F 00000	T 77 10
000	16	13	R2 E	0 03381	F 00000	T 65 28	000	13	15	R1	0 02144	F 00000	T 77 11
CF 050	08	07	R3 N	0 03399	F 00000	T 65 30	000	06	08	R3 E	0 02147	F 00000	T 77 17
000	16	13	R2 E	0 03416	F 00000	T 65 32	000	13	15	R1	0 02150	F 00000	T 77 18
000	16	13	R1	0 03435	F 00000	T 65 34	F 056	13	15	R1	0 02151	F 00000	T 77 18
000	10	06	R3 S	0 03653	F 00000	T 66 58	000	06	10	R3 W	0 02162	F 00000	T 77 21
CF 051	10	06	R3 S	0 03657	F 00000	T 66 59	000	06	10	R2 W	0 02167	F 00000	T 77 22
000	16	11	R1	0 03687	F 00000	T 67 02	000	06	08	R2 E	0 02175	F 00000	T 77 24
TA 030	16	11	R1	0 03710	F 00000	T 67 13	000	06	08	R3 E	0 02191	F 00000	T 77 26
000	10	06	R1	0 03839	F 00000	T 67 39	000	06	08	R2 E	0 02216	F 00000	T 77 29
000	10	06	R2 N	0 03974	F 00000	T 67 51	000	06	08	R1	0 02258	F 00000	T 77 33
000	12	06	R3 S	0 04029	F 00000	T 67 57	000	06	08	R2 E	0 02264	F 00000	T 77 34
000	10	06	R2 N	0 04042	F 00000	T 67 59	000	06	08	R1	0 02281	F 00000	T 77 35
000	10	06	R3 N	0 04046	F 00000	T 67 59	CF 057	06	08	R1	0 02366	F 00000	T 78 20
000	12	06	R2 S	0 04050	F 00000	T 68 00	000	06	08	R2 W	0 02436	F 00000	T 78 30
000	12	06	R1	0 00003	F 00000	T 68 06	000	06	08	R1	0 02444	F 00000	T 78 31
000	12	06	R2 N	0 00196	F 00000	T 69 21	000	06	08	R2 W	0 02575	F 00000	T 78 49
000	14	06	R3 S	0 00201	F 00000	T 69 22	000	06	06	R3 E	0 02575	F 00000	T 78 52
000	14	06	R2 S	0 00250	F 00000	T 69 28	000	06	06	R2 W	0 02575	F 00000	T 78 56
000	12	06	R2 N	0 00258	F 00000	T 69 29	000	06	06	R3 E	0 02575	F 00000	T 78 57
000	12	06	R3 N	0 00261	F 00000	T 69 30	000	06	06	R1	0 02726	F 00000	T 79 22
TA 001	12	06	R3 N	0 00270	F 00000	T 69 31	000	06	06	R1	0 02768	F 00000	T 79 26
000	14	06	R2 S	0 00272	F 00000	T 69 32	000	06	06	R1	0 02821	F 00000	T 80 08
000	19	11	R1	0 00275	F 00000	T 69 32	CF 058	06	06	R1	0 03058	F 00000	T 80 59
000	19	13	R3 W	0 00339	F 00000	T 69 41	TA 058	06	06	R1	0 00190	F 00000	T 85 15
000	19	13	R1	0 00400	F 00000	T 69 47	000	15	11	R1	0 00272	F 00000	T 85 38
TA 002	19	13	R1	0 00493	F 00000	T 70 07	000	06	06	R1	0 00322	F 00000	T 86 06
CF 052	19	13	R1	0 00539	F 00000	T 70 21	TA 058	06	06	R1	0 00322	F 00000	T 86 06
000	12	07	R1	0 00607	F 00000	T 70 29	CF 059	06	06	R2 E	0 00367	F 00000	T 86 11
000	19	13	R2 S	0 00616	F 00000	T 70 31	000	06	06	R3 E	0 00397	F 00000	T 86 48
000	12	07	R2 E	0 00639	F 00000	T 71 24	000	06	06	R2 E	0 00421	F 00000	T 86 51
000	19	13	R3 S	0 00647	F 00000	T 71 25	000	06	06	R3 E	0 00468	F 00000	T 86 55
000	12	07	R2 W	0 00652	F 00000	T 71 25	000	06	06	R1	0 00625	F 00000	T 87 09
000	17	13	R3 N	0 00666	F 00000	T 71 27	000	06	08	R1	0 00723	F 00000	T 87 21
000	12	07	R2 W	0 00670	F 00000	T 71 27	CF 060	06	08	R1	0 00723	F 00000	T 87 21

LISTING OF RECORDED RANDOM ROUTE TEST DATA (CONT'D)

000	06	0R	R2	E	0 00886	F 00000	T 88 39
000	06	0B	R3	E	0 00904	F 00000	T 88 42
000	06	0B	R2	E	0 00909	F 00000	T 88 43
000	13	15	R1		0 00941	F 00000	T 89 23
000	06	0B	R3	E	0 00944	F 00000	T 89 24
000	06	0B	R2	E	0 00970	F 00000	T 89 27
000	06	10	R3	W	0 00977	F 00000	T 89 28
000	06	10	R2	W	0 01000	F 00000	T 89 31
000	06	0B	R3	E	0 01009	F 00000	T 89 33
000	06	10	R2	W	0 01012	F 00000	T 89 33
000	06	10	R3	W	0 01023	F 00000	T 89 41
000	06	10	R2	W	0 01036	F 00000	T 89 56
000	06	10	R1		0 01047	F 00000	T 90 03
000	06	10	R2	W	0 01047	F 00000	T 90 08
000	06	10	R1		0 01047	F 00000	T 90 41
000	06	10	R2	W	0 01047	F 00000	T 90 43
000	06	10	R1		0 01047	F 00000	T 90 44
000	06	10	R2	W	0 01047	F 00000	T 90 49
000	06	10	R1		0 01047	F 00000	T 90 57
000	06	10	R2	W	0 01047	F 00000	T 90 59
000	06	10	R1		0 01047	F 00000	T 91 02
000	06	10	R2	W	0 01047	F 00000	T 91 04
000	06	10	R1		0 01053	F 00000	T 91 08
000	06	10	R2	W	0 01091	F 00000	T 92 01
000	06	10	R1		0 01098	F 00000	T 92 02
CF 061	06	10	R1		0 01171	F 00000	T 92 55
000	06	10	R2	E	0 01251	F 00000	T 93 34
000	06	10	R1		0 01260	F 00000	T 93 35
000	06	10	R2	E	0 01278	F 00000	T 93 38
000	06	10	R1		0 01280	F 00000	T 93 39
000	06	10	R2	E	0 01287	F 00000	T 93 40
000	06	10	R3	E	0 01312	F 00000	T 94 01
000	06	10	R2	E	0 01312	F 00000	T 94 04
000	06	10	R3	E	0 01370	F 00000	T 94 21
000	06	10	R2	E	0 01392	F 00000	T 94 24
000	06	10	R3	E	0 01408	F 00000	T 94 26
000	06	12	R2	W	0 01428	F 00000	T 94 28
000	06	12	R1		0 01505	F 00000	T 94 35
CF 062	06	12	R1		0 01631	F 00000	T 94 46
TA 064	06	12	R1		0 01650	F 00000	T 94 49

.L CTO:DUMPUM.LDA

Secondary

B.K. 12/15/76

.ST 14156

RUN 008 SAMPLE RATE 00.5 YEAR 76 MONTH 12 DAY 14 HOUR 12 MIN 40

	FIFTH WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002
	000	06	12	R1	0 00127	F 00000 T 00 26
TA	064	06	12	R1	0 00219	F 00000 T 01 10
CP	001	06	12	R1	0 00247	F 00000 T 01 14
	000	06	12	R2 N	0 00323	F 00000 T 01 22
	000	08	12	R3 S	0 00386	F 00000 T 01 27
	000	06	12	R2 N	0 00454	F 00000 T 01 32
	000	08	12	R1	0 00523	F 00000 T 01 38
CP	002	08	12	R1	0 00590	F 00000 T 02 15
	000	08	12	R2 N	0 00714	F 00000 T 02 31
	000	08	12	R1	0 00741	F 00000 T 02 33
	000	08	12	R2 N	0 00753	F 00000 T 02 34
	000	10	12	R3 S	0 00758	F 00000 T 02 35
	000	08	12	R2 N	0 00778	F 00000 T 02 37
	000	10	12	R3 S	0 00797	F 00000 T 02 41
	000	10	12	R2 S	0 00856	F 00000 T 03 32
	000	10	12	R1	0 00873	F 00000 T 03 35
CP	003	10	12	R1	0 00941	F 00000 T 03 43
TA	029	10	12	R1	0 00956	F 00000 T 03 46
	000	10	12	R2 S	0 01045	F 00000 T 03 55
	000	10	12	R2 N	0 01058	F 00000 T 03 56
TA	080	12	12	R3 S	0 01119	F 00000 T 04 01
	000	10	12	R2 N	0 01125	F 00000 T 04 02
	000	12	12	R2 S	0 01178	F 00000 T 04 06
	000	12	12	R1	0 01232	F 00000 T 04 20
TA	019	12	12	R1	0 01274	F 00000 T 04 25
CP	004	12	12	R1	0 01361	F 00000 T 04 36
	000	19	16	R2 S	0 01396	F 00000 T 04 41
	000	12	12	R2 W	0 01407	F 00000 T 04 42
TA	018	12	12	R2 W	0 01416	F 00000 T 04 44
	000	12	10	R3 E	0 01438	F 00000 T 04 48
	000	19	16	R2 S	0 01464	F 00000 T 04 51
	000	17	16	R3 N	0 01474	F 00000 T 04 52
	000	17	16	R2 N	0 01490	F 00000 T 04 53
	000	17	16	R1	0 01526	F 00000 T 04 56
	000	17	16	R2 S	0 01656	F 00000 T 05 23
	000	17	16	R1	0 01656	F 00000 T 05 29
	000	10	10	R3 E	0 01727	F 00000 T 05 45
CP	005	10	10	R3 E	0 01732	F 00000 T 05 45
	000	17	16	R2 S	0 01736	F 00000 T 05 46
	000	16	16	R3 N	0 01796	F 00000 T 05 52
	000	16	16	R2 N	0 01850	F 00000 T 05 56
	000	17	16	R3 S	0 01856	F 00000 T 05 57
	000	16	16	R1	0 01869	F 00000 T 05 58
	000	16	16	R2 N	0 01901	F 00000 T 06 00
	000	15	16	R3 N	0 02028	F 00000 T 06 14
	000	16	16	R2 S	0 02052	F 00000 T 06 37
	000	15	16	R3 N	0 02058	F 00000 T 06 39
TA	044	15	16	R3 N	0 02070	F 00000 T 06 41
	000	15	16	R2 N	0 02084	F 00000 T 06 44
	000	15	16	R1	0 02087	F 00000 T 06 44
CP	006	15	16	R1	0 02092	F 00000 T 06 45
	000	08	12	R2 W	0 02098	F 00000 T 06 46
	000	08	12	R2 W	0 02109	F 00000 T 06 48

.L CTO:DUMPUM.LDA

.ST 14156

secondary

B.K. 12/15/76

RUN 009 SAMPLE RATE 00.5 YEAR 76 MONTH 12 DAY 14 HOUR 14 MIN 20

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
CP 000	06	12	R1	0 00117	F 00000	T 00 38
CP 064	06	12	R1	0 00215	F 00000	T 00 51
CP 001	06	12	R1	0 00237	F 00000	T 00 54
000	06	12	R2 N	0 00335	F 00000	T 01 02
000	08	12	R3 S	0 00365	F 00000	T 01 04
000	06	12	R2 N	0 00388	F 00000	T 01 05
000	08	12	R2 S	0 00410	F 00000	T 01 07
000	08	12	R3 S	0 00423	F 00000	T 01 08
000	06	12	R2 N	0 00445	F 00000	T 01 10
000	06	12	R3 N	0 00456	F 00000	T 01 11
000	08	12	R2 S	0 00465	F 00000	T 01 13
000	08	12	R1	0 00510	F 00000	T 01 40
CP 002	08	12	R1	0 00579	F 00000	T 01 50
000	08	12	R2 N	0 00702	F 00000	T 02 07
000	10	12	R3 S	0 00710	F 00000	T 02 08
000	08	12	R1	0 00718	F 00000	T 02 09
000	08	12	R2 N	0 00732	F 00000	T 02 10
000	10	12	R3 S	0 00749	F 00000	T 02 12
000	08	12	R2 N	0 00762	F 00000	T 02 14
000	10	12	R3 S	0 00786	F 00000	T 02 23
000	08	12	R2 N	0 00792	F 00000	T 02 24
000	10	12	R3 S	0 00795	F 00000	T 02 25
000	10	12	R2 S	0 00854	F 00000	T 02 34
000	10	12	R1	0 00865	F 00000	T 02 35
000	10	12	R2 S	0 00875	F 00000	T 02 36
000	10	12	R1	0 00886	F 00000	T 02 37
CP 003	10	12	R1	0 00931	F 00000	T 02 41
TA 029	10	12	R1	0 00951	F 00000	T 02 44
000	10	12	R2 S	0 01042	F 00000	T 02 52
000	10	12	R2 N	0 01049	F 00000	T 02 52
TA 080	10	12	R2 N	0 01119	F 00000	T 02 57
000	12	12	R1	0 01227	F 00000	T 03 17
TA 019	12	12	R1	0 01268	F 00000	T 03 22
CP 004	19	16	R2 S	0 01353	F 00000	T 03 32
000	12	12	R1	0 01358	F 00000	T 03 33
000	12	12	R2 W	0 01404	F 00000	T 03 38
TA 018	12	12	R2 W	0 01415	F 00000	T 03 40
000	19	16	R2 S	0 01418	F 00000	T 03 41
000	12	12	R2 W	0 01430	F 00000	T 03 43
000	19	16	R2 S	0 01437	F 00000	T 03 44
000	12	12	R3 W	0 01452	F 00000	T 03 45
000	17	16	R2 N	0 01495	F 00000	T 03 49
000	17	16	R3 N	0 01501	F 00000	T 03 49
000	17	16	R2 N	0 01516	F 00000	T 03 50
000	17	16	R1	0 01531	F 00000	T 03 51
000	17	16	R2 N	0 01666	F 00000	T 04 12
000	16	16	R3 N	0 01666	F 00000	T 04 13
000	17	16	R2 S	0 01666	F 00000	T 04 13
000	17	16	R2 N	0 01666	F 00000	T 04 14

.L CT0:DUMPUM.LDA

*Empirical
Data.*

.ST 14156

RUN 010 SAMPLE RATE 00.5 YEAR 76 MONTH 12 DAY 14 HOUR 17 MIN 05

	FIFTH WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002
	000	06	12	R1	0 00116	F 00000 T 01 20
TA	064	06	12	R1	0 00193	F 00000 T 02 11
CP	001	06	12	R1	0 00234	F 00000 T 02 16
	000	06	12	R2 N	0 00350	F 00000 T 02 27
	000	06	12	R3 N	0 00370	F 00000 T 02 29
	000	06	12	R2 N	0 00394	F 00000 T 02 34
	000	08	12	R3 S	0 00395	F 00000 T 02 35
	000	06	12	R2 N	0 00396	F 00000 T 02 47
	000	08	12	R3 S	0 00396	F 00000 T 02 49
	000	06	12	R2 N	0 00396	F 00000 T 02 51
	000	08	12	R3 S	0 00396	F 00000 T 02 52
	000	06	12	R2 N	0 00396	F 00000 T 03 06
	000	08	12	R3 S	0 00396	F 00000 T 03 09
	000	06	12	R2 N	0 00396	F 00000 T 03 18
	000	08	12	R3 S	0 00396	F 00000 T 03 18
	000	06	12	R2 N	0 00396	F 00000 T 03 19
	000	08	12	R3 S	0 00396	F 00000 T 03 20
	000	06	12	R2 N	0 00399	F 00000 T 03 22
	000	08	12	R3 S	0 00404	F 00000 T 03 23
	000	08	12	R2 S	0 00404	F 00000 T 03 34
	000	06	12	R2 N	0 00404	F 00000 T 03 34
	000	06	12	R3 N	0 00404	F 00000 T 03 36
	000	06	12	R2 N	0 00404	F 00000 T 03 36
	000	06	12	R3 N	0 00404	F 00000 T 03 37
	000	06	12	R2 N	0 00405	F 00000 T 03 38
	000	06	12	R3 N	0 00411	F 00000 T 03 40
	000	06	12	R2 N	0 00422	F 00000 T 03 44
	000	08	12	R3 S	0 00424	F 00000 T 03 45
	000	08	12	R2 S	0 00437	F 00000 T 04 21
CP	000	08	12	R1	0 00503	F 00000 T 05 20
CP	002	08	12	R1	0 00566	F 00000 T 06 14
	000	08	12	R2 N	0 00612	F 00000 T 06 24
	000	08	12	R1	0 00623	F 00000 T 06 26
	000	08	12	R2 N	0 00664	F 00000 T 06 40
	000	08	12	R1	0 00667	F 00000 T 06 40
	000	08	12	R2 N	0 00681	F 00000 T 06 43
	000	08	12	R1	0 00697	F 00000 T 06 46
	000	08	12	R2 N	0 00703	F 00000 T 06 47
	000	08	12	R1	0 00705	F 00000 T 06 47
	000	10	12	R3 S	0 00730	F 00000 T 06 52
	000	08	12	R2 N	0 00754	F 00000 T 06 58
	000	10	12	R3 S	0 00770	F 00000 T 07 04
	000	08	12	R2 N	0 00770	F 00000 T 07 45
	000	08	12	R3 N	0 00770	F 00000 T 07 46
	000	10	12	R2 S	0 00814	F 00000 T 08 03
	000	10	12	R3 S	0 00817	F 00000 T 08 03
	000	10	12	R2 S	0 00832	F 00000 T 08 05
	000	10	12	R1	0 00840	F 00000 T 08 06
	000	10	12	R2 S	0 00866	F 00000 T 08 09
CP	000	10	12	R1	0 00870	F 00000 T 08 10
CP	003	10	12	R1	0 00914	F 00000 T 08 18
TA	029	10	12	R1	0 00929	F 00000 T 08 20

3.2 RANDOM ROUTE DATA PROCESSING RESULTS

3.2.1 Location Subsystem (Checkpoint) Results

This subsection contains the results obtained by processing random route test data for Runs 1-10 through use of the CPMAIN program. A complete listing of the CPMAIN output for Run 4 is included. The error frequency density and cumulative error statistics for each of the other nine runs are also included.

Two data sheets are shown for Run 10. The first includes only 42 checkpoints. This run was processed by the computer. Note the occurrence of an error in the 1350-1375 foot range. This error is not a valid checkpoint, for it was processed at Checkpoint 44 which was erroneously entered for Turn 44 between Checkpoints 5 and 6 as noted in Table 5-13 of Volume I of this report and in Table 3.3-1 of this Appendix. The second data sheet for Run 10 includes the results of manually computing the errors at Checkpoints 42 through 62 for Run 10 which could not be processed as a result of tape read errors.

RANDOM ROUTE RUN 4 CPMAN OUTPUT

TABULAR LISTING

CP	X(CP)	Y(CP)	LOCATION	REGION	X(SP)	Y(SP)	ERROR
1	8180	5701	6,12	R1	8176	5673	32
2	7635	6132	17,13	R1	7856	6180	145
3	7321	5782	6, 6	R3E	6865	7846	460
4	6852	5846	13,10	R2N	6865	5846	13
5	6455	6268	15,14	R1	6321	6307	139
6	6009	6222	15,13	R1	6026	6358	137
7	5585	6389	8, 6	R3S	5585	6389	0
8	5705	7100	16,11	R1	5553	7099	152
9	6369	7383	10, 7	R1	6379	7344	40
10	7500	7204	10,10	R1	7500	7204	0
11	8211	7127	10,12	R2W	8069	7104	143
12	8298	7738	12,12	R1	8321	7721	28
13	7515	7919	12,10	R1	7591	7857	96
14	6741	8159	12, 8	R3N	6739	8205	46
15	7147	8153	19,15	R1	7147	8153	0
16	7969	7159	10,10	R3E	7969	7159	0
17	7891	6661	16,16	R1	7910	6813	153
18	6956	6572	15,15	R2N	6956	6572	0
19	6580	6988	16,14	R1	6427	7006	154
20	6655	7544	10, 8	R2N	6656	7528	16
21	6714	7933	12, 8	R1	6714	7933	0
22	7157	8093	19,15	R1	7147	8153	60
23	6464	8014	12, 7	R1	6523	7974	71
24	5867	8275	12, 6	R1	5837	8045	231
25	6296	8232	19,13	R1	6300	8282	50
26	6239	7764	17,13	R1	6219	7561	203
27	6156	7203	16,13	R3N	6170	7301	98
28	6075	6713	8, 7	R1	6298	6690	224
29	5684	6934	6, 6	R1	5644	6735	202
30	5809	7838	12, 6	R1	5837	8045	208
31	6456	7919	12, 7	R1	6523	7974	86
32	7090	7702	17,15	R1	7090	7458	244
33	6996	6930	16,15	R1	6996	6930	0
34	6920	6239	15,15	R1	6909	6376	137
35	6316	6285	15,14	R1	6321	6307	22
36	5756	6411	15,11	R3E	5585	6389	172
37	5705	7100	16,11	R1	5553	7099	152
38	5809	7838	12, 6	R2S	5801	7837	8
39	6710	7886	12, 8	R1	6714	7933	47
CT1:RUN004.001							
40	7589	7840	12,10	R1	7591	7859	19
41	7969	7159	10,10	R3E	7969	7159	0
42	7444	6878	8,10	R3N	7444	6878	0
43	6958	6590	15,15	R3N	6956	6572	18
44	6580	6988	16,14	R1	6427	7006	154
45	6102	6886	16,13	R1	6122	7042	157

RANDOM ROUTE RUN 4 CPMAN OUTPUT

46	5996	6139	15,13	R1	6026	6358	221
47	5553	6009	6, 6	R1	5553	6009	0
48	5585	6389	8, 6	R3S	5585	6389	0
49	5705	7100	16,11	R1	5553	7099	152
50	5809	7838	12, 6	R1	5837	8045	208
51	6239	7764	17,13	R1	6219	7561	203
52	6507	7341	10, 7	R3E	6503	7335	7
53	7055	7276	16,15	R3N	7045	7181	25
54	7715	7176	10,10	R2E	7785	7154	73
55	7891	6661	16,16	R1	7910	6813	153
56	7837	6109	15,16	R2S	7814	5989	122
57	7561	5756	6,10	R1	7321	5782	241
58	6865	5846	13,15	R1	6842	5691	156
59	5988	5938	6, 8	R2W	6135	5934	147
60	5988	5938	6, 8	R3W	5988	5938	0
61	6865	5846	13,15	R1	6842	5691	156
62	7561	5756	6,10	R1	7321	5782	241
63	8176	5673	6,12	R1	8176	5673	0

EVENT MIN SEC

58 0:47 VALID

ERROR FREQUENCY DENSITY				CUMULATIVE ERRORS		
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS	ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS	
0-	25	20	31.75%	0	13	20.63%
25-	50	5	7.94%	25	20	31.75%
50-	75	4	6.35%	50	26	41.27%
75-	100	4	6.35%	75	29	46.03%
100-	125	1	1.59%	100	33	52.38%
125-	150	6	9.52%	125	34	53.97%
150-	175	11	17.46%	150	40	63.45%
200-	225	7	11.11%	175	51	80.99%
225-	250	4	6.35%	225	58	92.00%
450-	475	1	1.59%	250	62	98.41%
				475	63	100.00%

RANDOM ROUTE RUN 4 CPMAN OUTPUT

SORTED ERROR VALUES

ERROR CP #

0	7	153	17
0	10	153	55
0	15	154	19
0	16	154	44
0	18	156	58
0	21	156	61
0	33	157	45
0	41	172	36
0	42	202	29
0	47	203	26
0	48	203	51
0	60	208	30
0	63	208	50
7	52	221	46
8	38	224	28
13	4	231	24
16	20	241	57
18	43	241	62
19	40	244	32
22	35	460	3
28	12		
32	1		
40	9		
46	14		
47	39		
50	25		
60	22		
71	23		
73	54		
86	31		
95	53		
96	13		
98	27		
122	56		
137	6		
137	34		
137	8		
143	11		
145	2		
147	59		
152	8		
152	37		
152	49		

AVERAGE ERROR	=	103.05	
STANDARD DEVIATION	=	92.83	
ELAPSED TIME	=	86:17	
ELAPSED DISTANCE	=	0.00	(FIFTH WHEEL)
ELAPSED DISTANCE	=	29758.00	(ODOMETER)

RANDOM ROUTE ERROR STATISTICS, RUN 1

ERROR FREQUENCY DENSITY			
ERROR		NUMBER	PERCENT
INTERVAL		POINTS	OF POINTS

0-	25	21	33.87%
25-	50	7	11.29%
50-	75	3	4.84%
75-	100	3	4.84%
100-	125	1	1.61%
125-	150	6	9.68%
150-	175	11	17.74%
175-	200	1	1.61%
200-	225	6	9.68%
225-	250	2	3.23%
450-	475	1	1.61%

CUMULATIVE ERRORS

ERROR	# ERRORS	PERCENT
FEET	LT FEET	ERRORS

0	13	20.97%
25	21	33.87%
50	29	46.77%
75	31	50.00%
100	34	54.84%
125	35	56.45%
150	41	66.13%
175	52	83.67%
200	53	85.48%
225	59	95.16%
250	61	98.39%
475	62	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 2

ERROR FREQUENCY DENSITY

ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS
-------------------	------------------	----------------------

0- 25	22	34.92%
25- 50	6	9.52%
50- 75	3	4.76%
75- 100	3	4.76%
100- 125	1	1.59%
125- 150	6	9.52%
150- 175	9	14.29%
200- 225	7	11.11%
225- 250	4	6.35%
350- 375	1	1.59%
450- 475	1	1.59%

CUMULATIVE ERRORS

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
---------------	---------------------	-------------------

0	14	22.22%
25	22	34.92%
50	29	46.03%
75	31	49.21%
100	34	53.97%
125	35	55.56%
150	41	65.08%
175	50	79.37%
225	57	90.48%
250	61	96.83%
375	62	98.41%
475	63	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 3

ERROR FREQUENCY DENSITY
 ERROR NUMBER PERCENT
 INTERVAL POINTS OF POINTS

0-	25	18	29.03%
25-	50	7	11.29%
50-	75	3	4.84%
75-	100	3	4.84%
100-	125	1	1.61%
125-	150	5	8.06%
150-	175	11	17.74%
200-	225	8	12.90%
225-	250	2	3.23%
250-	275	1	1.61%
275-	300	1	1.61%
300-	325	1	1.61%
450-	475	1	1.61%

CUMULATIVE ERRORS
 ERROR # ERRORS PERCENT
 FEET LT FEET ERRORS

0	12	19.35%
25	18	29.03%
50	26	41.94%
75	28	45.16%
100	31	50.00%
125	32	51.61%
150	37	59.68%
175	48	77.42%
225	56	90.32%
250	58	93.55%
275	60	96.77%
325	61	98.39%
475	62	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 4

ERROR FREQUENCY DENSITY

ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS
-------------------	------------------	----------------------

0- 25	20	31.75%
25- 50	5	7.94%
50- 75	4	6.35%
75- 100	4	6.35%
100- 125	1	1.59%
125- 150	6	9.52%
150- 175	11	17.46%
200- 225	7	11.11%
225- 250	4	6.35%
450- 475	1	1.59%

CUMULATIVE ERRORS

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
---------------	---------------------	-------------------

0	13	20.63%
25	20	31.75%
50	26	41.27%
75	29	46.03%
100	33	52.38%
125	34	53.97%
150	40	63.49%
175	51	80.95%
225	58	92.06%
250	62	98.41%
475	63	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 5

ERROR FREQUENCY DENSITY
 ERROR NUMBER PERCENT
 INTERVAL POINTS OF POINTS

0-	25	21	32.81%
25-	50	4	6.25%
50-	75	3	4.69%
75-	100	1	1.56%
100-	125	2	3.12%
125-	150	7	10.94%
150-	175	8	12.50%
175-	200	2	3.12%
200-	225	6	9.37%
225-	250	4	6.25%
275-	300	1	1.56%
350-	375	2	3.12%
425-	450	1	1.56%
450-	475	1	1.56%
550-	575	1	1.56%

CUMULATIVE ERRORS

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	15	23.44%
25	21	32.81%
50	26	40.62%
75	28	43.75%
100	29	45.31%
125	31	48.44%
150	38	59.37%
175	46	71.87%
200	48	75.00%
225	54	84.37%
250	58	90.62%
275	59	92.19%
375	61	95.31%
450	62	96.87%
475	63	98.44%
575	64	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 6

ERROR FREQUENCY DENSITY			
ERROR		NUMBER	PERCENT
INTERVAL		POINTS	OF POINTS

0-	25	26	41.94%
25-	50	8	12.90%
50-	75	5	8.06%
75-	100	8	12.90%
100-	125	3	4.84%
125-	150	1	1.61%
150-	175	3	4.84%
175-	200	5	8.06%
225-	250	1	1.61%
275-	300	1	1.61%
400-	425	1	1.61%

CUMULATIVE ERRORS		
ERROR	# ERRORS	PERCENT
FEET	LT FEET	ERRORS

0	22	35.48%
25	27	43.55%
50	35	56.45%
75	39	62.90%
100	47	75.81%
125	50	80.65%
150	51	82.26%
175	54	87.10%
200	59	95.16%
250	60	96.77%
300	61	98.39%
425	62	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 7

ERROR FREQUENCY DENSITY			
ERROR INTERVAL	NUMBER POINTS	NUMBER POINTS	PERCENT OF POINTS
0- 25	36		41.74%
25- 50	4		6.45%
50- 75	7		11.29%
75- 100	11		17.74%
100- 125	2		3.23%
150- 175	4		6.45%
175- 200	5		8.06%
225- 250	1		1.61%
250- 275	1		1.61%
275- 300	1		1.61%

CUMULATIVE ERRORS		
ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	22	35.46%
25	27	43.58%
50	31	50.00%
75	37	59.48%
100	48	77.42%
125	50	80.65%
175	54	87.10%
200	59	95.16%
250	60	96.77%
275	61	98.39%
300	62	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 8

ERROR FREQUENCY DENSITY
 ERROR NUMBER PERCENT
 INTERVAL POINTS OF POINTS

0-	25	25	40.98%
25-	50	7	11.48%
50-	75	7	11.48%
75-	100	8	13.11%
100-	125	1	1.64%
150-	175	3	4.92%
175-	200	4	6.56%
225-	250	3	4.92%
250-	275	1	1.64%
300-	325	1	1.64%
400-	425	1	1.64%

CUMULATIVE ERRORS
 ERROR # ERRORS PERCENT
 FEET LT FEET ERRORS

0	21	34.43%
25	26	42.62%
50	33	54.10%
75	39	63.93%
100	47	77.05%
125	48	78.69%
175	51	83.61%
200	55	90.16%
225	56	91.80%
250	59	96.72%
325	60	98.36%
425	61	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 9

ERROR FREQUENCY DENSITY			
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS	
0- 25	26	41.27%	
25- 50	5	7.94%	
50- 75	7	11.11%	
75- 100	9	14.29%	
100- 125	2	3.17%	
125- 150	2	3.17%	
150- 175	3	4.76%	
175- 200	6	9.52%	
225- 250	1	1.59%	
250- 275	1	1.59%	
9950- 9975	1	1.59%	

CUMULATIVE ERRORS		
ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	20	31.75%
25	26	41.27%
50	32	50.79%
75	38	60.32%
100	47	74.60%
125	49	77.78%
150	51	80.95%
175	54	85.71%
200	60	95.24%
250	61	96.83%
275	62	98.41%
9975	63	100.00%

RANDOM ROUTE ERROR STATISTICS, RUN 10

ERROR FREQUENCY DENSITY
 ERROR NUMBER PERCENT
 INTERVAL POINTS OF POINTS

0-	25	12	28.57%
25-	50	5	11.90%
50-	75	3	7.14%
75-	100	6	14.29%
100-	125	1	2.38%
125-	150	2	4.76%
150-	175	4	9.52%
175-	200	2	4.76%
225-	250	2	4.76%
250-	275	1	2.38%
275-	300	1	2.38%
300-	375	1	2.38%
375-	400	1	2.38%
1350-	1375	1	2.38%

CUMULATIVE ERRORS

ERROR # ERRORS PERCENT
 FEET LT FEET ERRORS

0	9	21.43%
25	13	30.95%
50	17	40.48%
75	20	47.62%
100	26	61.90%
125	27	64.29%
150	29	69.05%
175	33	78.57%
200	35	83.33%
225	36	85.71%
250	38	90.48%
300	39	92.86%
375	40	95.24%
400	41	97.62%
1375	42	100.00%

3.2.2 AVM System (Pseudo Checkpoint) Results

This subsection contains results obtained by processing random route Runs 1-10 through use of the RRSL program. Complete results are presented for Random Route Run 4 . The tabular output error frequency density and cumulative error statistics for each of the other nine runs are presented. Following the RRSL results obtained by processing Run 10 are the results of computing the location errors at pseudo checkpoints which could not be processed by RRSL. This data is followed by the tabulated error statistics for the case of 0 and 5 percent communication errors.

RANDOM ROUTE AVM SYSTEM RUN 1

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY		
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS

0- 25	31	11.52%
25- 50	39	14.50%
50- 75	39	14.50%
75- 100	36	13.38%
100- 125	24	8.92%
125- 150	12	4.46%
150- 175	23	8.55%
175- 200	14	5.20%
200- 225	24	8.92%
225- 250	12	4.46%
250- 275	7	2.60%
300- 325	1	0.37%
325- 350	2	0.74%
350- 375	1	0.37%
425- 450	1	0.37%
450- 475	1	0.37%
550- 575	1	0.37%
600- 625	1	0.37%

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY		
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS

0- 25	31	11.52%
25- 50	39	14.50%
50- 75	38	14.13%
75- 100	36	13.38%
100- 125	23	8.55%
125- 150	12	4.46%
150- 175	23	8.55%
175- 200	16	5.95%
200- 225	24	8.92%
225- 250	12	4.46%
250- 275	7	2.60%
300- 325	1	0.37%
325- 350	2	0.74%
350- 375	1	0.37%
425- 450	1	0.37%
450- 475	1	0.37%
550- 575	1	0.37%
600- 625	1	0.37%

CUMULATIVE ERRORS

ERROR FEET	# ERRORS	PERCENT ERRORS
------------	----------	----------------

0	2	0.74%
25	32	11.90%
50	70	26.02%
75	111	41.26%
100	147	54.65%
125	171	63.57%
150	181	67.29%
175	205	76.21%
200	219	81.41%
225	242	89.96%
250	254	94.42%
275	261	97.03%
325	262	97.40%
350	264	98.14%
375	265	98.51%
450	266	98.88%
475	267	99.26%
575	268	99.63%
625	269	100.00%

CUMULATIVE ERRORS

ERROR FEET	# ERRORS	PERCENT ERRORS
------------	----------	----------------

0	2	0.74%
25	32	11.90%
50	70	26.02%
75	110	40.89%
100	146	54.28%
125	169	62.83%
150	179	66.54%
175	203	75.46%
200	219	81.41%
225	242	89.96%
250	254	94.42%
275	261	97.03%
325	262	97.40%
350	264	98.14%
375	265	98.51%
450	266	98.88%
475	267	99.26%
575	268	99.63%
625	269	100.00%

AVERAGE ERROR = 115.44

STANDARD DEVIATION =

ELAPSED TIME = 5400

AVERAGE ERROR = 116.19

STANDARD DEVIATION = 91.29

ELAPSED TIME = 5400

RANDOM ROUTE AVM SYSTEM RUN 2

NO COMMUNICATION ERRORS

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY				ERROR FREQUENCY DENSITY			
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS		ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS	
0- 25	47	20.52%		0- 25	48	20.96%	
25- 50	36	15.72%		25- 50	36	15.72%	
50- 75	30	13.10%		50- 75	30	13.10%	
75- 100	18	7.86%		75- 100	18	7.86%	
100- 125	18	7.86%		100- 125	18	7.86%	
125- 150	14	6.11%		125- 150	14	6.11%	
150- 175	16	6.99%		150- 175	16	6.99%	
175- 200	15	6.55%		175- 200	15	6.55%	
200- 225	4	1.75%		200- 225	4	1.75%	
225- 250	5	2.18%		225- 250	4	1.75%	
250- 275	6	2.62%		250- 275	6	2.62%	
275- 300	6	2.62%		275- 300	6	2.62%	
300- 325	5	2.18%		300- 325	5	2.18%	
325- 350	2	0.87%		325- 350	2	0.87%	
350- 375	3	1.31%		350- 375	3	1.31%	
400- 425	1	0.44%		400- 425	1	0.44%	
425- 450	1	0.44%		425- 450	1	0.44%	
450- 475	1	0.44%		450- 475	1	0.44%	
475- 500	1	0.44%		475- 500	1	0.44%	

CUMULATIVE ERRORS

CUMULATIVE ERRORS

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	2	0.87%
25	49	21.40%
50	84	36.68%
75	114	49.78%
100	131	57.21%
125	150	65.50%
150	164	71.62%
175	179	78.17%
200	194	84.72%
225	200	87.34%
250	203	88.65%
275	210	91.70%
300	215	93.89%
325	220	96.07%
350	222	96.94%
375	225	98.25%
425	226	98.69%
450	227	99.13%
475	228	99.56%
500	229	100.00%

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	2	0.87%
25	50	21.83%
50	85	37.12%
75	115	50.22%
100	132	57.64%
125	151	65.94%
150	165	72.05%
175	180	78.60%
200	195	85.15%
225	200	87.34%
250	203	88.65%
275	210	91.70%
300	215	93.89%
325	220	96.07%
350	222	96.94%
375	225	98.25%
425	226	98.69%
450	227	99.13%
475	228	99.56%
500	229	100.00%

AVERAGE ERROR = 110.45

AVERAGE ERROR = 109.47

STANDARD DEVIATION =

99.21 STANDARD DEVIATION =

99.18

ELAPSED TIME = 4819

ELAPSED TIME = 4819

RANDOM ROUTE AVM SYSTEM RUN 3

NO COMMUNICATION ERRORS

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY

ERROR FREQUENCY DENSITY

ERROR INTERVAL NUMBER POINTS PERCENT OF POINTS

ERROR INTERVAL NUMBER POINTS PERCENT OF POINTS

0-	25	31	15.50%
25-	50	32	16.00%
50-	75	26	13.00%
75-	100	15	7.50%
100-	125	21	10.50%
125-	150	13	6.50%
150-	175	18	9.00%
175-	200	10	5.00%
200-	225	11	5.50%
225-	250	8	4.00%
250-	275	4	2.00%
275-	300	3	1.50%
300-	325	1	0.50%
325-	350	2	1.00%
350-	375	2	1.00%
375-	400	1	0.50%
400-	425	1	0.50%
550-	575	1	0.50%

0-	25	31	15.50%
25-	50	32	16.00%
50-	75	27	13.50%
75-	100	15	7.50%
100-	125	21	10.50%
125-	150	13	6.50%
150-	175	18	9.00%
175-	200	10	5.00%
200-	225	11	5.50%
225-	250	8	4.00%
250-	275	4	2.00%
275-	300	3	1.50%
300-	325	1	0.50%
325-	350	1	0.50%
350-	375	2	1.00%
375-	400	1	0.50%
400-	425	1	0.50%
550-	575	1	0.50%

CUMULATIVE ERRORS

CUMULATIVE ERRORS

ERROR # ERRORS PERCENT
FEET LT FEET ERRORS

ERROR # ERRORS PERCENT
FEET LT FEET ERRORS

0	3	1.50%
25	31	15.50%
50	63	31.50%
75	89	44.50%
100	104	52.00%
125	125	62.50%
150	139	69.50%
175	157	78.50%
200	166	83.00%
225	177	88.50%
250	186	93.00%
275	189	94.50%
300	192	96.00%
325	193	96.50%
350	195	97.50%
375	197	98.50%
400	198	99.00%
425	199	99.50%
575	200	100.00%

0	3	1.50%
25	31	15.50%
50	63	31.50%
75	90	45.00%
100	105	52.50%
125	126	63.00%
150	140	70.00%
175	158	79.00%
200	167	83.50%
225	178	89.00%
250	187	93.50%
275	190	95.00%
300	193	96.50%
325	194	97.00%
350	195	97.50%
375	197	98.50%
400	198	99.00%
425	199	99.50%
575	200	100.00%

AVERAGE ERROR = 113.59

AVERAGE ERROR = 112.29

STANDARD DEVIATION = 92.84

STANDARD DEVIATION = 91.61

ELAPSED TIME = 4111

ELAPSED TIME = 4111

RANDOM ROUTE AVM SYSTEM RUN 4

PSEUDO CP #	ERROR	TIME	ODOMETER
1	352	2:12	703
2	51	2:32	836
3	41	2:52	988
4	79	3:12	1122
5	12	3:32	1231
6	57	3:52	1352
7	57	4:12	1352
8	181	4:32	1462
9	73	4:52	1558
10	19	5:12	1611
11	93	5:32	1775
12	3	5:52	1823
13	376	6:12	1954
14	15	6:32	2068
15	21	6:52	2212
16	153	7:12	2296
17	44	7:32	2428
18	91	7:52	2525
19	32	8:12	2610
20	10	8:32	2621
21	31	8:52	2749
22	150	9:12	2904
23	18	9:32	2970
24	120	9:52	3104
25	241	10:12	3252
26	384	10:32	3366
27	85	10:52	3533
28	67	11:12	3543
29	66	11:32	3712
30	195	11:52	3902
31	129	12:12	4085
32	46	12:32	181
33	150	12:52	330
34	6	13:12	394
35	38	13:32	576
36	420	13:52	726
37	16	14:12	924
38	22	14:32	1048
39	32	14:52	1073
40	74	15:12	1261
41	69	15:32	1264
42	52	15:52	1275
43	341	16:12	1464
44	138	16:32	1671
45	76	16:52	1813
46	25	17:12	1931
47	66	17:32	2091
48	53	17:52	2151
49	221	18:12	2235
50	153	18:32	2334
51	137	18:52	2342
52	137	19:12	2342
53	138	19:32	2479
54	244	19:52	2696
55	171	20:12	2792
56	258	20:32	2955
57	217	20:52	3110
58	181	21:12	3199
59	59	21:32	3373
60	10	21:52	3554
61	243	22:12	3721
62	13	22:32	3836

RANDOM ROUTE AVM SYSTEM RUN 4 (CONT'D) ODOMETER

62	13	22:32	3836
63	326	22:52	3966
64	194	23:12	26
65	34	23:32	88
66	13	23:52	112
67	4	24:12	270
68	86	24:32	381
69	121	24:52	485
70	66	25:12	608
71	41	25:32	776
72	68	25:52	879
73	201	26:12	946
74	201	26:32	946
75	55	26:52	1023
76	70	27:12	1166
77	70	27:32	1166
78	124	27:52	1250
79	296	28:12	1437
80	53	28:32	1622
81	27	28:52	1631
82	209	29:12	1722
83	319	29:32	1853
84	404	29:52	1998
85	165	30:12	2108
86	72	30:32	2133
87	72	30:52	2133
88	255	31:12	2260
89	33	31:32	2415
90	178	31:52	2488
91	85	32:12	2574
92	91	32:32	2719
93	226	32:52	2851
94	162	33:12	2993
95	58	33:32	3045
96	166	33:52	3152
97	155	34:12	3259
98	298	34:32	3371
99	83	34:52	3374
100	124	35:12	3476
101	179	35:32	3641
102	89	35:52	3686
103	182	36:12	3794
104	107	36:32	3930
105	63	36:52	32
106	71	37:12	219
107	65	37:32	340
108	32	37:52	489
109	55	38:12	610
110	0	38:32	773
111	34	38:52	936
112	64	39:12	1083
113	62	39:32	1206
114	172	39:52	1340
115	66	40:12	1394
116	164	40:32	1511
117	43	40:52	1558
118	78	41:12	1665
119	6	41:32	1800
120	92	41:52	1937
121	221	42:12	2094
122	168	42:32	2225
123	52	42:52	2382

RANDOM ROUTE AVM SYSTEM RUN 4 (CONT'D)			ODOMETER
125	169	43:32	2589
126	82	43:52	2692
127	99	44:12	2877
128	65	44:32	3078
129	58	44:52	3083
130	48	45:12	3117
131	91	45:32	3309
132	179	45:52	3355
133	242	46:19	3451
134	215	46:39	3636
135	265	46:59	3824
136	81	47:19	3885
137	81	47:39	3885
138	150	47:59	4003
139	72	48:19	37
140	209	48:39	151
141	15	48:59	228
142	208	49:19	340
143	28	49:39	463
144	97	50:13	580
145	97	50:47	580
146	97	51:21	580
147	97	51:55	580
148	97	52:29	580
149	97	53: 3	580
150	97	53:37	580
151	97	54:12	580
152	97	54:46	580
153	97	55:20	580
154	97	55:54	580
155	97	56:28	580
156	97	57: 2	580
157	97	57:36	580
158	59	57:56	599
159	29	58:16	614
160	16	58:36	637
161	127	58:56	799
162	63	59:16	831
163	65	59:36	875
164	10	59:56	1017
165	110	60:16	1134
166	10	60:36	1254
167	306	60:56	1383
168	230	61:16	1520
169	179	61:36	1665
170	11	61:56	1781
171	100	62:16	1781
172	133	62:36	1847
173	148	62:56	1986
174	106	63:16	2007
175	106	63:36	2007
176	61	63:56	2046
177	111	64:16	2189
178	28	64:36	2192
179	52	64:56	2234
180	8	65:16	2379
181	8	65:36	2379
182	137	65:56	2452
183	167	66:16	2599
184	29	66:36	2722
185	182	66:56	2824
186	145	67:16	2977
187	123	67:36	2988

RANDOM ROUTE AVM SYSTEM RUN 4 (CONT'D)

ODOMETER

188	111	67:56	
189	207	68:16	3129
190	297	68:36	3275
191	42	68:56	3403
192	205	69:16	3548
193	21	69:36	3701
194	25	69:56	3761
195	226	70:16	3887
196	287	70:36	3917
197	111	70:56	3976
198	95	71:16	3989
199	163	71:36	50
200	168	71:56	216
201	73	72:16	331
202	51	72:36	448
203	153	72:56	602
204	89	73:16	754
205	59	73:36	916
206	70	73:56	1054
207	60	74:16	1105
208	117	74:36	1250
209	226	74:56	1422
210	157	75:16	1546
211	118	75:36	1714
212	57	75:56	1745
213	259	76:16	1864
214	112	76:36	1976
215	187	76:56	2014
216	68	77:16	2180
217	6	77:36	2211
218	144	78:16	3874
219	43	78:36	4058
220	54	78:56	135
221	54	79:16	135
222	59	79:36	191
223	155	79:56	378
224	105	80:16	556
225	229	80:36	723
226	62	80:56	823
227	62	81:16	823
228	185	81:36	972

SIMULATED ERRORS

EUDO CP #	ERROR	TIME	ODOMETER
1	352	2:12	703
2	51	2:34	851 *
3	41	2:52	988
4	79	3:14	1134
5	12	3:32	1231
6	57	3:52	1352
7	57	4:12	1352
8	181	4:32	1462
9	73	4:52	1558
10	19	5:12	1611
11	93	5:32	1775
12	3	5:52	1823
13	376	6:12	1954
14	15	6:32	2068 *
15	21	6:52	2212
16	67	7:14	2309
17	44	7:32	2428
18	91	7:52	2525

RANDOM ROUTE AVM SYSTEM RUN 4 (CONT'D) ODOMETER

19	32	8:12	2610
20	10	8:32	2621
21	31	8:52	2749
22	150	9:12	2904
23	18	9:32	2970
24	120	9:52	3104
25	241	10:14	3268
26	384	10:32	3366
27	85	10:52	3533
28	67	11:12	3543
29	66	11:32	3712
30	195	11:52	3902
31	129	12:12	4085
32	46	12:32	181
33	150	12:52	330
34	6	13:12	394
35	38	13:32	576
36	420	13:52	726
37	16	14:12	924
38	22	14:34	1048
39	32	14:52	1073
40	74	15:12	1261
41	69	15:32	1264
42	52	15:52	1275
43	341	16:12	1464
44	138	16:32	1671
45	76	16:52	1813
46	25	17:12	1931
47	66	17:32	2091
48	53	17:52	2151
49	221	18:12	2235
50	153	18:32	2334
51	137	18:52	2342
52	137	19:12	2342
53	138	19:32	2479
54	244	19:52	2696*
55	171	20:12	2792
56	92	20:34	2975
57	217	20:52	3110
58	181	21:12	3199
59	59	21:32	3373*
60	10	21:52	3554
61	50	22:14	3740
62	13	22:32	3836
63	326	22:52	3966
64	194	23:12	26
65	34	23:32	88
66	13	23:52	112
67	4	24:12	270
68	86	24:32	381
69	121	24:52	485
70	66	25:12	608
71	41	25:32	776
72	68	25:52	879
73	201	26:12	946
74	201	26:32	946
75	55	26:52	1023
76	70	27:12	1166
77	70	27:32	1166
78	124	27:52	1250
79	296	28:12	1437
80	53	28:32	1622
81	27	28:52	1631
	---	29:12	1722

RANDOM ROUTE AVM SYSTEM RUN 4 (CONT'D) ODOMETER

83	319	29:32	1853
84	404	29:52	1998
85	165	30:12	2108
86	72	30:32	2133
87	72	30:52	2133
88	255	31:12	2260
89	33	31:32	2415
90	178	31:52	2488
91	85	32:12	2574
92	91	32:32	2719
93	226	32:52	2851
94	162	33:12	2993
95	58	33:32	3045
96	166	33:52	3152
97	155	34:12	3259
98	298	34:32	3371
99	83	34:52	3374
100	124	35:12	3476
101	179	35:32	3641
102	89	35:52	3686
103	182	36:12	3794
104	107	36:32	3930
105	63	36:52	32
106	71	37:12	219
107	65	37:32	340
108	32	37:52	489
109	55	38:12	610
110	0	38:32	773
111	34	38:52	936
112	64	39:12	1083
113	62	39:32	1206
114	172	39:52	1340 *
115	66	40:12	1394
116	164	40:34	1525
117	43	40:52	1558
118	78	41:12	1665
119	6	41:32	1800
120	92	41:52	1937
121	221	42:12	2094
122	168	42:32	2225
123	52	42:52	2382
124	67	43:12	2535
125	169	43:32	2589
126	82	43:52	2692
127	99	44:12	2877
128	65	44:32	3078
129	58	44:52	3083
130	48	45:12	3117
131	91	45:32	3309
132	179	45:52	3355
133	242	46:19	3451
134	215	46:39	3636
135	265	46:59	3824
136	81	47:19	3885
137	81	47:39	3885
138	150	47:59	4003
139	72	48:19	37
140	209	48:39	151
141	15	49: 1	234
142	208	49:19	340
143	28	49:39	463
144	97	50:13	580
145	97	50:47	580

RANDOM ROUTE AVM SYSTEM RUN 4 (CONT'D) ODOMETER

146	97	51:21	580
147	97	51:55	580
148	97	52:29	580
149	97	53: 3	580
150	97	53:55	580
151	97	54:12	580
152	97	54:46	580
153	97	55:20	580
154	97	55:54	580
155	97	56:28	580
156	97	57: 2	580
157	97	57:36	580
158	59	57:56	599
159	29	58:16	614
160	16	58:36	637
161	127	58:56	799
162	63	59:16	831
163	65	59:36	875
164	10	59:56	1017
165	110	60:16	1134
166	10	60:36	1254
167	306	60:56	1383
168	230	61:16	1520
169	179	61:36	1665 *
170	11	61:56	1781
171	100	62:18	1781
172	133	62:36	1847
173	148	62:56	1986
174	106	63:16	2007
175	106	63:36	2007
176	61	63:56	2046
177	111	64:16	2189
178	28	64:36	2192
179	52	64:56	2234
180	8	65:16	2379
181	8	65:36	2379
182	137	65:56	2452
183	167	66:16	2599
184	29	66:36	2722
185	182	66:56	2824
186	145	67:16	2977
187	123	67:36	2988
188	111	67:56	2994
189	207	68:16	3129
190	297	68:36	3275 *
191	42	68:56	3403
192	172	69:18	3558
193	21	69:36	3701
194	25	69:56	3761
195	226	70:16	3887
196	287	70:36	3917
197	111	70:56	3976
198	95	71:16	3989
199	163	71:36	50
200	168	71:56	216
201	73	72:16	331
202	51	72:36	448
203	153	72:56	602
204	89	73:16	754
205	59	73:36	916
206	70	73:56	1054
207	60	74:16	1105
208	117	74:36	1250

RANDOM ROUTE AVM SYSTEM RUN 4 (CONT'D) ODOMETER

208	117	74:36	1250
209	226	74:56	1422
210	157	75:16	1546
211	118	75:36	1714
212	57	75:56	1745
213	259	76:16	1864
214	112	76:36	1976
215	187	76:56	2014
216	68	77:16	2180
217	6	77:36	2211
218	144	78:16	3874
219	43	78:36	4058
220	54	78:58	135
221	54	79:16	135
222	59	79:36	191
223	155	79:56	378
224	105	80:18	577
225	229	80:36	723
226	62	80:56	823
227	62	81:16	823
228	185	81:36	972

RANDOM ROUTE AVM SYSTEM RUN 4

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY			
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS	
0- 25	25	10.96%	
25- 50	23	10.09%	
50- 75	52	22.81%	
75- 100	34	14.91%	
100- 125	17	7.46%	
125- 150	11	4.82%	
150- 175	20	8.77%	
175- 200	12	5.26%	
200- 225	10	4.39%	
225- 250	8	3.51%	
250- 275	3	1.32%	
275- 300	4	1.75%	
300- 325	2	0.88%	
325- 350	2	0.88%	
350- 375	1	0.44%	
375- 400	2	0.88%	
400- 425	2	0.88%	

5% COMMUNICATION ERROR

ERROR FREQUENCY DENSITY			
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS	
0- 25	25	10.96%	
25- 50	23	10.09%	
50- 75	50	21.93%	
75- 100	33	14.47%	
100- 125	17	7.46%	
125- 150	11	4.82%	
150- 175	20	8.77%	
175- 200	12	5.26%	
200- 225	11	4.82%	
225- 250	9	3.95%	
250- 275	4	1.75%	
275- 300	4	1.75%	
300- 325	2	0.88%	
325- 350	2	0.88%	
350- 375	1	0.44%	
375- 400	2	0.88%	
400- 425	2	0.88%	

CUMULATIVE ERRORS

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	1	0.44%
25	27	11.84%
50	49	21.49%
75	100	43.86%
100	135	59.21%
125	151	66.23%
150	165	72.37%
175	182	79.82%
200	194	85.09%
225	204	89.47%
250	212	92.98%
275	215	94.30%
300	219	96.05%
325	221	96.93%
350	223	97.81%
375	224	98.25%
400	226	99.12%
425	228	100.00%

CUMULATIVE ERRORS

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	1	0.44%
25	27	11.84%
50	48	21.05%
75	98	42.98%
100	132	57.89%
125	148	64.91%
150	162	71.05%
175	179	78.51%
200	191	83.77%
225	202	88.60%
250	211	92.54%
275	215	94.30%
300	219	96.05%
325	221	96.93%
350	223	97.81%
375	224	98.25%
400	226	99.12%
425	228	100.00%

AVERAGE ERROR = 111.65

STANDARD DEVIATION = 84.63

ELAPSED TIME = 4784

AVERAGE ERROR = 113.75

STANDARD DEVIATION = 85.61

ELAPSED TIME = 4784

RANDOM ROUTE AVM SYSTEM RUN 5

NO COMMUNICATION ERRORS

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY				ERROR FREQUENCY DENSITY			
ERROR INTERVAL		NUMBER POINTS	PERCENT OF POINTS	ERROR INTERVAL		NUMBER POINTS	PERCENT OF POINTS
0-	25	30	17.54%	0-	25	30	17.54%
25-	50	19	11.11%	25-	50	20	11.70%
50-	75	25	14.62%	50-	75	25	14.62%
75-	100	14	8.19%	75-	100	14	8.19%
100-	125	14	8.19%	100-	125	14	8.19%
125-	150	10	5.85%	125-	150	10	5.85%
150-	175	9	5.26%	150-	175	9	5.26%
175-	200	9	5.26%	175-	200	9	5.26%
200-	225	10	5.85%	200-	225	10	5.85%
225-	250	3	1.75%	225-	250	3	1.75%
250-	275	10	5.85%	250-	275	10	5.85%
275-	300	1	0.58%	275-	300	1	0.58%
300-	325	3	1.75%	300-	325	3	1.75%
325-	350	4	2.34%	325-	350	4	2.34%
350-	375	1	0.58%	375-	400	4	2.34%
375-	400	4	2.34%	425-	450	2	1.17%
425-	450	2	1.17%	450-	475	1	0.58%
450-	475	1	0.58%	700-	725	2	1.17%
700-	725	2	1.17%				

CUMULATIVE ERRORS

CUMULATIVE ERRORS

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	2	1.17%
25	31	18.13%
50	53	30.99%
75	74	43.27%
100	88	51.46%
125	102	59.65%
150	113	66.08%
175	124	72.51%
200	130	76.02%
225	140	81.87%
250	144	84.21%
275	153	89.47%
300	155	90.64%
325	157	91.81%
350	161	94.15%
375	162	94.74%
400	166	97.08%
450	168	98.25%
475	169	98.83%
725	171	100.00%
AVERAGE ERROR =		131.19
STANDARD DEVIATION =		123.78
ELAPSED TIME =		3445

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
0	2	1.17%
25	31	18.13%
50	54	31.58%
75	75	43.86%
100	89	52.05%
125	103	60.23%
150	114	66.67%
175	125	73.10%
200	131	76.61%
225	141	82.46%
250	145	84.80%
275	154	90.06%
300	156	91.23%
325	158	92.40%
350	162	94.74%
400	166	97.08%
450	168	98.25%
475	169	98.83%
725	171	100.00%
AVERAGE ERROR =		129.31
STANDARD DEVIATION =		122.87
ELAPSED TIME =		3445

RANDOM ROUTE AVM SYSTEM RUN 6

NO COMMUNICATION ERRORS

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY
 ERROR NUMBER PERCENT
 INTERVAL POINTS OF POINTS

ERROR FREQUENCY DENSITY
 ERROR NUMBER PERCENT
 INTERVAL POINTS OF POINTS

0-	25	28	13.59%
25-	50	33	16.02%
50-	75	29	14.08%
75-	100	23	11.17%
100-	125	14	6.80%
125-	150	27	13.11%
150-	175	11	5.34%
175-	200	8	3.88%
200-	225	5	2.43%
225-	250	9	4.37%
250-	275	3	1.46%
275-	300	6	2.91%
300-	325	4	1.94%
350-	375	1	0.49%
400-	425	3	1.46%
425-	450	2	0.97%

0-	25	28	13.59%
25-	50	33	16.02%
50-	75	29	14.08%
75-	100	24	11.65%
100-	125	14	6.80%
125-	150	26	12.62%
150-	175	10	4.85%
175-	200	8	3.88%
200-	225	5	2.43%
225-	250	9	4.37%
250-	275	3	1.46%
275-	300	6	2.91%
300-	325	5	2.43%
350-	375	1	0.49%
400-	425	3	1.46%
425-	450	2	0.97%

CUMULATIVE ERRORS

CUMULATIVE ERRORS

ERROR # ERRORS PERCENT
 FEET LT FEET ERRORS

ERROR # ERRORS PERCENT
 FEET LT FEET ERRORS

0	2	0.97%
25	30	14.56%
50	62	30.10%
75	91	44.17%
100	113	54.85%
125	127	61.65%
150	154	74.76%
175	165	80.10%
200	173	83.98%
225	178	86.41%
250	187	90.78%
275	190	92.23%
300	196	95.15%
325	200	97.09%
375	201	97.57%
425	204	99.03%
450	206	100.00%

0	2	0.97%
25	30	14.56%
50	62	30.10%
75	91	44.17%
100	114	55.34%
125	128	62.14%
150	154	74.76%
175	164	79.61%
200	172	83.50%
225	177	85.92%
250	186	90.29%
275	189	91.75%
300	195	94.66%
325	200	97.09%
375	201	97.57%
425	204	99.03%
450	206	100.00%

AVERAGE ERROR = 113.21

AVERAGE ERROR = 113.67

STANDARD DEVIATION = 93.08

STANDARD DEVIATION = 93.93

ELAPSED TIME = 4141

ELAPSED TIME = 4141

RANDOM ROUTE AVM SYSTEM RUN 7

NO COMMUNICATION ERRORS				5% COMMUNICATION ERRORS			
ERROR FREQUENCY		DENSITY		ERROR FREQUENCY		DENSITY	
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS		ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS	
0- 25	32	12.31%		0- 25	32	12.31%	
25- 50	32	12.31%		25- 50	33	12.69%	
50- 75	35	13.46%		50- 75	36	13.85%	
75- 100	31	11.92%		75- 100	31	11.92%	
100- 125	35	13.46%		100- 125	35	13.46%	
125- 150	19	7.31%		125- 150	19	7.31%	
150- 175	21	8.08%		150- 175	20	7.69%	
175- 200	15	5.77%		175- 200	14	5.38%	
200- 225	6	2.31%		200- 225	6	2.31%	
225- 250	14	5.38%		225- 250	14	5.38%	
250- 275	5	1.92%		250- 275	5	1.92%	
275- 300	6	2.31%		275- 300	6	2.31%	
300- 325	1	0.38%		300- 325	1	0.38%	
350- 375	1	0.38%		350- 375	1	0.38%	
375- 400	3	1.15%		375- 400	3	1.15%	
400- 425	3	1.15%		400- 425	3	1.15%	
475- 500	1	0.38%		475- 500	1	0.38%	

CUMULATIVE ERRORS

CUMULATIVE ERRORS

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
25	33	12.69%
50	65	25.00%
75	99	38.08%
100	130	50.00%
125	166	63.85%
150	184	70.77%
175	205	78.85%
200	220	84.62%
225	228	87.69%
250	243	93.46%
275	245	94.23%
300	251	96.54%
325	252	96.92%
375	253	97.31%
400	256	98.46%
425	259	99.62%
500	260	100.00%

ERROR FEET	# ERRORS LT FEET	PERCENT ERRORS
25	33	12.69%
50	66	25.38%
75	101	38.85%
100	132	50.77%
125	168	64.62%
150	186	71.54%
175	206	79.23%
200	220	84.62%
225	228	87.69%
250	243	93.46%
275	245	94.23%
300	251	96.54%
325	252	96.92%
375	253	97.31%
400	256	98.46%
425	259	99.62%
500	260	100.00%

AVERAGE ERROR = 116.33
 STANDARD DEVIATION =
 ELAPSED TIME = 5161

AVERAGE ERROR = 115.31
 STANDARD DEVIATION = 89.38
 ELAPSED TIME = 5161

RANDOM ROUTE AVM SYSTEM RUN 8

NO COMMUNICATION ERRORS

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY

ERROR FREQUENCY DENSITY

ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS	ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS
----------------	---------------	-------------------	----------------	---------------	-------------------

0- 25	27	10.63%	0- 25	27	10.63%
25- 50	46	18.11%	25- 50	47	18.50%
50- 75	36	14.17%	50- 75	37	14.57%
75- 100	26	10.24%	75- 100	27	10.63%
100- 125	19	7.48%	100- 125	19	7.48%
125- 150	20	7.87%	125- 150	20	7.87%
150- 175	23	9.06%	150- 175	23	9.06%
175- 200	13	5.12%	175- 200	13	5.12%
200- 225	13	5.12%	200- 225	13	5.12%
225- 250	11	4.33%	225- 250	11	4.33%
250- 275	9	3.54%	250- 275	7	2.76%
275- 300	3	1.18%	275- 300	3	1.18%
300- 325	1	0.39%	300- 325	1	0.39%
325- 350	1	0.39%	325- 350	1	0.39%
375- 400	3	1.18%	375- 400	3	1.18%
400- 425	1	0.39%	400- 425	1	0.39%
425- 450	1	0.39%	425- 450	1	0.39%
475- 500	1	0.39%			

CUMULATIVE ERRORS

CUMULATIVE ERRORS

ERROR FEET	# ERRORS	PERCENT ERRORS	ERROR FEET	# ERRORS	PERCENT ERRORS
------------	----------	----------------	------------	----------	----------------

0	3	1.18%	0	3	1.18%
25	28	11.02%	25	28	11.02%
50	74	29.13%	50	75	29.53%
75	109	42.91%	75	111	43.70%
100	135	53.15%	100	138	54.33%
125	155	61.02%	125	158	62.20%
150	176	69.29%	150	179	70.47%
175	197	77.56%	175	200	78.74%
200	210	82.68%	200	213	83.86%
225	224	88.19%	225	227	89.37%
250	235	92.52%	250	238	93.70%
275	243	95.67%	275	244	96.06%
300	246	96.85%	300	247	97.24%
325	247	97.24%	325	248	97.64%
350	248	97.64%	350	249	98.03%
400	251	98.82%	400	252	99.21%
425	252	99.21%	425	253	99.61%
450	253	99.61%	450	254	100.00%
500	254	100.00%			

AVERAGE ERROR =	114.63	AVERAGE ERROR =	111.47
STANDARD DEVIATION =	89.67	STANDARD DEVIATION =	85.82
ELAPSED TIME =	5141	ELAPSED TIME =	5141

RANDOM ROUTE AVM SYSTEM RUN 9

NO COMMUNICATION ERRORS

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY				ERROR FREQUENCY DENSITY			
ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS		ERROR INTERVAL	NUMBER POINTS	PERCENT OF POINTS	
0-	25	27	11.74%	0-	25	27	11.74%
25-	50	31	13.48%	25-	50	31	13.48%
50-	75	35	15.22%	50-	75	35	15.22%
75-	100	31	13.48%	75-	100	31	13.48%
100-	125	22	9.57%	100-	125	23	10.00%
125-	150	23	10.00%	125-	150	23	10.00%
150-	175	19	8.26%	150-	175	19	8.26%
175-	200	12	5.22%	175-	200	12	5.22%
200-	225	13	5.65%	200-	225	12	5.22%
225-	250	8	3.48%	225-	250	8	3.48%
250-	275	2	0.87%	250-	275	2	0.87%
275-	300	1	0.43%	275-	300	1	0.43%
300-	325	1	0.43%	300-	325	1	0.43%
325-	350	1	0.43%	325-	350	1	0.43%
350-	375	2	0.87%	350-	375	2	0.87%
400-	425	2	0.87%	400-	425	2	0.87%

CUMULATIVE ERRORS

CUMULATIVE ERRORS

ERROR FEET	# ERRORS	PERCENT
------------	----------	---------

ERROR FEET	# ERRORS	PERCENT
------------	----------	---------

0	1	0.43%
25	28	12.17%
50	59	25.65%
75	93	40.43%
100	124	53.91%
125	149	64.78%
150	169	73.48%
175	189	82.17%
200	201	87.39%
225	214	93.04%
250	221	96.09%
275	223	96.96%
300	224	97.39%
325	226	98.26%
375	228	99.13%
425	230	100.00%

0	1	0.43%
25	28	12.17%
50	59	25.65%
75	93	40.43%
100	124	53.91%
125	150	65.22%
150	170	73.91%
175	190	82.61%
200	202	87.83%
225	214	93.04%
250	221	96.09%
275	223	96.96%
300	224	97.39%
325	226	98.26%
375	228	99.13%
425	230	100.00%

AVERAGE ERROR = 108.83
 STANDARD DEVIATION =
 ELAPSED TIME = 4601

AVERAGE ERROR = 108.45
 STANDARD DEVIATION = 76.68
 ELAPSED TIME = 4601

RANDOM ROUTE AVM SYSTEM RUN 10

NO COMMUNICATION ERRORS

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY
 ERROR NUMBER PERCENT
 INTERVAL POINTS OF POINTS

ERROR FREQUENCY DENSITY
 ERROR NUMBER PERCENT
 INTERVAL POINTS OF POINTS

0-	25	15	9.80%
25-	50	21	13.73%
50-	75	30	19.61%
75-	100	21	13.73%
100-	125	13	8.50%
125-	150	17	11.11%
150-	175	11	7.19%
175-	200	6	3.92%
200-	225	6	3.92%
225-	250	5	3.27%
250-	275	1	0.65%
275-	300	3	1.96%
325-	350	1	0.65%
375-	400	1	0.65%
425-	450	1	0.65%
775-	800	1	0.65%

0-	25	13	8.50%
25-	50	21	13.73%
50-	75	30	19.61%
75-	100	22	14.38%
100-	125	13	8.50%
125-	150	17	11.11%
150-	175	11	7.19%
175-	200	7	4.58%
200-	225	6	3.92%
225-	250	5	3.27%
250-	275	1	0.65%
275-	300	3	1.96%
325-	350	1	0.65%
375-	400	1	0.65%
425-	450	1	0.65%
775-	800	1	0.65%

CUMULATIVE ERRORS
 ERROR # ERRORS PERCENT
 FEET LT FEET ERRORS

CUMULATIVE ERRORS
 ERROR # ERRORS PERCENT
 FEET LT FEET ERRORS

25	17	11.11%
50	42	27.45%
75	67	43.79%
100	87	56.86%
125	102	66.67%
150	118	77.12%
175	129	84.31%
200	134	87.58%
225	140	91.50%
250	145	94.77%
275	146	95.42%
300	149	97.39%
350	150	98.04%
400	151	98.69%
450	152	99.35%
800	153	100.00%

25	15	9.80%
50	40	26.14%
75	65	42.48%
100	86	56.21%
125	101	66.01%
150	117	76.47%
175	128	83.66%
200	134	87.58%
225	140	91.50%
250	145	94.77%
275	146	95.42%
300	149	97.39%
350	150	98.04%
400	151	98.69%
450	152	99.35%
800	153	100.00%

AVERAGE ERROR = 109.42
 STANDARD DEVIATION =
 ELAPSED TIME = 3063

AVERAGE ERROR = 111.07
 STANDARD DEVIATION = 94.46
 ELAPSED TIME = 3063

MANUALLY PROCESSED RANDOM ROUTE AVM SYSTEM
 ERRORS, RUN 10

PCP	ERROR	TIME	ODOM	
154	0	53:34	1032	
5	267	53:54	1538	
6	293	54:14	1618	
7	562	54:34	1626	
8	341	54:54	1700	
9	22	55:14	2150	
160	73	55:34	2590	
1	253	55:54	3006	
2	269	56:14	3588	
3	117	56:34	4222	
4	309	56:54	4578	
5	385	57:14	4984	
6	30	57:34	5248	
7	178	57:54	5336	
8	36	58:14	5426	
9	118	58:34	5958	PCP'=158'
170	182	58:54	6022	
1	171	59:14	6266	
2	30	59:34	6646	
3	126	59:54	6838	
4	67	60:14	7240	
5	52	60:34	7260	
6	58	60:54	7620	
7	229	61:14	7888	
8	228	61:34	7964	
9	80	61:54	8454	
180	92	62:14	8988	
1	89	62:34	9370	
2	62	62:54	9578	
3	123	63:14	9646	
4	269	63:34	10050	
5	82	63:54	10274	
6	35	64:14	10596	
7	56	64:34	10824	
8	291	64:54	11140	
9	20	65:14	11470	
190	109	65:34	11920	PCP'=109'
1	99	65:54	11930	
2	15	66:14	12030	
3	208	66:34	12506	

MANUALLY PROCESSED RANDOM ROUTE AVM SYSTEM
ERRORS, RUN 10 (CONT'D)

PCP	ERROR	TIME	ODOM
194	38	66:54	12744
5	222	67:14	12946
6	169	67:34	13356
7	566	67:54	13754
8	48	68:14	14038
9	48	68:34	14038
200	297	73:14	17368
1	93	73:34	17638
2	91	73:54	17982
3	35	74:14	18038
4	88	74:34	18166
5	86	74:54	18464
6	62	75:14	18918
7	39	75:34	19408
8	53	75:54	19794
9	8	76:14	19856
210	21	76:14	19868

RANDOM ROUTE RUN 10 AVM SYSTEM ERRORS

No Communication Errors

5% Communication Errors

Error Frequency

Error Frequency

Density

No. Samples

Density

No. Samples

0- 25	21
25- 50	30
50- 75	38
75-100	30
100-125	17
125-150	18
150-175	13
175-200	8
200-225	8
225-250	8
250-275	5
275-300	5
300-325	1
325-350	2
375-400	2
425-450	1
550-575	2
775-800	1

0- 25	21
25- 50	30
50- 75	38
75-100	30
100-125	16
125-150	18
150-175	14
175-200	8
200-225	8
225-250	8
250-275	5
275-300	5
300-325	1
325-350	2
375-400	2
425-450	1
550-575	2
775-800	1

Cumulative Error Distribution

Cumulative Error Distribution

Error	No. Samples LT Error	Percent Samples LT Error
25	21	10.00
50	51	24.29
75	89	42.38
100	119	56.67
125	136	64.76
150	154	73.33
175	167	79.52
200	175	83.33
225	183	87.14
250	191	90.95
275	196	93.33
306	201	95.71
325	202	96.19
350	204	97.14
400	206	98.10
450	207	98.57
575	209	99.52
800	210	100.00

Error	No. Samples LT Error	Percent Samples LT Error
25	21	10.00
50	51	24.29
75	89	42.38
100	119	56.67
125	135	64.28
150	153	72.86
175	167	79.52
200	175	83.33
225	183	87.14
250	191	90.95
275	196	93.33
300	201	95.71
325	202	96.19
350	204	97.14
400	206	98.10
450	207	98.57
575	209	99.52
800	210	100.00

3.2.3 Random Route One-Tenth Mile Averages

This subsection contains the results obtained by processing Random Route Runs 1-10 through use of the RRTEN program. The format is as follows:

Street Segment No:

1 2 3 4 5 6 7 8 9 10
11 12 13 14

Average Errors Over One-Tenth Mile Segments of
Random Route Runs 1, 2 and 3

RUN 1 RANDOM ROUTE
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

59	179	113	102	122	214	106	227	184	56
73	114	96	84	188	51	115	226	78	105
258	100	151	205	367	84	142	152	171	75
* 79	47	154	136	110	158	90	114	161	103

CT1:RUN001.001

122	93	188	173	93	116	117	105	75	75
197	119	57	57	102	128	121	94	113	125
193	118	131	73	137	137	147	105	119	68
51	111	111	155	129	74	204	67	124	114
131	75	122	115	85	121	148	135	174	78

RUN 2 RANDOM ROUTE
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

168	99	127	76	179	90	75	83	98	68
91	89	51	55	227	43	76	158	106	175
146	114	89	209	358	105	99	142	139	104
86	71	127	144	94	140	76	85	143	146
*198	134	179	60	75	117	225	123	71	83

CT1:RUN002.001

149	89	122	144	194	70	153	161	142	255
208	389	145	119	81	110	73	231	172	71
102	93	132	90	195	142	76	239	67	102
120	79	99	149	115	69	61	96	223	114
74									

RUN 3 RANDOM ROUTE
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

126	81	57	68	84	102	133	51	72	28
173	152	78	140	45	85	83	236	80	102
88	117	165	142	154	113	324	129	207	125
116	93	70	161	94	71	148	146	146	173
*176	95	129	117	121	181	121	103	151	131

CT1:RUN003.001

110	125	107	129	112	200	96	139	52	335
113	118	110	143	106	104	177	139	116	73
188	62	115	151	110	152	66	99	98	119
81	83	107	81	88	71	77	97	89	

**Average Errors Over One-Tenth Mile Segments of
Random Route Runs 4, 5 and Composite**

RUN 4 RANDOM ROUTE

AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

144	134	95	78	103	80	125	65	75	57
77	263	120	76	169	85	116	202	64	81
148	70	87	166	259	105	112	111	119	151
74	85	114	135	94	160	83	236	190	132
*162	148	129	122	94	100	145	94	87	87

CT1:RUN004.001

123	88	80	125	100	93	113	88	158	160
147	149	110	64	107	139	186	191	116	66
54	118	113	156	118	62	141	91	72	148
63	88	95	80	108	44	76	172	149	101

RUN 5 RANDOM ROUTE

AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

253	149	127	108	75	93	102	295	160	85
46	89	84	78	208	119	212	142	248	139
177	153	93	174	437	359	174	185	97	104
139	106	164	228	103	180	115	125	188	191
231	177	285	102	97	115	270	91	60	119
*110	117	167	147	83	149	194	214	134	75

CT1:RUN005.001

85	151	101	41	153	155	330	406	103	65
139	69	101	149	145	135	85	148	110	119
163	88	60	50	39	82	126	117	88	

COMPOSITE PRIMARY RUNS 1-5

AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

150	128	104	87	113	116	108	144	118	59
92	141	85	112	167	107	120	193	115	120
163	110	117	179	315	153	170	144	147	112
99	80	126	161	99	142	102	141	166	149
178	129	182	115	96	126	176	103	89	99
138	107	86	120	118	128	135	139	139	190
149	185	119	88	117	129	182	214	125	69
107	114	114	140	139	113	114	129	94	120
112	82	97	95	87	77	98	123	145	97

74

Average Errors Over One-Tenth Mile Segments of
Random Route Runs 6, 7 and 8

RUN 6 RANDOM ROUTE
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

138	68	71	189	140	145	96	182	83	168
106	128	110	92	139	96	62	247	115	103
62	59	77	95	97	194	162	94	117	107
75	98	152	51	63	90	122	89	101	93
*125	115	181	80	103	119	121	158	85	109

CT1:RUN006.001

117	63	99	128	77	49	89	59	77	78
228	141	266	72	81	117	131	167	100	80
94	69	75	94	89	86	104	127	141	109
132	90	97	105	83	158	91	96	125	78
67									

RUN 7 RANDOM ROUTE
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

92	71	76	134	82	132	103	136	102	110
110	115	80	105	84	214	73	199	75	106
113	74	69	51	103	160	171	45	108	85
*118	85	154	60	73	109	134	130	133	171

CT1:RUN007.001

134	81	185	65	144	114	132	160	98	106
77	135	135	90	163	59	96	132	68	83
77	107	165	312	65	98	93	157	101	119
175	88	72	93	84	171	122	112	57	48
123	129	236	121	125	56	154	52	95	129
105	83								

RUN 8 RANDOM ROUTE
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

117	83	98	72	97	117	159	119	92	136
63	139	59	93	164	88	58	226	49	82
76	50	104	93	85	162	176	78	91	81
* 71	68	174	57	49	89	161	117	123	61

CT1:RUN008.001

106	126	123	91	113	85	101	161	146	59
85	147	142	171	121	54	125	150	78	116
73	205	63	466	75	72	77	94	84	106
51	133	77	77	94	158	77	94	237	129
157	102	89	82	218	81	109	42	67	145
77	124								

**Average Errors Over One-Tenth Mile Segments of
Random Route Runs 9, 10 and Composite**

RUN 9 RANDOM ROUTE
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

67	83	85	116	116	158	124	101	94	122
65	83	90	99	149	84	73	154	138	104
77	76	70	80	107	184	165	60	119	86
55	108	146	108	50	117	110	110	100	92
*138	104	175	112	129	91	133	90	122	69

CT1:RUN009.001

112	108	98	135	77	67	180	85	108	107
156	119	276	86	91	135	119	156	80	152
119	131	103	79	109	132	99	97	162	101
110	142	67	163	96	82	72	94	131	73
71									

RUN 10 RANDOM ROUTE
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

55	76	49	118	117	122	96	128	100	120
100	96	89	122	106	45	98	124	122	74
69	94	151	75	85	184	177	87	91	106
166	68	89	143	77	66	99	109	82	87
*119	166	90	133	160	103	141	117	182	176

CT1:RUN010.001

95	100	148	84	120	180	57	83	149	98
----	-----	-----	----	-----	-----	----	----	-----	----

PERR 61 ILLEGAL MEMORY REFERENCE
IN ROUTINE ".MAIN." LINE 40

COMPOSITE SECONDARY RUNS 6-10
AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

94	76	76	126	110	134	115	133	94	131
89	112	86	102	128	105	73	190	100	94
79	71	94	79	95	177	170	73	105	93
97	85	143	84	62	94	125	111	108	101
124	118	151	96	130	102	126	137	127	104
97	110	124	122	112	82	107	102	96	96
134	143	193	234	78	106	105	144	91	114
110	105	82	86	94	137	101	108	149	97
131	116	122	118	131	94	107	71	105	106
								80	104

3.3 RANDOM ROUTE DATA PROCESSING REQUIREMENTS

During the recording of random route data, three manual entry errors occurred which required special consideration during data processing. These errors and the necessary considerations are described in Table 3.3.1. It is also noted that the second cassette on Run 10 could not be processed. As noted in Volume I, Section 5.4, the last 21 checkpoints of this run were processed manually from the dump.

Random Route Data Processing Anomalies

RUN NO.	PROBLEM	SOLUTION
1	TA63 entered twice after CP56	Deleted last TA63 prior to CP57 via card input in RRSL and RRTEN
9	CP64 entered instead of TA64 at beginning of run	Changed occurrence of CP63 to TA64 via card input in RPMAIN, RRSL, and RRTEN
10	CP44 entered instead of TA44 after CP5	Changed CP44 to TA44 via card input to CPMAIN, RRSL, and RRTEN
10	CP61 entered instead of TA61 after CP55	Changed CP61 to TA61 via card input in CPMAIN, RRSL, and RRTEN
10	Couldn't process data from second cassette	Manually computed results from dump.

4. FIXED ROUTE

4.1 FIXED ROUTE TESTS

4.1.1 Fixed Route Test Log Sheets

A log sheet describing the test conditions and any anomalies was filled out at the completion of each test run. Copies of each fixed route test log sheet are contained in this subsection.

TEST DATA LOG

Start Time 1310
End Time 1450
24°

TEST RUN NO. 11

SHEET NO. 1 OF 1

TYPE OF TEST: Fixed Route DATE: 13 JAN 1977

BRIEF NARRATIVE DESCRIPTION OF TEST
Ran Hoffman Fixed Route containing 15 time points and 76 checkpoints.

ROUTE IDENTIFICATION: Begin at Ritterhouse Square and end at 13th and Walnut.

EVENT MARKER NUMBER: Time points 1-15 in order
Checkpoints 1-76 in order

- TSC checkpoints not loaded in Hoffman software
- TP3 - Door Closed
- TP4 - Door Closed
- TP5 - Door Closed
- TP9 - Door Closed
- TP10 - Door Closed
- TP11 - Door Closed
- TP13 - Door Closed

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 - 55dbm 2 - 72dbm 3 - 82dbm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off On _____ OTHER: _____

TEMPERATURE: 24 F PRECIPITATION: _____ ROAD CONDITIONS: Dry

TEST TAPE NO(S). 11-1 & 11-2 FILE NO. _____

SAMPLE RATE: 0.5 seconds

RUN TIME: 100 min. TEST DIRECTOR George L. Graver

Elapsed Distance 13mi 38' 000m TSC MONITOR Barbara A. Klein
13mi 84' 5th

TEST DATA LOG

Start Time 1500
End Time 1637

TEST RUN NO. 12

SHEET NO. 1 OF 1

TYPE OF TEST: Fixed Route

DATE: 1-13-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION: Hoffman Fixed Route

EVENT MARKER NUMBER: Time Point 1-15 in order
TSC Checkpoints 1-76 in order

- Don Close AT
- TP 3
- TP 4
- TP 5
- TP 6
- TP 8
- TP 10
- TP 11
- TP 13

Heavy traffic

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55dBm 2 -72dBm 3 -82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 972 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 25.4 PRECIPITATION: No ROAD CONDITIONS: Dry

TEST TAPE NO(S). 12-1 & 12-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 97 min TEST DIRECTOR George Kruger

Elapsed Distance 12 mi 4979.00 mi TSC MONITOR Bernard W. A. Klein

12 mi 5253.5 mi

TEST DATA LOG

START 1650
END 1820

TEST RUN NO. 13

SHEET NO. 1 OF 1

TYPE OF TEST: FIXED ROUTE DATE: 1-13-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION: Hoffman Fixed Route

EVENT MARKER NUMBER: TIME POINTS 1-15 IN ORDER
CHECK POINTS 1-76 IN ORDER

Door closed at
TP 2
TP 4
TP 6
TP 8
TP 10
TP 11
TP 13
Heavy Traffic

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off (On) OTHER:

TEMPERATURE: 24°F PRECIPITATION: NO ROAD CONDITIONS: DRY

TEST TAPE NO(S). 13-1 and 13-2 FILE NO.

SAMPLE RATE: 0.5 TEST DIRECTOR George W. Shuman

RUN TIME: 90 min TSC MONITOR Bernard W. A. Kimm

Elapsed Distance - 000m 13 90
" " 5th 13 129

TEST DATA LOG

START 2025
END 2140

TEST RUN NO. 14

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE DATE: 1-13-77.

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: HI³ FIXED ROUTE

EVENT MARKER NUMBER: Time Points 1-15 in order
check points 1-76 in order.

Door Close at time points:

TP 2

TP 3

TP 4

TP 9

TP 10

TP 11

TP 12

TP 13

Musild Town #16

Enter { TD 15 at ODOM = 210
LE 15 at ODOM = 2390

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL: 872 FPP 2

R1 DROPOUT SWITCH: Off On OTHER: _____

TEMPERATURE: 24° F PRECIPITATION: None ROAD CONDITIONS: Dry

TEST TAPE NO(S). 14-1 and 14-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 75 min TEST DIRECTOR _____

DISTANCE: 5^{mi} 12^{mi} 5245' TSC MONITOR George W. Gunn

5^{mi} 13^{mi} 9' Gene W. Rhein

TEST DATA LOG

START 2300
END 2310

TEST RUN NO. 15

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ Fixed Route DATE: 1-13-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: HI³ Fixed Route

EVENT MARKER NUMBER: Time Points 1-15 in Sequence
check points 1-76 in Sequence

- Door Closed AT
- TP 2
- TP 6
- TP 8
- TP 10
- TP 11
- TP 12
- TP 14
- TP 15

1. Marked CP 25 wrong
Removed with EE 25

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55 2 -72 3 -82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 23° F PRECIPITATION: None ROAD CONDITIONS: Dry

TEST TAPE NO(S). 15-1 and 15-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 70 min TEST DIRECTOR George L. ...

TSC MONITOR Ben W. A. Khan

Elapsed Distance
Odora 12 mi 5175'
5th 13 mi 17'

TEST DATA LOG

START 2320 ^{1/13/77}
END 0030
_{1/14/77}

TEST RUN NO. 16 SHEET NO. 1 OF 1

TYPE OF TEST: FIXED ROUTE DATE: 1-13-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION: Hoffman Fixed Route

EVENT MARKER NUMBER: Time Points 1-15 in order
checkpoints 1-76 in order

- Door Closed AT
 - TP 1
 - TP 3
 - TP 4
 - TP 9
 - TP 12
 - TP 13
 - TP 14
1. Input TP 11 in error instead of Turn 24. Removed TO 11 with EE 11. First TD 11 entry is correct.
 2. Missed Turn 24
 3. Hit TD 15 in error at odom = 2066 (11 3P) Removed with EE 15.

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 - 55 2 - 72 3 - 82

ODOMETER CAL: 779 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 23° PRECIPITATION: none ROAD CONDITIONS: dry

TEST TAPE NO(S). 16-1 and 16-2 FILE NO.

SAMPLE RATE: 0.5 TEST DIRECTOR George W. Shuman

RUN TIME: 70' TSC MONITOR Richard A. Khien

Distance: 000m 12 mi 5172'
5th 12 mi 5255'

START 0850
END 1015

TEST DATA LOG

TEST RUN NO. 17

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ Fixed Route

DATE: 1-14-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER: TSC Tim-points 1-15 in order
Door Close AT TSC Checkpoints 1-76 in order
TP 2
TP 3 Missed TD 11 entry
TP 4
TP 6
TP 8
TP 9
TP 13
TPH

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 30°F PRECIPITATION: None ROAD CONDITIONS: Dry

TEST TAPE NO(S): 177 & 17-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 45 min TEST DIRECTOR George W. Brown

TSC MONITOR Ben W.A. Klein

Distance: ODOM 12 mi 5074
5th 12 mi 5245

TEST DATA LOG

START 1020
END 1200

TEST RUN NO. 18

SHEET NO. 1 OF 1

TYPE OF TEST: Fixed Route DATE: 1-14-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

- Door closed AT 1. H² TA 20 x 150 feet late
- TP 3
- TP 4 2. missed CP 43
- TP 6
- TP 8 3. Snowing hard at CP 40
- TP 9
- TP 11 4. Pictures on WA. ant.
- TP 13
- TP
- TD

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.:

VEHICLE UNIT THRESHOLD LEVELS: 1-55 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 32-30° PRECIPITATION: Snowing ROAD CONDITIONS: Dry - then wet

TEST TAPE NO(S) 18-1 ; 18-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 100 Min TEST DIRECTOR Leonard Shuman

DISTANCE: CELOM 12-5140
5th 12-5248 TSC MONITOR Bernard A. Klein

TEST DATA LOG START 1330
END 1535

TEST RUN NO. 19

SHEET NO. 1 OF 1

TYPE OF TEST: FIXED Route

DATE: 1-14-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION: Hoffman Fixed Route

EVENT MARKER NUMBER:

Door Closed AT

TP 8

TP 9

TP 10

TP 12

TP 14

1. HIT CP 2 \approx 50' late

2. Some skidding 5th wheel.

3. HIT TA 20 \approx 50' late

4. Stopped recording at Post office for 2-3 minutes. Turned into Post office Entry at 30+ mph.

- SNOW ACCUMULATION \approx 1-2" - SNOW + SLUSH STUCK TO 5th WHEEL - A 1/2" BUILD-UP OF SNOW CONTRIBUTES UP TO 0.80% ERROR (AS A REDUCTION)

- TIME POINTS - STOPPING; PASSING WAS CHOSEN BY TRAFFIC AND SET OF LIGHTS!

5. SUBSEQUENTLY FOUND THAT TAPE WOULD NOT DUMP WITH PRUMP ROUTINE! *EX-11/1/77*

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.:

VEHICLE UNIT THRESHOLD LEVELS: 1 - 55 2 - 72 3 - 87

ODOMETER CAL: 999 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off On OTHER: _____

TEMPERATURE: 31-32 PRECIPITATION: SNOWING ROAD CONDITIONS: SNOW + SLUSH WET

TEST TAPE NO(S). 19-1 ; 19-2

FILE NO. _____

SAMPLE RATE: 0.5

TEST DIRECTOR Joseph J. Turner

RUN TIME: 2 HR - 05 MIN

TSC MONITOR B. Khan

DISTANCE: ODOM 13 mi 201
5th < 13 mi

TEST DATA LOG START 1600
END 1730

TEST RUN NO. 20

SHEET NO. 1 OF 1

TYPE OF TEST: Fixed Route

DATE: 1-14-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door Closed AT

TP 4
TP 7
TP 8
TP 9

1. Missed CP 37

2. Generator stopped just after CP #46 at time 1730 hours.

Incomplete Run
TERMINATED: BK

5th WHEEL DISTANCE & ODOMETER UNKNOWN - INDICATORS WENT BLANK WHEN POWER FAILED.

3. ~~46~~ TAPE'S DUMPED SUCCESSFULLY THROUGH CP 46 USING "PUMP". HOWEVER, ABILITY TO TRANSFER TO MAG. TAPE (DUE TO LACK OF END-OF-FILE) TO BE DETERMINED: BK 1/14/77

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55 2 -72 3 -82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 972 FPP 2

R1 DROPOUT SWITCH: Off On OTHER: _____

TEMPERATURE: 32 PRECIPITATION: SHOWING ROAD CONDITIONS: 1/2-1 inch snow

TEST TAPE NO(S). 20-1 & 20-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 1^{hr}-30 MIN

TEST DIRECTOR George W. Grever

DISTANCE: ODOM ?
5th ?

TSC MONITOR Bernard A. Klein

TEST RUN NO. 21

SHEET NO. 1 OF 1

TYPE OF TEST: Fixed Route

DATE: 1-14-77

BRIEF NARRATIVE DESCRIPTION OF TEST - NOTE CONCERNING THE OPERATION OF THE 5th WHEEL IN THE SNOW. WHERE THE 5th WHEEL RUNS THE SNOW/SLUSH IS 3" TO 5" PLUS LARGE CLUMPS - PILED UP BY THE VEHICLES - THIS CAUSES THE 5th WHEEL TO BOUNCE - IN ADDITION, THE 5th WHEEL WILL PICK UP SNOW \approx 1/4" THK AND THE SHED IT AT ABOUT 15 MPH. THE 5th WHEEL, DURING DECELERATION OF THE TEST VEHICLE, WILL SLIDE LEFT OR RIGHT!

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door closed AT

- TP 3
- TP 4
- TP 8
- TP 9
- TP 10
- TP 11
- TP 12
- TP 14

1. MANUAL FIX - TO CONTROL THE BUTTERFLY ON THE AUTOMATIC CHOKE - WIKED OPEN!
2. AT ODOM=4800 HIT CP66 IN error and CP 7 also wrong place. Removed both with EE. Hit CP 7 at right place but missed CP 6 completely.
3. Entered CP 11 in error at location of CP 11. Removed with EE. Missed CP 11.
4. Entered TA 16 in error at TA 6 (Missed TA 6)
5. Entered CP 28 early, deleted with EE.
6. CP 47 in error.

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off On OTHER: _____

TEMPERATURE: 33°F PRECIPITATION: LT. SNOW ROAD CONDITIONS: 2" snow / slush

TEST TAPE NO(S). 21-1 and 21-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 90 min TEST DIRECTOR George J. Brown

TSC MONITOR Bend W. A. Klein

Distance: OPOM 13mi 347'
5th 12mi 4799'

TEST DATA LOG

START 2040
END 2155

TEST RUN NO. 22

SHEET NO. 1 OF 1

TYPE OF TEST: H² Fixed Route

DATE: 1-14-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door closed AT

TP 1

TP 3

TP 9

TP 10

TP 12

TP 13

TP 14

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55 2 -72 3 -82

ODOMETER CAL: SM FPP 2 5TH WHEEL CAL 822 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 33° PRECIPITATION: Freezing Rain & snow ROAD CONDITIONS: 1-2 inches slush

TEST TAPE NO(S). 22-1 and 22-2

FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 1 Hr - 15 Min.

TEST DIRECTOR

DISTANCE: 0 DOM 134-350'
5+ 124-4280'

TSC MONITOR

TEST DATA LOG

START 2200
END 2220

TEST RUN NO. 23

SHEET NO. 1 OF

TYPE OF TEST: HI³ fixed Runt DATE: 1-14-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door Closed At

TP1

TP3

TP7

TP8

TP11

TP13

TP15

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off On OTHER:

TEMPERATURE: 32° PRECIPITATION: Freezing Rain ROAD CONDITIONS: 1-2 inches slush

TEST TAPE NO(S). 23-1 and 23-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 80 Min TEST DIRECTOR George W. Lamb

TSC MONITOR Sam W.A. Klein

Distans: Odometer 13-458
5th wheel 12-4366

TEST DATA LOG

START: 23:30
End: 00:45

TEST RUN NO. 24

SHEET NO. 1 OF 1

TYPE OF TEST: H⁺ Fixed Route

DATE: 1-14-77 / 1-15-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Don closed at

- TP 2
- TP 3
- TP 4
- TP 5
- TP 6
- TP 11
- TP 14
- TP

1. marked CP 51 60' lat
2. Entered TD12 twice. removed one with EE.
3. 5th wheel calibration affected by build up of slush on loadways

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55 2 -72 3 -82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL: 72 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 32° F PRECIPITATION: Fogging ROAD CONDITIONS: 2 inches of F slush

TEST TAPE NO(S). 24-1 and 24-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 75 min. 1st - 15 min TEST DIRECTOR George W. Gura

Distance: Odometer 134 - 416' TSC MONITOR Bernard A. Khim

5th 124 - 606'

TEST DATA LOG

START 0050
END 0210

TEST RUN NO. 25

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ Fixed Route

DATE: 1-15-76

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door closed at

- TP1
- TP3
- TP4
- TP8
- TP12
- TP14

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: 1/2-10-1 inch

TEMPERATURE: 32° F PRECIPITATION: Light Rain ROAD CONDITIONS: 5th h

TEST TAPE NO(S). 25-1 and 25-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 1 hr - 20 min. TEST DIRECTOR Greg W. George

Distance: odometer 19mi 338 TSC MONITOR Barnd W.A. Klein

54: 10mi 4764

TEST DATA LOG

START 1035
END 1200

TEST RUN NO. 26

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE

DATE: 1-15-78

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door closed AT

- TP 2
- TP 4
- TP 6
- TP 8
- TP 11
- TP
- TP
- 1

1. at 1112 5th wheel stopped counting at 6 mi 771 feet
odom was ~ 6 mi 1119 feet
2. stopped vehicle - found wet concrete at 5th wheel. repaired, topped, and ran 5th wheel to 6 mile 919 feet (200 feet less than odometer) at CP 34 (odom - 5th) was 198 feet. Halted computer therefore moving 5th wheel count up and effect on recording, only on display read out led.
3. Missed Time Point 15. (DID NOT ENTER UA TERMINAL)

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-53 2-72 3-82

ODOMETER CAL: 771 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 33° F PRECIPITATION: NONE ROAD CONDITIONS: WET & SLUSH

TEST TAPE NO(S). 26-1 and 26-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 1 HR - 25 MIN

TEST DIRECTOR George J. Turner

Distance: odometer 13 mi 179
5th wheel

TSC MONITOR Barry W. A. Khan

TEST DATA LOG

START 1210
END 1322

TEST RUN NO. 27

SHEET NO. 1 OF

TYPE OF TEST: HI³ Fixed Route

DATE: 1-15-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:

Door closed AT

1. Ordered CP 48 too soon -
removed with EC.

- TP 2
- TP 4
- TP 5
- TP 8
- TP 9
- TP 10
- TP 11
- TP 12

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 - 55 2 - 72 3 - 82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 34° F PRECIPITATION: None ROAD CONDITIONS: WET 5/10/4

TEST TAPE NO(S). 27-1 and 27-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 1.12 mi (72 min) TEST DIRECTOR George Shaver

Distance: Odometer 13 mi 80 TSC MONITOR Ben W. A. Klein

5th wheel _____

TEST DATA LOG

START 1330
END 1455

TEST RUN NO. 28

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ Fixed Route

DATE: 1-15-77.

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:
Door closed AT
TP 1
TP 4
TP 9
TP 10
TP 13
TP 15
TP

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 38° F PRECIPITATION: None ROAD CONDITIONS: wet slush

TEST TAPE NO(S). 28-1 and 28-2 FILE NO. _____

SAMPLE RATE: 0.5 TEST DIRECTOR George V. Givens

RUN TIME: 1 hr 25 min TSC MONITOR Bernard A. Klein

Distance: odometer 13 mi 0 ft.
5th wheel _____

TEST DATA LOG

START 1500
END 1620

TEST RUN NO. 29

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE

DATE: 1-15-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door closed AT

- TP2
- TP3
- TP4
- TP9
- TP10
- TP11
- TP13
- TP14

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55 2 -72 3 -82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 37°F PRECIPITATION: NONE ROAD CONDITIONS: WET & SLUSH

TEST TAPE NO(S): 29-1 and 29-2

FILE NO.

SAMPLE RATE: 0.5

TEST DIRECTOR George W. Shuman

RUN TIME: 1 Hr - 20 MIN

TSC MONITOR Fred W.A. Miller

Distance: Odometer 13 miles 8' 5th Wheel

TEST DATA LOG

START 1715
END 1838

TEST RUN NO. 30

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ F MED ROUTE

DATE: 1-15-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Closed Door AT

- TP1
- TP2
- TP3
- TP4
- TP6
- TP9
- TP11

1. Entered CP10 instead of TA10
act ODOM = 4108 Plus x(4098)
missed TA10-

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55 2-72 3-82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 34° F PRECIPITATION: NOUC ROAD CONDITIONS:

TEST TAPE NO(S). 30-1 and 30-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 1 hour 23 min.

Distance: odometer 13 mi 48'
5th Wheel

TEST DIRECTOR

TSC MONITOR

Gay W. Shuck
Sam W. A. Allen

TEST DATA LOG

START 1845
END 2010

TEST RUN NO. 31

SHEET NO. 1 OF 2

TYPE OF TEST: HI³ FIXED ROUTE DATE: 1-15-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:

Closed Door AT

- TP 1
- TP 2
- TP 8
- TP 9
- TP 11
- TP 18

1. Noted X300 foot jump in
5th wheel Valtel CPT#3
on both DMILand CRT.

2. ADDITIONAL DATA SHEET 20F2
B. Klein 4/18/77

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55 lb 2 -72 3 -82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL: 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 34-32^{OF} PRECIPITATION: None ROAD CONDITIONS: Wet

TEST TAPE NO(S). 31-1 and 31-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 1 HR - 25 MIN TEST DIRECTOR George J. Gurn

Distance: Odometer 12 mi 5210 TSC MONITOR W. A. Klein

5th wheel 13 mi 270

Run # 31

TEST DATA LOG CONTINUED!

SHEET 2 OF 2

HI³ FIXED ROUTE

S. Klein 1/18/77

For a period of 27 seconds, covering a distance of 464 feet, the 5th wheel gained 298 feet (Maximum of two pseudo-checkpoints).

Q	5		
CP2	757	759	$\Delta = 2 \times 2 = 4$
CP3	1134	1135	$\Delta = 1 \times 1 = 2$
0333.5	1268	1268	$\Delta = 0 = 0'$
0334.5	1277	1281	$\Delta = 4 \times 2 = 8'$
0335.5	1287	1298	$\Delta = 9 \times 2 = 18'$
0336.5	1298	1314	$\Delta = 16 \times 2 = 32'$
0338.5	1315	1341	$\Delta = 26 \times 2 = 52'$
0340.5	1332	1369	$\Delta = 37 \times 2 = 74'$
0342.5	1350	1399	$\Delta = 49 \times 2 = 98'$
350.5	1426	1522	$\Delta = 96 \times 2 = 192'$
400.5	1500	1649	$\Delta = 149 \times 2 = 298' \leftarrow$
358.5	1472	1548	$\Delta = 126 \times 2 = 252'$
5..5	1490	1625	$\Delta = 135 \times 2 = 270'$
401.5	1513	1658	$\Delta = 145 \times 2 = 290'$
359.5	1458	1637	$\Delta = 139 \times 2 = 278'$

Between 03' min 33.5" sec and 4' 00.5" 5th wheel gained 298 feet on the odometer that's 300 feet in 27 seconds or 11.1 feet per second or ~~3.6 miles per hour~~ $\frac{60}{8} = 7.5$ miles per hour faster than the odometer. Note 11.1 feet per second is more than 1 extra revolution per second.

TEST DATA LOG

START 2025
END 2150

TEST RUN NO. 32

SHEET NO. 1 OF 4

TYPE OF TEST: HI FIXED ROUTE DATE: 1-15-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:

Closed Door AT

TP1

TP3

TP4

TP10

TP12

TP13

1. Most Roadways glazed will noted that 5th wheel was losing many counts after road was brightly glazed.

BK

after completing run, checked calibration and found 5th wheel to be 874 versus 1000 for odometer. Inspection showed that one of the eight magnets on the fifth wheel was missing. On 1-16-77, replaced magnet and checked calibration. Results were: Odometer - 1004 feet
5th wheel - 1000 feet.

with test made in $\approx 1/4$ - $1/2$ inches of slush with up to 0.25 inches of slush build up on 5th wheel.

SEE ALSO CALIBRATION SHEETS + RECALIBRATION! BK

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55 2 -72 3 -82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off On

OTHER: _____

TEMPERATURE: 32 F PRECIPITATION: None ROAD CONDITIONS: Wet-Frozen

TEST TAPE NO(S). 32-1 and 32-2

FILE NO. _____

SAMPLE RATE: 0.5

TEST DIRECTOR George W. Gunn

RUN TIME: 1 Hr 25 min

TSC MONITOR Blair W. A. Kilian

Distance: Odometer 13 mi 160
5th wheel 12 mi 279

TEST RUN #32 TEST DATA LOG

Wenac Street Hometer CA 1. 1-15-77
2340 hours

Street dry except on edge. SHEET 2 OF 4

(Run #1) - West edge - some ice & slush
5th wheel coated $\approx \frac{1}{8}$ - $\frac{1}{4}$ inch of ice
odometer - 1004'
5th wheel 874'

(Run #2) 5th wheel clean
Sheet clean

odometer = 1006'
5th wheel = 826'

Found one magnet
missing

Should record distances
by $\frac{1}{8}$

note $\frac{1}{8} \times 1004 = 878.5$

$\frac{1}{8} \times 1006 = 880$

B. Khan 1/15/77

odometer	5th wheel	Δ
180	122	18
208	180	28
266	230	36
308	268	40
350	304	46
384	332	52
418	362	56
462	400	62
496	430	66
540	470	70
574	500	74
616	552	82
670	582	88
712	628	94
1004	874	130
<u>Run #1</u>		

NIGHT CALIBRATION DATA -
AFTER RUN #32 WHEN CONSISTENT
LARGER 5th WHEEL ERROR (SMALLER
READINGS WERE OBSERVED). BK

TEST DATA LOG

1025 hours

TEST RUN NO. #32 CONTINUED

SHEET NO. 3 OF 4

TYPE OF TEST: Special

DATE: 1-16-76

BRIEF NARRATIVE DESCRIPTION OF TEST Odometer and 5th Wheel calibration AFTER RUN #32

ROUTE IDENTIFICATION: Lebanon, N.H. Test 1000' range snowing and slush on ground. After replacing magnet on fifth wheel

EVENT MARKER NUMBER: see attached sheet.

CP 1 0000 000



CP 2 1004 1000 ← on display

see attached Pump.

MAGNET REPAIRING TIME = 20 MINUTES
5th WHEEL WAS WIPE CLEAN PRIOR TO CALIBRATION AT THE END OF THE 1000' ABOUT 1/2" OF SNOW AND ICE HAD ACCUMULATED. 5th WHEEL HAS SLITHERING/SLIDING TENDENCY - OBSERVED THROUGH REAR WINDOW OF WINDSHIELD.

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1 -55 2 -72 3 -82

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 33° F PRECIPITATION: Snowing ROAD CONDITIONS: icy

TEST TAPE NO(S): N.A. FILE NO.

SAMPLE RATE: 0.5 TEST DIRECTOR George L. Grant

RUN TIME: NA TSC MONITOR Ben W. A. Klein

TEST DATA LOG
TEST RUN # 32 CONTINUED

SHEET 4 OF 4

.L FRUMP.LDA

.ST 14156

RUN 001 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 16 HOUR 10 MIN 25

FIFTH WHEEL	FEET/PULSE	0002	ODDOMETER	FEET/PULSE	0002
CP 001	00	00	R1	D 00000	F 00000 T 00 03
TA 002	00	00	R1	D 00057	F 00057 T 00 17
TA 003	00	00	R1	D 00100	F 00101 T 00 21
TA 004	00	00	R1	D 00140	F 00140 T 00 24
TA 005	00	00	R1	D 00181	F 00180 T 00 28
TA 006	00	00	R1	D 00220	F 00220 T 00 31
TA 006	00	00	R1	D 00258	F 00257 T 00 35
TA 006	00	00	R1	D 00295	F 00295 T 00 38
TA 007	00	00	R1	D 00322	F 00321 T 00 41
TA 001	00	00	R1	D 00353	F 00353 T 00 44
TA 001	00	00	R1	D 00384	F 00384 T 00 47
TA 001	00	00	R1	D 00419	F 00419 T 00 50
TA 001	00	00	R1	D 00447	F 00446 T 00 53
TA 001	00	00	R1	D 00472	F 00471 T 00 56
TA 001	00	00	R1	D 00495	F 00494 T 01 00
CP 002	00	00	R1	D 00502	F 00500 T 01 03
DD 085	42	85	R2 E	D 01365	F 21245 T 08 03
DD 085					

DATA DUMP AS DESCRIBED ON SHEET 3 OF 4

1/16/77 *B. Klein*

TEST DATA LOG

START 1010
END 1225

TEST RUN NO. 33

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ Fixed Route

DATE: 1-16-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:

Door closed AT

- TP 4
- TP 8
- TP 9
- TP 10
- TP 11
- TP 12
- TP 13
- TP 14

1. Tried 3 times to input D010 but would not show on display noted that cassette was not turning for period of 10-30 seconds then D010 was deployed and cassette started turning.

2. Subsequently found that failure to read tapes prior to starting run caused inability to display tape with the FRUMP routine.
B.K./10/77

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55db 2-72 3-92

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 26 F PRECIPITATION: SNOW ROAD CONDITIONS: 1/2-1/4 inch

TEST TAPE NO(S). 33-1 and 33-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: hour 15 min TEST DIRECTOR George W. Gunn

0 Odometer Distance 13mi 238' TSC MONITOR Robert W. A. Khan

5th wheel Distance _____

TEST DATA LOG

START 1235
END 1405

TEST RUN NO. 34

SHEET NO. 1 OF 1

TYPE OF TEST: HIT³ fixed Route

DATE: 1-16-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door Closed at

- TP 1
- TP 3
- TP B
- TP 7
- TP 13
- TP 14
- TP 15

1. HIT DO 2, DC 2, and TD 2 at Brook in Croy. Entered EE 2 three times. Entered TD 2 correctly at 13th.
2. Entered DO 15 and DC 15 at 11th in error. Entered EE 15 twice. HIT DO 15, DC 15, and TD 15 correctly at 12th.

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm 2-72dBm 3-82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 812 FPP 2

R1 DROPOUT SWITCH: Off/On

OTHER:

TEMPERATURE: 26° F PRECIPITATION: Snowing ROAD CONDITIONS: 1 INCH SLUSH

TEST TAPE NO(S). 34-1 and 34-2

FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 1 hour 30 min

TEST DIRECTOR George W. Grubb

at 12th on 12th lane 12 mi 364'
5th wheel distance

TSC MONITOR Richard A. Khier

TEST DATA LOG

START 1415
END 1535

TEST RUN NO. 35

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE DATE: 1-16-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:

DOOR CLOSED AT:

- TP4
- TP5
- TP6
- TP7
- TP10
- TP11
- TP12
- TP13

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm 2-72dBm 3-82dBm

ODOMETER CAL: 999 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 26°F PRECIPITATION: SNOWING ROAD CONDITIONS: 1 inch of S145H

TEST TAPE NO(S). 35-1 and 35-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 1 hour 20min TEST DIRECTOR George W. Yung

ODOMETER DISTANCE 13 mi 330' TSC MONITOR R. W. A. Khan

5th Wheel Distance 12 mi 495'

TEST DATA LOG

START 1550
END 1705

TEST RUN NO. 36

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FXED ROUTE

DATE: 1-16-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

- TP 2
- TP 4
- TP 8
- TP 9
- TP 11
- TP 12
- TP 13
- TP 14

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm 2-72dBm 3-82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/ On OTHER:

TEMPERATURE: 28[°]-26[°] PRECIPITATION: Light Blowing Snow ROAD CONDITIONS: 1 INCH SLUSH

TEST TAPE NO(S). 36-1 and 36-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 27

TEST DIRECTOR George W. Shure

ODOMETER DISTANCE ~~1177~~ TSC MONITOR 170

5th Wheel Distance ~~1177~~ 12mi 5100

TEST DATA LOG

START 1715
END 1830

TEST RUN NO. 37

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE

DATE: 1-16-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

Door Closed AT

TP 2	1. Entered CP30 after TP 7 in addition to its normal location.
TP 3	Entered EE30 after CP31
TP 8	
TP 9 *	2. * AT TP 9. Vehicle Failed to stop after Door was open. Closed Door and entered TP 9 while moving
TP 10	
TP 12	
TP 13	

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dB 2-72dB 3-82dB

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL: 81R FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE: 26° F PRECIPITATION: None ROAD CONDITIONS: 1/2-1 inch of slush

TEST TAPE NO(S). 37-1 and 37-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 1 hour 15 min

TEST DIRECTOR George Shunk

Elapsed Odometer Distance 17mi 260

TSC MONITOR B. W. Khan

Elapsed 5th Wheel Distance

TEST DATA LOG START 2040
END 2150

TEST RUN NO. 38 SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE DATE: 1-16-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:
Door closed AT 1-Entered CPTI accidentally
TP3 ~ 2 blocks early. Used EE 71.
TP4 Entered CPTI correctly.
TP8
TP9
TP10
TP11
TP13

EQUIPMENT UTILIZED/TEST CONDITION: VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm 2-72dBm 3-82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 15° F PRECIPITATION: NONE ROAD CONDITIONS: 1 INCH SLUSH

TEST TAPE NO(S). 38-1 and 38-2 FILE NO. _____

SAMPLE RATE: 0.5 TEST DIRECTOR George W. Linn

RUN TIME: 1H-10MIN TSC MONITOR Bernard W. Klein
ODOMETER DISTANCE 13 mi 250'
5th wheel distance 12 mi 5000'

TEST DATA LOG

START 1015
END 1145

TEST RUN NO. 39

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE DATE: 1-17-77

BRIEF NARRATIVE DESCRIPTION OF TEST

ROUTE IDENTIFICATION:

EVENT MARKER NUMBER:

DOOR CLOSED AT

- TP 2
- TP 3
- TP 4
- TP 5
- TP 6
- TP 8
- TP 11
- TP 13

1. Overnight temperature (signpost) went 0°F with wind chill factor -42°F.
2. Entered CP#27 at 20th St. in error (should have been past sign to 19th). Entered EE27 and then entered CP#27 at correct location.
4. Received overlays from 13,16 and 15,16 at 7th and Market as off-route declaration. 13,16 at 7th and Kensington. 15,16 at 7th and Filbert.
5. Entered CP 58 ≈ 50 feet late

EQUIPMENT UTILIZED/TEST CONDITION:

VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm 2-72dBm 3-82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER:

TEMPERATURE 0 PRECIPITATION: NONE ROAD CONDITIONS: ICE and slush

TEST TAPE NO(S). 39-1 and 39-2 FILE NO.

SAMPLE RATE: 0.5

RUN TIME: 1HR - 30MIN TEST DIRECTOR Georg W. Evans

DISTANCE: Odometer 12mi 220 TSC MONITOR Samuel A. Kiles
5th wheel 12mi 5125

TEST DATA LOG

START 1245
END 1340

TEST RUN NO. 40

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE DATE: 1-11-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:

DOOR ~~RE~~CLOSED AT

- TP 2
- TP 3
- TP 4
- TP 5
- TP 10
- TP 11
- TP 12

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm 2-72dBm 3-82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 8°F PRECIPITATION: none ROAD CONDITIONS: dry and slick

TEST TAPE NO(S). 40-1 and 40-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 1 hour 25 min. TEST DIRECTOR: George W. Hunter

Cleared Distance 13mi 230' TSC MONITOR: Brenda A. Khan
5m 12mi 5190

TEST DATA LOG

START 1535
END 1715

TEST RUN NO. 41

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE DATE: 1-17-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:

Door Closed at

- TP 1
- TP 2
- TP 3
- TP 10
- TP 12
- TP 13
- TP 14

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm2 -72dBm3 -82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off On OTHER: _____

TEMPERATURE: 12° F PRECIPITATION: None ROAD CONDITIONS: Wet/icy

TEST TAPE NO(S): 41-1 and 41-2 FILE NO. _____

SAMPLE RATE: 0.5

RUN TIME: 1 HR - 40 MIN. TEST DIRECTOR George W. Gower

Odometer distance 13 mi 130' TSC MONITOR Brnd W. A. Klien

5th wheel distance _____

TEST DATA LOG

START 1855
END 2010

TEST RUN NO. 42

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE DATE: 1-17-77

BRIEF NARRATIVE DESCRIPTION OF TEST _____

ROUTE IDENTIFICATION: _____

EVENT MARKER NUMBER:

closed Door AT

- TP 3
- TP 4
- TP 9
- TP 10
- TP 11
- TP 12
- TP 13

1. Entered CP40 at 12th in error.
Entered EE40. Entered
CP40 correctly at 13th.

2. Hit TP 15 1 block early. Entered
EE15 and then TDIS at correct
location.

EQUIPMENT UTILIZED/TEST CONDITION: _____ VEHICLE UNIT NO.: 1

VEHICLE UNIT THRESHOLD LEVELS: 1-55dBm 2-72dBm 3 -82dBm

ODOMETER CAL: 979 FPP 2 5TH WHEEL CAL 872 FPP 2

R1 DROPOUT SWITCH: Off/On OTHER: _____

TEMPERATURE: 12° F PRECIPITATION: None ROAD CONDITIONS: wet/icy today

TEST TAPE NO(S). 42-1 and 42-2 FILE NO. _____

SAMPLE RATE: 0.5 TEST DIRECTOR George W. Turner

RUN TIME: 1 HR 15 MIN TSC MONITOR Bart A. Thom

ELAPSED DISTANCE
0 Demeter on 13mi 200
5th wheel

TEST DATA LOG

START 2030

END 2140

TEST RUN NO. 43

SHEET NO. 1 OF 1

TYPE OF TEST: HI³ FIXED ROUTE

DATE: 1-17-77

EVENT MARKER NUMBER (cont'd):

FP	
Door Closed AT	odometer Cal <u>979</u> FIP <u>3</u>
TP 4	5th wheel Cal <u>872</u> FIP <u>3</u>
TP 6	L1 = -55 dBm
TP 8	L2 = -72 dBm
TP 10	L3 = -82 dBm
TP 11	Vehicle UNIT #1
TP 14	R1 Propanol Switch <u>ON</u>
	Temperature: <u>12°F</u>
	Road Conditions: <u>Dry -70- icy</u>
	Precipitation: <u>NONE</u>
	Sample Rate: <u>0.5 sec.</u>
	TEST TAPES: <u>43-1 and 43-2</u>
	Elapsed odometer: <u>13mi 150 feet</u>
	Elapsed 5th wheel:
	RUN TIME: <u>1 hour 10 min</u>
	FILE NO.

REMARKS:

RAN OUT OF THE 'NORMAL' DATA SLOTS

Test Director George W. Burns
 TSC monitor Barnd W. Klein

4.1.2 Fixed Route Test Data

This subsection contains a complete listing of the data recorded during Fixed Route Run 27 . As in the case of random route data , only records which contain signpost code changes and event markers are listed. The first page of data recorded during Runs 11-18 , 20-32 , and 34-43 are also included. Runs 19 and 33 were identified as bad tapes at the time of the tests. Runs 41-43 were run to replace these Runs plus Run 32 , during which a magnet was lost from the fifth wheel.

.L FRUMP.LDA

.ST 14156

George W. Hoover
1-14-77
B. Wom
1/19/77

RUN 011 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 13 HOUR 13 MIN 10

FIFTH WHEEL FEET/PULSE			0002	ODDOMETER	FEET/PULSE	0002	
	000	00	00	R1 D	0 00000	F 00001	T 00 00
	000	00	00	R1	0 00000	F 00001	T 00 01
TA	001	00	00	R1	0 00012	F 00014	T 00 16
TA	002	00	00	R1	0 00081	F 00082	T 00 28
	000	17	13	R1	0 00128	F 00128	T 00 35
CP	001	17	13	R1 D	0 00140	F 00140	T 00 36
	000	17	13	R1	0 00144	F 00144	T 00 37
TD	001	17	13	R1	0 00229	F 00229	T 00 55-
	000	17	13	R1 D	0 00260	F 00260	T 00 58
	000	17	13	R1	0 00266	F 00266	T 00 58
	000	17	13	R1 D	0 00300	F 00300	T 01 01
	000	17	13	R1	0 00305	F 00305	T 01 02
	000	17	13	R1 D	0 00321	F 00321	T 01 03
	000	17	13	R1	0 00326	F 00326	T 01 04
TA	003	17	13	R1	0 00476	F 00476	T 01 56
CP	002	17	13	R1	0 00763	F 00764	T 02 44
CP	003	17	13	R1	0 01146	F 01145	T 03 23
	000	14	06	R1	0 01758	F 01757	T 04 12
	000	14	06	R1 D	0 01769	F 01767	T 04 13
CP	004	14	06	R1	0 01773	F 01772	T 04 13
	000	14	06	R1 D	0 01898	F 01896	T 04 32
	000	14	06	R1	0 01901	F 01899	T 04 33
TD	002	14	06	R1	0 01904	F 01902	T 04 33-
	000	14	06	R1 D	0 01913	F 01912	T 04 35
TA	004	14	06	R1	0 01915	F 01915	T 04 36
	000	14	06	R1 D	0 01937	F 01937	T 04 39
	000	14	06	R1	0 01941	F 01941	T 04 40
	000	14	06	R1 D	0 01960	F 01961	T 04 42
	000	14	06	R1	0 01966	F 01966	T 04 42
CP	005	14	06	R1	0 02167	F 02167	T 05 43
CP	006	14	06	R1	0 02391	F 02393	T 06 32
CP	007	14	06	R1	0 02603	F 02604	T 08 13
CP	008	14	06	R1	0 02887	F 02887	T 08 41
	000	14	08	R3 W	0 03369	F 03369	T 09 54
CP	009	14	08	R3 W	0 03542	F 03542	T 10 12
CP	010	14	08	R3 W	0 03880	F 03880	T 10 40
CP	011	14	08	R3 W	0 00005	F 04100	T 12 34
	000	15	13	R1	0 00285	F 04380	T 13 55
	000	15	13	R1 D	0 00310	F 04405	T 13 57
	000	15	13	R1	0 00315	F 04410	T 13 58
	000	15	13	R1 D	0 00340	F 04435	T 14 00
	000	15	13	R1	0 00345	F 04440	T 14 01
DD	003	15	13	R1	0 00391	F 04486	T 14 15
DC	003	15	13	R1	0 00391	F 04486	T 14 40
TD	003	15	13	R1	0 00421	F 04516	T 14 45
	000	15	13	R1 D	0 00442	F 04537	T 14 47
	000	15	13	R1	0 00448	F 04543	T 14 48
	000	15	13	R1 D	0 00496	F 04591	T 14 51
	000	15	13	R1	0 00503	F 04598	T 14 52

.L FRUMP.LDA

.ST 14156

Joseph Young
1-14-77
B. Klein
4/14

RUN 012 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 13 HOUR.15 MIN 00

FIFTH WHEEL FEET/PULSE		0002	ODOMETER	FEET/PULSE	0002
TA 001	00 00	R1	0 00009	F 00010	T 00 29
TA 002	00 00	R1	0 00079	F 00080	T 00 40
000	17 13	R1	0 00112	F 00112	T 00 45
000	17 13	R1 D	0 00121	F 00121	T 00 46
000	17 13	R1	0 00126	F 00126	T 00 46
CP 001	17 13	R1 D	0 00136	F 00136	T 00 47
000	17 13	R1	0 00141	F 00141	T 00 48
TD 001	17 13	R1	0 00225	F 00225	T 00 56
000	17 13	R1 D	0 00262	F 00262	T 01 00
000	17 13	R1	0 00267	F 00267	T 01 00
000	17 13	R1 D	0 00273	F 00272	T 01 01
000	17 13	R1	0 00279	F 00278	T 01 01
000	17 13	R1 D	0 00320	F 00320	T 01 05
000	17 13	R1	0 00326	F 00326	T 01 05
TA 003	17 13	R1	0 00469	F 00471	T 01 51
CP 002	17 13	R1	0 00759	F 00763	T 02 33
CP 003	17 13	R1	0 01129	F 01135	T 03 22
000	14 06	R1	0 01743	F 01751	T 04 57
000	14 06	R1 D	0 01756	F 01764	T 04 58
CP 004	14 06	R1	0 01762	F 01770	T 04 58
TD 002	14 06	R1	0 01888	F 01897	T 05 30
TA 004	14 06	R1 D	0 01901	F 01911	T 05 33
000	14 06	R1	0 01903	F 01914	T 05 33
000	14 06	R1 D	0 01946	F 01958	T 05 39
000	14 06	R1	0 01952	F 01963	T 05 40
CP 005	14 06	R1	0 02149	F 02162	T 06 37
CP 006	14 06	R1	0 02378	F 02390	T 07 03
CP 007	14 06	R1	0 02589	F 02603	T 07 57
CP 008	14 06	R1	0 02867	F 02880	T 08 33
000	14 06	R2 E	0 03356	F 03370	T 09 53
CP 009	14 06	R2 E	0 03522	F 03538	T 10 08
CP 010	14 06	R2 E	0 03863	F 03881	T 11 11
CP 011	14 06	R2 E	0 04077	F 04095	T 11 34
000	15 13	R1	0 00265	F 04379	T 12 06
000	15 13	R1 D	0 00291	F 04405	T 12 26
000	15 13	R1	0 00292	F 04407	T 12 27
DO 003	15 13	R1	0 00370	F 04485	T 12 44
DC 003	15 13	R1	0 00370	F 04485	T 13 22
TD 003	15 13	R1	0 00390	F 04505	T 13 26
000	15 13	R1 D	0 00424	F 04538	T 13 29
000	15 13	R1	0 00430	F 04545	T 13 30
000	15 13	R1 D	0 00479	F 04594	T 13 33
000	15 13	R1	0 00487	F 04602	T 13 34
CP 012	15 13	R1	0 00796	F 04912	T 14 35
TA 005	15 13	R1	0 00867	F 04982	T 15 31
CP 013	15 13	R1	0 01086	F 05201	T 16 54
CP 014	15 13	R1	0 01309	F 05425	T 17 24
CP 015	15 13	R1	0 01532	F 05649	T 17 41

.L FRUMP.LDA

.ST 14156

George Williams
1-4-77
B. Klein
1/19/77

RUN 013 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 13 HOUR 16 MIN 50

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
TA 001	00	00	R1	0 00107	F 00108	T 00 43
TA 002	00	00	R1	0 00176	F 00178	T 00 52
000	17	13	R1	0 00212	F 00212	T 00 57
000	17	13	R1 D	0 00215	F 00215	T 00 58
000	17	13	R1	0 00219	F 00219	T 00 58
000	17	13	R1 D	0 00226	F 00226	T 00 59
000	17	13	R1	0 00230	F 00230	T 01 00
000	17	13	R1 D	0 00241	F 00241	T 01 01
CP 001	17	13	R1	0 00245	F 00245	T 01 02
TD 001	17	13	R1	0 00321	F 00322	T 01 29
000	17	13	R1 D	0 00362	F 00363	T 01 33
000	17	13	R1	0 00368	F 00369	T 01 34
000	17	13	R1 D	0 00401	F 00402	T 01 36
000	17	13	R1	0 00408	F 00409	T 01 37
000	17	13	R1 D	0 00421	F 00422	T 01 38
000	17	13	R1	0 00429	F 00429	T 01 38
TA 003	17	13	R1	0 00573	F 00575	T 01 51
CP 002	17	13	R1	0 00863	F 00866	T 02 21
CP 003	17	13	R1	0 01234	F 01238	T 03 55
000	14	06	R1	0 01832	F 01836	T 05 44
000	14	06	R1 D	0 01857	F 01861	T 05 47
CP 004	14	06	R1	0 01862	F 01865	T 05 47
DD 002	14	06	R1	0 01987	F 01991	T 06 01
000	14	06	R1 D	0 01987	F 01991	T 06 08
DC 002	14	06	R1	0 01987	F 01991	T 06 08
TD 002	14	06	R1	0 01992	F 01996	T 06 10
000	14	06	R1 D	0 02006	F 02011	T 06 13
TA 004	14	06	R1	0 02008	F 02014	T 06 14
000	14	06	R1 D	0 02029	F 02035	T 06 17
000	14	06	R1	0 02033	F 02039	T 06 17
000	14	06	R1 D	0 02052	F 02058	T 06 19
000	14	06	R1	0 02057	F 02063	T 06 20
CP 005	14	06	R1	0 02260	F 02266	T 06 36
CP 006	14	06	R1	0 02485	F 02492	T 07 02
CP 007	14	06	R1	0 02693	F 02699	T 07 48
CP 008	14	06	R1	0 02974	F 02981	T 08 13
CP 009	14	06	R1	0 03630	F 03638	T 11 43
CP 010	14	06	R1	0 03973	F 03981	T 12 15
CP 011	14	06	R1	0 00093	F 04196	T 13 29
000	15	13	R1	0 00370	F 04473	T 14 01
TD 003	15	13	R1	0 00504	F 04608	T 14 30
000	15	13	R1 D	0 00517	F 04620	T 14 31
000	15	13	R1	0 00523	F 04626	T 14 32
000	15	13	R1 D	0 00535	F 04639	T 14 33
000	15	13	R1	0 00542	F 04645	T 14 33
000	15	13	R1 D	0 00590	F 04693	T 14 37
000	15	13	R1	0 00596	F 04700	T 14 37
CP 012	15	13	R1	0 00902	F 05006	T 15 18

	FIFTH WHEEL	FEET/PULSE	0002	DIOMETER	FEET/PULSE	0002
	000	00	00	R1 D	0 00000	F 00000 T 00 00
	000	00	00	R1	0 00000	F 00000 T 00 01
TA	001	00	00	R1	0 00008	F 00009 T 00 20
TA	002	00	00	R1	0 00084	F 00084 T 00 31
	000	17	13	R1	0 00104	F 00102 T 00 34
	000	17	13	R1 D	0 00119	F 00117 T 00 36
	000	17	13	R1	0 00123	F 00121 T 00 37
	000	17	13	R1 D	0 00132	F 00130 T 00 38
	000	17	13	R1	0 00135	F 00132 T 00 39
CP	001	17	13	R1	0 00140	F 00139 T 00 40
TD	001	17	13	R1	0 00227	F 00225 T 01 05
	000	17	13	R1 D	0 00259	F 00257 T 01 08
	000	17	13	R1	0 00264	F 00262 T 01 09
	000	17	13	R1 D	0 00279	F 00277 T 01 10
	000	17	13	R1	0 00284	F 00282 T 01 11
	000	17	13	R1 D	0 00301	F 00299 T 01 12
	000	17	13	R1	0 00306	F 00304 T 01 13
	000	17	13	R1 D	0 00325	F 00323 T 01 14
	000	17	13	R1	0 00331	F 00329 T 01 15
TA	003	17	13	R1	0 00475	F 00474 T 01 57
CP	002	17	13	R1	0 00768	F 00767 T 02 46
CP	003	17	13	R1	0 01144	F 01141 T 03 25
	000	14	06	R1	0 01746	F 01742 T 05 06
CP	004	14	06	R1 D	0 01773	F 01769 T 05 08
	000	14	06	R1	0 01779	F 01775 T 05 08
DO	002	14	06	R1	0 01867	F 01863 T 05 25
DC	002	14	06	R1	0 01867	F 01863 T 05 29
TD	002	14	06	R1	0 01901	F 01897 T 05 36
TA	004	14	06	R1 D	0 01915	F 01912 T 05 38
	000	14	06	R1	0 01918	F 01915 T 05 39
	000	14	06	R1 D	0 01937	F 01935 T 05 42
	000	14	06	R1	0 01940	F 01938 T 05 42
CP	005	14	06	R1	0 02168	F 02165 T 06 00
CP	006	14	06	R1	0 02396	F 02392 T 06 18
CP	007	14	06	R1	0 02607	F 02603 T 07 06
CP	008	14	06	R1	0 02881	F 02876 T 07 30
	000	14	08	R2 W	0 03374	F 03369 T 08 58
CP	009	14	08	R2 W	0 03546	F 03540 T 09 11
CP	010	14	08	R2 W	0 03895	F 03890 T 09 37
CP	011	14	08	R2 W	0 00012	F 04104 T 09 52
	000	15	13	R1	0 00292	F 04383 T 10 17
DO	003	15	13	R1	0 00396	F 04487 T 10 30
DC	003	15	13	R1	0 00396	F 04487 T 10 39
TD	003	15	13	R1	0 00417	F 04508 T 10 43
	000	15	13	R1 D	0 00494	F 04586 T 10 48
	000	15	13	R1	0 00502	F 04594 T 10 49
CP	012	15	13	R1	0 00826	F 04918 T 11 17
TA	005	15	13	R1	0 00892	F 04983 T 11 24
CP	013	15	13	R1	0 01113	F 05203 T 11 42
CP	014	15	13	R1	0 01339	F 05428 T 12 09
CP	015	15	13	R1	0 01563	F 05653 T 12 26
CP	016	15	13	R1	0 01787	F 05877 T 12 43
TA	006	15	13	R1	0 01952	F 06041 T 12 58
CP	017	15	13	R1	0 02455	F 06543 T 13 32
CP	018	15	13	R1	0 02513	F 06602 T 13 44

*George W
1-14-77
B. Khr
11*

.L FRUMP.LDA

.ST 14156

George W. Jr.
1-14-77
B. Klein
1/14/77

RUN 015 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 13 HOUR 22 MIN 00

	FIFTH	WHEEL	FEET/PULSE	0002	ODD	METER	FEET/PULSE	0002
	000	00	00	R1 D	0	00002	F 00002	T 00 00
	000	00	00	R1	0	00002	F 00002	T 00 01
TA	001	00	00	R1	0	00013	F 00014	T 00 09
TA	002	00	00	R1	0	00079	F 00079	T 00 18
	000	17	13	R1	0	00115	F 00114	T 00 22
	000	17	13	R1 D	0	00137	F 00136	T 00 24
CP	001	17	13	R1	0	00143	F 00143	T 00 25
TD	001	17	13	R1	0	00225	F 00224	T 00 31
	000	17	13	R1 D	0	00265	F 00264	T 00 34
	000	17	13	R1	0	00272	F 00271	T 00 34
	000	17	13	R1 D	0	00315	F 00314	T 00 37
	000	17	13	R1	0	00322	F 00322	T 00 38
TA	003	17	13	R1	0	00474	F 00475	T 01 23
CP	002	17	13	R1	0	00764	F 00766	T 02 12
CP	003	17	13	R1	0	01142	F 01143	T 02 51
	000	14	06	R1	0	01739	F 01742	T 03 36
CP	004	14	06	R1 D	0	01769	F 01771	T 03 38
	000	14	06	R1	0	01776	F 01778	T 03 39
DO	002	14	06	R1	0	01871	F 01874	T 03 50
DC	002	14	06	R1	0	01874	F 01876	T 03 52
TD	002	14	06	R1	0	01897	F 01900	T 03 56
TA	004	14	06	R1 D	0	01910	F 01914	T 03 59
	000	14	06	R1	0	01913	F 01917	T 03 59
	000	14	06	R1 D	0	01927	F 01932	T 04 02
	000	14	06	R1	0	01931	F 01936	T 04 02
	000	14	06	R1 D	0	01957	F 01961	T 04 05
	000	14	06	R1	0	01962	F 01967	T 04 06
CP	005	14	06	R1	0	02163	F 02168	T 04 21
CP	006	14	06	R1	0	02397	F 02403	T 04 41
CP	007	14	06	R1	0	02596	F 02602	T 05 29
CP	008	14	06	R1	0	02882	F 02888	T 05 54
	000	14	08	R2 W	0	03360	F 03368	T 07 12
CP	009	14	08	R2 W	0	03538	F 03546	T 07 25
CP	010	14	08	R2 W	0	03876	F 03884	T 07 52
CP	011	14	08	R2 W	0	04095	F 04104	T 08 07
	000	15	13	R1	0	00282	F 04388	T 08 54
TD	003	15	13	R1	0	00406	F 04512	T 09 04
	000	15	13	R1 D	0	00436	F 04542	T 09 07
	000	15	13	R1	0	00442	F 04548	T 09 07
	000	15	13	R1 D	0	00483	F 04589	T 09 10
	000	15	13	R1	0	00491	F 04597	T 09 11
CP	012	15	13	R1	0	00810	F 04917	T 09 38
TA	005	15	13	R1	0	00682	F 04988	T 09 47
CP	013	15	13	R1	0	01098	F 05204	T 11 06
CP	014	15	13	R1	0	01321	F 05426	T 11 37
CP	015	15	13	R1	0	01545	F 05652	T 11 56
CP	016	15	13	R1	0	01767	F 05875	T 12 11
TA	006	15	13	R1	0	01935	F 06042	T 12 25
CP	017	15	13	R1	0	02435	F 06543	T 12 58
CP	018	15	13	R1	0	02492	F 06600	T 13 11

.L FRUMP.

.ST 14156

RUN 016 .SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 13 HOUR 23 MIN 2

	FIFTH WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002
TA 001	00	00	R1	0 00010	F 00011	T 00 11
TA 002	00	00	R1	0 00079	F 00080	T 00 20
000	17	13	R1	0 00117	F 00116	T 00 24
000	17	13	R1 D	0 00138	F 00136	T 00 26
CP 001	17	13	R1	0 00143	F 00141	T 00 27
OD 001	17	13	R1	0 00189	F 00188	T 00 35
DC 001	17	13	R1	0 00189	F 00188	T 00 40
TD 001	17	13	R1	0 00223	F 00222	T 00 46
000	17	13	R1 D	0 00273	F 00271	T 00 50
000	17	13	R1	0 00279	F 00278	T 00 51
000	17	13	R1 D	0 00306	F 00305	T 00 53
000	17	13	R1	0 00313	F 00311	T 00 53
000	17	13	R1 D	0 00327	F 00325	T 00 54
000	17	13	R1	0 00333	F 00332	T 00 55
TA 003	17	13	R1	0 00477	F 00477	T 01 07
CP 002	17	13	R1	0 00764	F 00765	T 01 34
CP 003	17	13	R1	0 01138	F 01138	T 02 08
000	14	06	R1	0 01753	F 01753	T 02 59
000	14	06	R1 D	0 01760	F 01760	T 03 00
CP 004	14	06	R1	0 01766	F 01766	T 03 00
TD 002	14	06	R1	0 01897	F 01897	T 03 14
TA 004	14	06	R1	0 01909	F 01910	T 03 17
000	14	06	R1 D	0 01912	F 01913	T 03 17
000	14	06	R1	0 01914	F 01915	T 03 18
CP 005	14	06	R1	0 02165	F 02166	T 03 38
CP 006	14	06	R1	0 02391	F 02393	T 03 59
CP 007	14	06	R1	0 02602	F 02604	T 04 56
CP 008	14	06	R1	0 02882	F 02884	T 05 20
000	14	08	R3 W	0 03361	F 03363	T 06 33
CP 009	14	08	R3 W	0 03539	F 03541	T 06 48
CP 010	14	08	R3 W	0 03889	F 03892	T 07 14
CP 011	14	08	R3 W	0 00002	F 04101	T 07 28
000	15	13	R1	0 00290	F 04389	T 07 53
DO 003	15	13	R1	0 00376	F 04475	T 08 03
DC 003	15	13	R1	0 00376	F 04475	T 08 11
TD 003	15	13	R1	0 00409	F 04509	T 08 16
000	15	13	R1 D	0 00429	F 04529	T 08 17
000	15	13	R1	0 00436	F 04535	T 08 18
000	15	13	R1 D	0 00443	F 04543	T 08 18
000	15	13	R1	0 00450	F 04550	T 08 19
000	15	13	R1 D	0 00496	F 04596	T 08 22
000	15	13	R1	0 00504	F 04604	T 08 22
CP 012	15	13	R1	0 00818	F 04918	T 08 49
TA 005	15	13	R1	0 00889	F 04988	T 09 00
CP 013	15	13	R1	0 01106	F 05203	T 09 26
CP 014	15	13	R1	0 01329	F 05428	T 09 52
CP 015	15	13	R1	0 01567	F 05666	T 10 11
CP 016	15	13	R1	0 01775	F 05874	T 10 25
TA 006	15	13	R1	0 01943	F 06042	T 10 38
CP 017	15	13	R1	0 02445	F 06544	T 11 10
CP 018	15	13	R1	0 02501	F 06600	T 11 21

Handwritten:
 1-14-77
 B. Khem /

Handwritten: 2x

.L FRUMP.LDA

.ST 14156

B. Kim 1/18/77

RUN 017 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 14 HOUR 03 MIN 50

FIFTH WHEEL FEET/PULSE			0002	ODD METER	FEET/PULSE	0002
	000	00	00	R1 D	0 00001	F 00000 T 00 00
	000	00	00	R1	0 00001	F 00000 T 00 01
TA	001	00	00	R1	0 00024	F 00025 T 00 16
TA	002	00	00	R1	0 00095	F 00095 T 00 24
CP	001	00	00	R1	0 00154	F 00153 T 00 30
	000	17	13	R1	0 00166	F 00166 T 00 31
TD	001	17	13	R1	0 00236	F 00235 T 00 36
	000	17	13	R1 D	0 00278	F 00277 T 00 39
	000	17	13	R1	0 00285	F 00284 T 00 40
	000	17	13	R1 D	0 00299	F 00299 T 00 41
	000	17	13	R1	0 00307	F 00306 T 00 41
	000	17	13	R1 D	0 00314	F 00314 T 00 42
	000	17	13	R1	0 00322	F 00321 T 00 42
	000	17	13	R1 D	0 00338	F 00337 T 00 43
	000	17	13	R1	0 00346	F 00345 T 00 44
TA	003	17	13	R1	0 00491	F 00491 T 00 55
CP	002	17	13	R1	0 00776	F 00779 T 01 23
CP	003	17	13	R1	0 01153	F 01155 T 02 00
	000	14	06	R1	0 01765	F 01766 T 03 37
CP	004	14	06	R1 D	0 01779	F 01781 T 03 38
	000	14	06	R1	0 01786	F 01788 T 03 39
DQ	002	14	06	R1	0 01858	F 01860 T 03 51
DC	002	14	06	R1	0 01859	F 01861 T 03 58
	000	14	06	R1 D	0 01905	F 01907 T 04 06
TD	002	14	06	R1	0 01908	F 01911 T 04 06
TA	004	14	06	R1	0 01924	F 01928 T 04 09
	000	14	06	R1 D	0 01928	F 01932 T 04 09
	000	14	06	R1	0 01931	F 01936 T 04 10
	000	14	06	R1 D	0 01974	F 01979 T 04 14
	000	14	06	R1	0 01981	F 01986 T 04 14
CP	005	14	06	R1	0 02178	F 02183 T 04 32
CP	006	14	06	R1	0 02402	F 02407 T 04 55
CP	007	14	06	R1	0 02614	F 02620 T 05 46
	000	10	06	R3 N	0 02620	F 02625 T 05 46
CP	008	10	06	R3 N	0 02893	F 02898 T 06 14
CP	009	10	06	R3 N	0 03547	F 03553 T 07 40
CP	010	10	06	R3 N	0 03889	F 03896 T 08 03
CP	011	10	06	R3 N	0 00009	F 04111 T 08 39
	000	15	13	R1	0 00298	F 04400 T 09 11
	000	15	13	R1 D	0 00317	F 04419 T 09 13
	000	15	13	R1	0 00321	F 04423 T 09 14
DQ	003	15	13	R1	0 00356	F 04458 T 09 22
DC	003	15	13	R1	0 00371	F 04475 T 10 56
TD	003	15	13	R1 D	0 00424	F 04528 T 11 03
	000	15	13	R1	0 00430	F 04533 T 11 04
	000	15	13	R1 D	0 00452	F 04555 T 11 06
	000	15	13	R1	0 00457	F 04561 T 11 06
	000	15	13	R1 D	0 00503	F 04607 T 11 11
	000	15	13	R1	0 00508	F 04612 T 11 11
CP	012	15	13	R1	0 00823	F 04927 T 11 44

J.L. FRUMP, LDA

.BT 14155

B. Khim / 18

RUN 018 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 14 HOUR 10 MIN 20

	FIFTH WHEEL	FEET/PULSE	0002		ODOMETER	FEET/PULSE	0002
TA 001	00	00	R1	0	00009	F 00009	T 00 17
TA 002	00	00	R1	0	00031	F 00032	T 00 30
000	17	13	R1	0	00134	F 00133	T 00 37
000	17	13	R1 D	0	00145	F 00144	T 00 38
CP 001	17	13	R1	0	00151	F 00150	T 00 38
TD 001	17	13	R1	0	00225	F 00225	T 00 47
000	17	13	R1 D	0	00231	F 00230	T 00 50
000	17	13	R1	0	00237	F 00236	T 00 51
000	17	13	R1 D	0	00314	F 00314	T 00 55
000	17	13	R1	0	00317	F 00317	T 00 56
000	17	13	R1 D	0	00325	F 00324	T 00 57
000	17	13	R1	0	00327	F 00327	T 00 58
TA 003	17	13	R1	0	00473	F 00479	T 01 44
CP 002	17	13	R1	0	00732	F 00736	T 02 41
CP 003	17	13	R1	0	01142	F 01145	T 03 17
000	14	05	R1	0	01734	F 01737	T 04 53
000	14	05	R1 D	0	01745	F 01743	T 05 00
000	14	05	R1	0	01743	F 01751	T 05 00
000	14	05	R1 D	0	01752	F 01755	T 05 02
CP 004	14	05	R1	0	01755	F 01758	T 05 03
TD 002	14	05	R1	0	01897	F 01901	T 05 23
TA 004	14	05	R1	0	01907	F 01912	T 05 30
000	14	05	R1 D	0	01910	F 01915	T 05 31
000	14	05	R1	0	01913	F 01913	T 05 31
000	14	05	R1 D	0	01932	F 01933	T 05 34
000	14	05	R1	0	01937	F 01944	T 05 34
CP 005	14	05	R1	0	02153	F 02156	T 06 37
CP 006	14	05	R1	0	02333	F 02332	T 07 03
CP 007	14	05	R1	0	02595	F 02604	T 07 53
CP 008	14	05	R1	0	02373	F 02333	T 08 25
000	14	03	R3 W	0	03352	F 03374	T 10 03
CP 009	14	03	R3 W	0	03523	F 03541	T 10 50
CP 010	14	03	R3 W	0	03359	F 03334	T 12 23
CP 011	14	03	R3 W	0	04033	F 04103	T 12 40
000	15	13	R1	0	00275	F 04336	T 13 51
00 003	15	13	R1	0	00367	F 04479	T 14 05
00 004	15	13	R1	0	00367	F 04479	T 14 26
TD 003	15	13	R1	0	00392	F 04504	T 14 34
000	15	13	R1 D	0	00443	F 04530	T 14 38
000	15	13	R1	0	00455	F 04537	T 14 39
000	15	13	R1 D	0	00476	F 04533	T 14 40
000	15	13	R1	0	00433	F 04595	T 14 41
CP 012	15	13	R1	0	00305	F 04920	T 15 10
TA 005	15	13	R1	0	00370	F 04933	T 15 21
CP 013	15	13	R1	0	01090	F 05204	T 16 43
CP 014	15	13	R1	0	01314	F 05423	T 17 13
CP 015	15	13	R1	0	01537	F 05553	T 18 46
CP 016	15	13	R1	0	01755	F 05333	T 19 19
TA 006	15	13	R1	0	01923	F 03044	T 20 03

Should be 013

.L FRUMP.LDA

.ST 14156

B. Klein 4/18/81

RUN 019 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 14 HOUR 13 MIN 30

FIFTH WHEEL FEET/PULSE		0002	ODDOMETER	FEET/PULSE	0002
000	00	12	R1	0 00810	F 00240 T 00 17
000	00	14	R1	0 00840	F 00240 T 00 17
000	00	17	R1	0 00870	F 00240 T 00 17
000	00	19	R1	0 00900	F 00240 T 00 17
000	00	22	R1	0 00930	F 00240 T 00 17
000	00	24	R1	0 00960	F 00240 T 00 17
000	00	27	R1	0 00990	F 00240 T 00 17
000	00	30	R1	0 01020	F 00240 T 00 17
000	00	33	R1	0 00026	F 00240 T 00 17
000	00	36	R1	0 00056	F 00240 T 00 17
000	00	39	R1	0 00086	F 00240 T 00 17
000	00	42	R1	0 00116	F 00240 T 00 17
000	00	44	R3 S	0 00146	F 00000 T 00 17
000	00	00	R1	0 00000	F 00046 T 00 17
000	96	81	R1	0 00078	F 00752 T 00 42
000	00	84	R1	0 00566	F 00240 T 00 52
000	00	87	R1	0 00596	F 00240 T 00 52
000	00	90	R1	0 00626	F 00240 T 00 52
000	00	93	R1	0 00656	F 00240 T 00 52
000	00	96	R1	0 00686	F 00240 T 00 52
000	00	99	R1	0 00716	F 00240 T 00 52
000	00	03	R1	0 00746	F 00240 T 00 52
000	00	06	R1	0 00776	F 00240 T 00 52
000	00	10	R1	0 00806	F 00240 T 00 52
000	00	13	R1	0 00836	F 00240 T 00 52
008	00	17	R2 N	0 00866	F 00240 T 00 53
008	00	20	R2 N	0 00896	F 00240 T 00 53
008	00	24	R2 N	0 00926	F 00240 T 00 53
008	00	27	R2 N	0 00956	F 00240 T 00 53
008	01	03	R2 N	0 00986	F 00243 T 00 53
008	01	06	R2 N	0 01016	F 00240 T 00 53
008	01	09	R2 N	0 00022	F 00240 T 00 53
008	01	11	R2 N	0 00052	F 00243 T 00 53
008	01	13	R2 N	0 00082	F 00240 T 00 53
008	33	16	R2 N	0 00112	F 28656 T 00 53
008	01	18	R2 N	0 00142	F 00240 T 00 53
008	01	19	R2 N	0 00172	F 00240 T 00 53
008	01	21	R2 N	0 00202	F 00240 T 00 53
008	01	23	R2 N	0 00232	F 00240 T 00 53
008	01	25	R2 N	0 00262	F 00240 T 00 53
008	01	26	R2 N	0 00292	F 00240 T 00 53
008	01	28	R2 N	0 00322	F 00240 T 00 53
008	01	30	R2 N	0 00352	F 00240 T 00 53
008	01	31	R2 N	0 00382	F 00240 T 00 53
008	01	32	R2 N	0 00412	F 00240 T 00 53
008	01	34	R2 N	0 00442	F 00240 T 00 53
008	01	35	R2 N	0 00502	F 00240 T 01 10
000	20	01	R1	0 00000	F 00162 T 01 59
000	17	13	R1	0 00163	F 00162 T 02 10
008	01	35	R2 N	0 00018	F 00240 T 02 19

.L FRUMP.LDA

.ST 14156

B. Klemm

1/18/77

RUN 020 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 14 HOUR 16 MIN 00

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
TA 001	00	00	R1	0 00008	F 00010	T 00 10
TA 002	00	00	R1	0 00079	F 00079	T 00 22
000	17	13	R1	0 00099	F 00098	T 00 25
000	17	13	R1 D	0 00103	F 00102	T 00 26
000	17	13	R1	0 00107	F 00106	T 00 26
000	17	13	R1 D	0 00115	F 00113	T 00 27
000	17	13	R1	0 00119	F 00117	T 00 28
000	17	13	R1 D	0 00126	F 00124	T 00 29
000	17	13	R1	0 00129	F 00127	T 00 29
CP 001	17	13	R1	0 00139	F 00137	T 00 32
TD 001	17	13	R1	0 00224	F 00222	T 00 59
000	17	13	R1 D	0 00261	F 00259	T 01 03
000	17	13	R1	0 00267	F 00264	T 01 03
000	17	13	R1 D	0 00284	F 00282	T 01 05
000	17	13	R1	0 00290	F 00287	T 01 05
000	17	13	R1 D	0 00314	F 00311	T 01 07
000	17	13	R1	0 00320	F 00317	T 01 08
TA 003	17	13	R1	0 00473	F 00471	T 01 55
000	17	12	R3 E	0 00476	F 00473	T 01 56
CP 002	17	12	R3 E	0 00767	F 00764	T 02 41
CP 003	17	12	R3 E	0 01143	F 01139	T 04 08
000	14	06	R1	0 01758	F 01751	T 05 55
000	14	06	R1 D	0 01770	F 01763	T 05 56
CP 004	14	06	R1	0 01775	F 01769	T 05 57
TD 002	14	06	R1	0 01905	F 01898	T 06 16
TA 004	14	06	R1	0 01916	F 01909	T 06 18
000	14	06	R1 D	0 01922	F 01916	T 06 19
000	14	06	R1	0 01925	F 01919	T 06 19
000	14	06	R1 D	0 01943	F 01938	T 06 22
000	14	06	R1	0 01947	F 01942	T 06 22
000	14	06	R1 D	0 01961	F 01956	T 06 24
000	14	06	R1	0 01966	F 01960	T 06 24
CP 005	14	06	R1	0 02166	F 02159	T 07 40
CP 006	14	06	R1	0 02398	F 02390	T 08 16
CP 007	14	06	R1	0 02605	F 02597	T 10 04
000	10	06	R3 N	0 02613	F 02604	T 10 05
CP 008	10	06	R3 N	0 02887	F 02878	T 12 10
CP 009	10	06	R3 N	0 03540	F 03529	T 18 01
CP 010	10	06	R3 N	0 03885	F 03871	T 19 15
CP 011	10	06	R3 N	0 00001	F 04081	T 20 05
000	15	13	R1	0 00273	F 04352	T 22 34
000	15	13	R1 D	0 00276	F 04355	T 22 37
000	15	13	R1	0 00277	F 04355	T 22 37
000	15	13	R1 D	0 00282	F 04360	T 23 01
000	15	13	R1	0 00282	F 04360	T 23 01
000	15	13	R1 D	0 00282	F 04360	T 23 04
000	15	13	R1	0 00282	F 04360	T 23 05
DD 003	15	13	R1	0 00394	F 04475	T 24 54
DC 003	15	13	R1	0 00394	F 04475	T 25 14
TD 003	15	13	R1	0 00414	F 04495	T 25 20
000	15	13	R1 D	0 00447	F 04526	T 25 25
000	15	13	R1	0 00450	F 04530	T 25 25

L FRUMP.LDA

ST 14155

1/18/77

B. Kliens

RUN 021 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 14 HOUR 13 MIN 00

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
TA 001	00	00	R1	0 00002	F 00002	T 00 05
TA 002	00	00	R1	0 00079	F 00079	T 00 13
000	17	13	R1	0 00107	F 00105	T 00 22
000	17	13	R1 D	0 00111	F 00109	T 00 22
000	17	13	R1	0 00115	F 00112	T 00 23
000	17	13	R1 D	0 00123	F 00124	T 00 24
000	17	13	R1	0 00132	F 00123	T 00 25
CP 001	17	13	R1	0 00136	F 00132	T 00 25
TD 001	17	13	R1	0 00213	F 00214	T 00 33
000	17	13	R1 D	0 00262	F 00257	T 00 42
000	17	13	R1	0 00263	F 00262	T 00 43
000	17	13	R1 D	0 00273	F 00267	T 00 43
000	17	13	R1	0 00273	F 00272	T 00 44
000	17	13	R1 D	0 00305	F 00299	T 00 46
000	17	13	R1	0 00311	F 00305	T 00 47
000	17	13	R1 D	0 00323	F 00315	T 00 48
000	17	13	R1	0 00323	F 00322	T 00 48
TA 003	17	13	R1	0 00473	F 00456	T 01 19
CP 002	17	13	R1	0 00765	F 00756	T 02 14
CP 003	17	13	R1	0 01145	F 01132	T 02 59
000	14	06	R1	0 01742	F 01723	T 04 42
000	14	06	R1 D	0 01752	F 01734	T 04 43
000	14	06	R1	0 01757	F 01733	T 04 43
CP 004	14	06	R1 D	0 01775	F 01757	T 04 45
000	14	06	R1	0 01730	F 01761	T 04 46
TD 002	14	06	R1	0 01905	F 01835	T 05 00
TA 004	14	06	R1	0 01914	F 01896	T 05 02
000	14	06	R1 D	0 01920	F 01901	T 05 03
000	14	06	R1	0 01922	F 01904	T 05 03
000	14	06	R1 D	0 01937	F 01919	T 05 06
000	14	06	R1	0 01940	F 01922	T 05 06
CP 005	14	06	R1	0 02172	F 02153	T 06 17
CP 006	14	06	R1	0 02400	F 02373	T 06 46
CP 007	14	06	R1	0 02553	F 02529	T 07 04
EE 006	14	06	R1	0 02533	F 02553	T 07 11
EE 007	14	06	R1	0 02533	F 02553	T 07 22
CP 007	14	06	R1	0 02603	F 02533	T 07 37
000	10	06	R3 N	0 02614	F 02590	T 07 33
CP 008	10	06	R3 N	0 02896	F 02369	T 03 13
CP 009	10	06	R3 N	0 03554	F 03521	T 10 52
CP 010	10	06	R3 N	0 03394	F 03359	T 11 55
CP 111	10	06	R3 N	0 00019	F 04073	T 12 16
EE 111	10	06	R3 N	0 00072	F 04131	T 12 29
000	15	13	R1	0 00303	F 04359	T 13 13
DC 003	15	13	R1	0 00403	F 04465	T 13 34
DC 003	15	13	R1	0 00403	F 04465	T 14 01
TD 003	15	13	R1	0 00430	F 04436	T 14 07
000	15	13	R1 D	0 00471	F 04526	T 14 12
000	15	13	R1	0 00474	F 04529	T 14 13

.L FRUMP.LDA

.BT 14156

B. Klein 4/18/77

RUN 022 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 14 HOUR 20 MIN 40

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
TA 001	00	00	R1	0 00010	F 00010	T 00 07
TA 002	00	00	R1	0 00073	F 00072	T 00 17
000	17	13	R1	0 00119	F 00115	T 00 23
009	17	13	R1 D	0 00132	F 00123	T 00 24
CP 001	17	13	R1	0 00136	F 00131	T 00 25
DD 001	17	13	R1	0 00174	F 00169	T 00 35
DC 001	17	13	R1	0 00174	F 00169	T 00 41
TD 001	17	13	R1	0 00217	F 00211	T 00 50
000	17	13	R1 D	0 00254	F 00247	T 00 55
000	17	13	R1	0 00253	F 00251	T 00 56
000	17	13	R1 D	0 00316	F 00303	T 01 02
000	17	13	R1	0 00320	F 00312	T 01 03
TA 003	17	13	R1	0 00473	F 00465	T 01 55
CP 002	17	13	R1	0 00765	F 00749	T 02 44
CP 003	17	13	R1	0 01142	F 01113	T 03 27
000	14	06	R1	0 01744	F 01703	T 05 13
000	14	06	R1 D	0 01749	F 01703	T 05 14
000	14	06	R1	0 01754	F 01714	T 05 14
000	14	06	R1 D	0 01768	F 01727	T 05 16
CP 004	14	06	R1	0 01772	F 01731	T 05 16
TD 002	14	06	R1	0 01905	F 01863	T 05 33
TA 004	14	06	R1 D	0 01917	F 01876	T 05 36
000	14	06	R1	0 01920	F 01873	T 05 36
000	14	06	R1 D	0 01939	F 01893	T 05 40
000	14	06	R1	0 01943	F 01902	T 05 40
CP 005	14	06	R1	0 02130	F 02133	T 06 45
CP 006	14	06	R1	0 02401	F 02351	T 07 11
CP 007	10	06	R3 N	0 02612	F 02560	T 08 05
CP 008	10	06	R3 N	0 02893	F 02837	T 08 33
CP 009	10	06	R3 N	0 03556	F 03493	T 10 14
CP 010	10	06	R3 N	0 03892	F 03827	T 11 17
CP 011	10	06	R3 N	0 00015	F 04043	T 11 39
000	15	13	R1	0 00295	F 04313	T 12 52
DD 003	15	13	R1	0 00400	F 04421	T 13 05
DC 003	15	13	R1	0 00409	F 04430	T 13 30
TD 003	15	13	R1	0 00434	F 04454	T 13 36
000	15	13	R1 D	0 00514	F 04532	T 13 44
000	15	13	R1	0 00520	F 04537	T 13 44
CP 012	15	13	R1	0 00836	F 04846	T 14 15
TA 005	15	13	R1	0 00913	F 04920	T 14 26
CP 013	15	13	R1	0 01129	F 05126	T 15 49
CP 014	15	13	R1	0 01355	F 05350	T 16 19
CP 015	15	13	R1	0 01532	F 05569	T 16 39
CP 016	15	13	R1	0 01813	F 05794	T 16 53
TA 006	15	13	R1	0 01976	F 05953	T 17 14
CP 017	15	13	R1	0 02481	F 06445	T 17 54
CP 018	15	13	R1	0 02540	F 06504	T 18 04
000	12	06	R1	0 02663	F 06627	T 18 17
000	12	06	R1 D	0 02724	F 06682	T 18 22
000	12	06	R1	0 02729	F 06687	T 18 22

.L BRUND
 .L BRUMP.LDR
 .ST 14156


 1/18/77

RUN 023 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 14 HOUR 22 MIN 00

	FIFTH WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002	
TR	001	00	00	R1	D 00006	F 00006	T 00 24
TR	002	00	00	R1	D 00030	F 00077	T 00 36
	000	17	13	R1	D 00105	F 00101	T 00 40
	000	17	13	R1 D	D 00109	F 00104	T 00 41
	000	17	13	R1	D 00113	F 00103	T 00 41
	000	17	13	R1 D	D 00117	F 00112	T 00 42
	000	17	13	R1	D 00121	F 00115	T 00 42
	000	17	13	R1 D	D 00133	F 00132	T 00 44
CP	001	17	13	R1	D 00143	F 00137	T 00 45
DO	001	17	13	R1	D 00194	F 00197	T 00 53
DC	001	17	13	R1	D 00195	F 00188	T 01 03
TD	001	17	13	R1	D 00221	F 00213	T 01 09
	000	17	13	R1 D	D 00264	F 00254	T 01 13
	000	17	13	R1	D 00270	F 00250	T 01 13
	000	17	13	R1 D	D 00306	F 00295	T 01 16
	000	17	13	R1	D 00312	F 00301	T 01 17
	000	17	13	R1 D	D 00330	F 00313	T 01 18
	000	17	13	R1	D 00335	F 00324	T 01 19
TR	003	17	13	R1	D 00476	F 00464	T 02 10
CP	002	17	13	R1	D 00765	F 00747	T 03 01
CP	003	17	13	R1	D 01139	F 01103	T 03 34
	000	14	06	R1	D 01745	F 01707	T 04 27
	000	14	06	R1 D	D 01751	F 01713	T 04 27
	000	14	06	R1	D 01757	F 01719	T 04 28
CP	004	14	06	R1 D	D 01776	F 01737	T 04 29
	000	14	06	R1	D 01792	F 01743	T 04 30
TD	002	14	06	R1	D 01903	F 01857	T 04 42
TR	004	14	06	R1	D 01919	F 01881	T 04 45
	000	14	06	R1 D	D 01922	F 01883	T 04 45
	000	14	06	R1	D 01925	F 01886	T 04 46
	000	14	06	R1 D	D 01943	F 01904	T 04 49
	000	14	06	R1	D 01947	F 01907	T 04 49
CP	005	14	06	R1	D 02174	F 02131	T 05 11
CP	006	14	06	R1	D 02403	F 02359	T 05 33
CP	007	14	06	R1	D 02614	F 02567	T 05 21
	000	10	06	R3 N	D 02621	F 02574	T 05 22
CP	008	10	06	R3 N	D 02996	F 02847	T 07 43
CP	009	10	06	R3 N	D 03553	F 03499	T 09 37
CP	010	10	06	R3 N	D 03901	F 03833	T 10 41
CP	011	10	06	R3 N	D 00022	F 04053	T 11 07
	000	15	13	R1	D 00291	F 04319	T 12 04
	000	15	13	R1 D	D 00367	F 04395	T 12 12
	000	15	13	R1	D 00372	F 04399	T 12 12
DO	003	15	13	R1	D 00409	F 04436	T 12 13
DC	003	15	13	R1	D 00410	F 04437	T 12 50
TD	003	15	13	R1	D 00433	F 04459	T 12 56
	000	15	13	R1 D	D 00473	F 04503	T 13 00

JL FORM LDM

ST 14156

1/18/77

B. Klem

RUN 024 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 14 HOUR 23 MIN 30

FIFTH WHEEL FEET/PULSE		0002	ODOMETER	FEET/PULSE		0002
TA 001	00	00	R1	0 00006	F 00006	T 00 26
TA 002	00	00	R1	0 00074	F 00073	T 00 38
000	17	13	R1	0 00108	F 00104	T 00 43
000	17	13	R1 D	0 00131	F 00126	T 00 46
000	17	13	R1	0 00135	F 00130	T 00 46
CP 001	17	13	R1	0 00139	F 00134	T 00 47
000	17	13	R1 D	0 00145	F 00141	T 00 48
000	17	13	R1	0 00149	F 00144	T 00 48
TD 001	17	13	R1	0 00222	F 00215	T 01 10
000	17	13	R1 D	0 00259	F 00251	T 01 14
000	17	13	R1	0 00263	F 00256	T 01 15
TA 033	17	13	R1	0 00473	F 00463	T 02 07
EE 033	17	13	R1	0 00509	F 00501	T 02 14
TA 003	17	13	R1	0 00520	F 00511	T 02 16
CP 002	17	13	R1	0 00762	F 00749	T 03 00
CP 003	17	13	R1	0 01139	F 01115	T 04 24
000	14	06	R1	0 01758	F 01724	T 06 23
000	14	06	R1 D	0 01771	F 01736	T 06 24
CP 004	14	06	R1	0 01776	F 01741	T 06 25
DO 002	14	06	R1	0 01882	F 01846	T 06 38
DC 002	14	06	R1	0 01886	F 01850	T 06 42
TD 002	14	06	R1	0 01904	F 01868	T 06 47
TA 004	14	06	R1	0 01914	F 01879	T 06 49
000	14	06	R1 D	0 01925	F 01890	T 06 52
000	14	06	R1	0 01927	F 01892	T 06 52
CP 005	14	06	R1	0 02171	F 02135	T 08 04
CP 006	14	06	R1	0 02400	F 02362	T 08 42
CP 007	14	06	R1	0 02607	F 02567	T 09 35
000	10	06	R3 N	0 02619	F 02579	T 09 37
CP 008	10	06	R3 N	0 02895	F 02855	T 10 01
CP 009	10	06	R3 N	0 03556	F 03509	T 11 38
CP 010	10	06	R3 N	0 03896	F 03846	T 12 40
CP 011	10	06	R3 N	0 00022	F 04067	T 13 00
000	15	13	R1	0 00295	F 04338	T 13 27
DO 003	15	13	R1	0 00405	F 04447	T 13 40
DC 003	15	13	R1	0 00412	F 04454	T 13 49
TD 003	15	13	R1	0 00431	F 04473	T 13 52
000	15	13	R1 D	0 00520	F 04560	T 14 00
000	15	13	R1	0 00525	F 04566	T 14 00
CP 012	15	13	R1	0 00838	F 04875	T 14 34
TA 005	15	13	R1	0 00915	F 04950	T 14 45
CP 013	15	13	R1	0 01133	F 05165	T 16 10
CP 014	15	13	R1	0 01358	F 05388	T 16 38
CP 015	15	13	R1	0 01584	F 05609	T 16 59
CP 016	15	13	R1	0 01810	F 05832	T 17 18
TA 006	15	13	R1	0 01979	F 05995	T 17 36
CP 017	15	13	R1	0 02489	F 06491	T 18 16
CP 018	15	13	R1	0 02544	F 06545	T 18 26
000	12	06	R1	0 02677	F 06675	T 18 39
DO 004	12	06	R1	0 02799	F 06795	T 18 53
DC 004	12	06	R1	0 02800	F 06797	T 19 13
TD 004	12	06	R1	0 02811	F 06807	T 19 18
000	12	06	R1 D	0 02840	F 06836	T 19 22
000	12	06	R1	0 02846	F 06842	T 19 22

.L FRUMP.LDA

.ST 14156

B. Khiero 1/19/77

RUN 025 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 15 HOUR 00 MIN 50

	FIFTH WHEEL	FEET/PULSE	0002	ODDOMETER	FEET/PULSE	0002
TA 001	00	00	R1	0 00009	F 00009	T 00 35
TA 002	00	00	R1	0 00086	F 00083	T 00 47
000	17	13	R1	0 00114	F 00109	T 00 51
000	17	13	R1 D	0 00137	F 00131	T 00 53
CP 001	17	13	R1	0 00141	F 00135	T 00 54
DD 001	17	13	R1	0 00196	F 00190	T 01 01
DC 001	17	13	R1	0 00198	F 00191	T 01 19
TD 001	17	13	R1	0 00224	F 00217	T 01 28
000	17	13	R1 D	0 00263	F 00256	T 01 32
000	17	13	R1	0 00269	F 00261	T 01 33
000	17	13	R1 D	0 00306	F 00298	T 01 36
000	17	13	R1	0 00311	F 00303	T 01 37
000	17	13	R1 D	0 00328	F 00320	T 01 38
000	17	13	R1	0 00333	F 00325	T 01 39
TA 003	17	13	R1	0 00480	F 00470	T 01 55
CP 002	17	13	R1	0 00769	F 00756	T 02 40
CP 003	17	13	R1	0 01140	F 01124	T 03 08
000	14	06	R1	0 01751	F 01732	T 04 47
000	14	06	R1 D	0 01758	F 01739	T 04 48
000	14	06	R1	0 01764	F 01745	T 04 48
000	14	06	R1 D	0 01771	F 01752	T 04 49
CP 004	14	06	R1	0 01778	F 01758	T 04 49
TD 002	14	06	R1	0 01906	F 01887	T 05 02
TA 004	14	06	R1	0 01924	F 01905	T 05 05
000	14	06	R1 D	0 01927	F 01908	T 05 06
000	14	06	R1	0 01929	F 01911	T 05 06
CP 005	14	06	R1	0 02177	F 02155	T 05 30
CP 006	14	06	R1	0 02401	F 02377	T 05 50
000	10	06	R3 N	0 02613	F 02589	T 06 40
CP 007	10	06	R3 N	0 02615	F 02591	T 06 40
CP 008	10	06	R3 N	0 02895	F 02870	T 07 12
CP 009	10	06	R3 N	0 03556	F 03527	T 08 48
CP 010	10	06	R3 N	0 03902	F 03872	T 09 53
CP 011	10	06	R3 N	0 00020	F 04085	T 10 12
000	15	13	R1	0 00302	F 04366	T 10 35
DD 003	15	13	R1	0 00406	F 04468	T 10 46
DC 003	15	13	R1	0 00411	F 04474	T 10 58
TD 003	15	13	R1	0 00432	F 04493	T 11 04
000	15	13	R1 D	0 00474	F 04536	T 11 08
000	15	13	R1	0 00480	F 04542	T 11 09
000	15	13	R1 D	0 00525	F 04587	T 11 12
000	15	13	R1	0 00532	F 04593	T 11 13
CP 012	15	13	R1	0 00837	F 04897	T 11 40
TA 005	15	13	R1	0 00919	F 04976	T 11 54
CP 013	15	13	R1	0 01132	F 05187	T 13 21
CP 014	15	13	R1	0 01359	F 05412	T 13 52
CP 015	15	13	R1	0 01583	F 05634	T 14 11
CP 016	15	13	R1	0 01808	F 05857	T 14 28
TA 006	15	13	R1	0 01980	F 06026	T 14 44
CP 017	15	13	R1	0 02482	F 06520	T 15 21

L FRUMP, LDA

ST 14155

B. Klein 1/18/77

RUN 026 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 15 HOUR 10 MIN 35

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
TA 001	00	00	R1	0 00000	F 00000	T 00 10
TA 002	00	00	R1	0 00079	F 00079	T 00 29
000	17	13	R1	0 00097	F 00095	T 00 31
000	17	13	R1 D	0 00134	F 00131	T 00 35
CP 001	17	13	R1	0 00138	F 00136	T 00 36
TD 001	17	13	R1	0 00217	F 00214	T 00 45
000	17	13	R1 D	0 00259	F 00256	T 00 49
000	17	13	R1	0 00265	F 00262	T 00 49
000	17	13	R1 D	0 00271	F 00267	T 00 50
000	17	13	R1	0 00277	F 00273	T 00 50
000	17	13	R1 D	0 00318	F 00315	T 00 55
000	17	13	R1	0 00322	F 00319	T 00 55
TA 003	17	13	R1	0 00470	F 00469	T 01 35
CP 002	17	13	R1	0 00764	F 00763	T 02 32
CP 003	17	13	R1	0 01142	F 01139	T 03 07
000	14	06	R1	0 01739	F 01734	T 04 43
000	14	06	R1 D	0 01746	F 01741	T 04 44
000	14	06	R1	0 01752	F 01747	T 04 44
CP 004	14	06	R1 D	0 01771	F 01765	T 04 46
000	14	06	R1	0 01776	F 01771	T 04 46
DD 002	14	06	R1	0 01876	F 01871	T 04 58
DC 002	14	06	R1	0 01876	F 01871	T 05 09
TD 002	14	06	R1	0 01901	F 01899	T 05 15
TA 004	14	06	R1 D	0 01913	F 01909	T 05 17
000	14	06	R1	0 01915	F 01912	T 05 17
CP 005	14	06	R1	0 02163	F 02160	T 05 39
CP 006	14	06	R1	0 02397	F 02394	T 06 00
CP 007	14	06	R1	0 02603	F 02599	T 06 48
CP 008	14	06	R1	0 02890	F 02885	T 07 18
000	14	08	R2 W	0 03373	F 03367	T 08 35
CP 009	14	08	R2 W	0 03547	F 03539	T 08 49
CP 010	14	08	R2 W	0 03389	F 03380	T 09 20
CP 011	14	08	R2 W	0 00014	F 04101	T 09 39
000	15	13	R1	0 00294	F 04330	T 10 03
TD 003	15	13	R1	0 00421	F 04507	T 10 14
000	15	13	R1 D	0 00455	F 04540	T 10 17
000	15	13	R1	0 00460	F 04546	T 10 17
000	15	13	R1 D	0 00506	F 04591	T 10 21
000	15	13	R1	0 00513	F 04598	T 10 21
CP 012	15	13	R1	0 00828	F 04912	T 10 51
TA 005	15	13	R1	0 00905	F 04938	T 11 05
CP 013	15	13	R1	0 01124	F 05204	T 12 23
CP 014	15	13	R1	0 01353	F 05433	T 12 55
CP 015	15	13	R1	0 01577	F 05656	T 13 13
CP 016	15	13	R1	0 01805	F 05883	T 13 32
TA 006	15	13	R1	0 01969	F 06046	T 13 43
CP 017	15	13	R1	0 02472	F 06546	T 14 28
CP 018	15	13	R1	0 02539	F 06603	T 14 38

AL FRUMP.LDR

ST 14155

28

B. Khim 1/18/77

RUN 023 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 15 HOUR 13 MIN 30

	FIFTH WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002	
TA 001	00	00	R1	0 00011	F 00012	T 00 05	
TA 002	00	00	R1	0 00073	F 00073	T 00 15	
000	17	13	R1	0 00105	F 00104	T 00 19	
DP 001	17	13	R1 D	0 00140	F 00139	T 00 23	
000	17	13	R1	0 00145	F 00145	T 00 23	
DD 001	17	13	R1	0 00193	F 00197	T 00 31	←
DD 001	17	13	R1	0 00193	F 00197	T 00 40	
TD 001	17	13	R1	0 00222	F 00221	T 00 45	
000	17	13	R1 D	0 00254	F 00252	T 00 49	
000	17	13	R1	0 00271	F 00259	T 00 50	
000	17	13	R1 D	0 00273	F 00277	T 00 50	
000	17	13	R1	0 00235	F 00234	T 00 51	
000	17	13	R1 D	0 00330	F 00329	T 00 54	
000	17	13	R1	0 00337	F 00335	T 00 54	
TA 003	17	13	R1	0 00477	F 00477	T 01 07	
DP 002	17	13	R1	0 00755	F 00755	T 01 41	
DP 003	17	13	R1	0 01141	F 01142	T 02 22	
000	14	05	R1	0 01741	F 01741	T 03 35	
DP 004	14	05	R1	0 01753	F 01759	T 03 53	
TD 002	14	05	R1	0 01393	F 01399	T 04 32	
TA 004	14	05	R1 D	0 01913	F 01915	T 04 35	
000	14	05	R1	0 01915	F 01919	T 04 35	
000	14	05	R1 D	0 01930	F 01933	T 04 33	
000	14	05	R1	0 01933	F 01935	T 04 33	
DP 005	14	05	R1	0 02151	F 02154	T 05 41	
DP 006	14	05	R1	0 02333	F 02332	T 05 09	
DP 007	14	05	R1	0 02595	F 02501	T 05 53	
DP 008	14	05	R1	0 02330	F 02335	T 07 25	
000	14	03	R3 W	0 03353	F 03359	T 03 53	
DP 010	14	03	R3 W	0 03331	F 03335	T 03 35	
DP 011	14	03	R3 W	0 00001	F 04103	T 09 51	
000	15	13	R1	0 00237	F 04333	T 10 13	
000	15	13	R1 D	0 00323	F 04431	T 10 22	
000	15	13	R1	0 00332	F 04434	T 10 22	
TD 003	15	13	R1	0 00411	F 04513	T 10 37	
000	15	13	R1 D	0 00440	F 04542	T 10 40	
000	15	13	R1	0 00445	F 04543	T 10 40	
000	15	13	R1 D	0 00495	F 04593	T 10 44	
000	15	13	R1	0 00502	F 04504	T 10 45	
DP 012	15	13	R1	0 00311	F 04914	T 11 24	
TA 005	15	13	R1	0 00333	F 04930	T 12 15	
DP 013	15	13	R1	0 01103	F 05209	T 12 53	
DP 014	15	13	R1	0 01332	F 05432	T 13 20	
DP 015	15	13	R1	0 01553	F 05559	T 13 37	
DP 016	15	13	R1	0 01735	F 05335	T 13 57	
TA 006	15	13	R1	0 01945	F 05044	T 14 11	
DP 017	15	13	R1	0 02452	F 05550	T 14 45	
DP 018	15	13	R1	0 02505	F 05503	T 14 54	
000	12	05	R1	0 02535	F 05734	T 15 05	
DD 004	12	05	R1	0 02755	F 05332	T 15 20	

CT 14156

B. Klem 11/8/77

RUN 029 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 15 HOUR 15 MIN 00

	FIFTH WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002
TA 001	00	00	R1	0 00006	F 00007	T 00 09
TA 002	00	00	R1	0 00073	F 00079	T 00 17
000	17	13	R1	0 00107	F 00107	T 00 20
000	17	13	R1 D	0 00133	F 00132	T 00 23
000	17	13	R1	0 00133	F 00137	T 00 23
000	17	13	R1 D	0 00149	F 00149	T 00 24
000	17	13	R1	0 00155	F 00154	T 00 25
TD 001	17	13	R1	0 00234	F 00234	T 00 31
000	17	13	R1 D	0 00259	F 00259	T 00 33
000	17	13	R1	0 00266	F 00266	T 00 33
000	17	13	R1 D	0 00302	F 00301	T 00 36
000	17	13	R1	0 00306	F 00306	T 00 37
000	17	13	R1 D	0 00330	F 00330	T 00 39
000	17	13	R1	0 00335	F 00334	T 00 40
TA 003	17	13	R1	0 00470	F 00470	T 01 21
CP 002	17	13	R1	0 00754	F 00766	T 02 21
CP 003	17	13	R1	0 01133	F 01140	T 03 50
000	10	06	R3 N	0 01557	F 01558	T 05 21
000	14	06	R1	0 01726	F 01728	T 05 41
000	14	06	R1 D	0 01746	F 01747	T 05 42
000	14	06	R1	0 01752	F 01753	T 05 43
CP 004	14	06	R1 D	0 01764	F 01765	T 05 44
000	14	06	R1	0 01771	F 01771	T 05 44
DD 002	14	06	R1	0 01850	F 01851	T 05 54
DD 002	14	06	R1	0 01853	F 01854	T 06 04
TD 002	14	06	R1	0 01898	F 01899	T 06 11
000	14	06	R1 D	0 01907	F 01909	T 06 12
TA 004	14	06	R1	0 01910	F 01912	T 06 13
000	14	06	R1 D	0 01916	F 01919	T 06 14
000	14	06	R1	0 01919	F 01922	T 06 14
000	14	06	R1 D	0 01926	F 01929	T 06 15
000	14	06	R1	0 01930	F 01933	T 06 16
000	14	06	R1 D	0 01962	F 01966	T 06 19
000	14	06	R1	0 01969	F 01971	T 06 19
CP 005	14	06	R1	0 02157	F 02159	T 06 35
CP 006	14	06	R1	0 02385	F 02388	T 06 54
CP 007	14	06	R1	0 02597	F 02600	T 07 39
CP 008	14	06	R1	0 02873	F 02880	T 08 07
CP 009	14	06	R1	0 03529	F 03532	T 09 39
CP 010	14	06	R1	0 03874	F 03873	T 10 06
CP 011	14	06	R1	0 04039	F 04093	T 10 22
000	15	13	R1	0 00279	F 04378	T 11 25
000	15	13	R1 D	0 00304	F 04403	T 11 27
000	15	13	R1	0 00310	F 04409	T 11 28
DD 003	15	13	R1	0 00373	F 04479	T 11 41
DD 003	15	13	R1	0 00373	F 04479	T 12 01
TD 003	15	13	R1	0 00411	F 04513	T 12 09
000	15	13	R1 D	0 00441	F 04542	T 12 11
000	15	13	R1	0 00447	F 04543	T 12 12
000	15	13	R1 D	0 00497	F 04593	T 12 15
000	15	13	R1	0 00504	F 04606	T 12 16
CP 012	15	13	R1	0 00910	F 04912	T 12 43
TA 005	15	13	R1	0 00932	F 04933	T 12 53

.L FRUMP.LIA

.ST 14156

1/18/77 B. Klein

RUN 030 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 15 HOUR 17 MIN 15

FIFTH WHEEL FEET/PULSE		0002	DIDMETER FEET/PULSE		0002
TA 001	00	00	R1	0 00006	F 00007 T 00 12
TA 002	00	00	R1	0 00076	F 00077 T 00 21
000	17	13	R1	0 00102	F 00102 T 00 25
000	17	13	R1 D	0 00134	F 00132 T 00 28
CP 001	17	13	R1	0 00138	F 00137 T 00 29
DC 001	17	13	R1	0 00170	F 00170 T 00 37
DC 001	17	13	R1	0 00170	F 00170 T 00 43
TD 001	17	13	R1	0 00221	F 00221 T 00 52
000	17	13	R1 D	0 00258	F 00258 T 00 55
000	17	13	R1	0 00264	F 00263 T 00 56
000	17	13	R1 D	0 00275	F 00274 T 00 57
000	17	13	R1	0 00281	F 00280 T 00 57
000	17	13	R1 D	0 00316	F 00315 T 01 00
000	17	13	R1	0 00322	F 00321 T 01 01
TA 003	17	13	R1	0 00475	F 00475 T 01 16
CP 002	17	13	R1	0 00760	F 00760 T 01 51
CP 003	17	13	R1	0 01140	F 01139 T 02 23
000	14	06	R1	0 01748	F 01746 T 03 55
CP 004	14	06	R1	0 01767	F 01765 T 03 57
000	14	06	R1 D	0 01774	F 01772 T 03 57
000	14	06	R1	0 01780	F 01778 T 03 58
DC 002	14	06	R1	0 01866	F 01864 T 04 08
DC 002	14	06	R1	0 01869	F 01868 T 04 18
TD 002	14	06	R1	0 01899	F 01898 T 04 25
TA 004	14	06	R1	0 01913	F 01912 T 04 29
000	14	06	R1 D	0 01914	F 01914 T 04 31
000	14	06	R1	0 01915	F 01916 T 04 31
CP 005	14	06	R1	0 02163	F 02163 T 05 43
CP 006	14	06	R1	0 02393	F 02392 T 06 07
CP 007	14	06	R1	0 02604	F 02604 T 07 01
000	10	06	R3 N	0 02608	F 02607 T 07 02
CP 008	10	06	R3 N	0 02883	F 02881 T 08 22
CP 009	10	06	R3 N	0 03544	F 03539 T 10 12
CP 010	10	06	R3 N	0 03883	F 03879 T 11 20
CP 011	10	06	R3 N	0 00011	F 04101 T 11 41
000	15	13	R1	0 00293	F 04383 T 12 53
000	15	13	R1 D	0 00322	F 04412 T 12 55
000	15	13	R1	0 00328	F 04418 T 12 56
DC 003	15	13	R1	0 00399	F 04489 T 13 07
DC 003	15	13	R1	0 00399	F 04489 T 13 27
TD 003	15	13	R1	0 00417	F 04507 T 13 35
000	15	13	R1 D	0 00510	F 04600 T 13 44
000	15	13	R1	0 00517	F 04607 T 13 44
CP 012	15	13	R1	0 00827	F 04916 T 14 15
TA 005	15	13	R1	0 00901	F 04988 T 14 25
CP 013	15	13	R1	0 01113	F 05200 T 15 54
CP 014	15	13	R1	0 01342	F 05429 T 16 26

L FRUMP.LDA

.ST 14156

RUN 031 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 15 HOUR 18 MIN 45

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
TA 001	00	00	R1	0 00010	F 00010	T 00 12
TA 002	00	00	R1	0 00076	F 00077	T 00 23
000	17	13	R1	0 00122	F 00121	T 00 29
000	17	13	R1 D	0 00135	F 00134	T 00 31
000	17	13	R1	0 00139	F 00138	T 00 31
CP 001	17	13	R1	0 00143	F 00142	T 00 32
DO 001	17	13	R1	0 00181	F 00180	T 00 41
DC 001	17	13	R1	0 00187	F 00186	T 00 44
TD 001	17	13	R1	0 00223	F 00222	T 00 49
000	17	13	R1 D	0 00269	F 00269	T 00 54
000	17	13	R1	0 00275	F 00274	T 00 54
000	17	13	R1 D	0 00299	F 00298	T 00 57
000	17	13	R1	0 00303	F 00303	T 00 57
000	17	13	R1 D	0 00312	F 00312	T 00 58
000	17	13	R1	0 00317	F 00317	T 00 59
TA 003	17	13	R1	0 00470	F 00471	T 01 52
000	17	13	R1	0 00686	F 00688	T 02 37
000	17	43	R1	0 00690	F 00691	T 02 38
000	17	13	R1	0 00694	F 00695	T 02 38
000	17	13	R1	0 00699	F 00700	T 02 39
000	17	13	R1	0 00703	F 00705	T 02 39
000	17	13	R1	0 00708	F 00709	T 02 40
000	17	13	R1	0 00713	F 00715	T 02 40
000	17	13	R1	0 00718	F 00719	T 02 41
000	17	13	R1	0 00723	F 00725	T 02 41
000	17	13	R1	0 00729	F 00730	T 02 42
000	17	13	R1	0 00734	F 00736	T 02 42
000	17	13	R1	0 00740	F 00741	T 02 43
000	17	13	R1	0 00746	F 00747	T 02 43
000	17	13	R1	0 00751	F 00753	T 02 44
CP 002	17	13	R1	0 00757	F 00759	T 02 44
000	17	13	R1	0 00763	F 00765	T 02 45
000	17	13	R1	0 00769	F 00770	T 02 45
000	17	13	R1	0 00774	F 00776	T 02 46
000	17	13	R1	0 00780	F 00781	T 02 46
000	17	13	R1	0 00785	F 00787	T 02 47
000	17	13	R1	0 00790	F 00791	T 02 47
000	17	13	R1	0 00795	F 00797	T 02 48
000	17	13	R1	0 00800	F 00801	T 02 48
000	17	13	R1	0 00804	F 00806	T 02 49
000	17	13	R1	0 00809	F 00810	T 02 49
000	17	13	R1	0 00813	F 00814	T 02 50
000	17	13	R1	0 00817	F 00818	T 02 50
000	17	13	R1	0 00821	F 00823	T 02 51
000	17	13	R1	0 00825	F 00827	T 02 51
000	17	13	R1	0 00829	F 00831	T 02 52
000	17	13	R1	0 00834	F 00835	T 02 52
000	17	13	R1	0 00838	F 00839	T 02 53
000	17	13	R1	0 00842	F 00843	T 02 53
000	17	13	R1	0 00846	F 00847	T 02 54

B. Klein
1/18/77

.L FRUMP.LDA

.ST 14156

RUN 032 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 15 HOUR 20 MIN 20

	FIFTH WHEEL	FEET	PULSE	0002	ODD METER	FEET/PULSE	0002
TA 001	00	00	R1	0	00007	F 00008	T 00 11
TA 002	00	00	R1	0	00076	F 00077	T 00 26
000	17	13	R1	0	00107	F 00105	T 00 31
000	17	13	R1 D	0	00110	F 00109	T 00 31
000	17	13	R1	0	00114	F 00112	T 00 32
CP 001	17	13	R1 D	0	00137	F 00136	T 00 35
000	17	13	R1	0	00141	F 00139	T 00 35
DO 001	17	13	R1	0	00182	F 00180	T 00 42
DC 001	17	13	R1	0	00184	F 00183	T 00 59
TD 001	17	13	R1	0	00222	F 00221	T 01 07
000	17	13	R1 D	0	00256	F 00255	T 01 10
000	17	13	R1	0	00261	F 00260	T 01 11
000	17	13	R1 D	0	00306	F 00305	T 01 15
000	17	13	R1	0	00312	F 00310	T 01 15
000	17	13	R1 D	0	00329	F 00327	T 01 17
000	17	13	R1	0	00335	F 00333	T 01 17
TA 003	17	13	R1	0	00474	F 00473	T 02 03
CP 002	17	13	R1	0	00761	F 00760	T 02 56
CP 003	17	13	R1	0	01140	F 01137	T 03 33
000	14	06	R1	0	01745	F 01740	T 05 28
000	14	06	R1 D	0	01750	F 01745	T 05 28
000	14	06	R1	0	01755	F 01750	T 05 29
CP 004	14	06	R1 D	0	01771	F 01765	T 05 30
000	14	06	R1	0	01775	F 01770	T 05 31
TD 002	14	06	R1	0	01898	F 01892	T 05 45
TA 004	14	06	R1 D	0	01915	F 01910	T 05 50
000	14	06	R1	0	01917	F 01912	T 05 51
000	14	06	R1 D	0	01936	F 01932	T 05 54
000	14	06	R1	0	01939	F 01935	T 05 55
CP 005	14	06	R1	0	02166	F 02161	T 07 01
CP 006	14	06	R1	0	02397	F 02391	T 07 26
CP 007	14	06	R1	0	02605	F 02599	T 08 21
CP 008	14	06	R1	0	02892	F 02884	T 08 51
CP 009	14	06	R1	0	03548	F 03538	T 10 24
CP 010	14	06	R1	0	03888	F 03878	T 11 35
CP 011	14	06	R1	0	00013	F 04099	T 11 56
000	15	13	R1	0	00298	F 04382	T 13 11
000	15	13	R1 D	0	00324	F 04408	T 13 13
000	15	13	R1	0	00329	F 04413	T 13 14
DO 003	15	13	R1	0	00399	F 04483	T 13 23
DC 003	15	13	R1	0	00401	F 04485	T 13 41
TD 003	15	13	R1	0	00421	F 04505	T 13 50
000	15	13	R1 D	0	00516	F 04600	T 13 59
000	15	13	R1	0	00523	F 04607	T 13 59
CP 012	15	13	R1	0	00827	F 04910	T 14 32
TA 005	15	13	R1	0	00902	F 04984	T 14 42
CP 013	15	13	R1	0	01120	F 05199	T 15 07
CP 014	15	13	R1	0	01343	F 05422	T 15 33
CP 015	15	13	R1	0	01575	F 05654	T 15 56
CP 016	15	13	R1	0	01790	F 05868	T 16 15

1/18/77
B. Khem

4/18/77 U. Kloms

FIFTH WHEEL FEET/PULSE			0002	ODDOMETER	FEET/PULSE	0002
TA 001	00	00	R1	0 00008	F 00009	T 00 09
TA 002	00	00	R1	0 00076	F 00076	T 00 19
CP 001	17	13	R1	0 00133	F 00131	T 00 26
DO 001	17	13	R1	0 00178	F 00176	T 00 34
DC 001	17	13	R1	0 00181	F 00179	T 00 40
TD 001	17	13	R1	0 00222	F 00219	T 00 49
000	17	13	R1 D	0 00253	F 00251	T 00 52
000	17	13	R1	0 00259	F 00256	T 00 53
000	17	13	R1 D	0 00312	F 00310	T 00 57
000	17	13	R1	0 00318	F 00315	T 00 58
TA 003	17	13	R1	0 00471	F 00469	T 01 48
CP 002	17	13	R1	0 00758	F 00753	T 02 44
CP 003	17	13	R1	0 01130	F 01122	T 03 19
DO 002	17	13	R1	0 01563	F 01551	T 04 16
DC 002	17	13	R1	0 01565	F 01553	T 04 41
TD 002	17	13	R1	0 01586	F 01574	T 04 49
EE 002	17	13	R1	0 01686	F 01673	T 05 01
EE 002	17	13	R1	0 01708	F 01695	T 05 03
EE 002	17	13	R1	0 01731	F 01717	T 05 05
000	14	06	R1	0 01753	F 01739	T 05 07
CP 004	14	06	R1 D	0 01769	F 01755	T 05 09
000	14	06	R1	0 01773	F 01759	T 05 09
TD 002	14	06	R1	0 01897	F 01883	T 05 33
000	14	06	R1 D	0 01912	F 01898	T 05 36
TA 004	14	06	R1	0 01914	F 01901	T 05 36
CP 005	14	06	R1	0 02167	F 02153	T 06 00
CP 006	14	06	R1	0 02397	F 02382	T 06 21
CP 007	14	06	R1	0 02606	F 02589	T 07 09
000	10	06	R3 N	0 02612	F 02595	T 07 10
CP 008	10	06	R3 N	0 02888	F 02870	T 07 43
CP 009	10	06	R3 N	0 03544	F 03526	T 10 02
CP 010	10	06	R3 N	0 03879	F 03860	T 10 35
CP 011	10	06	R3 N	0 00001	F 04077	T 10 50
000	15	13	R1	0 00290	F 04365	T 11 12
000	15	13	R1 D	0 00319	F 04394	T 11 14
000	15	13	R1	0 00324	F 04400	T 11 15
DO 003	15	13	R1	0 00390	F 04465	T 11 23
DC 003	15	13	R1	0 00399	F 04475	T 11 36
TD 003	15	13	R1	0 00422	F 04498	T 11 43
000	15	13	R1 D	0 00455	F 04530	T 11 46
000	15	13	R1	0 00462	F 04537	T 11 46
000	15	13	R1 D	0 00506	F 04581	T 11 49
000	15	13	R1	0 00514	F 04589	T 11 50
CP 012	15	13	R1	0 00822	F 04897	T 12 16
TA 005	15	13	R1	0 00902	F 04975	T 12 24
CP 013	15	13	R1	0 01117	F 05187	T 13 44
CP 014	15	13	R1	0 01338	F 05409	T 14 15
CP 015	15	13	R1	0 01570	F 05640	T 14 33
CP 016	15	13	R1	0 01791	F 05861	T 14 49
TA 006	15	13	R1	0 01961	F 06029	T 15 04
CP 017	15	13	R1	0 02464	F 06529	T 15 40
CP 018	15	13	R1	0 02524	F 06588	T 15 49
000	12	06	R1	0 02659	F 06722	T 16 02
TD 004	12	06	R1	0 02788	F 06851	T 16 56

wrong
intensity

.L FRUMP.LDA

.ST 14156

B. Khien

1/18/77

RUN 035 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 16 HOUR 14 MIN 15

	FIFTH	WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002
TA	001	00	00	R1	0 00007	F 00008	T 00 06
TA	002	00	00	R1	0 00078	F 00078	T 00 21
	000	17	13	R1	0 00120	F 00119	T 00 29
CP	001	17	13	R1	0 00134	F 00132	T 00 30
	000	17	13	R1 D	0 00138	F 00136	T 00 31
	000	17	13	R1	0 00143	F 00141	T 00 31
TD	001	17	13	R1	0 00221	F 00218	T 00 39
	000	17	13	R1 D	0 00260	F 00256	T 00 42
	000	17	13	R1	0 00266	F 00261	T 00 43
	000	17	13	R1 D	0 00321	F 00313	T 00 47
	000	17	13	R1	0 00327	F 00319	T 00 48
TA	003	17	13	R1	0 00474	F 00465	T 01 31
CP	002	17	13	R1	0 00767	F 00753	T 02 24
CP	003	17	13	R1	0 01140	F 01122	T 02 56
	000	14	06	R1	0 01744	F 01720	T 04 37
	000	14	06	R1 D	0 01750	F 01726	T 04 38
	000	14	06	R1	0 01757	F 01733	T 04 38
CP	004	14	06	R1 D	0 01770	F 01745	T 04 39
	000	14	06	R1	0 01777	F 01752	T 04 40
TD	002	14	06	R1	0 01903	F 01877	T 05 01
TA	004	14	06	R1 D	0 01920	F 01895	T 05 04
	000	14	06	R1	0 01922	F 01898	T 05 05
	000	14	06	R1 D	0 01959	F 01934	T 05 10
	000	14	06	R1	0 01963	F 01938	T 05 10
CP	005	14	06	R1	0 02171	F 02143	T 05 28
CP	006	14	06	R1	0 02403	F 02370	T 05 49
CP	007	14	06	R1	0 02612	F 02576	T 06 39
	000	10	06	R3 N	0 02615	F 02580	T 06 40
CP	008	10	06	R3 N	0 02890	F 02854	T 07 05
CP	009	10	06	R3 N	0 03547	F 03506	T 08 49
CP	010	10	06	R3 N	0 03886	F 03842	T 10 01
CP	011	10	06	R3 N	0 00016	F 04063	T 10 26
	000	15	13	R1	0 00295	F 04339	T 11 12
TD	003	15	13	R1	0 00430	F 04471	T 11 25
	000	15	13	R1 D	0 00470	F 04511	T 11 28
	000	15	13	R1	0 00476	F 04517	T 11 29
	000	15	13	R1 D	0 00518	F 04558	T 11 32
	000	15	13	R1	0 00525	F 04565	T 11 33
CP	012	15	13	R1	0 00837	F 04875	T 12 00
TA	005	15	13	R1	0 00908	F 04944	T 12 53
CP	013	15	13	R1	0 01130	F 05160	T 13 23
CP	014	15	13	R1	0 01352	F 05379	T 13 52
CP	015	15	13	R1	0 01584	F 05609	T 14 12
CP	016	15	13	R1	0 01822	F 05846	T 14 31
TA	006	15	13	R1	0 01973	F 05995	T 14 45
CP	017	15	13	R1	0 02476	F 06492	T 15 26
CP	018	15	13	R1	0 02534	F 06551	T 15 40
	000	12	06	R1	0 02662	F 06675	T 15 52
DD	004	12	06	R1	0 02784	F 06796	T 16 06
DC	004	12	06	R1	0 02786	F 06798	T 16 42
TD	004	12	06	R1	0 02811	F 06823	T 16 49
	000	12	06	R1 D	0 02840	F 06852	T 16 52

.L FRUMP.LDA

.ST 14156

4/18/77 B. Kliem

RUN 036 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 16 HOUR 15 MIN 50

	FIFTH WHEEL FEET/PULSE		0002	DIOMETER	FEET/PULSE	0002
TA 001	00	00	R1	0 00009	F 00010	T 00 13
TA 002	00	00	R1	0 00071	F 00071	T 00 22
000	17	13	R1	0 00120	F 00118	T 00 29
000	17	13	R1 D	0 00129	F 00127	T 00 30
CP 001	17	13	R1	0 00134	F 00132	T 00 30
TD 001	17	13	R1	0 00220	F 00218	T 00 39
000	17	13	R1 D	0 00255	F 00252	T 00 42
000	17	13	R1	0 00260	F 00257	T 00 43
000	17	13	R1 D	0 00316	F 00313	T 00 48
000	17	13	R1	0 00322	F 00319	T 00 48
TA 003	17	13	R1	0 00473	F 00470	T 01 35
CP 002	17	13	R1	0 00764	F 00756	T 02 26
CP 003	17	13	R1	0 01145	F 01134	T 03 01
000	14	06	R1	0 01742	F 01728	T 04 45
000	14	06	R1 D	0 01748	F 01734	T 04 45
000	14	06	R1	0 01754	F 01739	T 04 46
CP 004	14	06	R1 D	0 01771	F 01756	T 04 47
000	14	06	R1	0 01776	F 01762	T 04 48
DD 002	14	06	R1	0 01885	F 01869	T 05 00
DC 002	14	06	R1	0 01891	F 01875	T 05 07
TD 002	14	06	R1	0 01911	F 01896	T 05 11
000	14	06	R1 D	0 01921	F 01906	T 05 13
000	14	06	R1	0 01923	F 01908	T 05 14
TA 004	14	06	R1	0 01926	F 01911	T 05 14
000	14	06	R1 D	0 01939	F 01925	T 05 17
000	14	06	R1	0 01943	F 01929	T 05 17
000	14	06	R1 D	0 01969	F 01955	T 05 20
000	14	06	R1	0 01975	F 01960	T 05 21
CP 005	14	06	R1	0 02172	F 02156	T 05 38
CP 006	14	06	R1	0 02405	F 02388	T 05 58
CP 007	14	06	R1	0 02615	F 02597	T 06 47
000	10	06	R2 N	0 02617	F 02599	T 06 47
CP 008	10	06	R2 N	0 02900	F 02881	T 07 15
CP 009	10	06	R2 N	0 03558	F 03535	T 08 54
CP 010	10	06	R2 N	0 03898	F 03872	T 09 59
CP 011	10	06	R2 N	0 00026	F 04093	T 10 20
000	15	13	R1	0 00310	F 04376	T 10 43
000	15	13	R1 D	0 00372	F 04437	T 10 49
000	15	13	R1	0 00376	F 04441	T 10 49
TD 003	15	13	R1	0 00439	F 04503	T 11 08
000	15	13	R1 D	0 00527	F 04588	T 11 15
000	15	13	R1	0 00534	F 04596	T 11 16
CP 012	15	13	R1	0 00842	F 04900	T 11 43
TA 005	15	13	R1	0 00917	F 04972	T 11 57
CP 013	15	13	R1	0 01134	F 05188	T 13 22
CP 014	15	13	R1	0 01360	F 05410	T 13 54
CP 015	15	13	R1	0 01585	F 05634	T 14 12
CP 016	15	13	R1	0 01809	F 05853	T 14 29

B. Kliem 1/1

ST 14156

RUN 037 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 16 HOUR 17 MIN 15

	FIFTH WHEEL FEET/PULSE			0002	ODDOMETER	FEET/PULSE	0002
TA 001	00	00	R1	0	00005	F 00006	T 00 06
TA 002	00	00	R1	0	00075	F 00076	T 00 17
000	17	13	R1	0	00123	F 00122	T 00 23
000	17	13	R1 D	0	00131	F 00129	T 00 24
CP 001	17	13	R1	0	00135	F 00133	T 00 25
000	17	13	R1 D	0	00147	F 00146	T 00 27
000	17	13	R1	0	00151	F 00149	T 00 27
TD 001	17	13	R1	0	00219	F 00217	T 00 39
000	17	13	R1 D	0	00258	F 00256	T 00 43
000	17	13	R1	0	00263	F 00261	T 00 43
000	17	13	R1 D	0	00274	F 00271	T 00 44
000	17	13	R1	0	00279	F 00276	T 00 45
000	17	13	R1 D	0	00333	F 00330	T 00 50
000	17	13	R1	0	00338	F 00335	T 00 50
TA 003	17	13	R1	0	00478	F 00476	T 01 40
CP 002	17	13	R1	0	00770	F 00765	T 02 29
CP 003	17	13	R1	0	01143	F 01134	T 03 10
DC 007	00	68	R1	0	02135	F 22930	T 03 50 ← <i>our record</i>
000	17	13	R1	0	01583	F 01571	T 04 08
000	14	06	R1	0	01743	F 01730	T 05 07
000	14	06	R1 D	0	01749	F 01736	T 05 07
000	14	06	R1	0	01755	F 01742	T 05 08
CP 004	14	06	R1 D	0	01772	F 01759	T 05 09
000	14	06	R1	0	01778	F 01765	T 05 10
DO 002	14	06	R1	0	01894	F 01880	T 05 24
DC 002	14	06	R1	0	01896	F 01882	T 05 29
000	14	06	R1 D	0	01897	F 01884	T 05 29
000	14	06	R1	0	01899	F 01885	T 05 30
TD 002	14	06	R1	0	01910	F 01897	T 05 32
000	14	06	R1 D	0	01919	F 01908	T 05 34
000	14	06	R1	0	01922	F 01910	T 05 35
TA 004	14	06	R1	0	01941	F 01930	T 05 38
CP 005	14	06	R1	0	02172	F 02155	T 05 58
CP 006	14	06	R1	0	02395	F 02377	T 06 19
CP 007	14	06	R1	0	02610	F 02590	T 07 12
CP 008	14	06	R1	0	02894	F 02873	T 08 27
000	14	08	R3 W	0	03377	F 03353	T 09 58
CP 009	14	08	R3 W	0	03556	F 03531	T 10 15
CP 010	14	08	R3 W	0	03894	F 03868	T 10 45
CP 011	14	08	R3 W	0	00021	F 04091	T 11 03
000	15	13	R1	0	00311	F 04379	T 11 48
000	15	13	R1 D	0	00327	F 04395	T 11 49
000	15	13	R1	0	00333	F 04400	T 11 50
DO 003	15	13	R1	0	00409	F 04476	T 12 03
DC 003	15	13	R1	0	00409	F 04476	T 12 30
TD 003	15	13	R1	0	00428	F 04494	T 12 38
000	15	13	R1 D	0	00522	F 04586	T 12 46
000	15	13	R1	0	00529	F 04593	T 12 46
CP 012	15	13	R1	0	00839	F 04901	T 13 14

.L FRUMP.LDA

.ST 14156

1/18/77 B. Klien

RUN 038 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 16 HOUR 20 MIN 40

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
TA 001	00	00	R1	0 00007	F 00008	T 00 15
TA 002	00	00	R1	0 00079	F 00079	T 00 27
000	17	13	R1	0 00123	F 00121	T 00 33
000	17	13	R1 D	0 00137	F 00134	T 00 35
CP 001	17	13	R1	0 00141	F 00139	T 00 35
TD 001	17	13	R1	0 00228	F 00224	T 00 44
000	17	13	R1 D	0 00261	F 00258	T 00 47
000	17	13	R1	0 00267	F 00264	T 00 47
TA 003	17	13	R1	0 00471	F 00467	T 01 25
CP 002	17	13	R1	0 00767	F 00760	T 02 15
CP 003	17	13	R1	0 01145	F 01133	T 02 49
000	14	06	R1	0 01767	F 01750	T 03 43
CP 004	14	06	R1 D	0 01778	F 01761	T 03 44
000	14	06	R1	0 01784	F 01766	T 03 45
000	14	06	R1 D	0 01910	F 01891	T 03 58
TD 002	14	06	R1	0 01913	F 01894	T 03 58
TA 004	14	06	R1 D	0 01924	F 01906	T 04 01
000	14	06	R1	0 01927	F 01909	T 04 01
CP 005	14	06	R1	0 02176	F 02157	T 05 11
CP 006	14	06	R1	0 02403	F 02383	T 05 47
CP 007	14	06	R1	0 02617	F 02596	T 06 27
CP 008	14	06	R1	0 02896	F 02873	T 06 51
000	14	08	R3 W	0 03390	F 03365	T 07 36
CP 009	14	08	R3 W	0 03560	F 03533	T 08 23
CP 010	14	08	R3 W	0 03901	F 03872	T 08 53
CP 011	14	08	R3 W	0 00023	F 04089	T 09 11
000	15	13	R1	0 00315	F 04379	T 09 36
000	15	13	R1 D	0 00374	F 04437	T 09 44
000	15	13	R1	0 00376	F 04440	T 09 44
DD 003	15	13	R1	0 00415	F 04479	T 09 55
DC 003	15	13	R1	0 00415	F 04479	T 10 01
TD 003	15	13	R1	0 00440	F 04503	T 10 07
000	15	13	R1 D	0 00453	F 04516	T 10 08
000	15	13	R1	0 00457	F 04520	T 10 09
000	15	13	R1 D	0 00472	F 04535	T 10 10
000	15	13	R1	0 00478	F 04540	T 10 11
000	15	13	R1 D	0 00512	F 04574	T 10 14
000	15	13	R1	0 00518	F 04580	T 10 14
CP 012	15	13	R1	0 00845	F 04906	T 10 45
TA 005	15	13	R1	0 00916	F 04975	T 10 54
CP 013	15	13	R1	0 01131	F 05187	T 12 02
CP 014	15	13	R1	0 01363	F 05418	T 12 36
CP 015	15	13	R1	0 01591	F 05643	T 12 57
CP 016	15	13	R1	0 01814	F 05866	T 13 15
TA 006	15	13	R1	0 01987	F 06035	T 13 34

R1

2X

.L FRUMP.LDA

.ST 14156

1/18/77

B. Kliem

RUN 039 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 17 HOUR 10 MIN 15

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
	000	00	00	R1 D	0 00000	F 00000 T 00 00
	000	00	00	R1	0 00000	F 00000 T 00 01
TA	001	00	00	R1	0 00006	F 00006 T 00 23
TA	002	00	00	R1	0 00076	F 00075 T 00 34
CP	001	00	00	R1	0 00140	F 00137 T 00 43
	000	17	13	R1	0 00149	F 00147 T 00 44
TD	001	17	13	R1	0 00223	F 00220 T 00 54
	000	17	13	R1 D	0 00261	F 00258 T 00 58
	000	17	13	R1	0 00268	F 00264 T 00 58
	000	17	13	R1 D	0 00320	F 00316 T 01 02
	000	17	13	R1	0 00326	F 00323 T 01 03
TA	003	17	13	R1	0 00473	F 00470 T 01 45
CP	002	17	13	R1	0 00763	F 00759 T 02 32
CP	003	17	13	R1	0 01144	F 01137 T 03 06
	000	14	06	R1	0 01761	F 01749 T 04 00
CP	004	14	06	R1 D	0 01773	F 01761 T 04 01
	000	14	06	R1	0 01778	F 01766 T 04 02
DO	002	14	06	R1	0 01885	F 01871 T 04 13
DC	002	14	06	R1	0 01892	F 01879 T 04 22
TD	002	14	06	R1	0 01908	F 01895 T 04 27
	000	14	06	R1 D	0 01919	F 01907 T 04 29
TA	004	14	06	R1	0 01922	F 01910 T 04 29
CP	005	14	06	R1	0 02176	F 02164 T 05 35
CP	006	14	06	R1	0 02399	F 02386 T 05 59
CP	007	14	06	R1	0 02612	F 02596 T 06 57
CP	008	14	06	R1	0 02895	F 02879 T 07 24
	000	14	08	R2 W	0 03383	F 03362 T 08 45
CP	009	14	08	R2 W	0 03553	F 03531 T 09 03
CP	010	14	08	R2 W	0 03892	F 03869 T 09 31
CP	011	14	08	R2 W	0 00020	F 04092 T 10 26
	000	15	13	R1	0 00302	F 04371 T 10 54
	000	15	13	R1 D	0 00306	F 04376 T 10 55
	000	15	13	R1	0 00311	F 04380 T 10 55
	000	15	13	R1 D	0 00330	F 04399 T 10 58
	000	15	13	R1	0 00333	F 04402 T 10 58
	000	15	13	R1 D	0 00347	F 04417 T 11 02
	000	15	13	R1	0 00349	F 04418 T 11 02
DO	003	15	13	R1	0 00353	F 04421 T 11 05
DC	003	15	13	R1	0 00358	F 04427 T 11 20
TD	003	15	13	R1	0 00403	F 04472 T 11 31
	000	15	13	R1 D	0 00470	F 04538 T 11 38
	000	15	13	R1	0 00476	F 04544 T 11 38
	000	15	13	R1 D	0 00509	F 04577 T 11 41
	000	15	13	R1	0 00516	F 04583 T 11 41
CP	012	15	13	R1	0 00841	F 04906 T 12 13
TA	005	15	13	R1	0 00915	F 04978 T 12 21

	FIFTH WHEEL	FEET/PULSE	0002	ODOMETER	FEET/PULSE	0002
TA 001	00	00	R1	0 00004	F 00004	T 00 06
TA 002	00	00	R1	0 00073	F 00073	T 00 16
000	17	13	R1	0 00130	F 00128	T 00 23
000	17	13	R1 D	0 00135	F 00133	T 00 23
CP 001	17	13	R1	0 00139	F 00137	T 00 24
TD 001	17	13	R1	0 00215	F 00213	T 00 31
000	17	13	R1 D	0 00252	F 00249	T 00 35
000	17	13	R1	0 00256	F 00254	T 00 35
000	17	13	R1 D	0 00266	F 00263	T 00 36
000	17	13	R1	0 00271	F 00268	T 00 37
000	17	13	R1 D	0 00275	F 00272	T 00 37
000	17	13	R1	0 00280	F 00277	T 00 38
000	17	13	R1 D	0 00322	F 00319	T 00 42
000	17	13	R1	0 00327	F 00324	T 00 42
TA 003	17	13	R1	0 00472	F 00470	T 01 17
CP 002	17	13	R1	0 00763	F 00760	T 02 07
CP 003	17	13	R1	0 01140	F 01136	T 02 39
000	14	06	R1	0 01753	F 01746	T 04 22
000	14	06	R1 D	0 01765	F 01757	T 04 23
CP 004	14	06	R1	0 01771	F 01763	T 04 24
DO 002	14	06	R1	0 01870	F 01862	T 04 35
DC 002	14	06	R1	0 01870	F 01862	T 04 46
TD 002	14	06	R1	0 01901	F 01893	T 04 52
000	14	06	R1 D	0 01913	F 01905	T 04 54
TA 004	14	06	R1	0 01915	F 01908	T 04 54
CP 005	14	06	R1	0 02166	F 02158	T 05 18
CP 006	14	06	R1	0 02396	F 02388	T 05 38
CP 007	14	06	R1	0 02605	F 02596	T 06 30
CP 008	14	06	R1	0 02887	F 02877	T 06 58
000	14	06	R2 E	0 03370	F 03358	T 08 20
CP 009	14	06	R2 E	0 03547	F 03535	T 09 19
CP 010	14	06	R2 E	0 03890	F 03875	T 09 55
CP 011	14	06	R2 E	0 00010	F 04090	T 10 17
000	15	13	R1	0 00293	F 04373	T 11 16
000	15	13	R1 D	0 00319	F 04399	T 11 18
000	15	13	R1	0 00324	F 04404	T 11 19
DO 003	15	13	R1	0 00355	F 04434	T 11 32
DC 003	15	13	R1	0 00355	F 04434	T 11 47
TD 003	15	13	R1	0 00423	F 04502	T 11 58
000	15	13	R1 D	0 00500	F 04578	T 12 04
000	15	13	R1	0 00506	F 04585	T 12 05
CP 012	15	13	R1	0 00828	F 04906	T 12 42
TA 005	15	13	R1	0 00903	F 04979	T 12 52
CP 013	15	13	R1	0 01123	F 05197	T 13 31
CP 014	15	13	R1	0 01346	F 05419	T 13 51
CP 015	15	13	R1	0 01574	F 05645	T 14 47
CP 016	15	13	R1	0 01802	F 05872	T 15 13
TA 006	15	13	R1	0 01962	F 06031	T 15 33
CP 017	15	13	R1	0 02479	F 06543	T 16 14
CP 018	15	13	R1	0 02533	F 06597	T 16 27
000	12	06	R1	0 02663	F 06726	T 16 39
000	12	06	R1 D	0 02669	F 06732	T 16 40
000	12	06	R1	0 02674	F 06737	T 16 40
000	12	06	R1 D	0 02695	F 06758	T 16 42

1/18/77
B. Klein

.Z CT1:

.ST 1444

.L FRUMP.LDA

.ST 14156

1/18/77 B. Khiero

RUN 041 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 17 HOUR 15 MIN 35

	FIFTH WHEEL	FEET/PULSE	0002	DIAMETER	FEET/PULSE	0002
	000	00	00	R1 D	0 00000	F 00000 T 00 00
	000	00	00	R1	0 00000	F 00000 T 00 01
TA	001	00	00	R1	0 00007	F 00008 T 00 12
TA	002	00	00	R1	0 00075	F 00076 T 00 21
	000	17	13	R1	0 00109	F 00107 T 00 26
	000	17	13	R1 D	0 00112	F 00111 T 00 26
	000	17	13	R1	0 00116	F 00115 T 00 27
CP	001	17	13	R1	0 00132	F 00130 T 00 29
	000	17	13	R1 D	0 00136	F 00134 T 00 29
	000	17	13	R1	0 00140	F 00139 T 00 30
DO	001	17	13	R1	0 00185	F 00183 T 00 38
DC	001	17	13	R1	0 00187	F 00185 T 00 43
TD	001	17	13	R1	0 00221	F 00219 T 00 48
	000	17	13	R1 D	0 00263	F 00260 T 00 52
	000	17	13	R1	0 00269	F 00266 T 00 53
	000	17	13	R1 D	0 00315	F 00313 T 00 56
	000	17	13	R1	0 00323	F 00320 T 00 57
TA	003	17	13	R1	0 00475	F 00473 T 01 10
CP	002	17	13	R1	0 00768	F 00764 T 01 45
CP	003	17	13	R1	0 01137	F 01130 T 02 17
	000	14	06	R1	0 01742	F 01732 T 03 09
	000	14	06	R1 D	0 01744	F 01733 T 03 10
	000	14	06	R1	0 01745	F 01735 T 03 10
	000	14	06	R1 D	0 01750	F 01739 T 03 12
	000	14	06	R1	0 01751	F 01741 T 03 12
	000	14	06	R1 D	0 01771	F 01761 T 03 23
	000	14	06	R1	0 01773	F 01763 T 03 24
CP	004	14	06	R1	0 01775	F 01765 T 03 24
DO	002	14	06	R1	0 01902	F 01891 T 03 48
DC	002	14	06	R1	0 01902	F 01891 T 04 10
TD	002	14	06	R1	0 01910	F 01899 T 04 14
	000	14	06	R1 D	0 01920	F 01911 T 04 16
	000	14	06	R1	0 01923	F 01914 T 04 16
TA	004	14	06	R1	0 01927	F 01918 T 04 17
CP	005	14	06	R1	0 02175	F 02165 T 04 49
CP	006	14	06	R1	0 02404	F 02393 T 05 09
CP	007	14	06	R1	0 02612	F 02600 T 06 00
CP	008	14	06	R1	0 02896	F 02883 T 07 07
	000	14	08	R3 W	0 03385	F 03371 T 07 59
CP	009	14	08	R3 W	0 03553	F 03539 T 08 47
CP	010	14	08	R3 W	0 03898	F 03882 T 09 15
CP	011	14	08	R3 W	0 00021	F 04099 T 09 31
	000	15	13	R1	0 00298	F 04377 T 10 39
	000	15	13	R1 D	0 00330	F 04408 T 10 41
	000	15	13	R1	0 00336	F 04414 T 10 42
	000	15	13	R1 D	0 00347	F 04425 T 10 43
	000	15	13	R1	0 00353	F 04430 T 10 43

D. M. W. 1/10/11

RUN 042 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 17 HOUR 13 MIN 55

FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
000	00	00	R1 D	0 00000	F 00000 T 00 00
000	00	00	R1	0 00000	F 00000 T 00 01
TA 001	00	00	R1	0 00012	F 00013 T 00 10
TA 002	00	00	R1	0 00075	F 00076 T 00 19
000	17	13	R1	0 00131	F 00129 T 00 26
CP 001	17	13	R1	0 00135	F 00134 T 00 27
000	17	13	R1 D	0 00140	F 00133 T 00 27
000	17	13	R1	0 00144	F 00143 T 00 28
TD 001	17	13	R1	0 00213	F 00217 T 00 34
000	17	13	R1 D	0 00251	F 00259 T 00 39
000	17	13	R1	0 00257	F 00255 T 00 39
000	17	13	R1 D	0 00327	F 00325 T 00 43
000	17	13	R1	0 00334	F 00332 T 00 44
TA 003	17	13	R1	0 00471	F 00469 T 01 11
CP 002	17	13	R1	0 00758	F 00756 T 02 02
CP 003	17	13	R1	0 01142	F 01137 T 02 38
000	14	05	R1	0 01751	F 01754 T 03 31
000	14	05	R1 D	0 01755	F 01753 T 03 32
CP 004	14	05	R1	0 01771	F 01764 T 03 32
TD 002	14	05	R1	0 01905	F 01997 T 03 47
000	14	05	R1 D	0 01913	F 01911 T 03 50
TA 004	14	05	R1	0 01921	F 01914 T 03 50
CP 005	14	05	R1	0 02157	F 02150 T 05 01
CP 006	14	05	R1	0 02393	F 02391 T 05 22
CP 007	14	05	R1	0 02506	F 02599 T 05 39
CP 008	14	05	R1	0 02390	F 02382 T 06 37
CP 009	14	05	R1	0 03547	F 03537 T 08 14
CP 010	14	05	R1	0 03390	F 03373 T 08 52
CP 011	14	05	R1	0 00012	F 04097 T 09 08
000	15	13	R1	0 00294	F 04377 T 10 11
DC 003	15	13	R1	0 00393	F 04432 T 10 24
DC 003	15	13	R1	0 00393	F 04432 T 10 35
TD 003	15	13	R1	0 00425	F 04509 T 10 44
000	15	13	R1 D	0 00453	F 04540 T 10 47
000	15	13	R1	0 00455	F 04547 T 10 47
000	15	13	R1 D	0 00515	F 04597 T 10 51
000	15	13	R1	0 00523	F 04604 T 10 51
CP 012	15	13	R1	0 00323	F 04909 T 11 22
TA 005	15	13	R1	0 00903	F 04983 T 11 32
CP 013	15	13	R1	0 01120	F 05197 T 11 57
CP 014	15	13	R1	0 01345	F 05422 T 12 28
CP 015	15	13	R1	0 01559	F 05644 T 12 46
CP 016	15	13	R1	0 01794	F 05869 T 13 03
TA 006	15	13	R1	0 01953	F 06035 T 13 18
CP 017	15	13	R1	0 02459	F 06539 T 13 56
CP 018	15	13	R1	0 02525	F 06595 T 14 05
000	12	05	R1	0 02557	F 06725 T 14 19
DC 004	12	05	R1	0 02779	F 06847 T 14 31
DC 004	12	05	R1	0 02733	F 06851 T 14 37
TD 004	12	05	R1	0 02790	F 06859 T 14 41
000	12	05	R1 D	0 02816	F 06885 T 14 45
000	12	05	R1	0 02820	F 06883 T 14 45
CP 019	12	05	R1	0 03241	F 07309 T 15 18
TA 007	12	05	R1	0 03316	F 07382 T 15 27
CP 020	12	05	R1	0 03333	F 08048 T 17 21

L FRUMP.LDR

ST 14156

B. Klein 1/18/77

RUN 043 SAMPLE RATE 00.5 YEAR 77 MONTH 01 DAY 17 HOUR 20 MIN 30

	FIFTH WHEEL	FEET/PULSE	0002	ODD METER	FEET/PULSE	0002
	000	00	00	R1 D	0 00000	F 00000 T 00 00
	000	00	00	R1	0 00000	F 00000 T 00 01
TA	001	00	00	R1	0 00007	F 00007 T 00 09
TA	002	00	00	R1	0 00075	F 00074 T 00 13
	000	17	13	R1	0 00121	F 00119 T 00 23
	000	17	13	R1 D	0 00126	F 00124 T 00 24
CP	001	17	13	R1	0 00132	F 00129 T 00 24
TD	001	17	13	R1	0 00217	F 00214 T 00 31
	000	17	13	R1 D	0 00253	F 00255 T 00 35
	000	17	13	R1	0 00264	F 00261 T 00 35
	000	17	13	R1 D	0 00326	F 00323 T 00 40
	000	17	13	R1	0 00332	F 00329 T 00 41
TA	003	17	13	R1	0 00471	F 00468 T 01 09
CP	002	17	13	R1	0 00752	F 00757 T 02 02
CP	003	17	13	R1	0 01137	F 01131 T 02 44
	000	14	06	R1	0 01756	F 01747 T 04 22
CP	004	14	06	R1 D	0 01768	F 01758 T 04 23
	000	14	06	R1	0 01773	F 01764 T 04 24
	000	14	06	R1 D	0 01904	F 01894 T 04 39
	000	14	06	R1	0 01907	F 01897 T 04 39
TD	002	14	06	R1	0 01909	F 01900 T 04 40
	000	14	06	R1 D	0 01917	F 01908 T 04 41
TA	004	14	06	R1	0 01920	F 01911 T 04 42
CP	005	14	06	R1	0 02165	F 02155 T 05 03
CP	006	14	06	R1	0 02392	F 02381 T 05 59
CP	007	14	06	R1	0 02604	F 02592 T 06 29
CP	008	14	06	R1	0 02889	F 02875 T 06 53
	000	14	03	R2 W	0 03373	F 03357 T 07 47
CP	009	14	03	R2 W	0 03548	F 03532 T 08 16
CP	010	14	03	R2 W	0 03886	F 03868 T 08 46
CP	011	14	03	R2 W	0 00015	F 04092 T 09 06
	000	15	13	R1	0 00295	F 04372 T 10 14
TD	003	15	13	R1	0 00422	F 04497 T 10 45
	000	15	13	R1 D	0 00461	F 04536 T 10 48
	000	15	13	R1	0 00467	F 04542 T 10 49
	000	15	13	R1 D	0 00497	F 04571 T 10 51
	000	15	13	R1	0 00503	F 04577 T 10 52
CP	012	15	13	R1	0 00830	F 04904 T 11 26
TA	005	15	13	R1	0 00902	F 04974 T 11 35
CP	013	15	13	R1	0 01127	F 05197 T 12 56
CP	014	15	13	R1	0 01351	F 05420 T 13 26
CP	015	15	13	R1	0 01576	F 05645 T 13 44
CP	016	15	13	R1	0 01800	F 05868 T 14 00
TA	006	15	13	R1	0 01963	F 06029 T 14 14
CP	017	15	13	R1	0 02467	F 06529 T 14 53
CP	018	15	13	R1	0 02530	F 06591 T 15 04
	000	12	06	R1	0 02662	F 06723 T 15 13
	000	12	06	R1 D	0 02669	F 06729 T 15 19
	000	12	06	R1	0 02675	F 06736 T 15 19
	000	12	06	R1 D	0 02712	F 06772 T 15 22

4.2 FIXED ROUTE DATA PROCESSING RESULTS

4.2.1 Location Subsystem (Checkpoint) and AVM System (Timepoint) Results

This subsection contains a complete listing of the output of the FRLS program for the Fixed Route Run 27. The checkpoint and timepoint error frequency density and cumulative error distribution tabular outputs are presented for all other fixed route runs. Timepoint data were obtained during location subsystem processing as a programming convenience, however, timepoint performance is the same for both location subsystem and system level algorithms in the HI³ system. Three location error sheets are provided for Runs 14 , 24 , 34 , 40 , and 43. The first shows the result of running raw data through the FRLS program. The second sheet contains the manually computed results for those runs which contained tape read errors and the third sheet gives the overall error statistics for all checkpoints on that run.

FIXED ROUTE RUN #27 CHECKPOINT ERRORS

FIXED ROUTE RUN # 27 CHECKPOINT ERRORS

CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
1	12431	4529	1	3	40.	12413.	4580.	54.
2	12895	3792	1	4	559.	12886.	3807.	18.
3	13632	3698	1	4	1305.	13626.	3711.	14.
4	14904	3541	2	5	26.	14871.	3547.	34.
5	15277	4035	2	6	449.	15263.	3934.	102.
6	15334	4441	2	6	905.	15326.	4385.	56.
7	15383	4869	2	6	1321.	15384.	4797.	72.
8	15475	5453	2	6	1895.	15463.	5366.	88.
9	15644	6735	2	6	3203.	15644.	6661.	74.
10	15736	7421	2	6	3891.	15739.	7342.	79.
11	15809	7838	2	6	4335.	15801.	7782.	57.
12	16042	9499	3	7	1086.	16035.	9460.	40.
13	16512	9618	3	8	372.	16435.	9641.	80.
14	16941	9578	3	8	810.	16872.	9607.	75.
15	17368	9554	3	8	1274.	17334.	9571.	38.
16	17811	9507	3	8	1718.	17777.	9536.	45.
17	18095	8454	3	9	1009.	18112.	8501.	50.
18	18109	8343	3	9	1117.	18112.	8393.	50.
19	17929	6962	4	10	1170.	17926.	6915.	47.
20	16580	6988	4	11	1395.	16525.	6981.	56.
21	15087	7167	4	11	2899.	15032.	7161.	56.
22	14282	7260	4	11	3679.	14257.	7255.	25.
23	13313	7718	5	13	551.	13339.	7715.	26.
24	12500	8500	5	15	401.	12450.	8552.	72.
25	11590	9350	5	15	1633.	11544.	9387.	58.
26	12190	10181	6	18	943.	12170.	10196.	25.
27	13151	10036	6	18	1895.	13114.	10072.	52.
28	13130	9554	6	19	440.	13127.	9626.	72.
29	13052	9039	6	19	974.	13045.	9099.	60.
30	13699	7663	6	21	930.	13808.	7649.	110.
31	15123	7495	7	22	1172.	15148.	7482.	28.
32	15948	7393	7	22	2012.	15982.	7381.	36.
33	16627	7326	7	22	2684.	16649.	7301.	33.
34	17500	7204	7	22	3590.	17548.	7193.	50.
35	18345	7054	7	22	4488.	18440.	7085.	100.
36	18300	5657	8	25	297.	18347.	5646.	49.
37	17779	5728	8	25	865.	17784.	5718.	12.
38	16908	5840	8	25	1719.	16937.	5826.	32.
39	16427	5897	8	25	2221.	16439.	5889.	14.
40	15645	6003	8	25	3009.	15658.	5989.	19.
41	14638	6127	9	29	427.	14627.	6043.	85.
42	14717	5780	9	30	248.	14842.	5763.	126.
43	14816	5222	9	31	632.	14811.	5131.	91.
44	14055	5037	9	32	771.	14024.	5053.	35.
45	13388	5138	9	32	1443.	13357.	5141.	31.
46	12862	5200	9	32	2013.	12792.	5215.	71.

FIXED ROUTE RUN #27 CHECKPOINT ERRORS (CONT'D)

CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
47	11518	5369	10	33	810.	11543.	5386.	30.
48	10787	5472	10	33	1448.	10911.	5474.	124.
49	10462	5513	10	33	1888.	10475.	5535.	26.
50	9558	5647	10	33	2860.	9513.	5669.	50.
51	8740	5757	10	33	3616.	8764.	5774.	29.
52	8145	5840	10	33	4250.	8136.	5861.	23.
53	7537	6481	11	35	538.	7560.	6454.	35.
54	7652	6971	11	35	1036.	7645.	6945.	27.
55	8320	6948	11	36	609.	8264.	6955.	57.
56	9345	6825	11	36	1655.	9301.	6818.	45.
*57	9894	6731	11	36	2211.	9852.	6745.	45.
CT1:RUN027.001								
58	12136	6444	12	37	1184.	12134.	6444.	2.
59	12561	6405	12	37	1594.	12541.	6391.	25.
60	13099	6331	12	37	2164.	13106.	6316.	16.
61	13452	6271	12	37	2504.	13443.	6272.	9.
62	13455	5695	12	38	528.	13494.	5733.	55.
63	13388	5138	12	38	1088.	13421.	5178.	51.
64	13372	4812	12	38	1378.	13382.	4890.	79.
65	13787	4668	12	39	367.	13721.	4656.	67.
66	14242	4594	12	39	815.	14165.	4595.	77.
67	15770	4381	13	40	1366.	15740.	4392.	32.
68	16152	4347	13	40	1768.	16139.	4341.	14.
69	17121	4202	13	40	2712.	17076.	4222.	50.
70	17491	3736	13	41	410.	17495.	3756.	21.
71	18691	3072	14	43	1294.	18713.	3068.	23.
72	18782	3565	14	44	521.	18813.	3581.	35.
73	18484	4477	14	45	448.	18469.	4489.	19.
74	17621	4597	14	45	1344.	17579.	4593.	42.
75	16706	4705	14	45	2228.	16701.	4696.	10.
76	15624	4856	15	46	420.	15656.	4830.	42.

FIXED ROUTE RUN #27 CHECKPOINT ERRORS (CONT'D)

ERROR FREQUENCY DENSITY

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	2	2.63
10- 20	9	11.84
20- 30	11	14.47
30- 40	12	15.79
40- 50	9	11.84
50- 60	14	18.42
60- 70	1	1.32
70- 80	9	11.84
80- 90	3	3.95
90- 100	2	2.63
100- 110	2	2.63
120- 130	2	2.63

CUMULATIVE ERRORS

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	2	2.63
20	11	14.47
30	22	28.95
40	34	44.74
50	43	56.58
60	57	75.00
70	58	76.32
80	67	88.16
90	70	92.11
100	72	94.74
110	74	97.37
120	74	97.37
130	76	100.00

AVERAGE ERROR = 48.10
 STANDARD DEVIATION = 27.26
 ELAPSED TIME = 80: 0
 ELAPSED DISTANCE = 68512. (5TH WHEEL)
 ELAPSED DISTANCE = 68650. (ODOMETER)

FIXED ROUTE LS RUN 11

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 11a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	2	2.63
10- 20	8	10.53
20- 30	15	19.74
30- 40	6	7.89
40- 50	11	14.47
50- 60	4	5.26
60- 70	9	11.84
70- 80	9	11.84
80- 90	6	7.89
90- 100	2	2.63
100- 110	2	2.63
120- 130	2	2.63

CUMULATIVE ERRORS RUN 11a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	2	2.63
20	10	13.16
30	25	32.89
40	31	40.79
50	42	55.26
60	46	60.53
70	55	72.37
80	64	84.21
90	70	92.11
100	72	94.74
110	74	97.37
120	74	97.37
130	76	100.00

FIXED ROUTE LS RUN 11

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 11b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	13.33
1- 2	5	33.33
2- 3	2	13.33
3- 4	1	6.67
5- 6	3	20.00
10- 11	1	6.67
23- 24	1	6.67

CUMULATIVE ERRORS RUN 11b |

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	13.33
2	7	46.67
3	9	60.00
4	10	66.67
5	10	66.67
6	13	86.67
7	13	86.67
8	13	86.67
9	13	86.67
10	13	86.67
11	14	93.33
24	15	100.00

FIXED ROUTE LS RUN 12
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 12a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	2	2.63
10- 20	6	7.89
20- 30	15	19.74
30- 40	6	7.89
40- 50	4	5.26
50- 60	9	11.84
60- 70	7	9.21
70- 80	7	9.21
80- 90	5	6.58
90- 100	7	9.21
100- 110	4	5.26
110- 120	1	1.32
120- 130	1	1.32
130- 140	1	1.32
140- 150	1	1.32

CUMULATIVE ERRORS RUN 12a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	2	2.63
20	8	10.53
30	23	30.26
40	29	38.16
50	33	43.42
60	42	55.26
70	49	64.47
80	56	73.68
90	61	80.26
100	68	89.47
110	72	94.74
120	73	96.05
130	74	97.37
140	75	98.68
150	76	100.00

FIXED ROUTE LS RUN 12
 TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 12b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	3	20.00
1- 2	1	6.67
2- 3	5	33.33
4- 5	2	13.33
5- 6	1	6.67
8- 9	1	6.67
12- 13	1	6.67
27- 28	1	6.67

CUMULATIVE ERRORS RUN 12b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	20.00
2	4	26.67
3	9	60.00
4	9	60.00
5	11	73.33
6	12	80.00
9	13	86.67
13	14	93.33
28	15	100.00

FIXED ROUTE LS RUN 13

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 13a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	1	1.32
10- 20	8	10.53
20- 30	13	17.11
30- 40	8	10.53
40- 50	11	14.4777
50- 60	7	9.21
60- 70	6	7.89
70- 80	8	10.53
80- 90	5	6.58
90- 100	4	5.26
100- 110	2	2.63
110- 120	2	2.63
140- 150	1	1.32

CUMULATIVE ERRORS RUN 13a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	1	1.32
20	9	11.84
30	22	28.95
40	30	39.47
50	41	53.95
60	48	63.16
70	54	71.05
80	62	81.58
90	67	88.16
100	71	93.42
110	73	96.05
120	75	98.68
130	75	98.68
140	75	98.68
150	76	100.00

FIXED ROUTE LS RUN 13

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 13b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	3	20.00
1- 2	2	13.33
2- 3	3	20.00
3- 4	1	6.67
4- 5	2	13.33
6- 7	1	6.67
13- 14	1	6.67
15- 16	1	6.67
42- 43	1	6.67

CUMULATIVE ERRORS RUN 13b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	20.00
2	5	33.33
3	8	53.33
4	9	60.00
5	11	73.33
6	11	73.33
7	12	80.00
14	13	86.67
15	13	86.67
16	14	93.33
43	15	100.00

FIXED ROUTE LS RUN 14

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 14a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	4	7.41
10- 20	7	12.96
20- 30	9	16.67
30- 40	11	20.37
40- 50	1	1.85
50- 60	5	9.26
60- 70	5	9.26
70- 80	5	9.26
80- 90	4	7.41
90- 100	1	1.85
100- 110	2	3.70

CUMULATIVE ERRORS RUN 14a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	4	7.41
20	11	20.37
30	20	37.04
40	31	57.41
50	32	59.26
60	37	68.52
70	42	77.78
80	47	87.04
90	51	94.44
100	52	96.30
110	54	100.00

MANUALLY PROCESSED FIXED ROUTE LS DATA, RUN 14

FIXED ROUTE RUN# CHECKPOINT ERRORS

CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
55	8320	6948	11	36	577	8232	6959	89
56	9345	6825	11	36	1615	9261	6823	84
57	9894	6731	11	36	2155	9796	6753	100
58	12136	6444	12	37	1178	12128	6445	8
59	12561	6405	12	37	1560	12507	6395	55
60	13099	6331	12	37	2140	13082	6319	21
61	13452	6271	12	37	2464	13403	6377	49
62	13455	5695	12	38	486	13500	5774	91
63	13388	5138	12	38	1046	13426	5219	89
64	13372	4812	12	38	1338	13388	4930	119
65	13787	4668	12	39	337	13691	4660	96
66	14242	4594	12	39	781	14131	4559	116
67	15770	4381	13	40	1368	15742	4392	30
68	16152	4347	13	40	1770	16141	4341	13
69	17121	4202	13	40	2702	17066	4224	59
70	17491	3956	13	41	408	17495	3751	22
71	18691	3072	14	43	1232	18651	3073	40
72	18782	3565	14	44	459	18806	3520	51
73	18484	4477	14	45	386	18531	4482	47
74	17621	4597	14	45	1272	17650	4585	31
75	16706	4705	14	45	2170	16758	4690	54
76	15624	4856	15	46	430	15646	4831	33

LOCATION SUBSYSTEM ERROR STATISTICS, RUN 14

ERROR FREQUENCY DENSITY RUN 14a

Error Interval	No. Samples	Percent of Samples
0- 10	5	6.57
10- 20	8	10.52
20- 30	11	14.47
30- 40	14	18.42
40- 50	4	5.26
50- 60	9	11.24
60- 70	5	6.57
70- 80	5	6.57
80- 90	7	9.21
90-100	3	3.94
100-110	3	3.94
110-120	2	2.63

CUMULATIVE ERRORS RUN 14a

Error	Samples LT Error	Percent Samples LT Error
10	5	6.57
20	13	17.10
30	24	31.57
40	38	50.00
50	42	55.26
60	51	67.10
70	56	73.68
80	61	80.26
90	68	89.47
100	71	93.42
110	74	97.36
120	76	100.00

FIXED ROUTE LS RUN 14
 TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 14b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	3	27.27
2- 3	3	27.27
3- 4	1	9.09
4- 5	2	18.18
7- 8	1	9.09
8- 9	1	9.09

CUMULATIVE ERRORS RUN 14b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	27.27
2	3	27.27
3	6	54.55
4	7	63.64
5	9	81.82
6	9	81.82
7	9	81.82
8	10	90.91
9	11	100.00

FIXED ROUTE LS RUN 15
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 15a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	4	5.26
10- 20	8	10.53
20- 30	11	14.47
30- 40	8	10.53
40- 50	14	18.42
50- 60	7	9.21
60- 70	5	6.58
70- 80	2	2.63
80- 90	6	7.89
90- 100	3	3.95
100- 110	5	6.58
110- 120	2	2.63
140- 150	1	1.32

CUMULATIVE ERRORS RUN 15a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	4	5.26
20	12	15.79
30	23	30.26
40	31	40.79
50	45	59.21
60	52	68.42
70	57	75.00
80	59	77.63
90	65	85.53
100	68	89.47
110	73	96.05
120	75	98.68
130	75	98.68
140	75	98.68
150	76	100.00

FIXED ROUTE LS RUN 15

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 15b

ERROR INTERVAL		NO. OF SAMPLES	PERCENT OF SAMPLES
0-	1	3	20.00
1-	2	2	13.33
2-	3	1	6.67
3-	4	5	33.33
4-	5	2	13.33
5-	6	1	6.67
7-	8	1	6.67

CUMULATIVE ERRORS RUN 15b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	20.00
2	5	33.33
3	6	40.00
4	11	73.33
5	13	86.67
6	14	93.33
7	14	93.33
8	15	100.00

FIXED ROUTE LS RUN 16

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 16a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	3	3.95
10- 20	12	15.79
20- 30	12	15.79
30- 40	3	3.95
40- 50	11	14.47
50- 60	10	13.16
60- 70	7	9.21
70- 80	4	5.26
80- 90	8	10.53
90- 100	2	2.63
100- 110	3	3.95
110- 120	1	1.32

CUMULATIVE ERRORS RUN 16a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	3	3.95
20	15	19.74
30	27	35.53
40	30	39.47
50	41	53.95
60	51	67.11
70	58	76.32
80	62	81.58
90	70	92.11
100	72	94.74
110	75	98.68
120	76	100.00

FIXED ROUTE LS RUN 16

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 16b |

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	1	6.67
1- 2	4	26.67
2- 3	2	13.33
3- 4	2	13.33
4- 5	1	6.67
5- 6	1	6.67
6- 7	1	6.67
7- 8	1	6.67
10- 11	1	6.67
14- 15	1	6.67

CUMULATIVE ERRORS RUN 16b |

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	1	6.67
2	5	33.33
3	7	46.67
4	9	60.00
5	10	66.67
6	11	73.33
7	12	80.00
8	13	86.67
9	13	86.67
10	13	86.67
11	14	93.33
12	14	93.33
13	14	93.33
14	14	93.33
15	15	100.00

FIXED ROUTE LS RUN 17

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 17a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	4	5.26
10- 20	6	7.89
20- 30	17	22.37
30- 40	11	14.47
40- 50	6	7.89
50- 60	3	3.95
60- 70	5	6.58
70- 80	4	5.26
80- 90	10	13.16
90- 100	6	7.89
100- 110	2	2.63
110- 120	2	2.63

CUMULATIVE ERRORS RUN 17a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	4	5.26
20	10	13.16
30	27	35.53
40	38	50.00
50	44	57.89
60	47	61.84
70	52	68.42
80	56	73.68
90	66	86.84
100	72	94.74
110	74	97.37
120	76	100.00

FIXED ROUTE LS RUN 17

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 17b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	14.29
1- 2	1	7.14
2- 3	4	28.57
4- 5	2	14.29
6- 7	2	14.29
7- 8	1	7.14
8- 9	1	7.14
9- 10	1	7.14

CUMULATIVE ERRORS RUN 17b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	14.29
2	3	21.43
3	7	50.00
4	7	50.00
5	9	64.29
6	9	64.29
7	11	78.57
8	12	85.71
9	13	92.86
10	14	100.00

FIXED ROUTE LS RUN 18

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 18a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	2	2.67
10- 20	3	4.00
20- 30	12	16.00
30- 40	12	16.00
40- 50	10	13.33
50- 60	9	12.00
60- 70	8	10.67
70- 80	5	6.67
80- 90	3	4.00
90- 100	3	4.00
100- 110	4	5.33
110- 120	1	1.33
120- 130	2	2.67
130- 140	1	1.33

CUMULATIVE ERRORS RUN 18a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	2	2.67
20	5	6.67
30	17	22.67
40	29	38.67
50	39	52.00
60	48	64.00
70	56	74.67
80	61	81.33
90	64	85.33
100	67	89.33
110	71	94.67
120	72	96.00
130	74	98.67
140	75	100.00

FIXED ROUTE LS RUN 18

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 18b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	3	20.00
1- 2	2	13.33
2- 3	3	20.00
3- 4	4	26.67
5- 6	1	6.67
8- 9	1	6.67
14- 15	1	6.67

CUMULATIVE ERRORS RUN 18b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	20.00
2	5	33.33
3	8	53.33
4	12	80.00
5	12	80.00
6	13	86.67
7	13	86.67
8	13	86.67
9	14	93.33
10	14	93.33
11	14	93.33
12	14	93.33
13	14	93.33
14	14	93.33
15	15	100.00

FIXED ROUTE LS RUN 20
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 20a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
10- 20	3	6.67
20- 30	6	13.33
30- 40	5	11.11
40- 50	10	22.22
50- 60	4	8.89
60- 70	3	6.67
70- 80	4	8.89
80- 90	3	6.67
90- 100	1	2.22
100- 110	2	4.44
110- 120	1	2.22
120- 130	1	2.22
140- 150	1	2.22
160- 170	1	2.22

CUMULATIVE ERRORS RCN 20a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
20	3	6.67
30	9	20.00
40	14	31.11
50	24	53.33
60	28	62.22
70	31	68.89
80	35	77.78
90	38	84.44
100	39	86.67
110	41	91.11
120	42	93.33
130	43	95.56
140	43	95.56
150	44	97.78
160	44	97.78
170	45	100.00

FIXED ROUTE LS RUN 20
 TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 20b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
1- 2	2	22.22
2- 3	1	11.11
3- 4	1	11.11
4- 5	2	22.22
5- 6	2	22.22
9- 10	1	11.11

CUMULATIVE ERRORS RUN 20b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
2	2	22.22
3	3	33.33
4	4	44.44
5	6	66.67
6	8	88.89
7	8	88.89
8	8	88.89
9	8	88.89
10	9	100.00

FIXED ROUTE LS RUN 21
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 21a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	7	9.59
10- 20	11	15.07
20- 30	13	17.81
30- 40	14	19.18
40- 50	6	8.22
50- 60	8	10.96
60- 70	4	5.48
70- 80	3	4.11
80- 90	1	1.37
90- 100	2	2.74
100- 110	2	2.74
130- 140	1	1.37
140- 150	1	1.37

CUMULATIVE ERRORS RUN 21a

ERROR LT	# SAMPLES ERROR	PERCENT SAMPLES LT ERROR
10	7	9.59
20	18	24.66
30	31	42.47
40	45	61.64
50	51	69.86
60	59	80.82
70	63	86.30
80	66	90.41
90	67	91.78
100	69	94.52
110	71	97.26
120	71	97.26
130	71	97.26
140	72	98.63
150	73	100.00

FIXED ROUTE LS RUN 21
 TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 21b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	3	20.00
1- 2	3	20.00
3- 4	3	20.00
4- 5	2	13.33
6- 7	2	13.33
7- 8	1	6.67
10- 11	1	6.67

CUMULATIVE ERRORS RUN 21b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	20.00
2	6	40.00
3	6	40.00
4	9	60.00
5	11	73.33
6	11	73.33
7	13	86.67
8	14	93.33
9	14	93.33
10	14	93.33
11	15	100.00

FIXED ROUTE LS RUN 22
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 22a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	5	6.58
10- 20	10	13.16
20- 30	11	14.47
30- 40	10	13.16
40- 50	14	18.42
50- 60	9	11.84
60- 70	6	7.89
70- 80	3	3.95
80- 90	1	1.32
90- 100	2	2.63
100- 110	2	2.63
120- 130	1	1.32
130- 140	1	1.32
150- 160	1	1.32

CUMULATIVE ERRORS RUN 22a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	5	6.58
20	15	19.74
30	26	34.21
40	36	47.37
50	50	65.79
60	59	77.63
70	65	85.53
80	68	89.47
90	69	90.79
100	71	93.42
110	73	96.05
120	73	96.05
130	74	97.37
140	75	98.68
150	75	98.68
160	76	100.00

FIXED ROUTE LS RUN 22
TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 22b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	3	20.00
1- 2	3	20.00
2- 3	3	20.00
3- 4	3	20.00
6- 7	1	6.67
7- 8	1	6.67
9- 10	1	6.67

CUMULATIVE ERRORS RUN 22b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	20.00
2	6	40.00
3	9	60.00
4	12	80.00
5	12	80.00
6	12	80.00
7	13	86.67
8	14	93.33
9	14	93.33
10	15	100.00

FIXED ROUTE LS RUN 23

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 23a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	6	7.89
10- 20	10	13.16
20- 30	16	21.05
30- 40	8	10.53
40- 50	10	13.16
50- 60	7	9.21
60- 70	6	7.89
70- 80	1	1.32
80- 90	2	2.63
90- 100	4	5.26
110- 120	1	1.32
120- 130	1	1.32
130- 140	1	1.32
140- 150	2	2.63
170- 180	1	1.32

CUMULATIVE ERRORS RUN 23a

ERROR	↑ SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	6	7.89
20	16	21.05
30	32	42.11
40	40	52.63
50	50	65.79
60	57	75.00
70	63	82.89
80	64	84.21
90	66	86.84
100	70	92.11
110	70	92.11
120	71	93.42
130	72	94.74
140	73	96.05
150	75	98.68
160	75	98.68
170	75	98.68
180	76	100.00

FIXED ROUTE LS RUN 23
TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 23b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0-	1	5
1-	2	1
2-	3	2
3-	4	1
4-	5	2
6-	7	2
7-	8	1
8-	9	1

CUMULATIVE ERRORS RUN 23b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	5	33.33
2	6	40.00
3	8	53.33
4	9	60.00
5	11	73.33
6	11	73.33
7	13	86.67
8	14	93.33
9	15	100.00

FIXED ROUTE LS RUN 24
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 24a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	1	1.61
10- 20	7	11.29
20- 30	9	14.52
30- 40	13	20.97
40- 50	5	8.06
50- 60	9	14.52
60- 70	4	6.45
70- 80	2	3.23
80- 90	2	3.23
90- 100	1	1.61
100- 110	2	3.23
120- 130	1	1.61
130- 140	2	3.23
140- 150	2	3.23
170- 180	1	1.61
1500-1510	1	1.61

CUMULATIVE ERRORS RUN 24a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	1	1.61
20	8	12.90
30	17	27.42
40	30	48.39
50	35	56.45
60	44	70.97
70	48	77.42
80	50	80.65
90	52	83.87
100	53	85.48
110	55	88.71
120	55	88.71
130	56	90.32
140	58	93.55
150	60	96.77
160	60	96.77
170	60	96.77
180	61	98.39
1510	62	100.00

MANUALLY PROCESSED FIXED ROUTE LS ERRORS, RUN 24

FIXED ROUTE RUN#		CHECKPOINT ERRORS						
CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
64	13372	4812	12	38	1400	13379	4869	57
65	13787	4668	12	39	399	13753	4652	38
66	14242	4594	12	39	867	14217	4587	26
67	15770	4381	13	40	1408	15782	4386	13
68	16152	4347	13	40	1770	16141	4341	13
69	17121	4202	13	40	2740	17104	4219	24
70	17491	3736	13	41	449	17490	3723	13
71	18691	3072	14	43	1256	18675	3071	16
72	18782	3565	14	44	489	18809	3557	28
73	14484	4477	14	45	422	18495	4486	14
74	17621	4597	14	45	1328	17595	4592	26
75	16706	4705	14	45	2220	16709	4695	10
76	15624	4856	15	46	448	15629	4834	23

FIXED ROUTE LOCATION SUBSYSTEM
ERROR STATISTICS, RUN 24

ERROR FREQUENCY DENSITY RUN 24a

Error Interval	No. Samples	Percent of Samples
0- 10	1	1.61
10- 20	13	17.33
20- 30	14	18.66
30- 40	14	18.66
40- 50	5	8.06
50- 60	10	13.33
60- 70	4	6.45
70- 80	2	3.23
80- 90	2	3.23
90-100	1	1.61
100-110	2	3.23
120-130	1	1.61
130-140	2	3.23
140-150	2	3.23
170-180	1	1.61
1500-1510	1	1.61

Cumulative Errors Run 24a

Error	Samples LT Error	Percent Samples LT Error
10	1	1.61
20	14	17.33
30	28	37.33
40	42	56.00
50	47	62.66
60	57	76.00
70	61	81.33
80	63	84.00
90	65	86.66
100	66	88.00
110	68	90.66
120	68	90.66
130	69	92.00
140	71	94.66
150	73	97.33
160	73	97.33
170	73	97.33
180	74	98.66
1510	75	100.00

FIXED ROUTE LS RUN 24
TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 24b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
1- 2	4	33.33
2- 3	1	8.33
3- 4	1	8.33
4- 5	3	25.00
5- 6	2	16.67
12- 13	1	8.33

CUMULATIVE ERRORS RUN 24b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
2	4	33.33
3	5	41.67
4	6	50.00
5	9	75.00
6	11	91.67
7	11	91.67
8	11	91.67
9	11	91.67
10	11	91.67
11	11	91.67
12	11	91.67
13	12	100.00

FIXED ROUTE LS RUN 25
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 25a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
.0- 10	1	4.00
10- 20	2	8.00
20- 30	5	20.00
30- 40	1	4.00
40- 50	5	20.00
50- 60	4	16.00
60- 70	3	12.00
70- 80	1	4.00
80- 90	1	4.00
90- 100	2	8.00

CUMULATIVE ERRORS RUN 25a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	1	4.00
20	3	12.00
30	8	32.00
40	9	36.00
50	14	56.00
60	18	72.00
70	21	84.00
80	22	88.00
90	23	92.00
100	25	100.00

FIXED ROUTE LS RUN 25

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 25b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
1- 2	1	20.00
3- 4	1	20.00
6- 7	2	40.00
9- 10	1	20.00

CUMULATIVE ERRORS RUN 25b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
2	1	20.00
3	1	20.00
4	2	40.00
5	2	40.00
6	2	40.00
7	4	80.00
8	4	80.00
9	4	80.00
10	5	100.00

FIXED ROUTE LS RUN 26
TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 26a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	6	7.89
10- 20	10	13.16
20- 30	17	22.37
30- 40	11	14.47
40- 50	13	17.11
50- 60	7	9.21
60- 70	6	7.89
70- 80	1	1.32
80- 90	1	1.32
90- 100	2	2.63
100- 110	1	1.32
110- 120	1	1.32

CUMULATIVE ERRORS RUN 26a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	6	7.89
20	16	21.05
30	33	43.42
40	44	57.89
50	57	75.00
60	64	84.21
70	70	92.11
80	71	93.42
90	72	94.74
100	74	97.37
110	75	98.68
120	76	100.00

FIXED ROUTE LS 26
TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 26b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES	
0-	1	3	21.43
1-	2	3	21.43
2-	3	2	14.29
3-	4	3	21.43
5-	6	2	14.29
12-	13	1	7.14

CUMULATIVE ERRORS RUN 26b/

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	21.43
2	6	42.86
3	8	57.14
4	11	78.57
5	11	78.57
6	13	92.86
7	13	92.86
8	13	92.86
9	13	92.86
10	13	92.86
11	13	92.86
12	13	92.86
13	14	100.00

FIXED ROUTE LS RUN 27
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 27a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	2	2.63
10- 20	9	11.84
20- 30	11	14.47
30- 40	12	15.79
40- 50	9	11.84
50- 60	14	18.42
60- 70	1	1.32
70- 80	9	11.84
80- 90	3	3.95
90- 100	2	2.63
100- 110	2	2.63
120- 130	2	2.63

CUMULATIVE ERRORS RUN 27a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	2	2.63
20	11	14.47
30	22	28.95
40	34	44.74
50	43	56.58
60	57	75.00
70	58	76.32
80	67	88.16
90	70	92.11
100	72	94.74
110	74	97.37
120	74	97.37
130	76	100.00

FIXED ROUTE LS RUN 27
 TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 27b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	13.33
1- 2	4	26.67
2- 3	3	20.00
3- 4	3	20.00
5- 6	1	6.67
9- 10	1	6.67
14- 15	1	6.67

CUMULATIVE ERRORS RUN 27b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	13.33
2	6	40.00
3	9	60.00
4	12	80.00
5	12	80.00
6	13	86.67
7	13	86.67
8	13	86.67
9	13	86.67
10	14	93.33
11	14	93.33
12	14	93.33
13	14	93.33
14	14	93.33
15	15	100.00

FIXED ROUTE LS RUN 28
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 28a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	5	6.67
10- 20	10	13.33
20- 30	11	14.67
30- 40	8	10.67
40- 50	13	17.33
50- 60	5	6.67
60- 70	8	10.67
70- 80	5	6.67
80- 90	5	6.67
90- 100	2	2.67
100- 110	2	2.67
110- 120	1	1.33

CUMULATIVE ERRORS RUN 28a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	5	6.67
20	15	20.00
30	26	34.67
40	34	45.33
50	47	62.67
60	52	69.33
70	60	80.00
80	65	86.67
90	70	93.33
100	72	96.00
110	74	98.67
120	75	100.00

FIXED ROUTE LS RUN 28
TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 28b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	5	33.33
1- 2	2	13.33
2- 3	1	6.67
3- 4	2	13.33
4- 5	2	13.33
5- 6	2	13.33
9- 10	1	6.67

CUMULATIVE ERRORS RUN 28b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	5	33.33
2	7	46.67
3	8	53.33
4	10	66.67
5	12	80.00
6	14	93.33
7	14	93.33
8	14	93.33
9	14	93.33
10	15	100.00

FIXED ROUTE LS RUN 29

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 29a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	4	5.41
10- 20	10	13.51
20- 30	11	14.86
30- 40	15	20.27
40- 50	9	12.16
50- 60	6	8.11
60- 70	8	10.81
70- 80	1	1.35
80- 90	5	6.76
90- 100	3	4.05
100- 110	1	1.35
120- 130	1	1.35

CUMULATIVE ERRORS RUN 29a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	4	5.41
20	14	18.92
30	25	33.78
40	40	54.05
50	49	66.22
60	55	74.32
70	63	85.14
80	64	86.49
90	69	93.24
100	72	97.30
110	73	98.65
120	73	98.65
130	74	100.00

**FIXED ROUTE LS RUN 29
TIMEPOINT ERROR IN SECONDS**

ERROR FREQUENCY DENSITY RUN 29b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0-	4	26.67
1-	2	13.33
2-	1	6.67
3-	1	6.67
4-	1	6.67
5-	1	6.67
6-	2	13.33
7-	1	6.67
8-	1	6.67
11-	1	6.67

CUMULATIVE ERRORS RUN 29b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	4	26.67
2	6	40.00
3	7	46.67
4	8	53.33
5	9	60.00
6	10	66.67
7	12	80.00
8	13	86.67
9	14	93.33
10	14	93.33
11	14	93.33
12	15	100.00

FIXED ROUTE LS RUN 30

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 30a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	3	3.95
10- 20	10	13.16
20- 30	12	15.79
30- 40	9	11.84
40- 50	11	14.47
50- 60	13	17.11
60- 70	7	9.21
70- 80	5	6.58
80- 90	3	3.95
100- 110	2	2.63
120- 130	1	1.32

CUMULATIVE ERRORS RUN 30a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	3	3.95
20	13	17.11
30	25	32.89
40	34	44.74
50	45	59.21
60	58	76.32
70	65	85.53
80	70	92.11
90	73	96.05
100	73	96.05
110	75	98.68
120	75	98.68
130	76	100.00

FIXED ROUTE LS RUN 30

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 30b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	3	20.00
1- 2	4	26.67
2- 3	1	6.67
3- 4	1	6.67
5- 6	2	13.33
7- 8	1	6.67
8- 9	2	13.33
13- 14	1	6.67

CUMULATIVE ERRORS RUN 30b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	20.00
2	7	46.67
3	8	53.33
4	9	60.00
5	9	60.00
6	11	73.33
7	11	73.33
8	12	80.00
9	14	93.33
10	14	93.33
11	14	93.33
12	14	93.33
13	14	93.33
14	15	100.00

FIXED ROUTE LS RUN 31
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 31a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	2	2.63
10- 20	4	5.26
20- 30	12	15.79
30- 40	15	19.74
40- 50	10	13.16
50- 60	4	5.26
60- 70	9	11.84
70- 80	3	3.95
80- 90	7	9.21
90- 100	5	6.58
100- 110	2	2.63
110- 120	1	1.32
120- 130	1	1.32
400- 410	1	1.32

CUMULATIVE ERRORS RUN 31a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	2	2.63
20	6	7.89
30	18	23.68
40	33	43.42
50	43	56.58
60	47	61.84
70	56	73.68
80	59	77.63
90	66	86.84
100	71	93.42
110	73	96.05
120	74	97.37
130	75	98.68
410	76	100.00

FIXED ROUTE LS RUN 31

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 31b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	5	33.33
1- 2	1	6.67
2- 3	1	6.67
3- 4	2	13.33
4- 5	1	6.67
5- 6	3	20.00
6- 7	1	6.67
10- 11	1	6.67

CUMULATIVE ERRORS RUN 31b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	5	33.33
2	6	40.00
3	7	46.67
4	9	60.00
5	10	66.67
6	13	86.67
7	14	93.33
8	14	93.33
9	14	93.33
10	14	93.33
11	15	100.00

FIXED ROUTE LS RUN 32

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 32a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	5	6.67
10- 20	11	14.67
20- 30	10	13.33
30- 40	16	21.33
40- 50	9	12.00
50- 60	8	10.67
60- 70	4	5.33
70- 80	3	4.00
80- 90	3	4.00
90- 100	4	5.33
100- 110	1	1.33
120- 130	1	1.33

CUMULATIVE ERRORS RUN 32a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	5	6.67
20	16	21.33
30	26	34.67
40	42	56.00
50	51	68.00
60	59	78.67
70	63	84.00
80	66	88.00
90	69	92.00
100	73	97.33
110	74	98.67
120	74	98.67
130	75	100.00

FIXED ROUTE LS RUN 32

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 32b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	14.29
1- 2	2	14.29
2- 3	3	21.43
5- 6	2	14.29
6- 7	1	7.14
8- 9	1	7.14
9- 10	1	7.14
11- 12	1	7.14
12- 13	1	7.14

CUMULATIVE ERRORS RUN 32b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	14.29
2	4	28.57
3	7	50.00
4	7	50.00
5	7	50.00
6	9	64.29
7	10	71.43
8	10	71.43
9	11	78.57
10	12	85.71
11	12	85.71
12	13	92.86
13	14	100.00

FIXED ROUTE LS RUN 34

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 34a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
10- 20	3	8.11
20- 30	6	16.22
30- 40	5	13.51
40- 50	6	16.22
50- 60	3	8.11
60- 70	5	13.51
70- 80	3	8.11
80- 90	2	5.41
90- 100	3	8.11
130- 140	1	2.70

CUMULATIVE ERRORS RUN 34a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
20	3	8.11
30	9	24.32
40	14	37.84
50	20	54.05
60	23	62.16
70	28	75.68
80	31	83.78
90	33	89.19
100	36	97.30
110	36	97.30
120	36	97.30
130	36	97.30
140	37	100.00

MANUALLY PROCESSED FIXED ROUTE LS ERRORS, RUN 34

CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
38	16908	5840	8	25	1751	16905	5830	10
39	16427	5897	8	25	2253	16407	5893	20
40	15645	6003	8	25	3043	15624	5993	23
41	14638	6127	9	29	351	14637	6119	8
42	14717	5780	9	30	160	14754	5771	38
43	14816	5222	9	31	552	14821	5210	13
44	14055	5037	9	32	705	14089	5045	35
45	13388	5138	9	32	1373	13427	5132	39
46	12862	5200	9	32	1951	12854	5207	11
47	11518	5369	10	33	818	11535	5387	25
48	10787	5472	10	33	1550	10810	5488	28
49	10462	5513	10	33	1892	10471	5535	24
51	8740	5757	10	33	3628	8752	5775	22
52	8145	5840	10	33	4280	8106	5865	46
53	7537	6481	11	35	526	7558	6443	43
54	7652	6971	11	35	1028	7643	6937	35
55	8320	6948	11	36	611	8266	6955	54
56	9345	6825	11	36	1651	9297	6819	93
57	9894	6731	11	36	2213	9854	6745	42
58	12136	6444	12	37	1168	12118	6446	18
59	12561	6405	12	37	1574	12521	6393	42
60	13099	6331	12	37	2154	13096	6318	13
61	13452	6271	12	37	2490	13429	6274	23
62	13455	5695	12	38	510	13497	5751	70
63	13388	5138	12	38	1078	13422	5188	60
64	13372	4812	12	38	1372	13383	4896	85
65	13787	4668	12	39	375	13729	4655	59
66	14242	4594	12	39	821	14171	4594	71
67	15770	4381	13	40	1516	15889	4373	119
68	16152	4347	13	40	1772	16143	4341	11
69	17121	4202	13	40	2724	17088	4221	38
70	17491	3736	13	41	416	17494	3750	14
71	18691	3072	14	43	1230	18650	3074	41
72	18782	3565	14	44	477	18808	3537	38
73	18484	4477	14	45	412	18505	4485	22
74	17621	4597	14	45	1316	17607	4590	16
75	16706	4705	14	45	2220	16709	4695	115
76	15624	4856	15	46	430	15646	4831	33

FIXED ROUTE LOCATION SUBSYSTEM
ERROR STATISTICS, RUN 34a

ERROR FREQUENCY DENSITY RUN 34a

Error Interval	No. Samples	Percent of Samples
0- 10	1	1.33
10- 20	11	14.66
20- 30	14	18.66
30- 40	12	16.00
40- 50	11	14.66
50- 60	5	6.66
60- 70	6	8.0
70- 80	5	6.66
80- 90	3	4.0
90-100	4	5.33
110-120	2	2.66
130-140	1	1.33

Cumulative Errors Run 34a

Error	Samples		Percent Samples	
	LT	Error	LT	Error
10	1		1.33	
20	12		16.00	
30	26		34.66	
40	38		50.66	
50	49		65.33	
60	54		72.00	
70	60		80.00	
80	65		86.66	
90	68		90.66	
100	72		96.00	
110	72		96.00	
120	74		98.66	
130	74		98.66	
140	75		100.00	

FIXED ROUTE LS RUN 34

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY 34b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	25.00
1- 2	1	12.50
4- 5	1	12.50
7- 8	1	12.50
8- 9	1	12.50
9- 10	1	12.50
17- 18	1	12.50

CUMULATIVE ERRORS 34b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	25.00
2	3	37.50
3	3	37.50
4	3	37.50
5	4	50.00
6	4	50.00
7	4	50.00
8	5	62.50
9	6	75.00
10	7	87.50
11	7	87.50
12	7	87.50
13	7	87.50
14	7	87.50
15	7	87.50
16	7	87.50
17	7	87.50
18	8	100.00

FIXED ROUTE LS RUN 35

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 35a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	6	8.00
10- 20	10	13.33
20- 30	15	20.00
30- 40	10	13.33
40- 50	9	12.00
50- 60	7	9.33
60- 70	9	12.00
70- 80	3	4.00
80- 90	3	4.00
90- 100	2	2.67
130- 140	1	1.33

CUMULATIVE ERRORS RUN 35a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	6	8.00
20	16	21.33
30	31	41.33
40	41	54.67
50	50	66.67
60	57	76.00
70	66	88.00
80	69	92.00
90	72	96.00
100	74	98.67
110	74	98.67
120	74	98.67
130	74	98.67
140	75	100.00

FIXED ROUTE LS RUN 35

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 35b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	13.33
1- 2	3	20.00
2- 3	3	20.00
5- 6	3	20.00
6- 7	2	13.33
9- 10	2	13.33

CUMULATIVE ERRORS RUN 35b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	13.33
2	5	33.33
3	8	53.33
4	8	53.33
5	8	53.33
6	11	73.33
7	13	86.67
8	13	86.67
9	13	86.67
10	15	100.00

FIXED ROUTE LS RUN 36

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 36a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	6	7.89
10- 20	6	7.89
20- 30	13	17.11
30- 40	9	11.84
40- 50	9	11.84
50- 60	7	9.21
60- 70	7	9.21
70- 80	6	7.89
80- 90	5	6.58
100- 110	2	2.63
110- 120	3	3.95
120- 130	1	1.32
130- 140	1	1.32
150- 160	1	1.32

CUMULATIVE ERRORS RUN 36a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	6	7.89
20	12	15.79
30	25	32.89
40	34	44.74
50	43	56.58
60	50	65.79
70	57	75.00
80	63	82.89
90	68	89.47
100	68	89.47
110	70	92.11
120	73	96.05
130	74	97.37
140	75	98.68
150	75	98.68
160	76	100.00

FIXED ROUTE LS RUN 36

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 36b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES	
0-	1	2	13.33
1-	2	3	20.00
2-	3	3	20.00
3-	4	1	6.67
4-	5	5	33.33
7-	8	1	6.67

CUMULATIVE ERRORS RUN 36b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	13.33
2	5	33.33
3	8	53.33
4	9	60.00
5	14	93.33
6	14	93.33
7	14	93.33
8	15	100.00

FIXED ROUTE LS RUN 37
 LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 37a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	5	6.58
10- 20	4	5.26
20- 30	16	21.05
30- 40	7	9.21
40- 50	9	11.84
50- 60	7	9.21
60- 70	9	11.84
70- 80	3	3.95
80- 90	6	7.89
90- 100	3	3.95
100- 110	2	2.63
110- 120	3	3.95
120- 130	1	1.32
140- 150	1	1.32

CUMULATIVE ERRORS RUN 37a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	5	6.58
20	9	11.84
30	25	32.89
40	32	42.11
50	41	53.95
60	48	63.16
70	57	75.00
80	60	78.95
90	66	86.84
100	69	90.79
110	71	93.42
120	74	97.37
130	75	98.68
140	75	98.68
150	76	100.00

FIXED ROUTE LS RUN 37

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 37b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0-	1	4
1-	2	1
2-	3	2
3-	4	1
4-	5	3
5-	6	1
7-	8	1
8-	9	2

CUMULATIVE ERRORS RUN 37b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	4	26.67
2	5	33.33
3	7	46.67
4	8	53.33
5	11	73.33
6	12	80.00
7	12	80.00
8	13	86.67
9	15	100.00

FIXED ROUTE LS RUN 38

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 38a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	1	1.32
10- 20	10	13.16
20- 30	7	9.21
30- 40	8	10.53
40- 50	10	13.16
50- 60	9	11.84
60- 70	9	11.84
70- 80	5	6.58
80- 90	7	9.21
90- 100	6	7.89
100- 110	2	2.63
110- 120	2	2.63

CUMULATIVE ERRORS RUN 38a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	1	1.32
20	11	14.47
30	18	23.68
40	26	34.21
50	36	47.37
60	45	59.21
70	54	71.05
80	59	77.63
90	66	86.84
100	72	94.74
110	74	97.37
120	76	100.00

FIXED ROUTE LS RUN 38

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 38b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	14.29
2- 3	2	14.29
3- 4	1	7.14
4- 5	3	21.43
5- 6	3	21.43
6- 7	1	7.14
10- 11	1	7.14
19- 20	1	7.14

CUMULATIVE ERRORS RUN 38b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	14.29
2	2	14.29
3	4	28.57
4	5	35.71
5	8	57.14
6	11	78.57
7	12	85.71
8	12	85.71
9	12	85.71
10	12	85.71
11	13	92.86
20	14	100.00

FIXED ROUTE LS RUN 39
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 39a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
10- 20	2	2.78
20- 30	7	9.72
30- 40	11	15.28
40- 50	16	22.22
50- 60	13	18.06
60- 70	9	12.50
70- 80	4	5.56
80- 90	3	4.17
90- 100	1	1.39
100- 110	3	4.17
110- 120	1	1.39
130- 140	1	1.39
140- 150	1	1.39

CUMULATIVE ERRORS RUN 39a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
20	2	2.78
30	9	12.50
40	20	27.78
50	36	50.00
60	49	68.06
70	58	80.56
80	62	86.11
90	65	90.28
100	66	91.67
110	69	95.83
120	70	97.22
130	70	97.22
140	71	98.61
150	72	100.00

FIXED ROUTE LS RUN 39
 TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 39b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	1	7.14
1- 2	4	28.57
2- 3	1	7.14
4- 5	2	14.29
5- 6	1	7.14
6- 7	2	14.29
9- 10	1	7.14
11- 12	2	14.29

CUMULATIVE ERRORS RUN 39b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	1	7.14
2	5	35.71
3	6	42.86
4	6	42.86
5	8	57.14
6	9	64.29
7	11	78.57
8	11	78.57
9	11	78.57
10	12	85.71
11	12	85.71
12	14	100.00

FIXED ROUTE LS RUN 40

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 40a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	1	2.78
10- 20	1	2.78
20- 30	2	5.56
30- 40	8	22.22
40- 50	9	25.00
50- 60	7	19.44
70- 80	4	11.11
80- 90	1	2.78
90- 100	1	2.78
100- 110	1	2.78
110- 120	1	2.78

CUMULATIVE ERRORS RUN 40a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	1	2.78
20	2	5.56
30	4	11.11
40	12	33.33
50	21	58.33
60	28	77.78
70	28	77.78
80	32	88.89
90	33	91.67
100	34	94.44
110	35	97.22
120	36	100.00

MANUALLY PROCESSED FIXED ROUTE LS DATA, RUN 40

FIXED ROUTE RUN# 40 CHECKPOINT ERRORS

CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
37	17779	5728	8	25	1804	17758	5720	22
38	16908	5840	8	25	2670	16899	5829	14
39	16427	5897	8	25	3164	16409	5893	18
40	15645	6003	8	25	3960	15699	5994	55
41	14638	6127	9	29	1058	14637	6122	5
42	14717	5780	9	30	1572	14770	5770	54
43	14816	5222	9	31	2252	14820	5202	20
44	14055	5037	9	32	3208	14089	5045	35
45	13388	5138	9	32	3888	13415	5133	27
46	12862	5200	9	32	4450	12858	5207	8
47	11518	5369	10	33	824	11529	5388	22
48	10787	5472	10	33	1562	10798	5490	21
49	10462	5513	10	33	1894	10469	5536	24
50	4558	5647	10	33	2878	9495	5692	68
51	8740	5757	10	33	3634	8746	5776	20
52	8145	5840	10	33	4270	8116	5864	38
53	1537	6481	11	35	866	7553	6415	68
54	7652	6971	11	35	1370	7639	6912	60
55	8320	6948	11	36	2092	8252	6957	69
56	9345	6825	11	36	3124	9275	6822	70
57	9894	6731	11	36	3676	9822	6749	74
58	12136	6444	11	37	5994	12120	6446	16
59	12561	6405	11	37	6388	12511	6395	51
60	13099	6331	11	37	6964	13082	6319	21
61	13452	6271	11	37	7296	13411	6276	41
62	13455	5695	11	38	7940	13499	5770	87
63	13388	5138	11	38	8508	13425	5207	78
64	13372	4812	11	38	8794	13387	4924	113
65	13787	4668	11	39	9362	13703	4659	84
66	14242	4594	11	39	9824	14161	4595	81
67	15770	4381	13	40	1378	15752	4390	20
68	16152	4347	13	40	1772	16144	4341	10
69	17121	4202	13	40	2586	16950	4238	175
70	17491	3956	13	41	3628	17492	3738	2
71	18691	3072	13	43	1494	18638	3075	53
72	18782	3565	13	44	2072	18806	3524	48
73	18484	4477	13	45	3392	18517	4484	34
74	17621	4597	13	45	4286	17619	4589	8
75	16706	4705	13	45	5186	16735	4692	32
76	15624	4856	14	46	440	15636	4833	26

FIXED ROUTE LOCATION SUBSYSTEM
ERROR STATISTICS, RUN 40a

ERROR FREQUENCY DENSITY RUN 40a

Error Interval	No. Samples	Percent of Samples
0- 10	4	5.26
10- 20	6	7.89
20- 30	12	15.78
30- 40	12	15.78
40- 50	11	14.47
50- 60	11	14.47
60- 70	4	5.26
70- 80	7	9.21
80- 90	4	5.26
90-100	1	1.31
100-110	1	1.31
110-120	2	2.63
170-180	1	1.31

Cumulative Errors Run 40a

Error	Samples LT Error	Percent Samples LT Error
10	4	5.26
20	10	13.15
30	22	28.94
40	34	44.73
50	45	59.21
60	56	73.68
70	60	78.94
80	67	88.15
90	71	93.42
100	72	94.73
110	73	96.05
120	75	98.65
180	76	100.00

FIXED ROUTE LS RUN 40

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 40b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	3	37.50
3- 4	1	12.50
6- 7	2	25.00
8- 9	1	12.50
11- 12	1	12.50

CUMULATIVE ERRORS RUN 40b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	3	37.50
2	3	37.50
3	3	37.50
4	4	50.00
5	4	50.00
6	4	50.00
7	6	75.00
8	6	75.00
9	7	87.50
10	7	87.50
11	7	87.50
12	8	100.00

FIXED ROUTE LS RUN 41

LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 41a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	7	9.72
10- 20	14	19.44
20- 30	7	9.72
30- 40	9	12.50
40- 50	13	18.06
50- 60	6	8.33
60- 70	11	15.28
70- 80	2	2.78
80- 90	1	1.39
90- 100	1	1.39
110- 120	1	1.39

CUMULATIVE ERRORS RUN 41a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	7	9.72
20	21	29.17
30	28	38.89
40	37	51.39
50	50	69.44
60	56	77.78
70	67	93.06
80	69	95.83
90	70	97.22
100	71	98.61
110	71	98.61
120	72	100.00

FIXED ROUTE LS RUN 41
TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 41b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	14.29
1- 2	3	21.43
3- 4	3	21.43
4- 5	1	7.14
5- 6	2	14.29
7- 8	1	7.14
8- 9	1	7.14
9- 10	1	7.14

CUMULATIVE ERRORS RUN 41b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	14.29
2	5	35.71
3	5	35.71
4	8	57.14
5	9	64.29
6	11	78.57
7	11	78.57
8	12	85.71
9	13	92.86
10	14	100.00

FIXED ROUTE LS RUN 42
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 42a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	4	5.56
10- 20	6	8.33
20- 30	10	13.89
30- 40	9	12.50
40- 50	11	15.28
50- 60	8	11.11
60- 70	7	9.72
70- 80	4	5.56
80- 90	6	8.33
90- 100	3	4.17
100- 110	2	2.78
110- 120	1	1.39
130- 140	1	1.39

CUMULATIVE ERRORS RUN 42a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	4	5.56
20	10	13.89
30	20	27.78
40	29	40.28
50	40	55.56
60	48	66.67
70	55	76.39
80	59	81.94
90	65	90.28
100	68	94.44
110	70	97.22
120	71	98.61
130	71	98.61
140	72	100.00

FIXED ROUTE LS RUN 42

TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 42b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	2	14.29
1- 2	2	14.29
2- 3	2	14.29
3- 4	1	7.14
4- 5	4	28.57
5- 6	1	7.14
6- 7	1	7.14
9- 10	1	7.14

CUMULATIVE ERRORS RUN 42b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	2	14.29
2	4	28.57
3	6	42.86
4	7	50.00
5	11	78.57
6	12	85.71
7	13	92.86
8	13	92.86
9	13	92.86
10	14	100.00

FIXED ROUTE LS RUN 43
LOCATION ERROR IN FEET

ERROR FREQUENCY DENSITY RUN 43a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	1	1.72
20- 30	5	8.62
30- 40	5	8.62
40- 50	13	22.41
50- 60	9	15.52
60- 70	2	3.45
70- 80	10	17.24
80- 90	3	5.17
90- 100	5	8.62
100- 110	2	3.45
110- 120	1	1.72
120- 130	1	1.72
140- 150	1	1.72

CUMULATIVE ERRORS RUN 43a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	1	1.72
20	1	1.72
30	6	10.34
40	11	18.97
50	24	41.38
60	33	56.90
70	35	60.34
80	45	77.59
90	48	82.76
100	53	91.38
110	55	94.83
120	56	96.55
130	57	98.28
140	57	98.28
150	58	100.00

MANUALLY PROCESSED FIXED ROUTE LS DATA, RUN 43

FIXED ROUTE RUN#			CHECKPOINT ERRORS					
CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
64	13372	4812	11	38	1272	13396	4995	185
65	13787	4668	11	39	331	13686	4661	101
66	14242	4594	11	39	787	14137	4598	105
67	15770	4281	13	40	1390	15764	4389	10
68	16152	4347	13	40	1782	16153	4339	8
69	17121	4202	13	40	2732	17096	4220	31
70	17491	3736	13	41	432	17629	3735	138
71	18691	3072	14	43	1202	18621	3076	70
72	18782	3565	14	44	435	18803	3495	73
73	14484	4477	14	45	390	18527	4482	43
74	17621	4597	14	45	1264	17658	4584	39
75	16706	4705	14	45	2194	16604	4707	102
76	15624	4856	15	46	426	15650	4831	36

FIXED ROUTE LOCATION SUBSYSTEM
ERROR STATISTICS, RUN 43a

ERROR FREQUENCY DENSITY RUN 43a

Error Interval	No. Samples	Percent of Samples
0- 10	3	4.0
10- 20	3	4.0
20- 30	6	8.0
30- 40	8	10.66
40- 50	14	18.66
50- 60	9	12.0
60- 70	2	2.66
70- 80	12	16.00
80- 90	3	4.0
90-100	5	6.66
100-110	5	6.66
110-120	1	1.33
120-130	1	1.33
130-140	1	1.33
140-150	1	1.33
180-190	1	1.33

CUMULATIVE ERRORS RUN 43a

Error	Samples LT Error	Percent Samples LT Error
10	3	4.00
20	6	8.00
30	12	16.00
40	20	26.66
50	34	45.33
60	43	57.33
70	45	60.00
80	57	76.00
90	60	80.00
100	65	86.66
110	70	93.33
120	71	94.66
130	72	96.00
140	73	97.33
150	74	98.66
190	75	100.00

FIXED ROUTE LS RUN 43
TIMEPOINT ERROR IN SECONDS

ERROR FREQUENCY DENSITY RUN 43b

ERROR INTERVAL	NO. OF SAMPLES	PERCENT OF SAMPLES
0- 1	1	9.09
1- 2	3	27.27
2- 3	1	9.09
4- 5	1	9.09
5- 6	3	27.27
6- 7	1	9.09
10- 11	1	9.09

CUMULATIVE ERRORS RUN 43b

ERROR	NO. OF SAMPLES LT ERROR	PERCENT OF SAMPLES LT ERROR
1	1	9.09
2	4	36.36
3	5	45.45
4	5	45.45
5	6	54.55
6	9	81.82
7	10	90.91
8	10	90.91
9	10	90.91
10	10	90.91
11	11	100.00

4.2.2 AVM System (Pseudo Checkpoint) Results

This subsection contains a complete output listing of the FRSYS program corresponding to Fixed Route Run 28. This is followed by the error frequency density and cumulative error tabular outputs of FRSYS for all other fixed route runs. Data corresponding to the case of "no communication" errors and to the case in which 5 percent communication errors are simulated are presented. In the cases of Runs 24, 34, 40, and 43, at least three sheets are provided. The first sheet is the results obtained by processing the raw data through FRSYS. The second sheet contains the results computed manually for those pseudo checkpoints which could not be processed by FRSYS due to tape read errors. The third sheet contains the overall resulting error statistics. The last sheet in the sub section contains the results of imposing a 5 percent communication error rate on the manually computed data.

AVM SYSTEM TEST RESULTS, RUN 28

RUN # 28		SYSTEM LOCATION ERRORS (NO COMMUNICATION ERRORS)								
PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
1	396.	0:31.0	394.	3	CP 1	12396	4435	12413	4414	27
2	556.	0:51.0	554.	3	CP 1	12378	4276	12389	4256	22
3	994.	1:11.0	998.	4	TA 3	12370	3874	12375	3873	5
4	1332.	1:31.0	1334.	4	TA 3	12705	3831	12707	3821	10
5	1664.	1:51.0	1666.	4	CP 2	13035	3787	13027	3775	14
6	1964.	2:11.0	1968.	4	CP 2	13332	3748	13327	3736	13
7	2474.	2:31.0	2476.	4	CP 3	13838	3682	13822	3674	17
8	2970.	2:51.0	2970.	4	CP 3	14330	3618	14312	3613	18
9	3120.	3:11.0	3122.	4	CP 3	14479	3598	14463	3595	16
10	3120.	3:31.0	3122.	4	CP 3	14479	3598	14463	3595	16
11	3356.	3:51.0	3356.	4	CP 3	14713	3568	14695	3566	18
12	3650.	4:11.0	3652.	5	CP 4	15010	3522	15016	3521	6
13	3774.	4:31.0	3776.	5	CP 4	15132	3500	15138	3499	6
14	4128.	4:51.0	4134.	6	TA 4	15240	3771	15242	3788	17
15	4272.	5:11.0	4278.	6	TA 4	15260	3913	15262	3930	17
16	4272.	5:31.0	4278.	6	TA 4	15260	3913	15262	3930	17
17	4524.	5:51.0	4532.	6	CP 5	15295	4163	15305	4237	74
18	4792.	6:11.0	4802.	6	CP 6	15332	4428	15336	4458	30
19	5166.	6:31.0	5178.	6	CP 6	15384	4799	15378	4832	33
20	5166.	6:51.0	5178.	6	CP 6	15384	4799	15378	4832	33
21	5428.	7:11.0	5438.	6	CP 7	15420	5058	15419	5102	44
22	5862.	7:31.0	5872.	6	CP 8	15480	5488	15488	5554	66
23	6236.	7:51.0	6248.	6	CP 8	15532	5858	15537	5926	68
24	6458.	8:11.0	6468.	6	CP 8	15562	6078	15566	6145	67
25	6600.	8:31.0	6612.	6	CP 8	15582	6219	15585	6287	68
26	6670.	8:51.0	6680.	6	CP 8	15592	6288	15593	6355	67
27	7114.	9:11.0	7124.	6	CP 8	15653	6728	15651	6795	67
28	7648.	9:31.0	7660.	6	CP 8	15727	7257	15722	7326	69
29	8178.	9:51.0	8190.	6	CP10	15800	7781	15808	7832	51
30	8538.	10:11.0	8548.	6	CP11	15850	8138	15856	8176	38
31	8910.	10:31.0	8922.	7	CP11	15904	8526	15908	8547	21
32	9316.	10:51.0	9328.	7	CP11	15960	8928	15964	8949	21
33	9596.	11:11.0	9608.	7	CP11	15999	9206	16003	9226	20
34	9926.	11:31.0	9938.	7	CP12	16044	9533	16056	9608	75
35	9934.	11:51.0	9946.	7	CP12	16046	9541	16057	9616	75
36	9934.	12:11.0	9946.	7	CP12	16046	9541	16057	9616	75
37	10186.	12:31.0	10194.	8	TA 5	16185	9660	16276	9645	92
38	10248.	12:51.0	10256.	8	TA 5	16247	9655	16338	9638	92
39	10660.	13:11.0	10668.	8	CP13	16658	9623	16760	9594	106
40	11088.	13:31.0	11096.	8	CP14	17085	9590	17172	9564	90
41	11580.	13:51.0	11588.	8	CP15	17575	9552	17636	9525	66
42	12068.	14:11.0	12076.	8	CP16	18062	9514	18114	9510	52
43	12656.	14:31.0	12658.	9	TA 6	18113	8975	18104	8940	36
44	13172.	14:51.0	13176.	9	CP17	18112	8459	18104	8378	81
45	13570.	15:11.0	13572.	10	CP18	18094	7965	18061	7980	36
46	13722.	15:31.0	13724.	10	CP18	18070	7815	18042	7829	31
47	13722.	15:51.0	13724.	10	CP18	18070	7815	18042	7829	31
48	13984.	16:11.0	13988.	10	CP18	18028	7556	18007	7567	23
49	14286.	16:31.0	14292.	10	CP18	17981	7258	17968	7266	15

AVM SYSTEM TEST RESULTS, RUN 28 (CONT'D)

PCF	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
50	14740.	16:51.0	14744.	11	CF19	17907	6813	17914	6848	35
51	15040.	17:11.0	15038.	11	TA 7	17609	6849	17668	6844	59
52	15340.	17:31.0	15336.	11	TA 7	17311	6885	17372	6883	61
53	15648.	17:51.0	15636.	11	TA 7	17005	6922	17075	6922	70
54	15938.	18:11.0	15918.	11	TA 7	16717	6957	16795	6959	78
55	16200.	18:31.0	16180.	11	CF20	16457	6988	16490	6998	34
56	16570.	18:51.0	16544.	11	CF20	16090	7033	16129	7042	40
57	16990.	19:11.0	16958.	11	CF20	15673	7083	15718	7091	45
58	17260.	19:31.0	17228.	11	CF20	15404	7116	15450	7123	46
59	17568.	19:51.0	17538.	11	CF20	15099	7153	15142	7160	43
60	17572.	20:11.0	17544.	11	CF20	15095	7153	15136	7161	41
61	17874.	20:31.0	17838.	11	CF21	14795	7189	14842	7195	47
62	18080.	20:51.0	18042.	11	CF21	14590	7214	14639	7218	49
63	18080.	21:11.0	18042.	11	CF21	14590	7214	14639	7218	49
64	18392.	21:31.0	18342.	11	CF21	14281	7252	14341	7253	60
65	18528.	21:51.0	18480.	11	CF22	14145	7268	14154	7270	9
66	18528.	22:11.0	18480.	11	CF22	14145	7268	14154	7270	9
67	18654.	22:31.0	18604.	12	CF22	14058	7276	14030	7281	28
68	19140.	22:51.0	19074.	13	TA 8	13618	7409	13609	7412	9
69	19604.	23:11.0	19538.	13	CF23	13305	7752	13286	7750	19
70	20126.	23:31.0	20060.	14	TA 9	12931	8115	12909	8135	29
71	20214.	23:51.0	20150.	14	TA 9	12865	8173	12841	8194	31
72	20584.	24:11.0	20520.	15	TA10	12591	8421	12661	8354	96
73	20692.	24:31.0	20630.	15	TA10	12511	8494	12579	8428	94
74	20856.	24:51.0	20792.	15	CF24	12391	8605	12435	8560	62
75	21592.	25:11.0	21532.	15	CF24	11850	9104	11894	9065	58
76	22134.	25:31.0	22074.	15	CF25	11451	9471	11493	9437	54
77	22716.	25:51.0	22654.	16	CF25	11078	9892	11065	9828	65
78	23174.	26:11.0	23108.	17	TA11	11171	10238	11173	10111	127
79	23268.	26:31.0	23200.	17	TA11	11229	10312	11199	10199	116
80	23596.	26:51.0	23526.	18	TA12	11551	10278	11529	10277	22
81	23748.	27:11.0	23678.	18	TA12	11701	10258	11680	10255	21
82	24138.	27:31.0	24070.	18	TA12	12088	10207	12068	10198	21
83	24202.	27:51.0	24134.	18	TA12	12152	10198	12131	10189	22
84	24326.	28:11.0	24258.	18	CF26	12274	10182	12286	10166	20
85	24744.	28:31.0	24676.	18	CF26	12689	10127	12700	10104	25
86	24760.	28:51.0	24690.	18	CF26	12705	10125	12714	10101	25
87	25210.	29:11.0	25140.	18	CF27	13151	10066	13170	10046	27
88	25634.	29:31.0	25562.	19	TA13	13136	9685	13142	9650	35
89	25994.	29:51.0	25920.	19	CF28	13081	9329	13085	9263	66
90	26216.	30:11.0	26144.	19	CF28	13047	9110	13052	9041	69
91	26380.	30:31.0	26310.	19	CF29	13021	8948	13027	8901	47
92	26776.	30:51.0	26708.	19	CF29	12960	8557	12957	8509	48
93	26986.	31:11.0	26916.	19	CF29	12928	8349	12921	8304	45
94	27330.	31:31.0	27262.	20	TA14	12902	8006	12900	7971	35
95	27748.	31:51.0	27684.	21	TA15	13083	7757	13028	7765	55
96	27902.	32:11.0	27838.	21	TA15	13236	7734	13180	7742	56
97	27902.	32:31.0	27838.	21	TA15	13236	7734	13180	7742	56
98	28164.	32:51.0	28102.	21	TA15	13495	7695	13441	7702	54
99	28548.	33:11.0	28486.	21	CF30	13875	7638	13768	7654	108
100	28934.	33:31.0	28870.	22	CF30	14200	7595	14149	7609	52
101	29228.	33:51.0	29166.	22	CF30	14492	7560	14443	7575	51
102	29512.	34:11.0	29450.	22	CF30	14774	7526	14725	7541	51
103	29852.	34:31.0	29786.	22	CF30	15111	7486	15059	7502	54

AVM SYSTEM TEST RESULTS, RUN 28 (CONT'D)

PCF	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
104	30368.	34:51.0	30304.	22	CP31	15624	7424	15603	7435	23
105	30852.	35:11.0	30786.	22	CP32	16104	7366	16061	7361	40
106	31354.	35:31.0	31288.	22	CP32	16603	7306	16561	7332	49
107	31640.	35:51.0	31574.	22	CP33	16897	7272	16856	7293	37
108	31752.	36:11.0	31686.	22	CP33	16998	7258	16967	7278	36
109	31752.	36:31.0	31686.	22	CP33	16998	7258	16967	7278	36
110	31924.	36:51.0	31858.	22	CP33	17169	7238	17138	7254	34
111	32160.	37:11.0	32094.	22	CP33	17403	7210	17371	7221	33
112	32470.	37:31.0	32402.	22	CP34	17711	7173	17663	7174	48
113	32936.	37:51.0	32868.	22	CP34	18173	7117	18122	7093	56
114	33484.	38:11.0	33416.	22	CP35	18717	7051	18636	7044	81
115	33624.	38:31.0	33558.	23	CP35	18826	7013	18778	7039	54
116	33740.	38:51.0	33668.	23	TA16	18803	6899	18823	6974	77
117	34198.	39:11.0	34128.	24	TA16	18719	6469	18762	6518	65
118	34368.	39:31.0	34296.	24	TA16	18704	6299	18740	6352	64
119	34858.	39:51.0	34786.	24	TA16	18660	5812	18676	5866	56
120	35202.	40:11.0	35124.	25	TA17	18504	5625	18511	5626	7
121	35426.	40:31.0	35348.	25	CP36	18281	5653	18250	5663	32
122	35722.	40:51.0	35642.	25	CP36	17988	5691	17959	5703	31
123	35792.	41:11.0	35712.	25	CP36	17918	5700	17889	5712	31
124	35792.	41:31.0	35712.	25	CP36	17918	5700	17889	5712	31
125	35842.	41:51.0	35762.	25	CP36	17869	5706	17840	5719	31
126	35842.	42:11.0	35762.	25	CP36	17869	5706	17840	5719	31
127	35986.	42:31.0	35906.	25	CP37	17726	5724	17757	5730	31
128	36236.	42:51.0	36156.	25	CP37	17478	5756	17509	5762	31
129	36352.	43:11.0	36274.	25	CP37	17363	5771	17392	5777	29
130	36722.	43:31.0	36642.	25	CP37	16996	5818	17027	5824	31
131	36762.	43:51.0	36682.	25	CP37	16956	5823	16987	5829	31
132	37194.	44:11.0	37114.	25	CP38	16528	5877	16534	5884	9
133	37224.	44:31.0	37146.	25	CP38	16498	5881	16502	5888	8
134	37348.	44:51.0	37268.	25	CP39	16375	5897	16389	5902	14
135	37676.	45:11.0	37596.	25	CP39	16050	5938	16064	5946	16
136	37676.	45:31.0	37596.	25	CP39	16050	5938	16064	5946	16
137	37676.	45:51.0	37596.	25	CP39	16050	5938	16064	5946	16
138	37716.	46:11.0	37636.	25	CP39	16010	5943	16024	5951	16
139	37764.	46:31.0	37684.	25	CP39	15963	5949	15977	5957	16
140	38118.	46:51.0	38038.	25	CP40	15611	5994	15621	6005	14
141	38118.	47:11.0	38038.	25	CP40	15611	5994	15621	6005	14
142	38304.	47:31.0	38222.	25	CP40	15427	6018	15437	6023	11
143	38390.	47:51.0	38312.	25	CP40	15342	6029	15348	6031	6
144	38390.	48:11.0	38312.	25	CP40	15342	6029	15348	6031	6
145	38390.	48:31.0	38312.	25	CP40	15342	6029	15348	6031	6
146	38522.	48:51.0	38440.	26	TA18	15237	6065	15235	6056	9
147	38712.	49:11.0	38628.	26	TA18	15266	6253	15259	6243	12
148	38856.	49:31.0	38774.	28	TA19	15274	6380	15239	6385	35
149	39000.	49:51.0	38922.	28	TA19	15131	6401	15092	6406	39
150	39438.	50:11.0	39358.	28	TA19	14697	6464	14661	6469	36
151	39682.	50:31.0	39608.	29	TA20	14652	6241	14653	6252	11
152	39736.	50:51.0	39662.	29	TA20	14645	6188	14647	6199	11
153	40088.	51:11.0	40016.	29	TA21	14601	5838	14628	5785	59
154	40512.	51:31.0	40436.	31	TA22	14880	5682	14881	5694	12
155	40870.	51:51.0	40796.	31	TA22	14835	5327	14832	5337	10
156	41076.	52:11.0	41000.	31	CP43	14809	5122	14805	5116	7
157	41196.	52:31.0	41122.	31	CP43	14794	5003	14792	4995	8

AVM SYSTEM TEST RESULTS, RUN 28 (CONT'D)

FCF	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
158	41540.	52:51.0	41460.	32	TA23	14497	4991	14505	4985	10
159	41572.	53:11.0	41494.	32	TA23	14465	4995	14472	4989	9
160	41718.	53:31.0	41640.	32	TA23	14321	5014	14327	5005	10
161	41946.	53:51.0	41864.	32	CF44	14094	5044	14029	5040	65
162	42070.	54:11.0	41990.	32	CF44	13972	5060	13904	5059	68
163	42070.	54:31.0	41990.	32	CF44	13972	5060	13904	5059	68
164	42150.	54:51.0	42070.	32	CF44	13892	5070	13825	5071	67
165	42666.	55:11.0	42586.	32	CF45	13381	5137	13314	5146	67
166	43206.	55:31.0	43124.	32	CF46	12845	5208	12808	5206	37
167	43708.	55:51.0	43628.	33	CF46	12305	5279	12308	5269	10
168	43850.	56:11.0	43768.	33	CF46	12164	5299	12169	5287	13
169	43860.	56:31.0	43780.	33	CF46	12154	5300	12157	5288	12
170	43916.	56:51.0	43836.	33	CF46	12099	5308	12101	5295	13
171	44044.	57:11.0	43962.	33	CF46	11972	5325	11976	5311	14
172	44428.	57:31.0	44350.	33	CF46	11592	5378	11592	5359	19
173	44454.	57:51.0	44376.	33	CF46	11566	5382	11566	5362	20
174	44526.	58:11.0	44448.	33	CF47	11495	5392	11480	5374	23
175	44894.	58:31.0	44814.	33	CF47	11130	5443	11117	5425	22
176	45288.	58:51.0	45210.	33	CF48	10740	5497	10699	5483	43
177	45780.	59:11.0	45702.	33	CF49	10253	5565	10262	5542	24
178	46334.	59:31.0	46256.	33	CF49	9704	5642	9714	5623	21
179	46624.	59:51.0	46546.	33	CF50	9417	5682	9456	5660	44
180	46830.	60:11.0	46752.	33	CF50	9213	5710	9252	5688	44
181	46850.	60:31.0	46772.	33	CF50	9193	5713	9232	5690	45
182	47366.	60:51.0	47290.	33	CF51	8682	5784	8648	5769	37
183	47938.	61:11.0	47862.	33	CF52	8116	5863	8133	5841	27
184	48462.	61:31.0	48386.	34	CF52	7578	5917	7613	5906	36
185	48864.	61:51.0	48782.	35	TA24	7518	6211	7504	6217	15
186	49040.	62:11.0	48960.	35	TA24	7548	6385	7526	6394	23
187	49092.	62:31.0	49012.	35	TA24	7557	6436	7532	6446	26
188	49558.	62:51.0	49478.	35	CF53	7636	6896	7643	6934	38
189	49748.	63:11.0	49662.	36	TA25	7708	7028	7778	7019	70
190	50168.	63:31.0	50084.	36	TA25	8124	6973	8197	6964	73
191	50628.	63:51.0	50544.	36	CF55	8580	6913	8653	6907	73
192	50722.	64:11.0	50638.	36	CF55	8674	6901	8746	6896	72
193	51150.	64:31.0	51066.	36	CF55	9098	6844	9171	6845	73
194	51626.	64:51.0	51542.	36	CF56	9570	6782	9638	6774	68
195	51906.	65:11.0	51822.	36	CF57	9847	6745	9911	6728	66
196	52484.	65:31.0	52404.	36	CF57	10420	6670	10489	6654	70
197	52990.	65:51.0	52908.	36	CF57	10922	6603	10989	6590	68
198	53226.	66:11.0	53146.	37	CF57	11156	6573	11225	6560	70
199	53268.	66:31.0	53186.	37	CF57	11197	6567	11264	6555	68
200	53316.	66:51.0	53234.	37	CF57	11245	6561	11312	6549	68
201	53734.	67:11.0	53650.	37	CF57	11660	6506	11725	6496	65
202	54236.	67:31.0	54154.	37	CF58	12157	6441	12179	6439	22
203	54724.	67:51.0	54640.	37	CF59	12641	6377	12693	6386	52
204	55202.	68:11.0	55118.	37	CF60	13115	6315	13136	6324	22
205	55618.	68:31.0	55534.	37	CF61	13528	6260	13568	6255	40
206	55990.	68:51.0	55902.	38	TA26	13519	5923	13493	5894	38
207	56110.	69:11.0	56024.	38	TA26	13503	5804	13470	5774	44
208	56378.	69:31.0	56290.	38	CF62	13468	5538	13427	5468	81
209	56618.	69:51.0	56530.	38	CF62	13436	5300	13399	5230	79
210	56990.	70:11.0	56900.	38	CF63	13387	4931	13374	4864	68
211	57238.	70:31.0	57154.	39	TA27	13378	4704	13461	4695	83

AVM SYSTEM TEST RESULTS, RUN 28 (CONT'D)

PCF	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
212	57488.	70:51.0	57402.	39	TA27	13626	4669	13708	4674	82
213	57604.	71:11.0	57518.	39	CF65	13741	4653	13830	4660	89
214	57980.	71:31.0	57894.	39	CF65	14113	4601	14201	4600	88
215	58400.	71:51.0	58312.	40	CF66	14609	4535	14620	4541	12
216	58436.	72:11.0	58348.	40	CF66	14644	4531	14655	4536	12
217	58436.	72:31.0	58348.	40	CF66	14644	4531	14655	4536	12
218	58766.	72:51.0	58678.	40	CF66	14972	4489	14982	4490	10
219	59318.	73:11.0	59232.	40	CF66	15520	4419	15531	4414	12
220	59510.	73:31.0	59424.	40	CF66	15710	4395	15721	4387	13
221	59724.	73:51.0	59640.	40	CF67	15922	4368	15931	4366	9
222	60140.	74:11.0	60056.	40	CF68	16335	4316	16337	4319	3
223	60334.	74:31.0	60250.	40	CF68	16528	4291	16529	4290	1
224	60724.	74:51.0	60638.	40	CF68	16915	4242	16913	4233	9
225	60852.	75:11.0	60766.	40	CF68	17042	4226	17040	4214	12
226	60908.	75:31.0	60822.	40	CF69	17097	4219	17128	4201	35
227	61318.	75:51.0	61232.	40	CF69	17504	4168	17537	4163	33
228	61348.	76:11.0	61262.	40	CF69	17534	4164	17567	4160	33
229	61692.	76:31.0	61600.	41	TA28	17509	3847	17506	3833	14
230	61764.	76:51.0	61674.	41	TA28	17498	3775	17494	3760	15
231	62166.	77:11.0	62076.	42	CF70	17437	3332	17447	3372	41
232	62470.	77:31.0	62382.	43	TA29	17584	3173	17554	3177	30
233	62698.	77:51.0	62612.	43	TA29	17811	3152	17783	3155	28
234	63026.	78:11.0	62940.	43	TA29	18137	3121	18110	3125	27
235	63198.	78:31.0	63102.	43	TA29	18299	3106	18271	3110	28
236	63486.	78:51.0	63398.	43	TA29	18595	3078	18566	3083	29
237	63770.	79:11.0	63686.	44	TA30	18766	3190	18759	3181	11
238	63938.	79:31.0	63852.	44	TA30	18786	3356	18768	3347	20
239	64138.	79:51.0	64050.	44	TA30	18909	3555	18790	3545	30
240	64428.	80:11.0	64340.	44	CF72	18843	3843	18820	3816	35
241	64806.	80:31.0	64716.	44	CF72	18888	4218	18876	4187	33
242	65110.	80:51.0	65024.	45	TA31	18830	4446	18844	4443	14
243	65444.	81:11.0	65358.	45	TA31	18498	4485	18511	4474	17
244	65636.	81:31.0	65548.	45	CF73	18308	4507	18319	4499	13
245	65940.	81:51.0	65852.	45	CF73	18006	4543	18018	4541	12
246	66294.	82:11.0	66204.	45	CF73	17654	4584	17669	4590	16
247	66514.	82:31.0	66424.	45	CF74	17435	4610	17479	4613	44
248	66772.	82:51.0	66684.	45	CF74	17179	4640	17221	4644	42
249	66772.	83:11.0	66684.	45	CF74	17179	4640	17221	4644	42
250	66828.	83:31.0	66742.	45	CF74	17123	4646	17164	4650	41
251	67270.	83:51.0	67184.	45	CF75	16684	4698	16696	4706	14
252	67560.	84:11.0	67474.	45	CF75	16396	4731	16408	4746	19
253	67686.	84:31.0	67598.	45	CF75	16271	4746	16286	4763	22
254	67688.	84:51.0	67602.	45	CF75	16269	4746	16282	4764	22
255	67972.	85:11.0	67886.	46	CF75	16060	4771	16000	4803	68
256	68128.	85:31.0	68042.	46	CF75	15905	4793	15846	4824	66
257	68128.	85:51.0	68044.	46	CF75	15905	4793	15844	4825	68
258	68128.	86:11.0	68044.	46	CF75	15905	4793	15844	4825	68
259	68452.	86:31.0	68368.	46	CF76	15584	4839	15542	4860	46

AVM SYSTEM TEST RESULTS, RUN 28 (CONT'D)

ERROR FREQUENCY DENSITY

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	20	7.72
10- 20	53	20.46
20- 30	35	13.51
30- 40	43	16.60
40- 50	27	10.42
50- 60	18	6.95
60- 70	32	12.36
70- 80	15	5.79
80- 90	7	2.70
90- 100	5	1.93
100- 110	2	0.77
110- 120	1	0.39
120- 130	1	0.39

ERROR FREQUENCY DENSITY

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	20	7.72
10- 20	52	20.08
20- 30	34	13.13
30- 40	43	16.60
40- 50	26	10.04
50- 60	20	7.72
60- 70	33	12.74
70- 80	14	5.41
80- 90	7	2.70
90- 100	5	1.93
100- 110	2	0.77
110- 120	1	0.39
120- 130	2	0.77

CUMULATIVE ERRORS

ERROR #	SAMPLES	PERCENT SAMPLES
LT ERROR		LT ERROR
10	20	7.72
20	73	28.19
30	108	41.70
40	151	58.30
50	178	68.73
60	196	75.68
70	228	88.03
80	243	93.82
90	250	96.53
100	255	98.46
110	257	99.23
120	258	99.61
130	259	100.00
AVERAGE ERROR	=	39.30
STANDARD DEVIATION	=	25.12

CUMULATIVE ERRORS

ERROR #	SAMPLES	PERCENT SAMPLES
LT ERROR		LT ERROR
10	20	7.72
20	72	27.80
30	106	40.93
40	149	57.53
50	175	67.57
60	195	75.29
70	228	88.03
80	242	93.44
90	249	96.14
100	254	98.07
110	256	98.84
120	257	99.23
130	259	100.00
AVERAGE ERROR	=	39.85
STANDARD DEVIATION	=	25.60

FIXED ROUTE AVM SYSTEM RUN 11
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 11a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	20	6.51
10- 20	46	14.98
20- 30	38	12.38
30- 40	32	10.42
40- 50	42	13.68
50- 60	23	7.49
60- 70	24	7.82
70- 80	28	9.12
80- 90	30	9.77
90- 100	7	2.28
100- 110	5	1.63
110- 120	5	1.63
120- 130	4	1.30
150- 160	2	0.65
210- 220	1	0.33

CUMULATIVE ERRORS RUN 11a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	20	6.51
20	66	21.50
30	104	33.88
40	136	44.30
50	178	57.98
60	201	65.47
70	225	73.29
80	253	82.41
90	283	92.18
100	290	94.46
110	295	96.09
120	300	97.72
130	304	99.02
140	304	99.02
150	304	99.02
160	306	99.67
170	306	99.67
180	306	99.67
190	306	99.67
200	306	99.67
210	306	99.67
220	307	100.00
AVERAGE ERROR	=	48.96
STANDARD DEVIATION	=	31.68

FIXED ROUTE AVM SYSTEM RUN 11
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 11b |

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	20	6.51
10- 20	46	14.98
20- 30	39	12.70
30- 40	35	11.40
40- 50	42	13.68
50- 60	22	7.17
60- 70	22	7.17
70- 80	26	8.47
80- 90	30	9.77
90- 100	8	2.61
100- 110	5	1.63
110- 120	5	1.63
120- 130	4	1.30
150- 160	2	0.65
230- 240	1	0.33

CUMULATIVE ERRORS RUN 11b\

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	20	6.51
20	66	21.50
30	105	34.20
40	140	45.60
50	182	59.28
60	204	66.45
70	226	73.62
80	252	82.08
90	282	91.86
100	290	94.46
110	295	96.09
120	300	97.72
130	304	99.02
140	304	99.02
150	304	99.02
160	306	99.67
240	307	100.00
AVERAGE ERROR	=	48.63
STANDARD DEVIATION	=	32.02

FIXED ROUTE AVM SYSTEM RUN 12
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 12a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	8	2.67
10- 20	27	9.00
20- 30	67	22.33
30- 40	26	8.67
40- 50	23	7.67
50- 60	39	13.00
60- 70	33	11.00
70- 80	20	6.67
80- 90	17	5.67
90- 100	15	5.00
100- 110	14	4.67
110- 120	7	2.33
120- 130	2	0.67
130- 140	1	0.33
140- 150	1	0.33

CUMULATIVE ERRORS RUN 12a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	8	2.67
20	35	11.67
30	102	34.00
40	128	42.67
50	151	50.33
60	190	63.33
70	223	74.33
80	243	81.00
90	260	86.67
100	275	91.67
110	289	96.33
120	296	98.67
130	298	99.33
140	299	99.67
150	300	100.00
AVERAGE ERROR	=	51.48
STANDARD DEVIATION	=	30.28

FIXED ROUTE AVM SYSTEM RUN 12
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 12b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	3.33
10- 20	27	9.00
20- 30	70	23.33
30- 40	26	8.67
40- 50	20	6.67
50- 60	39	13.00
60- 70	33	11.00
70- 80	19	6.33
80- 90	17	5.67
90- 100	14	4.67
100- 110	14	4.67
110- 120	7	2.33
120- 130	2	0.67
130- 140	1	0.33
140- 150	1	0.33

CUMULATIVE ERRORS RUN 12b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	3.33
20	37	12.33
30	107	35.67
40	133	44.33
50	153	51.00
60	192	64.00
70	225	75.00
80	244	81.33
90	261	87.00
100	275	91.67
110	289	96.33
120	296	98.67
130	298	99.33
140	299	99.67
150	300	100.00
AVERAGE ERROR	=	50.75
STANDARD DEVIATION	=	30.50

FIXED ROUTE AVM SYSTEM RUN 13
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 13 a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	3.53
10- 20	58	20.49
20- 30	23	8.13
30- 40	42	14.84
40- 50	43	15.19
50- 60	25	8.83
60- 70	15	5.30
70- 80	17	6.01
80- 90	22	7.77
90- 100	9	3.18
100- 110	4	1.41
110- 120	2	0.71
120- 130	5	1.77
130- 140	4	1.41
140- 150	2	0.71
170- 180	1	0.35
180- 190	1	0.35

CUMULATIVE ERRORS RUN 13a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	3.53
20	68	24.03
30	91	32.16
40	133	47.00
50	176	62.19
60	201	71.02
70	216	76.33
80	233	82.33
90	255	90.11
100	264	93.29
110	268	94.70
120	270	95.41
130	275	97.17
140	279	98.59
150	281	99.29
160	281	99.29
170	281	99.29
180	282	99.65
190	283	100.00
AVERAGE ERROR	=	48.78
STANDARD DEVIATION	=	32.74

FIXED ROUTE AVM SYSTEM RUN 13
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 13b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	3.53
10- 20	59	20.85
20- 30	22	7.77
30- 40	42	14.84
40- 50	41	14.49
50- 60	25	8.83
60- 70	15	5.30
70- 80	18	6.36
80- 90	22	7.77
90- 100	10	3.53
100- 110	4	1.41
110- 120	2	0.71
120- 130	5	1.77
130- 140	4	1.41
140- 150	2	0.71
170- 180	1	0.35
180- 190	1	0.35

CUMULATIVE ERRORS RUN 13b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	3.53
20	69	24.38
30	91	32.16
40	133	47.00
50	174	61.48
60	199	70.32
70	214	75.62
80	232	81.98
90	254	89.75
100	264	93.29
110	268	94.70
120	270	95.41
130	275	97.17
140	279	98.59
150	281	99.29
160	281	99.29
170	281	99.29
180	282	99.65
190	283	100.00
AVERAGE ERROR	=	48.98
STANDARD DEVIATION	=	32.93

FIXED ROUTE AVM SYSTEM RUN 14

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 14a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	9	3.85
10- 20	34	14.53
20- 30	44	18.80
30- 40	33	14.10
40- 50	32	13.68
50- 60	18	7.69
60- 70	17	7.26
70- 80	12	5.13
80- 90	14	5.98
90- 100	11	4.70
100- 110	9	3.85
110- 120	1	0.43

CUMULATIVE ERRORS RUN 14a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	9	3.85
20	43	18.38
30	87	37.18
40	120	51.28
50	152	64.96
60	170	72.65
70	187	79.91
80	199	85.04
90	213	91.03
100	224	95.73
110	233	99.57
120	234	100.00
AVERAGE ERROR	=	44.88
STANDARD DEVIATION	=	27.13

FIXED ROUTE AVM SYSTEM RUN 14

LOCATION ERROR IN FEET

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 14b |

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	9	3.85
10- 20	34	14.53
20- 30	43	18.38
30- 40	33	14.10
40- 50	34	14.53
50- 60	20	8.55
60- 70	15	6.41
70- 80	12	5.13
80- 90	14	5.98
90- 100	10	4.27
100- 110	9	3.85
110- 120	1	0.43

CUMULATIVE ERRORS RUN 14b |

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	9	3.85
20	43	18.38
30	86	36.75
40	119	50.85
50	153	65.38
60	173	73.93
70	188	80.34
80	200	85.47
90	214	91.45
100	224	95.73
110	233	99.57
120	234	100.00
AVERAGE ERROR	=	44.74
STANDARD DEVIATION	=	26.86

FIXED ROUTE AVM SYSTEM RUN 15

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 15a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	9	4.11
10- 20	38	17.35
20- 30	29	13.24
30- 40	38	17.35
40- 50	34	15.53
50- 60	14	6.39
60- 70	17	7.76
70- 80	4	1.83
80- 90	9	4.11
90- 100	7	3.20
100- 110	5	2.28
110- 120	5	2.28
120- 130	8	3.65
130- 140	2	0.91

CUMULATIVE ERRORS RUN 15a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	9	4.11
20	47	21.46
30	76	34.70
40	114	52.05
50	148	67.58
60	162	73.97
70	179	81.74
80	183	83.56
90	192	87.67
100	199	90.87
110	204	93.15
120	209	95.43
130	217	99.09
140	219	100.00
AVERAGE ERROR	=	46.14
STANDARD DEVIATION	=	31.47

FIXED ROUTE AVM SYSTEM RUN 15
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 15b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	8	3.65
10- 20	42	19.18
20- 30	30	13.70
30- 40	36	16.44
40- 50	31	14.16
50- 60	13	5.94
60- 70	18	8.22
70- 80	4	1.83
80- 90	9	4.11
90- 100	8	3.65
100- 110	5	2.28
110- 120	5	2.28
120- 130	8	3.65
130- 140	2	0.91

CUMULATIVE ERRORS RUN 15b

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	8	3.65
20	50	22.83
30	80	36.53
40	116	52.97
50	147	67.12
60	160	73.06
70	178	81.28
80	182	83.11
90	191	87.21
100	199	90.87
110	204	93.15
120	209	95.43
130	217	99.09
140	219	100.00
AVERAGE ERROR	=	46.05
STANDARD DEVIATION	=	31.94

FIXED ROUTE AVM SYSTEM RUN 16
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 16a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	7	3.50
10- 20	41	20.50
20- 30	30	15.00
30- 40	31	15.50
40- 50	31	15.50
50- 60	21	10.50
60- 70	10	5.00
70- 80	8	4.00
80- 90	11	5.50
90- 100	4	2.00
100- 110	3	1.50
120- 130	3	1.50

CUMULATIVE ERRORS RUN 16a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	7	3.50
20	48	24.00
30	78	39.00
40	109	54.50
50	140	70.00
60	161	80.50
70	171	85.50
80	179	89.50
90	190	95.00
100	194	97.00
110	197	98.50
120	197	98.50
130	200	100.00
AVERAGE ERROR	=	41.22
STANDARD DEVIATION	=	25.23

FIXED ROUTE AVM SYSTEM RUN 16

LOCATION ERROR IN FEET
5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 16b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	8	4.00
10- 20	41	20.50
20- 30	29	14.50
30- 40	31	15.50
40- 50	32	16.00
50- 60	21	10.50
60- 70	11	5.50
70- 80	8	4.00
80- 90	9	4.50
90- 100	4	2.00
100- 110	3	1.50
120- 130	3	1.50

CUMULATIVE ERRORS RUN 16b

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	8	4.00
20	49	24.50
30	78	39.00
40	109	54.50
50	141	70.50
60	162	81.00
70	173	86.50
80	181	90.50
90	190	95.00
100	194	97.00
110	197	98.50
120	197	98.50
130	200	100.00
AVERAGE ERROR	=	40.78
STANDARD DEVIATION	=	24.95

FIXED ROUTE AVM SYSTEM RUN 17

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 17a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	24	9.20
10- 20	31	11.88
20- 30	49	18.77
30- 40	41	15.71
40- 50	33	12.64
50- 60	10	3.83
60- 70	19	7.28
70- 80	11	4.21
80- 90	16	6.13
90- 100	19	7.28
100- 110	2	0.77
110- 120	3	1.15
120- 130	3	1.15

CUMULATIVE ERRORS RUN 17a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	24	9.20
20	55	21.07
30	104	39.85
40	145	55.56
50	178	68.20
60	188	72.03
70	207	79.31
80	218	83.52
90	234	89.66
100	253	96.93
110	255	97.70
120	258	98.85
130	261	100.00
AVERAGE ERROR	=	43.43
STANDARD DEVIATION	=	28.97

FIXED ROUTE AVM SYSTEM RUN 17
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 17b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	23	8.81
10- 20	32	12.26
20- 30	49	18.77
30- 40	41	15.71
40- 50	36	13.79
50- 60	10	3.83
60- 70	18	6.90
70- 80	11	4.21
80- 90	15	5.75
90- 100	17	6.51
100- 110	2	0.77
110- 120	3	1.15
120- 130	3	1.15
2400-2410	1	0.38

CUMULATIVE ERRORS RUN 17b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	23	8.81
20	55	21.07
30	104	39.85
40	145	55.56
50	181	69.35
60	191	73.18
70	209	80.08
80	220	84.29
90	235	90.04
100	252	96.55
110	254	97.32
120	257	98.47
130	260	99.62
2410	261	100.00
AVERAGE ERROR	=	51.89
STANDARD DEVIATION	=	148.85

FIXED ROUTE AVM SYSTEM RUN 18
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 18a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	2	0.69
10- 20	28	9.69
20- 30	33	11.42
30- 40	56	19.38
40- 50	29	10.03
50- 60	32	11.07
60- 70	32	11.07
70- 80	18	6.23
80- 90	6	2.08
90- 100	19	6.57
100- 110	24	8.30
110- 120	1	0.35
120- 130	4	1.38
130- 140	1	0.35
140- 150	2	0.69
300- 310	1	0.35
330- 340	1	0.35

CUMULATIVE ERRORS RUN 18a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	2	0.69
20	30	10.38
30	63	21.80
40	119	41.18
50	148	51.21
60	180	62.28
70	212	73.36
80	230	79.58
90	236	81.66
100	255	88.24
110	279	96.54
120	280	96.89
130	284	98.27
140	285	98.62
150	287	99.31
310	288	99.65
320	288	99.65
330	288	99.65
340	289	100.00
AVERAGE ERROR	=	55.91
STANDARD DEVIATION	=	37.01

FIXED ROUTE AVM SYSTEM RUN 18
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 18b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	3	1.04
10- 20	29	10.03
20- 30	32	11.07
30- 40	58	20.07
40- 50	29	10.03
50- 60	29	10.03
60- 70	33	11.42
70- 80	18	6.23
80- 90	6	2.08
90- 100	19	6.57
100- 110	23	7.96
110- 120	1	0.35
120- 130	4	1.38
130- 140	1	0.35
140- 150	2	0.69
300- 310	1	0.35
330- 340	1	0.35

CUMULATIVE ERRORS RUN 18b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	3	1.04
20	32	11.07
30	64	22.15
40	122	42.21
50	151	52.25
60	180	62.28
70	213	73.70
80	231	79.93
90	237	82.01
100	256	88.58
110	279	96.54
120	280	96.89
130	284	98.27
140	285	98.62
150	287	99.31
160	287	99.31
310	288	99.65
320	288	99.65
330	288	99.65
340	289	100.00
AVERAGE ERROR	=	55.37
STANDARD DEVIATION	=	37.12

FIXED ROUTE AVM SYSTEM RUN 21

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 21a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	26	9.56
10- 20	48	17.65
20- 30	62	22.79
30- 40	46	16.91
40- 50	12	4.41
50- 60	9	3.31
60- 70	12	4.41
70- 80	17	6.25
80- 90	7	2.57
90- 100	12	4.41
100- 110	2	0.74
120- 130	10	3.68
130- 140	5	1.84
150- 160	1	0.37
160- 170	3	1.10

CUMULATIVE ERRORS RUN 21a

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	26	9.56
20	74	27.21
30	136	50.00
40	182	66.91
50	194	71.32
60	203	74.63
70	215	79.04
80	232	85.29
90	239	87.87
100	251	92.28
110	253	93.01
120	253	93.01
130	263	96.69
140	268	98.53
150	268	98.53
160	269	98.90
170	272	100.00
AVERAGE ERROR	=	42.59
STANDARD DEVIATION	=	35.55

FIXED ROUTE AVM SYSTEM RUN 21
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 21b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	27	9.93
10- 20	44	16.18
20- 30	62	22.79
30- 40	44	16.18
40- 50	12	4.41
50- 60	11	4.04
60- 70	14	5.15
70- 80	17	6.25
80- 90	8	2.94
90- 100	12	4.41
100- 110	2	0.74
120- 130	10	3.68
130- 140	4	1.47
140- 150	1	0.37
150- 160	1	0.37
160- 170	3	1.10

CUMULATIVE ERRORS RUN 21b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	27	9.93
20	71	26.10
30	133	48.90
40	177	65.07
50	189	69.49
60	200	73.53
70	214	78.68
80	231	84.93
90	239	87.87
100	251	92.28
110	253	93.01
120	253	93.01
130	263	96.69
140	267	98.16
150	268	98.53
160	269	98.90
170	272	100.00
AVERAGE ERROR	=	43.36
STANDARD DEVIATION	=	35.76

FIXED ROUTE AVM SYSTEM RUN 22

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 22a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	16	6.69
10- 20	37	15.48
20- 30	46	19.25
30- 40	31	12.97
40- 50	28	11.72
50- 60	18	7.53
60- 70	15	6.28
70- 80	14	5.86
80- 90	9	3.77
90- 100	6	2.51
100- 110	3	1.26
110- 120	4	1.67
120- 130	2	0.84
130- 140	8	3.35
140- 150	2	0.84

CUMULATIVE ERRORS RUN 22a

ERROR	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	16	6.69
20	53	22.18
30	99	41.42
40	130	54.39
50	158	66.11
60	176	73.64
70	191	79.92
80	205	85.77
90	214	89.54
100	220	92.05
110	223	93.31
120	227	94.98
130	229	95.82
140	237	99.16
150	239	100.00
AVERAGE ERROR	=	45.50
STANDARD DEVIATION	=	33.20

FIXED ROUTE AVM SYSTEM RUN 22
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 22b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	14	5.86
10- 20	36	15.06
20- 30	45	18.83
30- 40	32	13.39
40- 50	28	11.72
50- 60	17	7.11
60- 70	17	7.11
70- 80	13	5.44
80- 90	9	3.77
90- 100	7	2.93
100- 110	4	1.67
110- 120	5	2.09
120- 130	2	0.84
130- 140	7	2.93
140- 150	2	0.84
150- 160	1	0.42

CUMULATIVE ERRORS RUN 22b

ERROR	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	14	5.86
20	50	20.92
30	95	39.75
40	127	53.14
50	155	64.85
60	172	71.97
70	189	79.08
80	202	84.52
90	211	88.28
100	218	91.21
110	222	92.89
120	227	94.98
130	229	95.82
140	236	98.74
150	238	99.58
160	239	100.00
AVERAGE ERROR	=	46.87
STANDARD DEVIATION	=	33.78

FIXED ROUTE AVM SYSTEM RUN 23
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 23a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	21	8.33
10- 20	40	15.87
20- 30	38	15.08
30- 40	31	12.30
40- 50	27	10.71
50- 60	30	11.90
60- 70	12	4.76
70- 80	11	4.37
80- 90	5	1.98
90- 100	11	4.37
100- 110	7	2.78
110- 120	4	1.59
120- 130	3	1.19
130- 140	6	2.38
140- 150	1	0.40
160- 170	4	1.59
170- 180	1	0.40

CUMULATIVE ERRORS RUN 23a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	21	8.33
20	61	24.21
30	99	39.29
40	130	51.59
50	157	62.30
60	187	74.21
70	199	78.97
80	210	83.33
90	215	85.32
100	226	89.68
110	233	92.46
120	237	94.05
130	240	95.24
140	246	97.62
150	247	98.02
160	247	98.02
170	251	99.60
180	252	100.00
AVERAGE ERROR	=	47.70
STANDARD DEVIATION	=	36.82

FIXED ROUTE AVM SYSTEM RUN 23

LOCATION ERROR IN FEET

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 23b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	21	8.33
10- 20	40	15.87
20- 30	36	14.29
30- 40	31	12.30
40- 50	27	10.71
50- 60	29	11.51
60- 70	11	4.37
70- 80	13	5.16
80- 90	5	1.98
90- 100	11	4.37
100- 110	8	3.17
110- 120	4	1.59
120- 130	4	1.59
130- 140	6	2.38
140- 150	1	0.40
160- 170	4	1.59
170- 180	1	0.40

CUMULATIVE ERRORS RUN 23b

ERROR	# SAMPLES	PERCENT SAMPLES
LT ERROR	LT ERROR	LT ERROR
10	21	8.33
20	61	24.21
30	97	38.49
40	128	50.79
50	155	61.51
60	184	73.02
70	195	77.38
80	208	82.54
90	213	84.52
100	224	88.89
110	232	92.06
120	236	93.65
130	240	95.24
140	246	97.62
150	247	98.02
160	247	98.02
170	251	99.60
180	252	100.00
AVERAGE ERROR	=	48.57
STANDARD DEVIATION	=	37.28

FIXED ROUTE AVM SYSTEM RUN 24
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 24a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	8	4.00
10- 20	27	13.50
20- 30	26	13.00
30- 40	27	13.50
40- 50	24	12.00
50- 60	13	6.50
60- 70	20	10.00
70- 80	13	6.50
80- 90	10	5.00
90- 100	4	2.00
100- 110	9	4.50
110- 120	2	1.00
120- 130	5	2.50
130- 140	1	0.50
140- 150	6	3.00
160- 170	3	1.50
170- 180	2	1.00
CUMULATIVE ERRORS		RUN 24a

ERROR	LT	SAMPLES	PERCENT	SAMPLES
	LT	ERROR	LT	ERROR
10		8		4.00
20		35		17.50
30		61		30.50
40		88		44.00
50		112		56.00
60		125		62.50
70		145		72.50
80		158		79.00
90		168		84.00
100		172		86.00
110		181		90.50
120		183		91.50
130		188		94.00
140		189		94.50
150		195		97.50
160		195		97.50
170		198		99.00
180		200		100.00
AVERAGE ERROR	=		=	54.80
STANDARD DEVIATION	=		=	38.79

FIXED ROUTE AVM SYSTEM RUN 24
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 24b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	5.00
10- 20	27	13.50
20- 30	25	12.50
30- 40	25	12.50
40- 50	25	12.50
50- 60	12	6.00
60- 70	20	10.00
70- 80	13	6.50
80- 90	9	4.50
90- 100	4	2.00
100- 110	10	5.00
110- 120	2	1.00
120- 130	6	3.00
130- 140	1	0.50
140- 150	6	3.00
160- 170	3	1.50
170- 180	2	1.00

CUMULATIVE ERRORS RUN 24b

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	5.00
20	37	18.50
30	62	31.00
40	87	43.50
50	112	56.00
60	124	62.00
70	144	72.00
80	157	78.50
90	166	83.00
100	170	85.00
110	180	90.00
120	182	91.00
130	188	94.00
140	189	94.50
150	195	97.50
160	195	97.50
170	198	99.00
180	200	100.00
AVERAGE ERROR	=	55.06
STANDARD DEVIATION	=	39.36

MANUALLY PROCESSED FIXED ROUTE

RUN # 24

SYSTEM LOCATION ERRORS (NO COMMUNICATION ERRORS)

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
201	57242	68:08	56318	38	CD62	13398	5007	13388	4987	22
202	57980	68:08	56556	38	CD64	13367	4775	13359	4715	61
203	57808	68:08	56882	39	TA27	13618	4671	13645	4680	29
204	57892	68:27	56966	39	TA27	13702	4659	13728	4673	30
205	58038	68:47	57112	39	CP65	13846	4639	13879	4652	34
206	58488	69:07	57556	39	CP66	14292	4577	14315	4584	24
207	58952	62:27	58018	40	CP66	14776	4514	14773	4520	7
208	59274	69:47	58338	41	CP66	15095	4474	15090	4476	5
209	59400	70:07	58462	41	CP66	15220	4458	15212	4459	8
210	59590	70:27	58650	41	CP66	15409	4434	15399	4433	10
211	59884	70:47	58936	41	CP66	15701	4397	15692	4392	10
212	59898	71:07	58950	41	CP66	15715	4395	15696	4391	19
213	60088	71:27	59134	41	CP67	15903	4371	15913	4368	10
214	60496	71:47	59536	41	CP68	16308	4319	16320	4322	12
215	60910	72:07	59930	41	CP68	16897	4245	16710	4264	188
216	61428	72:27	60472	41	CP69	17233	4203	17286	4187	55
217	61750	72:47	60744	41	CP69	17552	4162	17557	4161	5
218	62136	73:07	61110	41	TA28	17500	3788	17501	3796	8
219	62570	73:27	61542	42	CP70	17429	3380	17448	3381	19
220	62710	73:47	61680	42	CP70	17397	3241	17432	3244	35
221	63068	74:07	62034	43	TA29	17730	3160	17732	3161	2
222	63400	74:27	62354	43	TA29	18060	3129	18051	3131	9
223	63708	74:47	62650	43	TA29	18367	3100	18345	3104	22
224	64086	75:07	63026	43	TA30	18743	3065	18753	3079	17
225	64382	75:27	63322	44	TA30	18786	3349	18771	3375	30
226	64560	75:47	63498	44	TA30	18806	3526	18781	3351	177
227	64560	76:07	63498	44	TA30	18806	3526	18781	3351	177
228	64838	76:27	63772	44	CP72	18839	3801	18819	3812	23
229	65170	76:47	64102	44	CP72	18878	4131	18869	4138	11
230	65504	77:07	64434	45	TA31	18888	4440	18878	4440	10
231	65868	77:27	64798	45	TA31	18527	4482	18516	4474	14
232	65876	77:47	64808	45	TA31	18519	4483	18506	4475	15
233	66264	78:07	65192	45	CP73	18153	4528	18125	4527	8
234	66680	78:27	65606	45	CP73	17720	4577	17715	4584	9
235	67166	78:47	66088	45	CP74	17237	4633	17220	4644	20
236	67710	79:07	66684	45	CP75	16697	4697	16641	4714	59
237	68170	79:27	69088	45	CP75	16240	4750	16240	4770	20
238	68642	79:47	69576	46	CP75	15834	4804	15776	4835	66
239	69056	80:07	67966	46	CP76	15425	4863	15418	4867	8

FIXED ROUTE AVM SYSTEM ERRORS, RUN 24

ERROR FREQUENCY DENSITY RUN 24

Error Interval	No. Samples	Percent of Samples
0- 10	18	7.53
10- 20	38	15.90
20- 30	33	13.81
30- 40	31	12.97
40- 50	24	10.04
50- 60	15	6.28
60- 70	22	9.21
70- 80	13	5.44
80- 90	10	4.18
90-100	4	1.67
100-110	9	3.77
110-120	2	8.37
120-130	5	2.09
130-140	1	0.42
140-150	6	2.51
160-170	3	1.26
170-180	4	1.67
180-190	1	0.42

Cumulative Errors Run 24

Error	Samples		Percent Samples	
	LT	Error	LT	Error
10	18		7.53	
20	56		23.43	
30	89		37.24	
40	120		50.21	
50	144		60.25	
60	159		66.53	
70	181		75.73	
80	194		81.17	
90	204		85.36	
100	208		87.03	
110	217		90.79	
120	219		91.63	
130	224		93.72	
140	225		94.14	
150	231		96.65	
170	234		97.91	
180	238		99.58	
180-190	239		100.00	

RESULT OF MANUAL PROCESSING PCP 77 THROUGH 97 FOR
RUN 25 TO CORRECT FOR RECORDING ERROR

PCP	ODOM (PCP)* -ODOM (R1)	INCREM INCREM	SEG STSEG	AVM X	AVM Y	REF X	REF Y	ERROR
76	56	56	17	11098	10144	11129	9961	185
77	464	185	18	11419	10296	11381	10298	38
78	798	519	18	11750	10252	11708	10251	42
79	1168	889	18	12119	10204	12068	10192	52
80	1214	935	18	12164	10198	12113	10148	71
81	1478	1199	18	12427	10163	12405	10106	61
82	1760	1481	18	12701	10126	12680	10087	44
83	1888	1609	18	12834	10109	12807	10047	68
84	2268	12	19	13193	10049	13193	10047	2
85	2652	396	19	13134	9670	13145	9678	14
86	2958	702	19	13087	9367	13094	9322	46
87	3238	982	19	13044	9091	13053	9049	43
88	3536	1280	19	12998	8796	13005	8777	20
89	3792	1536	19	12959	8543	12961	8530	13
90	"	1536	19	12959	8543	12961	8530	13
91	3920	1664	19	12939	8417	12939	8404	13
92	4322	291	20	12903	8017	12902	8003	14
93	4866	314	21	13199	7740	13127	7750	73
94	4986	434	21	13317	7722	13247	7731	71
95	4986	434	21	13317	7722	13247	7731	71
96	5218	666	21	13546	7688	13475	7697	72
97	5586	1034	21	13911	7633	13770	7654	72
98	248	248	22	14230	7592	14197	7604	35

* ODOM (R6) = 23120 feet. A value of 8192 feet was added to the 23120 feet to compensate for the record error.

FIXED ROUTE AVM SYSTEM RUN 25

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 25a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	13	17.11
10- 20	8	10.53
20- 30	10	13.16
30- 40	5	6.58
40- 50	6	7.89
50- 60	6	7.89
60- 70	7	9.21
70- 80	3	3.95
80- 90	8	10.53
90- 100	4	5.26
100- 110	2	2.63
110- 120	1	1.32
120- 130	2	2.63
140- 150	1	1.32

CUMULATIVE ERRORS RUN 25a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	13	17.11
20	21	27.63
30	31	40.79
40	36	47.37
50	42	55.26
60	48	63.16
70	55	72.37
80	58	76.32
90	66	86.84
100	70	92.11
110	72	94.74
120	73	96.05
130	75	98.68
140	75	98.68
150	76	100.00
AVERAGE ERROR		= 47.70
STANDARD DEVIATION		= 35.05

FIXED ROUTE AVM SYSTEM RUN 25
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 25b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	15	19.74
10- 20	7	9.21
20- 30	9	11.84
30- 40	5	6.58
40- 50	7	9.21
50- 60	6	7.89
60- 70	6	7.89
70- 80	3	3.95
80- 90	7	9.21
90- 100	4	5.26
100- 110	2	2.63
110- 120	1	1.32
120- 130	2	2.63
130- 140	1	1.32
140- 150	1	1.32

CUMULATIVE ERRORS RUN 25b

ERROR #	SAMPLES	PERCENT
LT	ERROR	LT ERROR
10	15	19.74
20	22	28.95
30	31	40.79
40	36	47.37
50	43	56.58
60	49	64.47
70	55	72.37
80	58	76.32
90	65	85.53
100	69	90.79
110	71	93.42
120	72	94.74
130	74	97.37
140	75	98.68
150	76	100.00
AVERAGE ERROR		= 47.61
STANDARD DEVIATION		= 36.37

FIXED ROUTE AVM SYSTEM RUN 26
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 26a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	18	7.56
10- 20	41	17.23
20- 30	51	21.43
30- 40	37	15.55
40- 50	18	7.56
50- 60	23	9.66
60- 70	10	4.20
70- 80	11	4.62
80- 90	3	1.26
90- 100	10	4.20
100- 110	6	2.52
110- 120	1	0.42
180- 190	9	3.78

CUMULATIVE ERRORS RUN 26a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	18	7.56
20	59	24.79
30	110	46.22
40	147	61.76
50	165	69.33
60	188	78.99
70	198	83.19
80	209	87.82
90	212	89.08
100	222	93.28
110	228	95.80
120	229	96.22
130	229	96.22
140	229	96.22
150	229	96.22
160	229	96.22
170	229	96.22
180	229	96.22
190	238	100.00
AVERAGE ERROR	=	43.62
STANDARD DEVIATION	=	38.03

FIXED ROUTE AVM SYSTEM RUN 26
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 26b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	16	6.72
10- 20	39	16.39
20- 30	50	21.01
30- 40	40	16.81
40- 50	19	7.98
50- 60	23	9.66
60- 70	11	4.62
70- 80	11	4.62
80- 90	3	1.26
90- 100	9	3.78
100- 110	7	2.94
110- 120	1	0.42
180- 190	9	3.78

CUMULATIVE ERRORS RUN 26b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	16	6.72
20	55	23.11
30	105	44.12
40	145	60.92
50	164	68.91
60	187	78.57
70	198	83.19
80	209	87.82
90	212	89.08
100	221	92.86
110	228	95.80
120	229	96.22
130	229	96.22
140	229	96.22
150	229	96.22
160	229	96.22
170	229	96.22
180	229	96.22
190	238	100.00
AVERAGE ERROR	=	44.30
STANDARD DEVIATION	=	37.87

FIXED ROUTE AVM SYSTEM RUN 27

LOCATION ERROR IN FEET
NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 27a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	17	7.08
10- 20	33	13.75
20- 30	48	20.00
30- 40	36	15.00
40- 50	26	10.83
50- 60	24	10.00
60- 70	13	5.42
70- 80	17	7.08
80- 90	8	3.33
90- 100	7	2.92
100- 110	6	2.50
110- 120	3	1.25
120- 130	1	0.42
210- 220	1	0.42

CUMULATIVE ERRORS RUN 27a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	17	7.08
20	50	20.83
30	98	40.83
40	134	55.83
50	160	66.67
60	184	76.67
70	197	82.08
80	214	89.17
90	222	92.50
100	229	95.42
110	235	97.92
120	238	99.17
130	239	99.58
140	239	99.58
150	239	99.58
160	239	99.58
170	239	99.58
180	239	99.58
190	239	99.58
200	239	99.58
210	239	99.58
220	240	100.00
AVERAGE ERROR	=	43.20
STANDARD DEVIATION	=	28.79

FIXED ROUTE AVM SYSTEM RUN 27

LOCATION ERROR IN FEET

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 27b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	16	6.67
10- 20	33	13.75
20- 30	51	21.25
30- 40	35	14.58
40- 50	25	10.42
50- 60	25	10.42
60- 70	12	5.00
70- 80	16	6.67
80- 90	8	3.33
90- 100	7	2.92
100- 110	7	2.92
110- 120	3	1.25
120- 130	1	0.42
210- 220	1	0.42

CUMULATIVE ERRORS RUN 27b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	16	6.67
20	49	20.42
30	100	41.67
40	135	56.25
50	160	66.67
60	185	77.08
70	197	82.08
80	213	88.75
90	221	92.08
100	228	95.00
110	235	97.92
120	238	99.17
130	239	99.58
140	239	99.58
150	239	99.58
160	239	99.58
170	239	99.58
180	239	99.58
190	239	99.58
200	239	99.58
210	239	99.58
220	240	100.00
AVERAGE ERROR	=	43.23
STANDARD DEVIATION	=	28.96

FIXED ROUTE AVM SYSTEM RUN 28
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 28a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	20	7.72
10- 20	53	20.46
20- 30	35	13.51
30- 40	43	16.60
40- 50	27	10.42
50- 60	18	6.95
60- 70	32	12.36
70- 80	15	5.79
80- 90	7	2.70
90- 100	5	1.93
100- 110	2	0.77
110- 120	1	0.39
120- 130	1	0.39

CUMULATIVE ERRORS RUN 28a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	20	7.72
20	73	28.19
30	108	41.70
40	151	58.30
50	178	68.73
60	196	75.68
70	228	88.03
80	243	93.82
90	250	96.53
100	255	98.46
110	257	99.23
120	258	99.61
130	259	100.00
AVERAGE ERROR	=	39.30
STANDARD DEVIATION	=	25.12

FIXED ROUTE AVM SYSTEM RUN 28
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 28b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	20	7.72
10- 20	52	20.08
20- 30	34	13.13
30- 40	43	16.60
40- 50	26	10.04
50- 60	20	7.72
60- 70	33	12.74
70- 80	14	5.41
80- 90	7	2.70
90- 100	5	1.93
100- 110	2	0.77
110- 120	1	0.39
120- 130	2	0.77

CUMULATIVE ERRORS RUN 28b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	20	7.72
20	72	27.80
30	106	40.93
40	149	57.53
50	175	67.57
60	195	75.29
70	228	88.03
80	242	93.44
90	249	96.14
100	254	98.07
110	256	98.84
120	257	99.23
130	259	100.00
AVERAGE ERROR	=	39.85
STANDARD DEVIATION	=	25.60

FIXED ROUTE AVM SYSTEM RUN 29

LOCATION ERROR IN FEET
NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 29a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	21	8.05
10- 20	39	14.94
20- 30	56	21.46
30- 40	30	11.49
40- 50	28	10.73
50- 60	34	13.03
60- 70	26	9.96
70- 80	6	2.30
80- 90	7	2.68
90- 100	10	3.83
100- 110	2	0.77
120- 130	1	0.38
160- 170	1	0.38

CUMULATIVE ERRORS RUN 29a

ERROR	SAMPLES	PERCENT SAMPLES
LT	ERROR	LT ERROR
10	21	8.05
20	60	22.99
30	116	44.44
40	146	55.94
50	174	66.67
60	208	79.69
70	234	89.66
80	240	91.95
90	247	94.64
100	257	98.47
110	259	99.23
120	259	99.23
130	260	99.62
140	260	99.62
150	260	99.62
160	260	99.62
170	261	100.00
AVERAGE ERROR	=	39.97
STANDARD DEVIATION	=	25.30

FIXED ROUTE AVM SYSTEM RUN 29
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 29b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	22	8.43
10- 20	40	15.33
20- 30	54	20.69
30- 40	30	11.49
40- 50	27	10.34
50- 60	36	13.79
60- 70	25	9.58
70- 80	5	1.92
80- 90	7	2.68
90- 100	10	3.83
100- 110	3	1.15
120- 130	1	0.38
160- 170	1	0.38

CUMULATIVE ERRORS RUN 29b

ERROR	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	22	8.43
20	62	23.75
30	116	44.44
40	146	55.94
50	173	66.28
60	209	80.08
70	234	89.66
80	239	91.57
90	246	94.25
100	256	98.08
110	259	99.23
120	259	99.23
130	260	99.62
140	260	99.62
150	260	99.62
160	260	99.62
170	261	100.00
AVERAGE ERROR	=	40.01
STANDARD DEVIATION	=	25.66

FIXED ROUTE AVM SYSTEM RUN 30
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 30a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	14	5.83
10- 20	40	16.67
20- 30	29	12.08
30- 40	31	12.92
40- 50	32	13.33
50- 60	34	14.17
60- 70	17	7.08
70- 80	22	9.17
80- 90	11	4.58
90- 100	2	0.83
100- 110	5	2.08
110- 120	2	0.83
240- 250	1	0.42

CUMULATIVE ERRORS RUN 30a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	14	5.83
20	54	22.50
30	83	34.58
40	114	47.50
50	146	60.83
60	180	75.00
70	197	82.08
80	219	91.25
90	230	95.83
100	232	96.67
110	237	98.75
120	239	99.58
250	240	100.00
AVERAGE ERROR	=	44.05
STANDARD DEVIATION	=	28.19

FIXED ROUTE AVM SYSTEM RUN 30
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 30b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	15	6.25
10- 20	39	16.25
20- 30	27	11.25
30- 40	34	14.17
40- 50	31	12.92
50- 60	33	13.75
60- 70	18	7.50
70- 80	20	8.33
80- 90	11	4.58
90- 100	3	1.25
100- 110	6	2.50
110- 120	2	0.83
240- 250	1	0.42

CUMULATIVE ERRORS RUN 30b

ERROR	LT	SAMPLES	PERCENT	SAMPLES
LT	ERROR	LT	ERROR	LT
10		15		6.25
20		54		22.50
30		81		33.75
40		115		47.92
50		146		60.83
60		179		74.58
70		197		82.08
80		217		90.42
90		228		95.00
100		231		96.25
110		237		98.75
120		239		99.58
130		239		99.58
140		239		99.58
150		239		99.58
160		239		99.58
170		239		99.58
180		239		99.58
190		239		99.58
200		239		99.58
210		239		99.58
220		239		99.58
230		239		99.58
240		239		99.58
250		240		100.00
AVERAGE ERROR		=		44.26
STANDARD DEVIATION		=		28.52

FIXED ROUTE AVM SYSTEM RUN 31
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 31a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	17	6.56
10- 20	23	8.88
20- 30	40	15.44
30- 40	43	16.60
40- 50	46	17.76
50- 60	17	6.56
60- 70	19	7.34
70- 80	16	6.18
80- 90	13	5.02
90- 100	7	2.70
100- 110	2	0.77
110- 120	1	0.39
120- 130	4	1.54
130- 140	2	0.77
150- 160	1	0.39
280- 290	2	0.77
320- 330	2	0.77
340- 350	1	0.39
400- 410	3	1.16
CUMULATIVE ERRORS, RUN 31a		

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	17	6.56
20	40	15.44
30	80	30.89
40	123	47.49
50	169	65.25
60	186	71.81
70	205	79.15
80	221	85.33
90	234	90.35
100	241	93.05
110	243	93.82
120	244	94.21
130	248	95.75
140	250	96.53
150	250	96.53
160	251	96.91
290	253	97.68
330	255	98.46
350	256	98.84
410	259	100.00
AVERAGE ERROR	=	54.62
STANDARD DEVIATION	=	59.77

FIXED ROUTE AVM SYSTEM RUN 31
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 31b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	18	6.95
10- 20	24	9.27
20- 30	41	15.83
30- 40	42	16.22
40- 50	44	16.99
50- 60	17	6.56
60- 70	18	6.95
70- 80	17	6.56
80- 90	13	5.02
90- 100	7	2.70
100- 110	2	0.77
110- 120	1	0.39
120- 130	4	1.54
130- 140	2	0.77
150- 160	1	0.39
280- 290	2	0.77
320- 330	2	0.77
340- 350	1	0.39
400- 410	3	1.16

CUMULATIVE ERRORS RUN 31b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	18	6.95
20	42	16.22
30	83	32.05
40	125	48.26
50	169	65.25
60	186	71.81
70	204	78.76
80	221	85.33
90	234	90.35
100	241	93.05
110	243	93.82
120	244	94.21
130	248	95.75
140	250	96.53
160	251	96.91
290	253	97.68
330	255	98.46
410	259	100.00
AVERAGE ERROR	=	54.37
STANDARD DEVIATION	=	59.87

FIXED ROUTE AVM SYSTEM RUN 34

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 34a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	8	4.79
10- 20	34	20.36
20- 30	19	11.38
30- 40	26	15.57
40- 50	14	8.38
50- 60	17	10.18
60- 70	14	8.38
70- 80	16	9.58
80- 90	12	7.19
90- 100	4	2.40
140- 150	1	0.60
190- 200	2	1.20

CUMULATIVE ERRORS RUN 34a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	8	4.79
20	42	25.15
30	61	36.53
40	87	52.10
50	101	60.48
60	118	70.66
70	132	79.04
80	148	88.62
90	160	95.81
100	164	98.20
110	164	98.20
120	164	98.20
130	164	98.20
140	164	98.20
150	165	98.80
160	165	98.80
170	165	98.80
180	165	98.80
190	165	98.80
200	167	100.00
AVERAGE ERROR	=	45.42
STANDARD DEVIATION	=	31.26

FIXED ROUTE AVM SYSTEM RUN 34

LOCATION ERROR IN FEET

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 34b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	9	5.39
10- 20	34	20.36
20- 30	18	10.78
30- 40	24	14.37
40- 50	15	8.98
50- 60	15	8.98
60- 70	15	8.98
70- 80	18	10.78
80- 90	12	7.19
90- 100	4	2.40
140- 150	1	0.60
190- 200	2	1.20

CUMULATIVE ERRORS RUN 34b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	9	5.39
20	43	25.75
30	61	36.53
40	85	50.90
50	100	59.88
60	115	68.86
70	130	77.84
80	148	88.62
90	160	95.81
100	164	98.20
110	164	98.20
120	164	98.20
130	164	98.20
140	164	98.20
150	165	98.80
160	165	98.80
170	165	98.80
180	165	98.80
190	165	98.80
200	167	100.00
AVERAGE ERROR	=	45.72
STANDARD DEVIATION	=	31.56

MANUALLY PROCESSED FIXED ROUTE

RUN # 34

SYSTEM LOCATION ERRORS (NO COMMUNICATION ERRORS)

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
168	36894	56:28	36524	25	CP37	16947	5824	16982	5831	35
169	36948	56:48	36678	25	CP38	16893	5831	16896	5841	10
170	37264	57:08	36942	25	CP38	16574	5871	16584	5878	12
171	37398	57:28	37076	25	CP38	16417	5892	16451	5894	34
172	37486	57:48	37162	25	CP39	16360	5899	16381	5903	21
173	37848	58:08	37520	25	CP39	16000	5945	16027	5951	28
174	37848	58:28	37522	25	CP39	16000	5945	16025	5952	26
175	38160	58:48	37828	25	CP39	15691	5985	15721	5993	115
176	38294	59:08	37964	25	CP40	15558	6002	15579	6009	22
177	38472	59:28	38138	25	CP40	15382	6024	15406	6026	24
178	38738	59:48	38398	26	TA18	15251	6158	15244	6120	39
179	38856	60:08	38516	27	TA18	15269	6275	15259	6237	39
180	39044	60:28	38708	28	TA19	15225	6388	15196	6392	29
181	39400	60:48	39062	28	TA19	14872	6439	14845	6443	27
182	39620	61:08	39280	29	TA19	14678	6440	14630	6475	57
183	39838	61:28	39500	29	TA20	14650	6224	14708	6257	67
184	39896	61:48	39558	29	TA20	14643	6166	14715	6199	70
185	40206	62:08	39866	29	CP41	14604	5858	14605	5867	9
186	40550	62:28	40206	30	CP42	14866	5760	14826	5766	40
187	40564	62:48	40218	30	CP42	14880	5759	14838	5763	42
188	40640	63:08	40290	31	TA22	14882	5692	14885	5722	30
189	40858	63:28	40506	31	TA22	14854	5476	14856	5508	32
190	41066	63:48	40712	31	TA22	14828	5270	14827	5304	34
191	41204	64:08	40850	31	CP43	14811	5133	14808	5146	13
192	41394	64:28	41038	32	CP43	14779	4954	14789	4959	11
193	41660	64:48	41296	32	TA23	14515	4989	14552	4980	38
194	41736	65:08	41372	32	TA23	14440	4999	14476	4989	37
195	41904	65:28	41536	32	TA23	14273	5021	14313	5007	42
196	42274	65:48	41904	32	CP44	13907	5069	13873	5065	34
197	42674	66:08	42302	32	CP44	13510	5121	13480	5124	30
198	42892	66:28	42516	32	CP45	13294	5149	13259	5153	35
199	43180	66:48	47804	32	CP45	13008	5187	12973	5187	35
200	43194	67:08	42816	32	CP45	12994	5189	12961	5188	33
201	43572	67:28	43188	32	CP46	12620	5238	12634	5229	23
202	44014	67:48	43626	33	CP46	12170	5298	12199	5283	33
203	44440	68:08	44050	33	CP46	11748	5357	11799	5336	37
204	44878	68:28	44486	33	CP47	11315	5418	11322	5469	51
205	45362	68:48	44966	33	CP47	10836	5485	10895	5687	155
206	45836	69:08	45440	33	CP49	10366	5550	10357	5528	24

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
207	46354	69:28	45958	33	CP49	9853	5622	9844	5601	23
208	46970	69:48	46576	33	CP49	9243	5707	9232	5687	23
209	47018	70:08	46624	33	CP49	9196	5713	9185	5694	22
210	47142	70:28	46746	33	CP49	9073	5730	9064	5711	21
211	47600	70:48	47900	33	CP51	8619	5794	8609	5775	21
212	48106	71:08	47708	33	CP51	8118	5864	8106	5845	22
213	48578	71:28	48176	34	CP52	7654	5913	7690	5896	40
214	48696	71:48	48294	34	CP52	7537	5920	7573	5911	37
215	48764	72:08	48358	34	TA24	7469	5924	7470	5930	6
216	49214	72:28	48802	35	TA24	7545	6368	7524	6371	21
217	49718	72:48	49304	35	CP53	7631	6864	7634	6896	32
218	50036	73:08	49612	36	TA25	7804	7016	7848	7010	44
219	50522	73:28	50088	36	CP55	8286	6952	8342	6945	56
220	50880	73:48	50436	36	CP55	8640	6905	8687	6904	47
221	51088	74:08	50644	36	CP55	8847	6878	8894	6879	47
222	51422	74:28	50972	36	CP55	9178	6834	9220	6840	42
223	50694	74:48	51242	36	CP56	9447	6799	9493	6800	46
224	52058	75:08	51596	36	CP56	9800	6751	9842	6740	36
225	52232	75:28	51770	36	CP57	9981	6728	10019	6715	40
226	52662	75:48	52198	36	CP57	10413	6671	10444	6661	33
227	53032	76:08	52566	36	CP57	10774	6624	10809	6614	36
228	53298	76:28	52828	37	CP57	11023	6590	11069	6561	47
229	53750	76:48	53280	37	CP57	11472	6532	11517	6523	46
230	54224	77:08	53750	37	CP57	11942	6470	11983	6464	41
231	54720	77:28	54244	37	CP57	12434	6405	12453	6415	21
232	55220	77:48	54738	37	CP59	12929	6339	12965	6349	37
233	55692	78:08	55208	37	CP60	13397	6277	13248	6306	152
234	56056	78:28	55564	38	TA26	13538	6062	13821	6060	283
235	56338	78:48	55846	38	TA26	13501	5782	13472	5782	29
236	56708	79:08	56224	38	CP62	13452	5416	13347	5351	123
237	57140	79:28	56644	38	CP63	13395	4987	13378	4936	51
238	57278	79:48	56780	38	CP64	13377	4851	13366	4766	86
239	57492	80:08	56996	39	TA27	13426	4697	13428	4698	2
240	57768	80:28	57266	39	TA27	13699	4659	13716	4674	23
241	58016	80:48	57514	39	CP65	13945	4625	13871	4654	79
242	58356	81:08	57848	39	CP66	14276	4579	14349	4579	23
243	58538	81:28	58030	40	CP66	14496	4549	14529	4554	33
244	58696	81:48	58188	40	CP66	14653	4529	14686	4532	33
245	59144	82:08	58632	40	CP66	15097	4474	15125	4471	28
246	59604	82:28	59090	40	CP66	15554	4416	15579	4408	26

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
247	59774	82:48	59260	40	CP66	15722	4394	15747	4384	27
248	59776	83:08	59262	40	CP66	15724	4394	15749	4384	27
249	60126	83:28	59604	40	CP67	16072	4349	16082	4353	11
250	60538	83:48	60010	40	CP68	16481	4298	16481	4298	0
251	60830	84:08	60298	40	CP68	16770	4261	16766	4255	7
252	61128	84:28	60592	40	CP68	17066	4224	17058	4211	15
253	61128	84:48	60592	40	CP68	17066	4224	17058	4211	15
254	61372	85:08	60834	40	CP69	17308	4192	17340	4182	34
255	61576	85:08	61036	40	CP69	17510	4167	17541	4163	31
256	61630	85:48	61088	41	TA28	17559	4157	17556	4135	22
257	61718	86:08	61176	41	TA28	17545	4070	17542	4049	21
258	62004	86:28	61458	41	TA28	17500	3788	17497	3771	17
259	62298	86:48	61748	41	CP70	17453	3498	17461	3486	9
260	62536	87:08	61982	42	CP70	17430	3257	17433	3254	4
261	62538	87:28	61984	42	CP70	17431	3255	17433	3252	4
262	62562	87:48	62010	42	CP70	17428	3230	17429	3226	4
263	62882	88:08	62330	43	TA29	17702	3163	17696	3164	6
264	63290	88:28	62732	43	TA29	18108	3125	18096	3127	8
265	63558	88:48	63000	43	TA29	18375	3100	18363	3102	12
266	63910	89:08		43		18725	3067	18752	3064	27
267	64174	89:28	63612	44	TA30	18780	3299	18968	3325	29
268	64370	89:48	63806	44	TA30	18803	3494	18779	3519	35
269	64370	90:08	63806	44	TA30	18803	3494	18779	3519	35
270	64568	90:28	63996	44	CP72	18826	3690	18805	3715	33
271	64868	90:48	64296	44	CP72	18861	3988	18850	4012	26
272	65208	91:08	64634	44	CP72	18901	4326	18900	4346	20
273	65496	91:28	64926	45	TA31	18739	4457	18725	4455	14
274	65710	91:48	65138	45	TA31	18527	4482	18514	4474	15
275	65992	92:08	65420	45	CP73	18 6	4515	18226	4513	20
276	66310	92:28	65736	45	CP73	17931	4552	17913	4556	18
277	66704	92:48	66128	45	CP74	17539	4598	17555	4605	17
278	66962	93:08	66384	45	CP74	17283	4628	17307	4634	25
279	67020	93:28	66442	45	CP74	17225	4635	17243	4642	19
280	67052	93:48	66474	45	CP74	17194	4639	17212	4645	19
281	67318	94:08	66738	45	CP74	16929	4670	16949	4676	21
282	67624	94:28	67042	45	CP75	16625	4705	16623	4717	12
283	67716	94:48	67134	45	CP75	16534	4715	16532	4729	14
284	67938	95:08	67352	45	CP75	16313	4742	16316	4759	17
285	68054	95:28	67468	45	CP75	16198	4755	16201	4776	21

RUN # 34

SYSTEM LOCATION ERRORS (NO COMMUNICATION ERRORS)

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
286	68352	95:48	67764	46	CP75	15959	4786	15907	4816	60
287	68402	96:08	67814	46	CP75	15910	4793	15858	4823	57
288	68402	96:28	67814	46	CP75	15910	4793	15858	4823	60
289	68574	96:48	67984	46	CP75	15739	4817	15689	4847	58
290		97:08						15383	4869	
291										
292										

FIXED ROUTE AVM SYSTEM ERRORS, RUN 34

ERROR FREQUENCY DENSITY RUN 34

Error Interval	No. Samples	Percent of Samples
0- 10	19	6.59
10- 20	52	18.05
20- 30	52	18.05
30- 40	55	19.09
40- 50	27	9.37
50- 60	23	7.98
60- 70	17	5.90
70- 80	19	6.59
80- 90	13	4.51
90-100	4	1.38
110-120	1	.34
120-130	1	.34
140-150	1	.34
150-160	2	.69
190-200	2	.69
280-290	1	.34

Cumulative Errors Run 34

Error	Samples LT Error	Percent Samples LT Error
10	19	6.59
20	71	24.65
30	123	42.70
40	178	61.80
50	205	71.18
60	228	79.16
70	245	85.06
80	264	91.66
90	277	96.18
100	281	97.56
120	282	97.91
130	283	98.26
150	284	98.61
160	286	99.30
200	288	100.00
280-290	289	

FIXED ROUTE AVM SYSTEM RUN 35

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 35a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	35	13.73
10- 20	41	16.08
20- 30	35	13.73
30- 40	30	11.76
40- 50	44	17.25
50- 60	14	5.49
60- 70	16	6.27
70- 80	22	8.63
80- 90	10	3.92
90- 100	2	0.78
100- 110	1	0.39
120- 130	4	1.57
130- 140	1	0.39

CUMULATIVE ERRORS RUN 35a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	35	13.73
20	76	29.80
30	111	43.53
40	141	55.29
50	185	72.55
60	199	78.04
70	215	84.31
80	237	92.94
90	247	96.86
100	249	97.65
110	250	98.04
120	250	98.04
130	254	99.61
140	255	100.00
AVERAGE ERROR		= 39.05
STANDARD DEVIATION		= 26.94

FIXED ROUTE AVM SYSTEM RUN 35

LOCATION ERROR IN FEET

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 35b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	35	13.73
10- 20	44	17.25
20- 30	37	14.51
30- 40	30	11.76
40- 50	39	15.29
50- 60	14	5.49
60- 70	16	6.27
70- 80	21	8.24
80- 90	9	3.53
90- 100	4	1.57
100- 110	1	0.39
120- 130	4	1.57
130- 140	1	0.39

CUMULATIVE ERRORS RUN 35b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	35	13.73
20	79	30.98
30	116	45.49
40	146	57.25
50	185	72.55
60	199	78.04
70	215	84.31
80	236	92.55
90	245	96.08
100	249	97.65
110	250	98.04
120	250	98.04
130	254	99.61
140	255	100.00
AVERAGE ERROR	=	38.74
STANDARD DEVIATION	=	27.27

FIXED ROUTE AVM SYSTEM RUN 36
LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 36a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	14	6.11
10- 20	40	17.47
20- 30	42	18.34
30- 40	16	6.99
40- 50	16	6.99
50- 60	20	8.73
60- 70	26	11.35
70- 80	23	10.04
80- 90	14	6.11
90- 100	4	1.75
100- 110	3	1.31
110- 120	2	0.87
130- 140	3	1.31
150- 160	5	2.18
200- 210	1	0.44

CUMULATIVE ERRORS RUN 36a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	14	6.11
20	54	23.58
30	96	41.92
40	112	48.91
50	128	55.90
60	148	64.63
70	174	75.98
80	197	86.03
90	211	92.14
100	215	93.89
110	218	95.20
120	220	96.07
130	220	96.07
140	223	97.38
150	223	97.38
160	228	99.56
210	229	100.00
AVERAGE ERROR	=	47.85
STANDARD DEVIATION	=	34.08

FIXED ROUTE AVM SYSTEM RUN 36
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 36b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	14	6.11
10- 20	40	17.47
20- 30	43	18.78
30- 40	16	6.99
40- 50	16	6.99
50- 60	19	8.30
60- 70	26	11.35
70- 80	21	9.17
80- 90	13	5.68
90- 100	5	2.18
100- 110	3	1.31
110- 120	3	1.31
130- 140	4	1.75
150- 160	5	2.18
200- 210	1	0.44

CUMULATIVE ERRORS RUN 36b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	14	6.11
20	54	23.58
30	97	42.36
40	113	49.34
50	129	56.33
60	148	64.63
70	174	75.98
80	195	85.15
90	208	90.83
100	213	93.01
110	216	94.32
120	219	95.63
130	219	95.63
140	223	97.38
150	223	97.38
160	228	99.56
210	229	100.00
AVERAGE ERROR	=	48.20
STANDARD DEVIATION	=	34.90

FIXED ROUTE AVM SYSTEM RUN 37

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 37a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	4.05
10- 20	39	15.79
20- 30	40	16.19
30- 40	34	13.77
40- 50	16	6.48
50- 60	16	6.48
60- 70	20	8.10
70- 80	17	6.88
80- 90	22	8.91
90- 100	9	3.64
100- 110	7	2.83
110- 120	6	2.43
120- 130	8	3.24
150- 160	2	0.81
210- 220	1	0.40

CUMULATIVE ERRORS RUN 37a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	4.05
20	49	19.84
30	89	36.03
40	123	49.80
50	139	56.28
60	155	62.75
70	175	70.85
80	192	77.73
90	214	86.64
100	223	90.28
110	230	93.12
120	236	95.55
130	244	98.79
160	246	99.60
220	247	100.00
AVERAGE ERROR	=	50.84
STANDARD DEVIATION	=	35.07

FIXED ROUTE AVM SYSTEM RUN 37

LOCATION ERROR IN FEET

5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 37b |

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	4.05
10- 20	40	16.19
20- 30	40	16.19
30- 40	33	13.36
40- 50	15	6.07
50- 60	15	6.07
60- 70	19	7.69
70- 80	18	7.29
80- 90	22	8.91
90- 100	11	4.45
100- 110	7	2.83
110- 120	6	2.43
120- 130	8	3.24
150- 160	2	0.81
210- 220	1	0.40

CUMULATIVE ERRORS RUN 37b

ERROR	‡ SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	4.05
20	50	20.24
30	90	36.44
40	123	49.80
50	138	55.87
60	153	61.94
70	172	69.64
80	190	76.92
90	212	85.83
100	223	90.28
110	230	93.12
120	236	95.55
130	244	98.79
160	246	99.60
170	246	99.60
180	246	99.60
190	246	99.60
200	246	99.60
210	246	99.60
220	247	100.00
AVERAGE ERROR	=	51.07
STANDARD DEVIATION	=	35.37

FIXED ROUTE AVM SYSTEM RUN 38
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 38a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	4.50
10- 20	24	10.81
20- 30	43	19.37
30- 40	28	12.61
40- 50	23	10.36
50- 60	22	9.91
60- 70	17	7.66
70- 80	23	10.36
80- 90	15	6.76
90- 100	12	5.41
100- 110	1	0.45
110- 120	1	0.45
190- 200	1	0.45
860- 870	1	0.45
870- 880	1	0.45

CUMULATIVE ERRORS RUN 38a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	4.50
20	34	15.32
30	77	34.68
40	105	47.30
50	128	57.66
60	150	67.57
70	167	75.23
80	190	85.59
90	205	92.34
100	217	97.75
110	218	98.20
120	219	98.65
130	219	98.65
870	221	99.55
880	222	100.00
AVERAGE ERROR =		54.62
STANDARD DEVIATION =		82.30

FIXED ROUTE AVM SYSTEM RUN 38

LOCATION ERROR IN FEET
5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 38b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	9	4.05
10- 20	29	13.06
20- 30	44	19.82
30- 40	29	13.06
40- 50	21	9.46
50- 60	20	9.01
60- 70	16	7.21
70- 80	21	9.46
80- 90	15	6.76
90- 100	12	5.41
100- 110	1	0.45
110- 120	2	0.90
190- 200	1	0.45
860- 870	1	0.45
870- 880	1	0.45

CUMULATIVE ERRORS RUN 38b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	9	4.05
20	38	17.12
30	82	36.94
40	111	50.00
50	132	59.46
60	152	68.47
70	168	75.68
80	189	85.14
90	204	91.89
100	216	97.30
110	217	97.75
120	219	98.65
200	220	99.10
870	221	99.55
880	222	100.00
AVERAGE ERROR	=	53.75
STANDARD DEVIATION	=	82.57

FIXED ROUTE AVM SYSTEM RUN 39

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 39a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	12	4.27
10- 20	19	6.76
20- 30	34	12.10
30- 40	37	13.17
40- 50	33	11.74
50- 60	50	17.79
60- 70	47	16.73
70- 80	17	6.05
80- 90	6	2.14
90- 100	5	1.78
100- 110	9	3.20
110- 120	3	1.07
120- 130	1	0.36
130- 140	6	2.14
180- 190	1	0.36
380- 390	1	0.36

CUMULATIVE ERRORS RUN 39a

ERROR	SAMPLES	PERCENT
LT ERROR	LT ERROR	LT ERROR
10	12	4.27
20	31	11.03
30	65	23.13
40	102	36.30
50	135	48.04
60	185	65.84
70	232	82.56
80	249	88.61
90	255	90.75
100	260	92.53
110	269	95.73
120	272	96.80
130	273	97.15
140	279	99.29
150	279	99.29
160	279	99.29
170	279	99.29
180	279	99.29
190	280	99.64
390	281	100.00
AVERAGE ERROR	=	52.67
STANDARD DEVIATION	=	34.57

FIXED ROUTE AVM SYSTEM RUN 39
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 39b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	12	4.27
10- 20	19	6.76
20- 30	34	12.10
30- 40	39	13.88
40- 50	33	11.74
50- 60	48	17.08
60- 70	45	16.01
70- 80	17	6.05
80- 90	7	2.49
90- 100	6	2.14
100- 110	9	3.20
110- 120	3	1.07
120- 130	1	0.36
130- 140	6	2.14
180- 190	1	0.36
380- 390	1	0.36

CUMULATIVE ERRORS RUN 39b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	12	4.27
20	31	11.03
30	65	23.13
40	104	37.01
50	137	48.75
60	185	65.84
70	230	81.85
80	247	87.90
90	254	90.39
100	260	92.53
110	269	95.73
120	272	96.80
130	273	97.15
140	279	99.29
150	279	99.29
160	279	99.29
170	279	99.29
180	279	99.29
190	280	99.64
390	281	100.00
AVERAGE ERROR	=	52.69
STANDARD DEVIATION	=	34.75

FIXED ROUTE AVM SYSTEM RUN 40
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 40a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	4	2.67
10- 20	14	9.33
20- 30	18	12.00
30- 40	33	22.00
40- 50	32	21.33
50- 60	25	16.67
60- 70	7	4.67
70- 80	13	8.67
80- 90	2	1.33
90- 100	2	1.33

CUMULATIVE ERRORS RUN 40a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	4	2.67
20	18	12.00
30	36	24.00
40	69	46.00
50	101	67.33
60	126	84.00
70	133	88.67
80	146	97.33
90	148	98.67
100	150	100.00
AVERAGE ERROR =		42.65
STANDARD DEVIATION =		19.07

FIXED ROUTE AVM SYSTEM RUN 40
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 40b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	4	2.67
10- 20	13	8.67
20- 30	20	13.33
30- 40	34	22.67
40- 50	34	22.67
50- 60	24	16.00
60- 70	5	3.33
70- 80	12	8.00
80- 90	1	0.67
90- 100	3	2.00

CUMULATIVE ERRORS RUN 40b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	4	2.67
20	17	11.33
30	37	24.67
40	71	47.33
50	105	70.00
60	129	86.00
70	134	89.33
80	146	97.33
90	147	98.00
100	150	100.00
AVERAGE ERROR		= 42.03
STANDARD DEVIATION		= 18.77

MANUALLY PROCESSED AVM SYSTEM

RUN # 40

SYSTEM LOCATION ERRORS (NO COMMUNICATION ERRORS)

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
152	19276	53:17	19184	25	CP40	15289	6036	15315	6035	26
153	19405	53:37	19311	26	TA18	15265	6243	15256	6215	29
154	19443	53:57	19348	27	TA18	15270	6285	15266	6289	6
155	19541	54:17	19448	28	TA19	15376	6395	15113	6402	263
156	19695	54:37	19601	28	TA19	14872	6439	14809	6448	64
157	19829	54:57	19736	29	TA20	14672	6393	14671	6393	1
158	19880	55:17	19787	29	TA20	14658	6291	14659	6293	2
159	19951	55:37	19859	29	TA20	14641	6150	14641	6149	1
160	20131	55:57	20039	29	TA21	14596	5793	14537	5783	60
161	20280	56:17	20188	30	CP42	14886	5758	14603	5766	283
162	20280	56:37	20188	30	CP42	14886	5758	14603	5766	283
163	20374	56:57	20279	31	TA22	14867	5575	14870	5612	37
164	20520	57:17	20424	31	TA22	14830	5286	14830	5320	34
165	20524	57:37	20428	21	TA22	14829	5278	14828	5312	34
166	20659	57:57	20563	31	CP43	14795	5010	14796	5030	20
167	20676	58:17	20579	31	CP43	14791	4976	14792	4998	22
168	20855	58:37	20754	32	TA23	14417	5002	14496	4987	80
169	20910	58:57	20808	32	TA23	14308	5016	14388	4999	82
170	21038	59:17	20937	32	TA23	14054	5049	14132	5029	81
171	21104	59:37	21003	32	CP44	13923	5067	13928	5057	11
172	21113	59:57	21012	32	CP44	13906	5069	13911	5059	11
173	21117	60:17	21016	32	CP44	13898	5070	13903	5060	11
174	21213	60:37	21112	32	CP44	13707	5095	13713	5089	8
175	21402	60:57	21300	32	CP45	13332	5144	13342	5143	10
176	21591	61:17	21488	32	CP45	12958	5207	12970	5187	23
177	21591	61:37	21488	32	CP45	12958	5207	12970	5141	67
178	21650	61:57	21547	32	CP45	12841	5209	12852	5201	14
179	21884	62:17	21779	32	CP46	12377	5270	12424	5255	49
180	22063	62:37	21958	33	CP46	12052	5315	12068	5300	22
181	22075	62:57	21969	33	CP46	12028	5318	12047	5303	25
182	22224	63:17	22118	33	CP46	11733	5359	11751	5340	26
183	22271	63:37	22166	33	CP46	11640	5372	11656	5352	26
184	22339	63:57	22234	33	CP47	11505	5391	11492	5373	22
185	22359	64:17	22254	33	CP47	11466	5397	11453	5378	23
186	22496	64:37	22390	33	CP47	11194	5435	11183	5416	22
187	22539	64:57	22432	33	CP47	11109	5446	11100	5428	20
188	22681	65:17	22573	33	CP47	10828	5486	10821	5467	22
189	22893	65:37	22784	33	CP49	10408	5544	10399	5521	25
190	23205	65:57	23096	33	CP50	9790	5630	9586	5643	204
191	23380	66:17	23271	33	CP51	9443	5679	9504	5654	66

RUN # 40

SYSTEM LOCATION ERRORS

(NO COMMUNICATION ERRORS)

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
192	23683	66:37	23574	33	CP51	8843	5763	8904	5735	67
193	23973	66:57	23863	33	CP52	8269	5843	8263	5824	20
194	24257	67:17	24146	34	TA24	7732	5909	7736	5891	18
195	24344	67:37	24233	34	TA24	7559	5919	7563	5912	8
196	24393	67:57	24280	35	CP53	7470	5932	7474	5968	36
197	24650	68:17	24536	35	CP54	7557	6439	7542	6504	67
198	24850	68:37	24736	35	CP54	7625	6833	7634	6894	62
199	24964	68:57	24847	36	CP55	7683	7032	7721	7027	38
200	25215	69:17	25099	36	CP55	8180	6966	8219	6961	39
201	25429	69:37	25312	36	CP56	8605	6910	8676	6905	1
202	25506	69:57	25388	36	CP56	8757	6890	8827	6887	70
203	25701	70:17	25583	36	CP56	9144	6839	9214	6841	70
204	25703	70:37	25585	36	CP55	9148	6838	9222	6840	74
205	25703	70:57	25685	36	CP56	9148	6838	9414	6813	267
206	26014	71:17	25895	36	CP56	9765	6757	9828	6742	84
207	26095	71:37	25977	36	CP57	9925	6736	9999	6718	76
208	26362	71:57	26243	36	CP57	10454	6666	10527	6650	74
209	26577	72:17	26457	36	CP57	10881	6609	10952	6596	72
210	26757	72:37	26637	37	CP57	11238	6562	11309	6550	72
211	26831	72:57	26710	37	CP57	11384	6543	11453	6531	70
212	26931	73:17	26809	37	CP57	11583	6517	11650	6506	68
213	26931	73:37	26809	37	CP57	11583	6517	11650	6506	68
214	27104	73:57	26981	37	CP57	11926	6472	12031	6457	106
215	27318	74:17	27194	37	CP58	12350	6416	12365	6423	17
216	27513	74:37	27388	37	CP59	12737	6365	12785	6374	49
217	27697	74:57	27571	37	CP60	13102	6317	13117	6328	19
218	27799	75:17	27673	37	CP60	13304	6290	13318	6294	15
219	27835	75:37	27710	37	CP60	13370	6281	13391	6281	21
220	27865	75:57	27740	37	CP61	13435	6272	13476	6268	41
221	28011	76:17	27882	38	TA26	13543	6095	13527	6063	36
222	28134	76:37	28005	38	TA26	13510	5852	13480	5822	42
223	28146	76:57	28017	38	TA26	13507	5828	13475	5798	44
224	28290	77:17	28161	38	CP62	13469	5542	13428	5467	85
225	28473	77:37	28342	38	CP63	13421	5180	13387	5110	78
226	28590	77:57	28458	38	CP63	13390	4948	13375	4878	72
227	28734	78:17	28603	39	TA27	13403	4701	13487	4693	84
228	28820	78:37	28689	39	TA27	13573	4677	13659	4679	86
229	28875	78:57	28744	39	TA27	13682	4662	13768	4670	86
230	29068	79:17	28934	39	CP65	14064	4609	14142	4610	78
231	29266	79:37	29131	40	CP66	14520	4547	14535	4553	16

RUN # 40

SYSTEM LOCATION ERRORS (NO COMMUNICATION ERRORS)

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
232	29338	79:57	29203	40	CP66	14663	4529	14678	4533	16
233	29575	80:17	29438	40	CP66	15133	4469	15143	4468	10
234	29832	80:37	29695	40	CP66	15643	4404	15652	4397	11
235	29878	80:57	29740	40	CP66	15734	4393	15741	4385	11
236	29879	81:17	29742	40	CP66	15736	4342	15745	4384	12
237	30080	81:37	29941	40	CP67	16135	4342	16150	4347	16
238	30269	81:57	30128	40	CP68	16510	4294	16514	4292	4
239	30335	82:17	30195	40	CP68	16641	4278	16646	4273	7
240	30549	82:37	30408	40	CP68	17066	4224	17068	4209	15
241	30549	82:57	30408	40	CP68	17066	4224	17068	4209	15
242	30627	83:17	30526	40	CP69	17221	4204	17331	4182	112
243	30775	83:37	30634	40	CP69	17514	4167	17546	4162	32
244	30845	83:57	30702	41	TA28	17545	4068	17543	4054	14
245	30974	84:17	30830	41	TA28	17504	3813	17502	3801	12
246	31081	84:37	30936	41	CP70	17470	3602	17474	3599	5
247	31216	84:57	31071	42	CP70	17439	3350	17442	3330	20
248	31349	85:17	31205	43	TA29	17529	3178	17566	3176	37
249	31595	85:37	31450	43	TA29	18018	3133	18055	3131	37
250	31815	85:57	31670	43	TA29	18456	3092	18493	3090	37
251	31847	86:17	31702	43	TA	18520	3085	18557	3084	37
252	31960	86:37	31817	43	TA30	18745	3065	18754	3104	40
253	32057	86:57	31913	43	TA30	18774	3250	18766	3296	47
254	32140	87:17	32000	44	TA30	18793	3414	18776	3469	58
255	32279	87:37	32131	44	CP72	18826	3690	18807	3729	43
256	32445	86:57	32297	44	CP72	18865	4018	18857	4057	40
257	32609	87:17	32459	44	CP72	18914	4435	18905	4376	60
258	32766	87:37	32618	45	TA31	18693	4463	18653	4461	40
259	32824	87:57	32676	45	TA31	18578	4476	18538	4472	43
260	32947	88:17	32798	45	CP73	18334	4505	18304	4502	30
261	33046	88:37	32897	45	CP73	18137	4528	18107	4529	30
262	33271	88:57	33122	45	CP73	17690	4580	17662	4591	30
263	33287	89:17	33137	45	CP73	17658	4584	17632	4595	28
264	33305	89:37	33155	45	CP74	17623	4588	17615	4598	13
265	33495	89:57	33345	45	CP74	17245	4633	17238	4642	11
266	33695	90:17	33544	45	CP74	16917	4679	16842	4689	14
267	33875	90:37	33723	45	CP75	16490	4721	16464	4739	32
268	33964	90:57	33812	45	CP75	16401	4742	16288	4763	115
269	33964	91:17	33812	45	CP75	16401	4742	16288	4763	115
270	34043	91:37	33891	45	CP75	16250	4760	16131	4785	112
271	34249	91:57	34095	46	CP75	15961	4786	15727	4842	241

AVM SYSTEM ERROR STATISTICS, RUN 40

ERROR FREQUENCY DENSITY RUN 40

Error Interval	No. Samples	Percent of Samples
0- 10	14	5.2
10- 20	37	13.75
20- 30	37	13.75
30- 40	48	17.84
40- 50	43	15.98
50- 60	26	9.66
60- 70	17	6.31
70- 80	24	8.92
80- 90	10	3.71
90-100	2	.74
100-110	1	.37
110-120	4	1.48
200-210	1	.37
240-250	1	.37
260-270	2	.74
280-290	2	.74

Cumulative Errors Run 40

Error	Samples		Percent Samples	
	LT	Error	LT	Error
10		14		5.2
20		51		18.95
30		88		32.7
40		136		50.5
50		179		66.54
60		205		76.2
70		222		82.5
80		246		91.44
90		256		95.16
100		258		95.91
110		259		96.28
120		263		97.76
210		264		98.14
250		265		98.51
270		267		99.25
290		269		100.00

FIXED ROUTE AVM SYSTEM RUN 41

LOCATION ERROR IN FEET

NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 41a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	46	13.98
10- 20	69	20.97
20- 30	24	7.29
30- 40	47	14.29
40- 50	51	15.50
50- 60	27	8.21
60- 70	38	11.55
70- 80	10	3.04
80- 90	8	2.43
100- 110	7	2.13
110- 120	1	0.30
190- 200	1	0.30

CUMULATIVE ERRORS RUN 41a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	46	13.98
20	115	34.95
30	139	42.25
40	186	56.53
50	237	72.04
60	264	80.24
70	302	91.79
80	312	94.83
90	320	97.26
100	320	97.26
110	327	99.39
120	328	99.70
130	328	99.70
140	328	99.70
150	328	99.70
160	328	99.70
170	328	99.70
180	328	99.70
190	328	99.70
200	329	100.00
AVERAGE ERROR	=	37.26
STANDARD DEVIATION	=	25.74

FIXED ROUTE AVM SYSTEM RUN 41

LOCATION ERROR IN FEET
5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 41b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	47	14.29
10- 20	68	20.67
20- 30	25	7.60
30- 40	46	13.98
40- 50	49	14.89
50- 60	27	8.21
60- 70	38	11.55
70- 80	9	2.74
80- 90	8	2.43
90- 100	1	0.30
100- 110	8	2.43
110- 120	1	0.30
190- 200	1	0.30
****-****	1	0.30

CUMULATIVE ERRORS RUN 41b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	47	14.29
20	115	34.95
30	140	42.55
40	186	56.53
50	235	71.43
60	262	79.64
70	300	91.19
80	309	93.92
90	317	96.35
100	318	96.66
110	326	99.09
120	327	99.39
130	327	99.39
140	327	99.39
150	327	99.39
160	327	99.39
170	327	99.39
180	327	99.39
190	327	99.39
200	328	99.70

FIXED ROUTE AVM SYSTEM RUN 42
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 42a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	18	7.79
10- 20	26	11.26
20- 30	38	16.45
30- 40	26	11.26
40- 50	38	16.45
50- 60	20	8.66
60- 70	24	10.39
70- 80	17	7.36
80- 90	10	4.33
90- 100	7	3.03
100- 110	3	1.30
110- 120	1	0.43
140- 150	1	0.43
150- 160	1	0.43
370- 380	1	0.43

CUMULATIVE ERRORS RUN 42a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	18	7.79
20	44	19.05
30	82	35.50
40	108	46.75
50	146	63.20
60	166	71.86
70	190	82.25
80	207	89.61
90	217	93.94
100	224	96.97
110	227	98.27
120	228	98.70
130	228	98.70
140	228	98.70
150	229	99.13
370	230	99.57
380	231	100.00
AVERAGE ERROR =		45.44
STANDARD DEVIATION =		34.42

FIXED ROUTE AVM SYSTEM RUN 42

LOCATION ERROR IN FEET
5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 42b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	19	8.23
10- 20	27	11.69
20- 30	39	16.88
30- 40	27	11.69
40- 50	36	15.58
50- 60	21	9.09
60- 70	20	8.66
70- 80	16	6.93
80- 90	12	5.19
90- 100	7	3.03
100- 110	4	1.73
140- 150	1	0.43
150- 160	1	0.43
370- 380	1	0.43

CUMULATIVE ERRORS RUN 42b

ERROR	# SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	19	8.23
20	46	19.91
30	85	36.80
40	112	48.48
50	148	64.07
60	169	73.16
70	189	81.82
80	205	88.74
90	217	93.94
100	224	96.97
110	228	98.70
120	228	98.70
130	228	98.70
140	228	98.70
150	229	99.13
370	230	99.57
380	231	100.00
AVERAGE ERROR	=	44.80
STANDARD DEVIATION	=	34.56

FIXED ROUTE AVM SYSTEM RUN 43
 LOCATION ERROR IN FEET
 NO COMMUNICATION ERRORS
 ERROR FREQUENCY DENSITY RUN 43a

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	5.38
10- 20	15	8.06
20- 30	16	8.60
30- 40	20	10.75
40- 50	31	16.67
50- 60	27	14.52
60- 70	6	3.23
70- 80	30	16.13
80- 90	10	5.38
90- 100	6	3.23
100- 110	5	2.69
110- 120	2	1.08
120- 130	2	1.08
130- 140	2	1.08
140- 150	3	1.61
220- 230	1	0.54

CUMULATIVE ERRORS RUN 43a

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	5.38
20	25	13.44
30	41	22.04
40	61	32.80
50	92	49.46
60	119	63.98
70	125	67.20
80	155	83.33
90	165	88.71
100	171	91.94
110	176	94.62
120	178	95.70
130	180	96.77
140	182	97.85
150	185	99.46
220	185	99.46
230	186	100.00
AVERAGE ERROR	=	54.89
STANDARD DEVIATION	=	32.86

FIXED ROUTE AVM SYSTEM RUN 43
 LOCATION ERROR IN FEET
 5% COMMUNICATION ERRORS

ERROR FREQUENCY DENSITY RUN 43b

ERROR INTERVAL	NO. SAMPLES	PERCENT OF SAMPLES
0- 10	10	5.38
10- 20	16	8.60
20- 30	16	8.60
30- 40	19	10.22
40- 50	30	16.13
50- 60	27	14.52
60- 70	6	3.23
70- 80	30	16.13
80- 90	10	5.38
90- 100	6	3.23
100- 110	5	2.69
110- 120	3	1.61
120- 130	2	1.08
130- 140	2	1.08
140- 150	2	1.08
170- 180	1	0.54
220- 230	1	0.54

CUMULATIVE ERRORS RUN 43b

ERROR #	SAMPLES LT ERROR	PERCENT SAMPLES LT ERROR
10	10	5.38
20	26	13.98
30	42	22.58
40	61	32.80
50	91	48.92
60	118	63.44
70	124	66.67
80	154	82.80
90	164	88.17
100	170	91.40
110	175	94.09
120	178	95.70
130	180	96.77
140	182	97.85
150	184	98.92
160	184	98.92
170	184	98.92
180	185	99.46
230	186	100.00
AVERAGE ERROR	=	55.22
STANDARD DEVIATION	=	33.71

MANUALLY PROCESSED FIXED ROUTE

RUN # 43

SYSTEM LOCATION ERRORS (NO COMMUNICATION ERRORS)

PCP	ODOM	TIME	FIFTH	STSEG	SSG5	AVM X	AVM Y	REF X	REF Y	ERROR
186	56382	62:10	56154	38	CP62	13490	5697	13447	5617	91
187	56706	62:41	56480	38	CP62	13447	5376	13417	5293	88
188	57232	63:07	57002	38	CP64	13378	4855	13354	4673	184
189	57380	63:27	57156	38	TA27	13358	4707	13454	4696	97
190	57670	63:47	57444	39	TA27	13644	4667	13740	4672	96
191	57680	64:07	57456	39	TA27	13654	4666	13752	4671	108
192	58042	64:27	57816	39	CP65	14013	4615	14111	4615	98
193	58366	64:47	58136	40	CP66	14417	4560	14436	4567	20
194	58784	65:07	58556	40	CP66	14831	4507	14852	4509	21
195	59280	65:27	59048	40	CP66	15324	4445	15339	4441	16
196	59682	65:47	59450	40	CP66	15722	4394	15737	4386	17
197	60094	66:07	59860	40	CP67	16131	4342	16138	4348	9
198	60580	66:27	60342	40	CP68	16613	4281	16607	4279	6
199	61116	66:47	60878	40	CP69	17145	4214	17171	4197	31
200	61540	67:07	61296	41	TA28	17559	4155	17558	4147	8
201	61686	67:27	61622	41	TA28	17507	3831	17506	3826	5
202	62144	67:47	61894	41	CP70	17463	3559	17470	3561	7
203	62440	68:07	62190	42	CP70	17436	3452	17434	3267	185
204	62750	68:27	62506	43	TA29	17604	3172	17674	3166	70
205	63184	68:47	62938	43	TA29	18036	3131	18104	3126	68
206	63482	69:07	63232	43	TA29	18333	3103	18397	3099	64
207	63736	69:27	63488	43	TA29	18586	3080	18652	3076	66
208	63932	69:46	63684	44	TA30	18755	3093	18746	3168	76
209	64268	70:06	64018	44	TA30	18795	3426	18726	3501	102
210	64594	70:26	64342	44	CP72	18833	3750	18847	3996	246
211	64976	70:46	64720	44	CP72	18878	4129	18904	4370	242
212	65168	71:06	64912	44	CP72	18900	4319	18933	4560	243
213	65240	71:26	64986	44	TA31	18909	4391	18898	4438	48
214	65596	71:46	65344	45	TA31	18606	4473	18542	4472	64
215	65608	72:06	65356	45	TA31	18594	4474	18530	4473	64
216	65904	72:26	65560	45	CP73	18300	4509	18260	4508	40
217	66272	72:46	66016	45	CP73	17935	4552	17897	4559	39
218	66752	73:06	66496	45	CP74	17458	4608	17418	4621	42
219	67058	73:26	66800	45	CP74	17154	4643	17369	4627	216
220	67416	73:46	67156	45	CP74	16798	4685	16763	4698	37
221	67416	74:06	67156	45	CP74	16798	4685	16763	4698	37
222	67590	74:26	67330	45	CP75	16625	4705	16597	4720	32
223	68052	74:46	67790	45	CP75	16166	4759	16141	4784	35
224	68524	75:06	68260	46	CP75	15706	4822	15676	4849	40

FIXED ROUTE AVM SYSTEM ERRORS, RUN 43

ERROR FREQUENCY DENSITY RUN 43

Error Interval	No. Samples	Percent of Samples
0- 10	15	6.66
10- 20	18	8.0
20- 30	17	7.5
30- 40	28	12.44
40- 50	33	14.66
50- 60	27	12.0
60- 70	11	4.8
70- 80	32	14.22
80- 90	11	4.88
90-100	10	4.44
100-110	7	3.11
110-120	2	.88
120-130	2	.88
130-140	2	.88
140-150	3	1.33
180-190	2	.88
220-230	1	.44
210-220	1	.44
240-250	3	1.33

Cumulative Errors Run 43

Error	Samples LT Error	Percent Samples LT Error
10	15	6.66
20	33	14.66
30	50	22.22
40	78	34.66
50	111	49.33
60	138	61.33
70	149	66.22
80	181	80.44
90	192	85.33
100	202	89.77
110	209	92.88
120	211	93.77
130	213	94.66
140	215	95.55
150	218	96.88
190	220	97.77
220	221	98.22
230	222	98.66
250	225	100.00

RESULTS OF IMPOSING 5 PERCENT COMMUNICATION ERROR
RATE ON MANUALLY COMPUTED DATA FROM RUNS 24,
34, 40, AND 43

Run No.	PCP * Number	Error with No Com- munication Errors	Error with 5% Communication Errors
24	233	8	7
34	171	34	34
34	192	11	40
34	233	152	4
34	261	4	4
34	288	60	60
40	171	11	34
40	192	67	68
40	233	10	12
40	261	30	29
43	192	98	86

* The PCP number on which communication errors were simulated were those determined by the use of the Random Number Table in FRSYS.

4.2.3 Fixed Route One-Tenth Mile Averages

Output data from the FRTEN program are presented herein for each Fixed Route data run. Each entry corresponds to the average error for all samples taken over 528 foot segments of the run. The format is as follows:

Segment	Segment -----	Segment
1	2	10

Segment	Segment -----	Segment
11	12	20

.

.

.

On Run 14, Segments 74, 75, and 76 produced average errors of 743, >999, and 752 feet. As explained fully in Section 8 of Volume I, analysis of the individual records in these segments indicate no single error of that magnitude. As was observed and verified in one or two other instances, it is assumed that these errors resulted from a tape read error. Note that the errors associated with these same three street segments on the other runs do not approach these values. For example, the maximum average value computed for the other 28 runs over any of these three street segments was 73 feet.

On Run 31, Segments 10 and 11 have errors of 390 and 329 feet respectively. These errors occurred in the region in which 5th wheel errors were observed and noted on the log sheet.

RUN 11 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

65	55	46	37	22	20	32	54	69	57
79	86	82	71	79	59	8	15	76	100
72	58	26	24	60	30	15	47	50	46
39	37	40	46	27	12	25	41	80	47
46	38	116	32	26	45	48	60	88	72
73	50	40	39	30	26	14	14	20	15
* 18	43	51	61	57	32	29	26	14	8

CT1:RUN011.001

11	10	69	46	49	10	12	6	66	82
81	20	17	26	26	24	23	40	31	27
31	32	49	57	73	74	63	79	79	72
71	34	64	28	51	86	96	107	110	58
57	53	39	44	71	54	6	8	22	140
34	28	29	29	13	20	37	55		

RUN 12 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

42	35	27	25	25	25	30	61	62	60
94	98	89	83	86	41	17	43	93	105
82	71	28	53	46	26	14	74	74	55
26	23	21	19	29	15	23	58	96	51
50	53	109	95	84	29	40	61	82	69
69	34	45	56	49	37	21	23	21	11
* 24	66	54	62	53	23	22	25	22	10

CT1:RUN012.001

11	4	53	38	13	33	15	23	52	63
47	22	22	25	113	27	30	38	22	26
29	34	53	69	75	76	81	98	96	88
88	51	65	51	71	102	121	115	88	62
64	57	53	60	76	60	31	42	49	65
57	59	64	61	50	56	75	61		

RUN 13 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

28	25	18	16	14	13	4	34	25	31
59	61	60	43	44	19	2	36	65	87
76	57	23	39	60	30	17	47	49	49
45	45	42	26	14	20	17	39	105	85
80	73	115	142	155	31	34	49	71	52
40	50	58	54	34	29	13	24	19	10
* 23	52	55	36	16	36	71	19	27	38

CT1:RUN013.001

39	57	52	130	78	124	116	132	53	43
72	35	17	27	38	33	34	44	29	34
32	43	68	80	82	83	75	94	93	68
67	34	45	27	44	87	87	89	50	19
17	19	15	21	41	22	20	36	38	47
46	44	49	48	29	37	53	41		

RUN 14 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

22	10	14	19	24	23	10	41	42	26
61	75	67	40	32	25	6	10	81	104
80	66	39	36	74	33	20	23	25	23
15	14	14	16	23	9	37	78	96	66
62	55	127	48	21	39	41	48	81	68
58	53	53	45	16	16	14	12	21	15
6	40	82	743	***	752	98	44	61	65
57	53	37	37	29	43	32	37	36	36
28	15	17	30	36	32	31	34	30	25
19	55	75							

RUN 15 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

31	29	20	14	8	6	12	56	14	42
60	61	48	48	43	28	16	45	98	112
87	67	47	82	48	19	15	22	20	18
15	14	12	17	13	12	55	108	71	69
63	104	96	87	65	40	49	75	79	67
74	31	57	37	35	13	19	29	14	8
26	62	38	32	17	38	32	16	38	33
30	45	49	127	83	125	101	110	50	55
72	13	22	32	39	31	38	36	23	56
* 19	25	40	45	46	44	47	53	57	58

CT1:RUN015.001

39	36	27	32	61	85	90	91	24	20
21	26	26	39	43	14	34	35	39	44
33	46	45	33	21	38	61			

RUN 16 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

40	28	24	21	17	16	39	73	51	54
80	86	76	66	59	53	25	39	96	114
81	73	45	63	69	29	16	35	35	32
26	26	25	22	10	8	11	25	114	81
78	74	140	39	35	29	34	51	69	54
36	38	49	50	40	27	15	24	23	17
27	56	55	47	35	10	16	18	16	14
13	12	54	31	70	16	26	20	98	84
59	22	21	36	47	41	32	21	27	31
45	47	55	66	65	67	72	84	77	53
* 53	20	37	9	35	60	58	56	42	30

CT1:RUN016.001

30	23	16	27	48	31	23	34	40	48
42	45	50	44	17	30	50	50		

RUN 17 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

105	98	93	86	82	43	41	80	50	61
89	91	78	78	76	32	29	57	97	113
87	63	43	83	40	25	37	45	43	34
29	27	27	14	33	28	77	73	46	45
38	67	77	15	19	41	42	74	70	62
58	35	49	47	45	23	28	31	17	21
42	73	49	33	16	15	13	10	29	24
* 26	37	46	6	47	9	8	42	92	91

CT1:RUN017.001

46	13	20	25	27	19	38	35	30	32
25	40	60	61	63	65	66	73	62	54
40	50	28	38	57	101	92	96	10	8
12	10	5	32	27	14	4	2	25	33
19	27	20	14	9	27	54			

RUN 18 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

57	58	59	52	42	41	5	27	42	29
51	59	60	52	47	37	16	34	106	111
98	71	45	63	87	28	18	54	54	47
33	31	28	30	14	11	27	42	85	72
66	57	93	51	41	20	25	39	54	37
48	45	54	49	32	28	16	32	25	15
* 21	49	51	38	20	44	88	45	53	59

CT1:RUN018.001

56	61	39	256	55	105	106	142	38	46
63	23	19	27	30	31	34	47	35	32
27	33	53	69	68	70	64	71	72	65
65	55	55	30	44	92	104	104	95	31
30	29	18	23	42	24	15	19	19	36
33	24	24	24	18	10	29	57		

RUN 20 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

19	6	20	26	33	35	28	53	57	52
73	86	84	70	73	48	7	15	62	83
45	34	13	12	38	30	19	54	65	71
* 53	61	61	54	28	8	30	48	116	83

CT1:RUN020.001

83	66	111	64	61	20	24	23	37	9
7	79	96	64	50	46	36	47	42	36
48	73	93	46	25	51	66	61	53	16
12	30	103	154	83	127	131	146	75	70

49152.0 49152.0 0.0 0.0 0.0 0.0 20 0

?ERR 12 FLOATING ZERO DIVIDE

IN ROUTINE ".MAIN." LINE 148

RUN 21 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

29	16	14	17	24	30	11	21	41	69
29	30	23	17	11	5	10	17	76	87
62	39	7	18	49	27	22	65	81	75
54	68	69	60	21	11	14	78	85	91
94	90	109	155	126	21	17	35	31	15
32	89	109	31	36	22	26	40	30	30
39	82	71	58	42	29	37	29	32	28
* 28	70	66	123	89	126	109	117	61	63

CT1:RUN021.001

77	21	28	32	24	31	66	61	32	56
25	16	22	23	15	15	23	24	25	28
20	24	22	8	35	53	39	30	17	12
9	9	16	22	2	6	9	2	22	27
7	8	14	18	25	15	57			

RUN 22 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

49	33	21	13	10	12	6	13	13	14
41	39	26	18	19	9	7	30	52	71
38	16	19	34	39	40	47	65	89	73
76	91	84	53	16	21	23	116	112	120
85	149	65	45	22	25	23	44	18	22
63	72	89	66	66	46	60	53	46	72
92	96	75	43	21	32	27	17	13	25
71	74	101	69	135	127	138	63	73	83
* 29	23	22	24	20	42	68	20	58	37

CT1:RUN022.001

31	40	40	24	29	44	45	34	25	20
19	24	20	37	35	29	36	30	21	10
9	22	25	12	28	20	30	23	34	33
39	31	49	63	49	48				

RUN 23 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

15	4	18	22	17	22	6	30	13	13
23	32	21	14	9	9	22	25	41	53
34	20	43	42	43	58	55	71	97	89
85	103	90	56	14	22	14	107	104	107
100	152	64	43	38	24	17	47	25	13
45	69	71	49	54	36	48	55	54	70
88	84	56	23	29	67	15	30	29	21
* 11	95	106	120	144	150	169	108	96	127

CT1:RUN023.001

64	28	20	22	21	32	75	37	53	46
28	39	52	53	39	37	43	39	32	26
15	18	22	33	40	47	40	17	7	7
10	31	37	17	44	31	47	26	33	42
39	38	52	72	57	56				

RUN 24 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

25	55	32	16	15	20	30	55	48	51
64	62	52	41	44	23	12	24	53	67
40	23	24	34	30	31	34	72	100	89
76	97	87	54	4	19	55	75	102	105
102	136	124	57	49	28	13	35	21	8
35	71	99	57	66	33	49	60	40	57
77	109	98	63	64	32	31	23	16	22
32	94	90	136	122	156	158	129	100	115
* 93	15	23	21	25	30	61	54	49	42

CT1:RUN024.001

25	37	46	50	43	47	49	43	31	27
16	20	19	18						

RUN 25 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

34	13	13	12	8	4	9	37	27	24
50	53	42	28	25	16	6	21	61	83
53	40	7	26	42	39	43	77	102	97
84	100	83	68	5	16	8	74	98	96
90	123								

CT1:RUN025.001
 ?ILL CMD?

RUN 26 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

16	3	18	27	34	34	7	30	39	14
32	40	38	24	29	9	5	4	61	77
60	42	12	10	45	30	16	52	70	78
51	66	68	64	27	16	12	20	101	91
87	71	150	80	31	22	26	30	49	34
19	89	95	64	34	26	9	28	31	25
156	62	75	54	41	23	39	14	16	17
16	12	19	20	22	36	25	38	39	38
* 23	14	21	26	25	23	25	49	30	24

CT1:RUN026.001

23	27	38	48	51	50	41	57	57	56
56	21	28	11	31	57	61	58	52	27
25	22	24	33	35	14	14	25	26	30
26	16	19	20	10	11	20	58		

RUN 27 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

46	34	17	12	9	12	40	60	59	68
88	87	78	74	66	30	9	26	67	78
50	28	6	31	36	23	34	64	78	71
64	71	66	34	7	16	22	84	70	70
60	105	98	37	33	31	30	57	67	49
41	41	69	50	50	30	32	39	29	36
51	86	75	29	21	38	38	12	29	14
15	51	34	105	62	113	95	90	34	33
* 64	14	22	61	71	21	34	41	27	40

CT1:RUN027.001

16	24	42	53	58	48	43	45	42	39
11	20	16	10	36	57	58	67	35	29
30	19	13	41	8	37	27	27	24	33
22	17	16	21	42	18	53			

RUN 28 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

23	8	13	15	17	16	8	28	50	38
63	67	67	67	46	33	20	57	90	102
76	58	35	46	64	29	16	56	67	62
40	43	42	47	12	13	22	42	85	59
57	57	135	21	21	24	31	50	63	45
35	56	75	55	52	34	25	45	37	36
50	71	63	66	57	23	31	30	24	12
* 15	7	33	16	44	13	8	14	67	65

CT1:RUN028.001

44	13	19	22	37	22	34	44	36	33
21	28	56	71	73	73	69	68	68	67
62	33	45	30	52	77	88	84	24	11
12	7	2	16	25	21	31	29	19	25
34	20	14	19	42	25	27	62		

RUN 29 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

38	23	12	11	9	15	11	41	10	14
41	42	36	34	26	22	22	46	91	97
70	49	20	51	44	28	39	67	79	73
65	68	62	43	17	20	18	70	57	54
50	81	159	58	49	23	15	17	32	35
41	43	65	24	26	17	20	31	27	28
36	71	55	52	29	27	32	24	8	11
13	19	59	11	50	23	8	28	55	59
* 34	13	20	22	27	19	43	51	38	47

CT1:RUN029.001

31	22	34	40	41	37	27	26	31	50
35	43	49	34	55	85	97	98	15	5
8	13	7	20	33	10	41	46	56	66
59	54	61	50	31	47	63			

RUN 30 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

24	8	13	14	20	17	25	43	50	36
49	71	62	47	41	31	11	18	79	104
70	51	20	20	59	31	23	67	77	83
60	68	69	76	33	8	28	48	72	67
65	59	120	20	21	32	34	45	68	51
39	48	60	75	68	64	48	56	53	51
52	79	97	71	48	20	16	10	10	9
* 15	17	68	21	29	47	21	25	42	40

CT1:RUN030.001

33	13	20	23	24	23	28	52	28	31
38	28	43	50	57	62	65	70	70	49
50	19	41	10	28	59	63	61	59	35
37	25	21	28	40	24	9	17	18	33
37	36	42	43	16	20	41	43		

RUN 31 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

48	47	45	40	99	312	159	43	61	390
329	89	89	70	69	61	29	17	49	103
105	73	49	27	60	37	17	28	46	55
45	37	40	46	18	6	15	1	86	81
79	73	107	126	26	25	32	29	56	63
39	21	40	66	44	43	22	24	38	25
23	33	77	68	37	12	54	54	27	43
29	35	113	34	118	71	126	102	113	47
* 46	76	13	21	33	39	32	32	32	27

CT1:RUN031.001

34	28	36	45	49	49	55	57	51	54
55	43	32	26	24	58	76	83	78	51
30	32	18	16	38	27	13	2	2	17
30	15	21	25	22	9	20	36		

RUN 34 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

88	74	64	61	58	52	30	62	40	45
71	73	70	57	71	51	25	33	70	94
67	49	10	23	50	27	16	45	54	57
45	54	55	52	24	11	7	17	159	77
71	55	146	61	56	21	15	22	34	16
25	86	97	36	32	16	21	24	26	24
39	74	77	58	47	22	33			

RUN 35 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

55	38	27	19	13	7	8	26	22	12
43	45	36	28	26	10	5	14	49	76
51	23	7	21	44	37	36	68	80	80
63	73	78	67	19	11	12	15	76	86
84	77	140	31	33	22	22	37	54	42
33	127	128	51	45	39	19	25	32	30
35	72	70	68	63	24	20	37	34	29
* 39	43	66	16	41	16	10	22	62	58

CT1:RUN035.001

38	13	19	27	28	26	34	55	21	38
38	26	21	34	45	44	43	50	50	68
63	30	43	23	39	68	76	67	32	22
20	8	4	16	10	6	9	5	7	22
12	6	6	10	25	19	29			

RUN 36 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

57	34	26	17	8	6	2	34	13	7
24	23	16	14	12	10	8	30	82	92
63	45	12	40	38	24	31	54	61	62
61	68	69	42	17	14	20	51	75	74
71	98	92	38	37	24	19	44	43	22
37	59	79	38	40	30	33	46	61	55
51	98	88	40	22	43	43	12	23	14
17	85	99	132	93	152	128	139	78	70
104	24	23	20	24	18	42	48	21	43
* 25	42	53	62	65	67	69	69	70	69

CT1:RUN036.001

56	40	36	29	52	82	86	85	22	15
14	9	5	19	19	33	65	68	28	33
31	25	22	32	45	39	48			

RUN 37 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

64	45	23	18	15	13	12	49	22	20
26	39	29	16	15	4	21	24	88	105
78	72	30	29	59	30	27	58	71	72
55	64	75	70	27	10	30	53	96	82
80	64	115	58	51	22	21	32	43	26
18	80	94	49	41	56	108	31	38	39
52	84	77	43	12	51	56	23	33	31
27	73	36	133	71	119	103	121	59	59
* 80	18	19	22	26	20	35	52	20	38

CT1:RUN037.001

25	45	60	66	62	65	66	61	66	79
71	53	47	36	60	81	92	79	38	24
22	12	3	20	14	6	12	12	21	37
20	15	15	14	21	17	28			

RUN 38 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

48	45	29	18	11	7	39	56	67	49
79	82	75	52	56	40	26	33	90	108
69	51	8	24	50	28	27	59	67	66
57	66	72	60	37	27	38	50	61	53
54	53	95	34	35	26	26	41	49	29
24	67	87	35	29	24	17	28	19	15
36	73	74	42	14	57	63	23	40	34
31	24	91	45	62	19	42	32	96	88
64	58	63	79	88	80	49	29	96	37
* 21	52	65	72	70	70	77	82	80	78

CT1:RUN038.001

68	42	49	24	48	74	79	79	34	25
21	14	5	32	17	5	20	18	19	31
17	15	13	14	18	16	36			

RUN 39 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

106	97	88	77	63	54	34	46	55	46
68	69	62	56	61	18	4	12	67	79
53	30	4	16	38	28	23	56	61	65
65	67	70	71	41	31	57	70	55	57
54	36	126	52	44	69	213	25	37	22
6	76	97	55	47	44	36	55	47	47
53	81	87	58	47	16	31	25	17	15
* 16	25	28	108	67	126	116	114	58	59

CT1:RUN039.001

97	36	25	21	23	20	31	56	20	36
28	29	49	61	65	58	49	47	45	42
38	61	33	10	34	66	66	61	55	47
45	45	38	42	50	31	30	22	38	65
55	55	56	52	34	43	51	39		

RUN 40 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

68	60	50	42	32	29	28	69	41	48
73	72	67	48	49	22	12	25	69	82
66	39	12	25	36	26	22	53	54	49
42	45	42	27	54	33	46	52	51	45
44	46	109	13	21	37	37	55	65	48
34	53	76	40	37	26	21	35	30	30
44	80	83	55	39	16	31	23	16	17
23									

CT1:RUN040.001
 ?ILL CMD?

RUN 41 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

44	16	14	12	7	10	7	22	11	13
19	35	32	17	7	2	1	32	78	82
58	46	6	13	31	28	22	49	52	49
40	42	44	41	16	11	17	51	96	60
61	62	105	96	92	26	27	42	62	47
48	48	53	73	71	71	65	69	65	62
* 62	84	90	55	25	25	45	10	11	12

CT1:RUN041.001

14	11	48	35	32	45	30	38	38	38
14	10	16	31	31	35	33	42	44	39
47	25	32	43	48	45	38	40	40	38
37	13	14	7	23	55	65	62	58	25
21	19	13	24	50	26	13	4	3	15
18	5	7	6	29	30	20	67		

RUN 42 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

75	64	41	37	34	32	39	55	57	61
84	83	77	66	59	34	8	25	79	92
66	45	14	34	42	23	26	48	49	48
39	41	46	30	17	15	30	52	85	69
65	53	122	43	41	21	15	31	40	17
9	73	95	58	55	47	23	37	42	43
56	84	88	50	16	69	76	34	55	46
36	29	66	13	34	21	16	31	42	44
24	13	20	26	26	19	36	62	20	32
* 23	57	63	71	74	75	71	64	63	61

CT1:RUN042.001

36	29	34	29
----	----	----	----

RUN 43 FIXED ROUTE
 AVERAGE ERROR IN FEET OVER ONE-TENTH MILE SEGMENTS

62	44	34	29	21	23	33	77	68	57
78	76	67	58	46	16	3	27	79	79
52	33	14	42	36	22	30	53	54	48
40	42	42	14	26	17	41	72	80	79
72	93	112	25	28	32	28	55	60	37
35	55	82	56	57	40	40	49	43	44
53	89	80	50	34	33	36	14	12	8
10	32	46	121	79	137	125	128	59	59
91	76	80	90	90	81	54	39	79	37
* 22	64	63	70	74	71	72	76	75	73

CT1:RUN043.001

61	37	41	43	63
----	----	----	----	----

4.2.4 Off Route Declaration

During Fixed Route Runs 38-43, a pair of signposts were installed along the fixed route between CP 36 and CP 37. When the AVM system records a code from either of these signposts, it was programmed to declare that the bus was off route. These results are shown in this section and are the output listings of the FRLS program. The values of the location errors incurred while the off route condition was being simulated are computed and presented in Section 8 of Volume I.

FIXED ROUTE RUN # 39 CHECKPOINT ERRORS OFF ROUTE DECLARATION

CP#	X(CP)	Y(CP)	SF#	SEG.	INCREM	COMP X	COMP Y	ERROR
1	12431	4529	16	3	72.	12410.	4548.	29.
2	12895	3792	1	4	483.	12811.	3817.	88.
3	13632	3698	1	4	1245.	13567.	3718.	68.
4	14904	3541	2	5	24.	14869.	3547.	36.
5	15277	4035	2	6	469.	15266.	3953.	82.
6	15334	4441	2	6	915.	15328.	4395.	46.
7	15383	4869	2	6	1341.	15387.	4817.	52.
8	15475	5453	2	6	1907.	15465.	5377.	76.
9	15644	6735	2	6	3223.	15647.	6681.	54.
10	15736	7421	2	6	3901.	15741.	7352.	69.
11	15809	7838	2	6	4349.	15803.	7796.	43.
12	16042	9499	3	7	1078.	16034.	9452.	48.
13	16512	9618	3	8	368.	16431.	9641.	84.
14	16941	9578	3	8	820.	16882.	9606.	66.
15	17368	9554	3	8	1268.	17328.	9571.	43.
16	17811	9507	3	8	1732.	17791.	9535.	35.
17	18095	8454	3	9	1021.	18112.	8489.	39.
18	18109	8343	3	9	1127.	18112.	8383.	40.
19	17929	6962	4	10	1172.	17926.	6913.	49.
20	16580	6988	4	11	1399.	16521.	6981.	59.
21	15087	7167	4	11	2913.	15018.	7163.	69.
22	14282	7260	4	11	3703.	14233.	7258.	49.
23	13313	7718	5	13	529.	13354.	7699.	45.
24	12500	8500	5	15	387.	12460.	8542.	58.
25	11590	9350	5	15	1607.	11564.	9369.	32.
26	12190	10181	6	18	955.	12182.	10195.	16.
27	13151	10036	6	18	1521.	12743.	10121.	417.
27	13151	10036	6	18	1917.	13136.	10069.	36.
28	13130	9554	6	19	466.	13123.	9601.	47.
29	13052	9039	6	19	1004.	13041.	9069.	32.
30	13699	7663	6	21	952.	13830.	7645.	132.
31	15123	7495	7	22	1176.	15152.	7481.	32.
32	15948	7393	7	22	2028.	15997.	7379.	51.
33	16627	7326	7	22	2702.	16667.	7299.	48.
34	17500	7204	7	22	3590.	17548.	7193.	50.
35	18345	7054	7	22	4492.	18444.	7085.	103.
36	18300	5657	8	25	311.	18334.	5647.	35.
BUS NO. 39 OFF ROUTE AT 15,16 TIME: 41:57 FIFTH: 35314. ODOM: 35554.								
BUS NO. 39 OFF ROUTE AT 13,16 TIME: 42: 3 FIFTH: 35402. ODOM: 35642.								
BUS NO. 39 OFF ROUTE AT 15,16 TIME: 42: 4 FIFTH: 35416. ODOM: 35658.								
BUS NO. 39 OFF ROUTE AT 13,16 TIME: 42: 6 FIFTH: 35448. ODOM: 35690.								
BUS NO. 39 OFF ROUTE AT 15,16 TIME: 42: 7 FIFTH: 35466. ODOM: 35706.								
BUS NO. 39 OFF ROUTE AT 13,16 TIME: 42: 9 FIFTH: 35500. ODOM: 35742.								
41	14638	6127	9	29	445.	14625.	6025.	103.
42	14717	5780	9	30	266.	14860.	5761.	144.
43	14816	5222	9	31	656.	14807.	5107.	115.
44	14055	5037	9	32	795.	14000.	5057.	59.
45	13388	5138	9	32	1471.	13330.	5145.	59.
*46	12862	5200	9	32	2043.	12762.	5219.	101.
CT1:RUN039.001								
47	11518	5369	10	33	822.	11531.	5388.	23.
48	10787	5472	10	33	1556.	10804.	5489.	24.
49	10462	5513	10	33	1896.	10467.	5536.	24.
50	9558	5647	10	33	2864.	9509.	5670.	54.
51	8740	5757	10	33	3632.	8748.	5776.	20.
52	8145	5840	10	33	4274.	8112.	5864.	41.
53	7537	6481	11	35	520.	7557.	6437.	49.

FIXED ROUTE RUN # 40 CHECKPOINT ERRORS OFF ROUTE DECLARATION

CP#	X(CP)	Y(CP)	SF#	SEG.	INCREM	COMP X	COMP Y	ERROR		
1	12431	4529	1	3	18.	12416.	4602.	75.		
2	12895	3792	1	4	521.	12849.	3812.	51.		
3	13632	3698	1	4	1275.	13596.	3714.	39.		
4	14904	3541	2	5	36.	14881.	3545.	24.		
5	15277	4035	2	6	465.	15265.	3949.	86.		
6	15334	4441	2	6	925.	15329.	4405.	36.		
7	15383	4869	2	6	1343.	15387.	4819.	50.		
8	15475	5453	2	6	1907.	15465.	5377.	76.		
9	15644	6735	2	6	3227.	15648.	6685.	50.		
10	15736	7421	2	6	3913.	15742.	7364.	57.		
11	15809	7838	2	6	4345.	15802.	7792.	47.		
12	16042	9499	3	7	1070.	16033.	9444.	56.		
13	16512	9618	3	8	362.	16425.	9642.	90.		
14	16941	9578	3	8	808.	16870.	9607.	77.		
15	17368	9554	3	8	1264.	17324.	9572.	47.		
16	17811	9507	3	8	1720.	17779.	9536.	43.		
17	18095	8454	3	9	1017.	18112.	8493.	43.		
18	18109	8343	3	9	1125.	18112.	8385.	42.		
19	17929	6962	4	10	1154.	17929.	6931.	31.		
20	16580	6988	4	11	1379.	16541.	6979.	40.		
21	15087	7167	4	11	2881.	15049.	7159.	38.		
22	14282	7260	4	11	3661.	14275.	7253.	10.		
23	13313	7718	5	13	527.	13355.	7697.	47.		
24	12500	8500	5	15	375.	12469.	8534.	46.		
25	11590	9350	5	15	1615.	11558.	9374.	40.		
26	12190	10181	6	18	933.	12160.	10198.	34.		
27	13151	10036	6	18	1895.	13114.	10072.	52.		
28	13130	9554	6	19	436.	13128.	9630.	76.		
29	13052	9039	6	19	978.	13045.	9095.	56.		
30	13699	7663	6	21	932.	13810.	7648.	112.		
31	15123	7495	7	22	1162.	15138.	7483.	19.		
32	15948	7393	7	22	2006.	15976.	7382.	30.		
33	16627	7326	7	22	2684.	16649.	7301.	33.		
34	17500	7204	7	22	3580.	17538.	7194.	40.		
35	18345	7054	7	22	4492.	18444.	7085.	103.		
36	18300	5657	8	25	311.	18334.	5647.	35.		
BUS NO. 40 OFF ROUTE AT 13,16					TIME:	44:38	FIFTH:	35436.	ODOM:	35602.
BUS NO. 40 OFF ROUTE AT 15,16					TIME:	44:40	FIFTH:	35500.	ODOM:	35666.

FIXED ROUTE RUN # 41 CHECKPOINT ERRORS OFF ROUTE DECLARATION

CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR	
1	12431	4529	1	3	46.	12413.	4574.	49.	
2	12895	3792	1	4	573.	12900.	3806.	15.	
3	13632	3698	1	4	1311.	13632.	3710.	12.	
4	14904	3541	2	5	66.	14910.	3540.	6.	
5	15277	4035	2	6	505.	15271.	3989.	46.	
6	15334	4441	2	6	963.	15334.	4443.	2.	
7	15383	4869	2	6	1379.	15392.	4855.	17.	
8	15475	5453	2	6	1947.	15470.	5417.	36.	
9	15644	6735	2	6	3261.	15652.	6718.	19.	
10	15736	7421	2	6	3951.	15748.	7402.	23.	
11	15809	7838	2	6	4389.	15808.	7835.	3.	
12	16042	9499	3	7	1070.	16033.	9444.	56.	
13	16512	9618	3	8	364.	16427.	9642.	88.	
14	16941	9578	3	8	820.	16882.	9606.	66.	
15	17368	9554	3	8	1264.	17324.	9572.	47.	
16	17811	9507	3	8	1710.	17769.	9537.	52.	
17	18095	8454	3	9	1055.	18112.	8455.	17.	
18	18109	8343	3	9	1133.	18112.	8377.	34.	
19	17929	6962	4	10	1158.	17928.	6927.	35.	
20	16580	6988	4	11	1379.	16541.	6979.	40.	
21	15087	7167	4	11	2887.	15044.	7160.	44.	
22	14282	7260	4	11	3675.	14261.	7255.	22.	
23	13313	7718	5	13	567.	13328.	7727.	18.	
24	12500	8500	5	15	391.	12458.	8545.	62.	
25	11590	9350	5	15	1635.	11543.	9388.	60.	
26	12190	10181	6	18	949.	12176.	10196.	20.	
27	13151	10036	6	18	1905.	13124.	10070.	44.	
28	13130	9554	6	19	446.	13126.	9620.	66.	
29	13052	9039	6	19	982.	13044.	9091.	52.	
30	13699	7663	6	21	916.	13794.	7651.	96.	
31	15123	7495	7	22	1210.	15185.	7477.	65.	
32	15948	7393	7	22	2046.	16015.	7377.	69.	
33	16627	7326	7	22	2720.	16685.	7297.	65.	
34	17500	7204	7	22	3602.	17560.	7191.	62.	
35	18345	7054	7	22	4508.	18460.	7083.	118.	
36	18300	5657	8	25	295.	18349.	5645.	51.	
BUS NO. 41 OFF ROUTE AT 13,16 TIME: 50:39 FIFTH: 35356. ODOM: 35488.									
BUS NO. 41 OFF ROUTE AT 15,16 TIME: 50:52 FIFTH: 35460. ODOM: 35592.									
BUS NO. 41 OFF ROUTE AT 13,16 TIME: 50:56 FIFTH: 35562. ODOM: 35694.									
*41	14638	6127	9	29	349.	14637.	6121.	7.	
CT1:RUN041.001									
42	14717	5780	9	30	166.	14760.	5771.	44.	
43	14816	5222	9	31	558.	14820.	5204.	18.	
44	14055	5037	9	32	699.	14095.	5044.	41.	
45	13388	5138	9	32	1375.	13425.	5132.	37.	
46	12862	5200	9	32	1935.	12869.	5205.	9.	
47	11518	5369	10	33	806.	11547.	5385.	33.	
48	10787	5472	10	33	1544.	10816.	5487.	33.	
49	10462	5513	10	33	1870.	10493.	5532.	37.	
50	9558	5647	10	33	2850.	9523.	5668.	41.	
51	8740	5757	10	33	3596.	8784.	5771.	46.	
52	8145	5840	10	33	4256.	8130.	5862.	27.	
53	7537	6481	11	35	528.	7558.	6445.	42.	
54	7652	6971	11	35	1036.	7645.	6945.	27.	
55	8320	6948	11	36	617.	8272.	6954.	49.	
56	9345	6825	11	36	1661.	9307.	6817.	39.	
57	9894	6731	11	36	2213.	9854.	6745.	43.	

FIXED ROUTE RUN # 42 CHECKPOINT ERRORS OFF ROUTE DECLARATION

CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
1	12431	4529	1	3	8.	12417.	4612.	84.
2	12895	3792	1	4	529.	12857.	3811.	43.
3	13632	3698	1	4	1277.	13598.	3714.	37.
4	14904	3541	2	5	20.	14865.	3548.	40.
5	15277	4035	2	6	451.	15263.	3936.	100.
6	15334	4441	2	6	913.	15327.	4393.	48.
7	15383	4869	2	6	1329.	15385.	4805.	64.
8	15475	5453	2	6	1897.	15464.	5368.	86.
9	15644	6735	2	6	3211.	15645.	6669.	66.
10	15736	7421	2	6	3897.	15740.	7348.	73.
11	15809	7838	2	6	4333.	15801.	7780.	59.
12	16042	9499	3	7	1068.	16032.	9442.	58.
13	16512	9618	3	8	354.	16417.	9642.	98.
14	16941	9578	3	8	806.	16868.	9607.	79.
15	17368	9554	3	8	1252.	17312.	9573.	59.
16	17811	9507	3	8	1702.	17761.	9538.	59.
17	18095	8454	3	9	995.	18112.	8515.	63.
18	18109	8343	3	9	1107.	18112.	8403.	60.
19	17929	6962	4	10	1168.	17927.	6917.	45.
20	16580	6988	4	11	1379.	16541.	6979.	40.
21	15087	7167	4	11	2889.	15042.	7160.	46.
22	14282	7260	4	11	3675.	14261.	7255.	22.
23	13313	7718	5	13	549.	13341.	7714.	28.
24	12500	8500	5	15	399.	12452.	8550.	70.
25	11590	9350	5	15	1621.	11553.	9378.	46.
26	12190	10181	6	18	963.	12190.	10194.	13.
27	13151	10036	6	18	1903.	13122.	10071.	45.
28	13130	9554	6	19	458.	13125.	9608.	55.
29	13052	9039	6	19	1006.	13040.	9067.	30.
30	13699	7663	6	21	960.	13838.	7644.	140.
31	15123	7495	7	22	1166.	15142.	7483.	22.
32	15948	7393	7	22	2008.	15978.	7382.	32.
33	16627	7326	7	22	2694.	16659.	7300.	41.
34	17500	7204	7	22	3592.	17550.	7192.	52.
35	18345	7054	7	22	4496.	18448.	7084.	107.
36	18300	5657	8	25	253.	18391.	5640.	93.
BUS NO. 42 OFF ROUTE AT 15,16 TIME: 40:16 FIFTH: 35306. ODOM: 35478.								
41	14638	6127	9	29	335.	14639.	6134.	8.
42	14717	5780	9	30	154.	14748.	5772.	33.
43	14816	5222	9	31	540.	14822.	5222.	6.
44	14055	5037	9	32	693.	14101.	5043.	46.
45	13388	5138	9	32	1361.	13439.	5130.	51.
46	12862	5200	9	32	1923.	12881.	5204.	20.
47	11518	5369	10	33	812.	11541.	5386.	29.
48	10787	5472	10	33	1552.	10808.	5488.	27.
49	10462	5513	10	33	1900.	10463.	5536.	24.
50	9558	5647	10	33	2872.	9501.	5671.	62.
51	8740	5757	10	33	3646.	8734.	5778.	21.
52	8145	5840	10	33	4272.	8114.	5864.	39.
53	7537	6481	11	35	494.	7553.	6411.	72.
54	7652	6971	11	35	1008.	7640.	6918.	55.
55	8320	6948	11	36	589.	8244.	6958.	77.
56	9345	6825	11	36	1619.	9265.	6823.	80.
*57	9894	6731	11	36	2189.	9830.	6748.	66.
CT1:RUN042.001								
58	12136	6444	11	37	1162.	12112.	6447.	24.
59	12561	6405	11	37	1576.	12523.	6393.	40.

FIXED ROUTE RUN # 43 CHECKPOINT ERRORS OFF ROUTE DECLARATION

CP#	X(CP)	Y(CP)	SP#	SEG.	INCREM	COMP X	COMP Y	ERROR
1	12431	4529	1	3	22.	12415.	4598.	71.
2	12895	3792	1	4	537.	12865.	3810.	36.
3	13632	3698	1	4	1287.	13608.	3713.	28.
4	14904	3541	2	5	24.	14869.	3547.	36.
5	15277	4035	2	6	457.	15264.	3942.	94.
6	15334	4441	2	6	911.	15327.	4391.	50.
7	15383	4869	2	6	1335.	15386.	4811.	58.
8	15475	5453	2	6	1905.	15465.	5376.	78.
9	15644	6735	2	6	3223.	15647.	6681.	54.
10	15736	7421	2	6	3899.	15741.	7350.	71.
11	15809	7838	2	6	4349.	15803.	7796.	43.
12	16042	9499	3	7	1070.	16033.	9444.	56.
13	16512	9618	3	8	366.	16429.	9642.	86.
14	16941	9578	3	8	814.	16876.	9607.	71.
15	17368	9554	3	8	1264.	17324.	9572.	47.
16	17811	9507	3	8	1712.	17771.	9537.	50.
17	18095	8454	3	9	989.	18112.	8521.	69.
18	18109	8343	3	9	1115.	18112.	8395.	52.
19	17929	6962	4	10	1150.	17929.	6934.	28.
20	16580	6988	4	11	1379.	16541.	6979.	40.
21	15087	7167	4	11	2885.	15046.	7160.	42.
22	14282	7260	4	11	3653.	14283.	7252.	8.
23	13313	7718	5	13	551.	13339.	7715.	26.
24	12500	8500	5	15	411.	12443.	8558.	82.
25	11590	9350	5	15	1633.	11544.	9387.	58.
26	12190	10181	6	18	939.	12166.	10197.	29.
27	13151	10036	6	18	1901.	13120.	10071.	47.
28	13130	9554	6	19	440.	13127.	9626.	72.
29	13052	9039	6	19	986.	13043.	9087.	48.
30	13699	7663	6	21	942.	13820.	7647.	122.
31	15123	7495	7	22	1180.	15156.	7481.	35.
32	15948	7393	7	22	2022.	15992.	7380.	45.
33	16627	7326	7	22	2698.	16663.	7299.	45.
34	17500	7204	7	22	3590.	17548.	7193.	50.
35	18345	7054	7	22	4494.	18446.	7085.	105.
36	18300	5657	8	25	301.	18343.	5646.	45.
BUS NO. 43 OFF ROUTE AT 13,16					TIME: 41: 5	FIFTH: 35406.	ODOM: 35576.	
BUS NO. 43 OFF ROUTE AT 15,16					TIME: 41: 9	FIFTH: 35478.	ODOM: 35650.	
BUS NO. 43 OFF ROUTE AT 13,16					TIME: 41:11	FIFTH: 35510.	ODOM: 35680.	
41	14638	6127	9	29	443.	14625.	6027.	101.
42	14717	5780	9	30	264.	14858.	5761.	142.
43	14816	5222	9	31	654.	14808.	5109.	113.
44	14055	5037	9	32	797.	13998.	5057.	61.
45	13388	5138	9	32	1469.	13332.	5144.	57.
46	12862	5200	9	32	2033.	12772.	5218.	91.
47	11518	5369	10	33	744.	11608.	5377.	91.
48	10787	5472	10	33	1476.	10883.	5478.	96.
49	10462	5513	10	33	1820.	10543.	5525.	82.
50	9558	5647	10	33	2782.	9590.	5658.	34.
51	8740	5757	10	33	3560.	8819.	5766.	80.
52	8145	5840	10	33	4202.	8184.	5855.	41.
53	7537	6481	11	35	490.	7552.	6407.	75.
54	7652	6971	11	35	1012.	7641.	6922.	51.
55	8320	6948	11	36	589.	8244.	6958.	77.
56	9345	6825	11	36	1627.	9273.	6822.	72.
57	9894	6731	11	36	2179.	9820.	6750.	76.

4.3 FIXED ROUTE DATA PROCESSING REQUIREMENTS

During the recording of fixed route data, a number of manual entry errors occurred. These errors are noted in Table 4.3-1. The resulting card input changes necessary for processing these data are delineated in Table 4.3-2.

FIXED ROUTE DATA PROCESSING ANOMALIES

RUN NO.	PROBLEM	SOLUTION
14	Missed TA16	Inserted at approximate fifth wheel reading
14	TD15 entered early	Deleted first occurrence of TD15
15	CP25 entered early	Deleted first occurrence of CP25
17	Missed TD11	None, event not processed
18	Missed CP43	None, event not processed
19	Couldn't process tape	None, event not processed
20	Missed CP37	None, event not processed
	Generator stalled after CP46	None, not processed by FR TEN and FR SYS
21	Entered CP66 for CP6	Replaced CP66 with CP6
	Entered CP26 early	Deleted first CP26
	Entered CP47 early	Deleted first CP47
	Entered CP111 for CP11	Replaced CP111 with CP 11
	Missed CP36, CP47 and CP49	None, events not processed
	Entered TA16 for TA6	Replaced TA16 with TA6
24	TA33 entered for TA3	Replaced TA33 with TA3
24	TD12 entered early	Delete first TD12
26	Missed TD15	None, event not processed
27	TD10 entered for TA10	Replaced TD10 with TA10
27	Missed CP48	None, event not processed
28	Missed CP9	None, event not processed
29	Missed CP1 and CP28	None, event not processed
31	5th Wheel problem between CP3 and CP4	None, data processed
32	Lost magnet from 5th wheel	None, not processed by FR SYS or FR TEN
33	Couldn't process tape	None, not processed
34	Garbage record after CP37	None, CP38-CP76 processed manually
34	DO2, DC2, and TD2 entered early	Deleted first DO2, DC2, and TD2
37	DC7 entered for DC1	Deleted DC7
37	CP30 entered twice	Deleted second CP30
38	CP71 entered early	Delete first CP71
39	CP27 entered early	Delete first CP27
40	Couldn't process past CP40 due to bad record	None, CP41-76 processed manually
42	CP40 entered in error	Delete first CP40
43	Couldn't process past CP62 with FR LS	None, CP63-76 processed manually

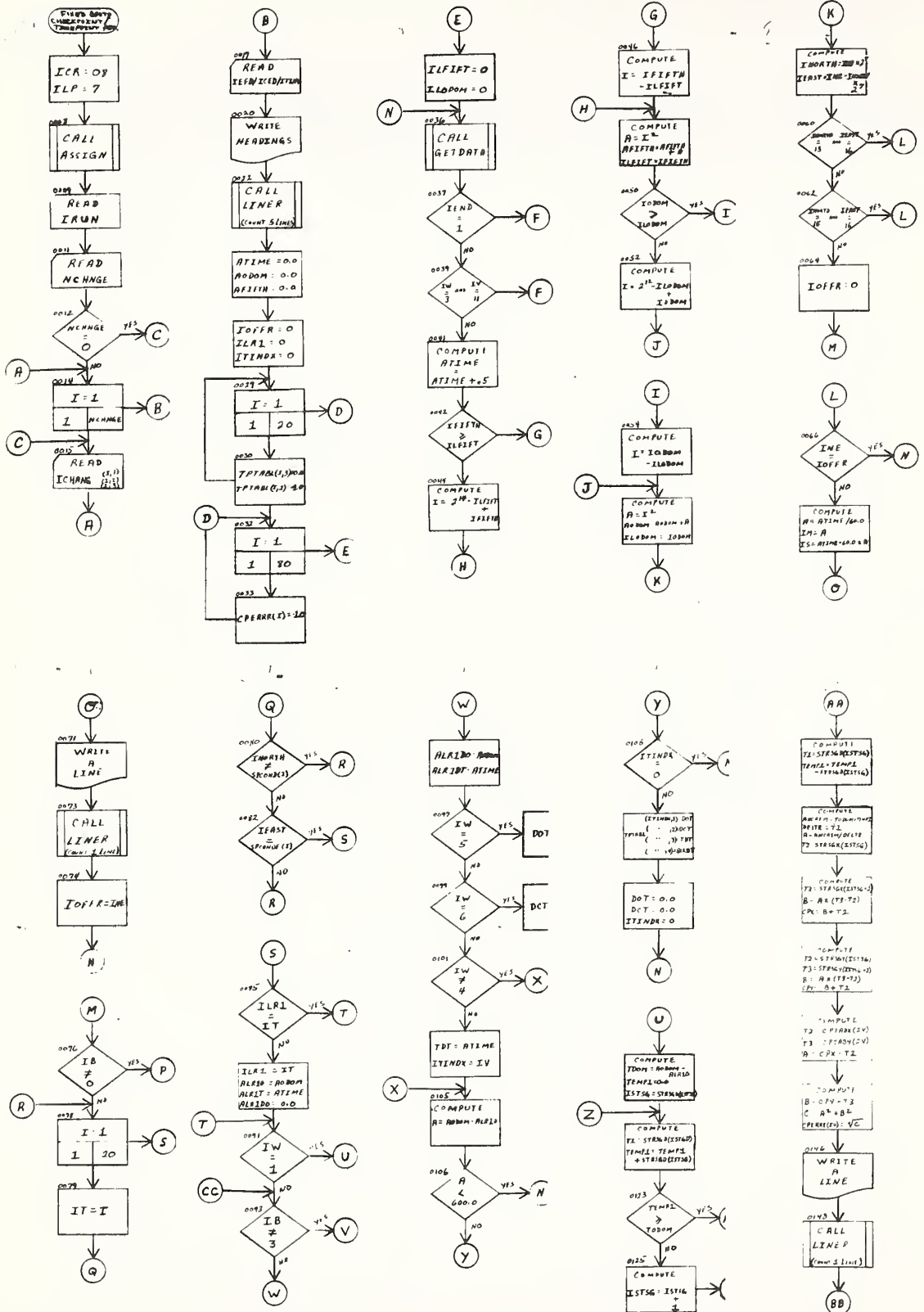
CARD INPUT CHANGES FOR HI³ DATA PROCESSING

RUN	CHANGES	FRLS	FRSYS/ FRTEN	RECORDED ON LOG SHEET
14	Insert TA16 at FIFTH = 33678	N.A.		Yes
16	Change 2nd TD11 to TA24	N.A.		Yes
21	Delete 1st CP7			Yes
21	Replace CP66 with CP6			Yes
21	Delete 1st CP26			Yes
21	Replace 1st TA16 with TA6	N.A.		Yes
21	Replace CP111 with CP11			Yes
21	Delete 1st CP47			Yes
24	Delete TA33	N.A.		No, but EE33 on tape
27	Replace 1st TD10 with TA10			No, observed on listing
30	Replace 2nd CP10 with TA10			Yes
32	Replace 1st TD13 with DO13		N.A.	No, observed on listing
34	Delete 1st DO2		N.A.	Yes
34	Delete 1st DC2		N.A.	Yes
34	Delete 1st TD2		N.A.	Yes
34	Delete CP128			Not entered by opera- tor, Error record
37	Delete 1st DC7		N.A.	No, observed on listing
37	Delete 2nd CP30			Yes
38	Delete 1st CP71			Yes
39	Replace 2nd TA18 with TA19	N.A.		No, observed on listing
39	Delete 1st CP27			Yes
42	Delete 1st CP40			Yes
42	Delete 1st TD5		N.A.	Yes

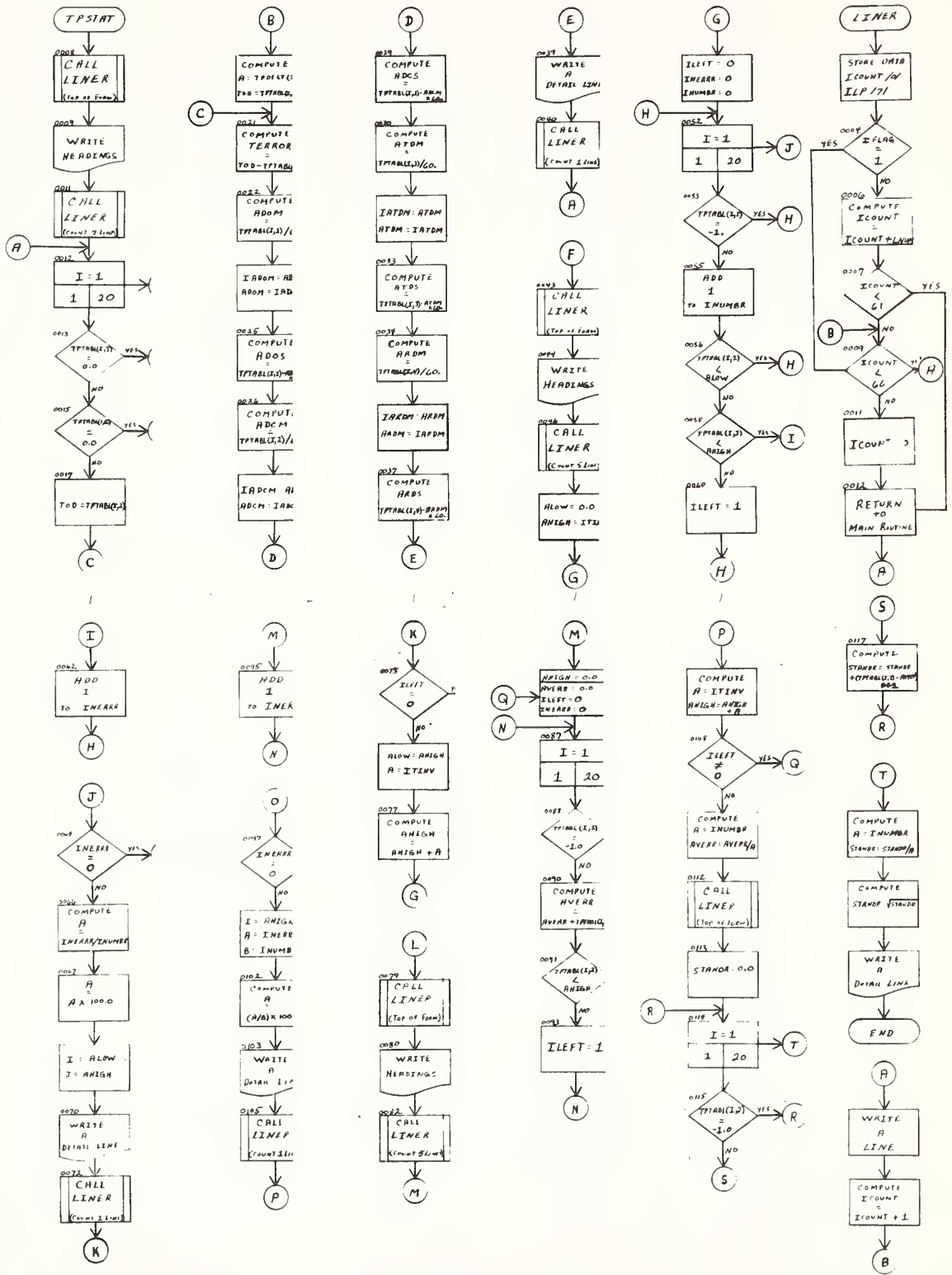
4.4 FRLS AND FRSYS FLOW CHARTS

Flow charts of computer programs CPMAIN and RRSL were included in Section 4 of Volume I. Flow charts of computer programs FRLS and FRSYS are presented in this subsection. Detailed software documentation of all Phase I software were delivered under separate cover to TSC and MITRE.

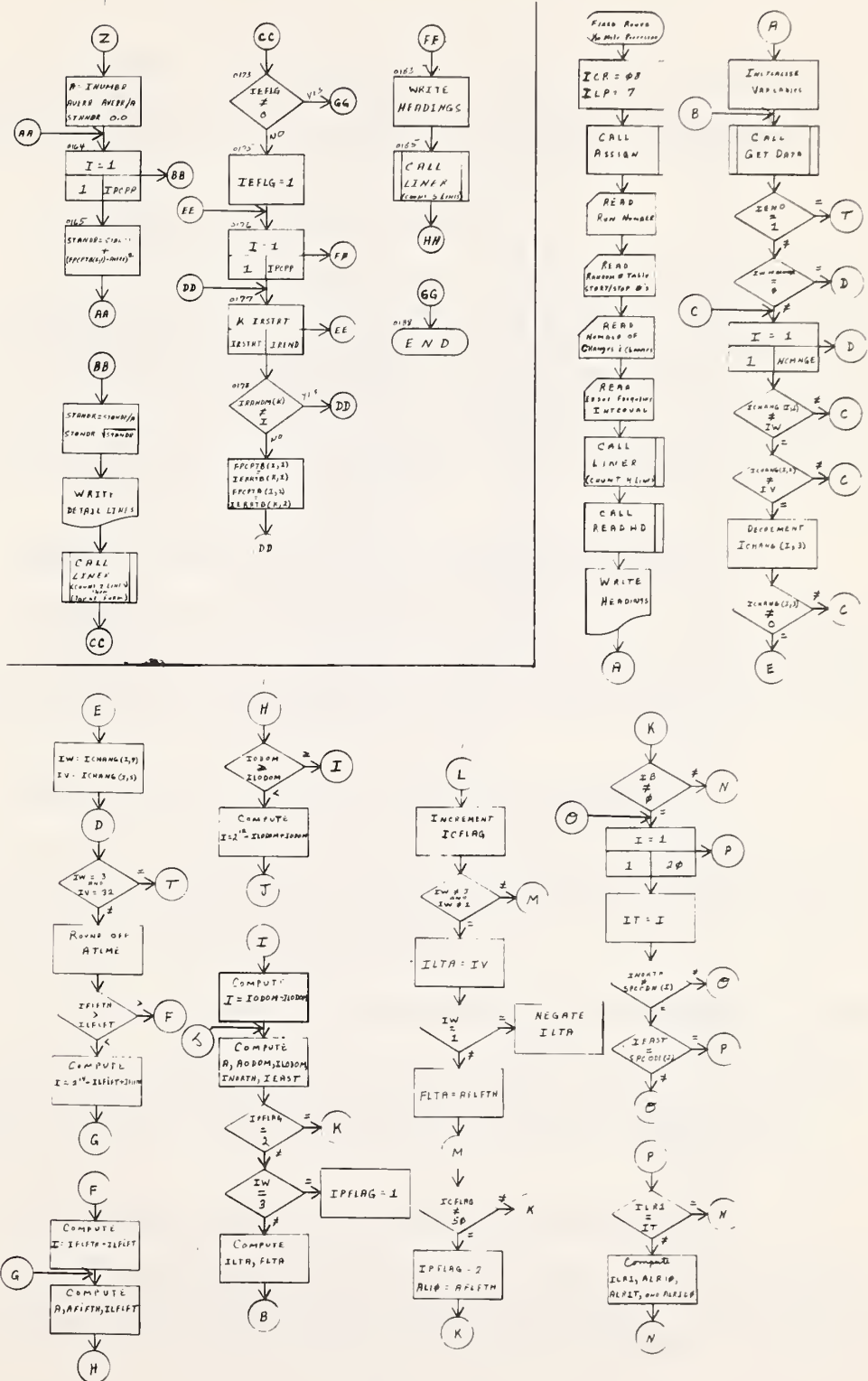
FLOW CHART OF PROGRAM FRIS



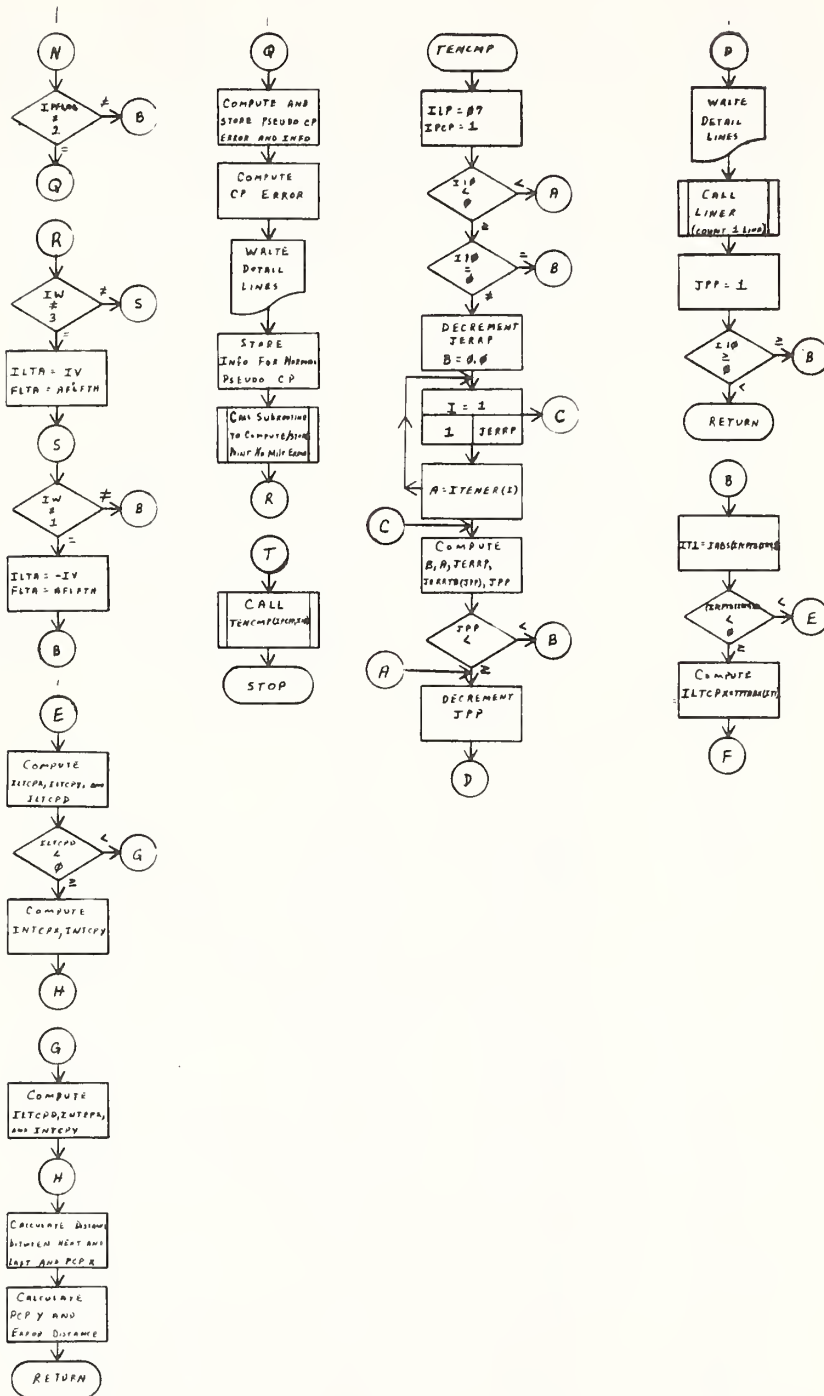
FLOW CHART OF PROGRAM FRLS (CONT'D)



FLOW CHART OF PROGRAM FRSYS (CONT'D) AND FRTEN



FLOW CHART OF PROGRAM FRTEN (CONT'D)



5. REPORT OF INVENTIONS APPENDIX

After a diligent review of the work performed under this contract, no innovation, discovery, or invention was made; however, a number of previous concepts were practically demonstrated for the first time. The previous concepts demonstrated are briefly described below.

1. Use of Signposts Operating at 49.86 MHz

Operation of signposts at 49.86 MHz was conceived by HI³ at the time the FCC proposed to open the 49 MHz band for use under Part 15. Operation in this band was formally authorized on 12 February 1976 under FCC Docket 20119. Use of this frequency was formally proposed to be tested during Phase I in Hoffman's response to TSC questions dated 15 April 1976. The use of 49.86 MHz signposts is described on pages 3-1 to 3-6 and 10-6 and 10-7 of Volume I. The first practical demonstration of the use of signposts operating at 49.86 MHz was performed under this contract.

2. Hole-Filling Technique for Use with Overlapping Signposts

The use of a double grid of signposts to fill in the holes left when only a single grid is used was first proposed by Hoffman in 1975 for use with the Cargo Security System and again in 1975 for use with the Dallas AVM system. However, the concept was not practically demonstrated until Phase I of this contract. Figure 3-14 on page 3-26 of Volume I illustrates this concept.

3. Automatic Reset of Odometer Using Region 1 of Signpost

The concept of resetting the odometer automatically using Region 1 of the signpost was proposed as part of Hoffman's proposal dated 14 October 1975. It was first practically demonstrated under this contract. The concept is described on pages 6-8, 6-12, 6-13, and 7-4 of Volume I.

4. Determination of Time Point Passage Through Use of the Region 1 Dropout

The concept of using Region 1 dropout to determine time point passage was proposed as part of Hoffman's proposal dated 14 October 1975. It was first practically demonstrated under this contract. The concept is described on pages 6-12, 6-13, 6-14, 6-15, and 7-7 of Volume I.

5. Random Route and Fixed Route Data Recording Software

The software used to record random route and fixed route vehicle location data on cassettes was developed during Phase I of this contract. This software is described on pages 3-19, 3-20, 6-6, 6-7, 6-8, and 6-9 of Volume I.

6. Interface Control Unit (ICU) Hardware

The Interface Control Unit was developed under this contract for the express purpose of recording AVL data on cassette. The ICU is described on pages 3-16 through 3-19 and 6-1 through 6-6 of Volume I.

7. Random Route and Fixed Route Data Processing Software

The random route and fixed route data processing software, consisting of computer programs CPMAIN, RRSL, RRTEN, FROUTE, FRSYS, and FRTEN, were developed under this contract. The algorithms used for automatic vehicle location were not developed under this contract; however, the algorithms which were associated with generating a reference location from the fifth-wheel and turn indications were developed under this contract. Software is described in Sections 3, 4, 6, and 7 of Volume I.

★U.S. GOVERNMENT PRINTING OFFICE: 1977-701-620/162

HE 18.5 .A37
no. DOT-TSC-
UMTA-77-31/II

BORROWER

Paul H. Hrusick

Form DOT F 1720
FORMERLY FORM DO

DOT LIBRARY



00351922

U. S. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS CENTER
KENDALL SQUARE, CAMBRIDGE, MA. 02142
OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300



POSTAGE AND FEES PAID

U. S. DEPARTMENT OF TRANSPORTATION

518