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Prepared by M. P. Moeller/PNL
T. Urbanik II/TTI
A. E. Desrosiers/PNL

Texas Transportation Institute

Pacific Northwest Laboratory

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Prepared by
M. P. Moeller, Pacific Northwest Laboratory
T. Urbanik II, Texas Transportation Institute
A. E. Desrosiers, Pacific Northwest Laboratory

Texas Transportation Institute
The Texas A&M University System
College Station, TX 77843

Pacific Northwest Laboratory
Richland, WA 99352

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ABSTRACT

This paper describes the methodology and application of the computer model CLEAR (Calculates Logical Evacuation And Response) which estimates the time required for a specific population density and distribution to evacuate an area using a specific transportation network. The CLEAR model simulates vehicle departure and movement on a transportation network according to the conditions and consequences of traffic flow. These include handling vehicles at intersecting road segments, calculating the velocity of travel on a road segment as a function of its vehicle density, and accounting for the delay of vehicles in traffic queues. The program also models the distribution of times required by individuals to prepare for an evacuation. In order to test its accuracy, the CLEAR model was used to estimate evacuation times for the emergency planning zone surrounding the Beaver Valley Nuclear Power Plant. The Beaver Valley site was selected because evacuation time estimates had previously been prepared by the licensee, Duquesne Light, as well as by the Federal Emergency Management Agency and the Pennsylvania Emergency Management Agency. A lack of documentation prevented a detailed comparison of the estimates based on the CLEAR model and those obtained by Duquesne Light. However, the CLEAR model results compared favorably with the estimates prepared by the other two agencies.

CONTENTS

FIGURES

ACKNOWLEDGMENTS

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INTRODUCTION

Following the accident at Three Mile Island, the U.S. Nuclear Regulatory Commission (NRC) required that each nuclear reactor operator submit an evacuation time estimate for an area with a radius of about 10 miles surrounding the plant (NRC, FEMA 1980). Previously, such estimates were prepared only for low-population zones (LPZs), which generally extended from only 1 to 6 miles from the reactor. Because of the small areas and numbers of people involved, evacuation times for LPZs could be estimated using relatively simple models. When NRC increased the area subject to evacuation, these simple models frequently proved inadequate (Urbanik et al., 1980). Consequently, a generic model was needed for estimating evacuation times for relatively large areas and for accurately representing the population, transportation network, and specific characteristics and problems posed by each power plant and the surrounding region.

This paper describes a computer model, designated CLEAR (Calculates Logical Evacuation And Response), developed by the Pacific Northwest Laboratory (PNL)[a] to simulate vehicle departure and movement on a transportation network in order to determine time estimates for an emergency evacuation. The NRC requested and sponsored the development of the CLEAR model to provide a means of verifying the evacuation time estimates submitted by its applicants and licensees. To date, the CLEAR model has been used primarily as an analytical tool for simulating an emergency evacuation following an accident at a nuclear power plant. However, the methodology is equally applicable to simulating evacuations preceding or following other types of events such as toxic waste spills, toxic gas leaks, fires, hurricanes and other natural or man-made incidents.

In order to test the model, evacuation time estimates for a power reactor facility and the surrounding area were calculated using the CLEAR model and then compared with time estimates prepared by three other groups using various techniques. The site chosen for this test was the Beaver Valley Nuclear Power Plant in Pennsylvania. The time estimates used for comparison were prepared by Wilbur Smith and Associates under contract to the Federal Emergency Management Agency; the utility company, Duquesne Light, as requested by NRC; and the Pennsylvania Emergency Management Agency. The results of the comparison are discussed in the final section of this report.

In an effort to fully describe the CLEAR model, a copy of the computer code and the corresponding flow chart are provided in Appendices I and II, respectively. In addition, an example of the input and output for a specific transportation network and population distribution is provided in the remaining appendices.

(a) Operated for the Department of Energy by Battelle Memorial Institute.

FACTORS INFLUENCING THE DEVELOPMENT OF CLEAR

Several factors influenced the development of the CLEAR model. These included the guidance of NRC as set forth in NUREG-0654, Rev. 1, Appendix 4 (NRC, FEMA 1980); the basic axioms of traffic flow theory; and specific factors that it was desired to have the program include in order to increase its versatility.

NRC GUIDANCE

Appendix 4 of NUREG-0654 Rev. 1 presents NRC's guidance for studies assessing emergency evacuation times. The methodology used in CLEAR satisfies these criteria, as outlined below.

- The model uses site-specific population information and transportation networks.

- Information on the assumptions used in the model (e.g., automobile occupancy factors, the method of determining road capacities, and the method of estimating populations) is available for analysis.

- The input for the model identifies an emergency planning zone (EPZ) with a radius of about 10 miles from the site of the emergency, in accordance with the plume exposure EPZ described in NUREG-0654 Rev. 1. For estimating evacuation times, the procedure for using CLEAR subdivides the EPZ into smaller zones. The model can be used to calculate evacuation times for the individual zones or for simultaneous evacuation of the entire EPZ.

- Three potential population groups are considered by CLEAR: Permanent residents, transients, and persons in special facilities. As defined in NUREG-0654 Rev. 1, permanent residents are people residing in the EPZ other than those in institutions. The transient population includes tourists, employees not residing in the area, and other groups visiting within the EPZ. Finally, special-facility residents include those confined to institutions such as hospitals and nursing homes. The school population is included in this group.

- In accordance with NRC guidance, a map showing the major roads used as evacuation routes (the transporation network) is included with the time estimates. Each road segment is numbered for reference. In addition, a table listing the characteristics of each road segment is included.

- The model can be used to calculate evacuation times for both normal and adverse weather conditions. According to NUREG-0654 Rev. 1 Appendix 4, adverse conditions would depend on the characteristics of a specific site and could include flooding, snow, ice, fog, or rain. The effects of adverse weather on a specific EPZ must be severe enough to affect both travel times and road capacities in order to be taken into consideration.

- To date, the CLEAR calculations have not been used for adverse weather conditions, although this application is within the capabilities of the model.

- Appendix 4 of NUREG-0654 Rev. 1 also suggests that the critical assumptions underlying the calculation of time estimates be identified and that the relative significance of alternative assumptions be analyzed. Such assumptions might include day versus night evacuation conditions, workday versus weekend, peak transient versus off-peak transient, and evacuation of adjacent sectors versus nonevacuation. A discussion of the assumptions used in CLEAR is presented near the end of this report.

TRAFFIC FLOW THEORY

The computer evacuation model adheres to many of the basic axioms of traffic flow theory by including several functions that handle the conditions and consequences of traffic flow. These include handling vehicles at road intersections, determining the speed of travel on a road segment as a function of vehicle density, simulating the delay of vehicles in traffic jams or congestion, and advancing vehicles on the transportation network.

FACTORS UNIQUE TO THE MODEL

While some of the methodology of CLEAR was dictated by traffic simulation theory and NRC guidance, several aspects of the evacuation plan are unique to the model. The methods for determining the number of vehicles assigned to a road segment and the initial positions from which they are being evacuated, as well as the method for randomly initiating a vehicle's movement, were all developed specifically for this computer model. The method of output, which includes vehicle population as a function of radial distance from the site of the emergency, is also unique to the code used in this model.

METHODOLOGY OF THE CLEAR MODEL

The Nuclear Regulatory Commission recommends two methods for calculating evacuation times. The first and simplest approach is to assume that events are sequential, i.e., that evacuation does not begin until all persons within the EPZ have been warned and are prepared to leave and that they then leave in an orderly sequence. The total evacuation time for this approach is estimated adding the maximum time for each component or stage of the overall evacuation process (decision, notification, preparation, and response). This approach tends to lead to an overestimate of the evacuation time.

The second approach, which is used in CLEAR, is more complex. It incorporates functions to simulate the simultaneous occurrence of the several stages of evacuation. For example, at a given moment some persons may be in the preparation stage while others are in the response stage. This integrated system for interpreting the evacuation process involves more realistic assumptions than the sequential approach, and can result in reduced time estimates. As noted in NUREG-0654 Rev. 1 Appendix 4, however, some functions of this approach must be based on the judgment of the estimators.

In order to represent the evacuation accurately, the computer model CLEAR allows events to occur simultaneously in a continuous time format. By calculating all occurrences on all roads during an increment of time, the model makes it possible to determine the status of all vehicles within various time increments.

The length of the time increment is determined by the shortest road segment in the transportation network. Since no vehicle may pass over more than one road segment during a single increment of time, the time increment is equal to 99% of the shortest road segment's length (meters) multiplied by the free flow velocity of vehicles traveling on the road segment (meters per second). Consequently, the time increment is small enough not to have any significant effect on the evacuation time estimates and large enough to make the program run efficiently.

The following explanation of the methodology of the CLEAR model includes a discussion of all functions, subroutines, and algorithms used to simulate behavior during an evacuation. The order in which the evacuation events proceed, as well as the handling of all necessary and arbitrary decisions, constitute the theory of the evacuation plan.

The input of data at the beginning of the program enables the generic model to be used to estimate evacuation times for a specific transportation network and population distribution. Because these data are critical to the program's calculations, any assumptions about or transformations of these numbers are significant and are discussed below.

DIVISION OF THE EMERGENCY PLANNING ZONE

In order to discuss the input of the transportation network and population data, it is first necessary to describe the manner in which the EPZ surrounding a nuclear reactor facility is compartmentalized for purposes of analysis. The area, which has a radius of 10 miles from the facility, is divided into eight 45° sectors that are identified by geographical direction: north, northeast, east, southeast, south, southwest, west, and northwest (see Figure 1). Within each sector, three zones are identified by their radial distance from the reactor facility: one zone extends from the reactor to the 2-mile radius, one from the 2-mile to the 5-mile radius, and one from the 5-mile to the 10-mile radius. Thus the total EPZ consists of eight sectors of three zones each, or a total of 24 zones. In addition, areas in an emergency planning zone may extend beyond ten miles from a reactor facility. These areas can be included as additional zones for calculations using the CLEAR model. This arrangement complies with NRC's guidelines (NRC, FEMA 1980), and provides flexibility and accuracy in determining the evacuation time estimates.

POPULATION INPUT

With the zone network defined, an estimation of the population density for each zone in an EPZ is obtained from current U.S. Bureau of Census reports, as well as from the data provided by nuclear power plant applicants or licensees in their response to NRC's request for evacuation time estimates. In cases where the data from these two sources do not agree, best efforts are made to establish the population on the basis of supplementary information. For example, when known population statistics cover an area in more than one zone or extend beyond the EPZ, the population may be considered to be evenly distributed over the area or may be weighed according to the location of specific townships.

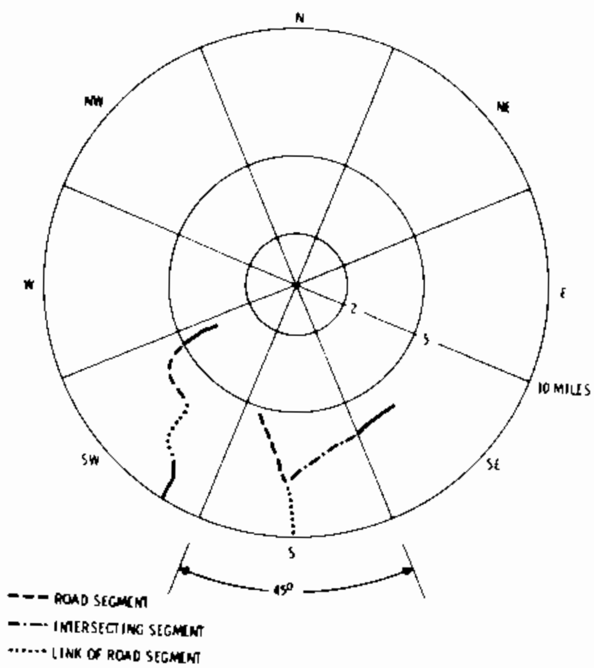


FIGURE 1. Zones and Road Segments in the Emergency Planning Zone

In addition to representing the general population distribution, the computer model also includes an independent special-traffic generator that accommodates schools, factories, hospitals, prisons, and other large population contributors. This routine allows satisfaction of NRC's requirement that special facilities be represented in the evacuation time estimates.

MODELING OF THE TRANSPORTATION NETWORK

In conjunction with the detailed representation of the population, the transportation network around a nuclear power plant is also modeled specifically. The initial step in preparing a transportation network is to construct a map of the roads in the EPZ. The 24-zone network is then placed over the map, and road segments are identified as follows (see figure 1): 1) a road segment ends and another begins at every road intersection; 2) for the purpose of tracking population density, one road segment ends at the boundary of one zone and a new one begins in the next zone; 3) when a road continues for a long stretch in one zone without being intersected, it may be divided into two or more road segments so that population can be tracked accurately in relation to radial distance from the reactor facility. For program efficiency, the maximum length of a road segment is about 3600 meters and the minimum length is about 300 meters for a small time increment (~12 seconds).

The characteristics of a road segment that affect the evacuation time are then input as data for a specific site. This information includes each road segment's length, number of lanes, free flow speed, relative position in terms of radial distance from the reactor, the next road segment on which vehicles will travel (the link), and possible intersecting routes. Finally, a direction for evacuation and the number of outbound lanes are assigned to each road segment.

IDENTIFICATION OF EVACUATION TREES AND EVACUATION PATHS

The entire EPZ transportation network is next divided into evacuation trees. Each evacuation tree is a system of interacting road segments with at least one exit from the EPZ (see Figure 2). Every road segment in an evacuation tree is dependent upon or interacts only with other road segments in that evacuation tree. The evacuation time estimated for a single evacuation tree may or may not determine the evacuation time estimate for an entire EPZ.

An evacuation tree may contain roads from a number of zones. An evacuation tree need not contain all the road segments in a zone, however, it does contain those road segments that interact. The evacuation time estimate for a particular zone can be determined by analyzing all evacuation trees containing road segments in that zone.

When an evacuation tree has been isolated, the remaining road segment parameters can be determined. Each road segment is given a number for identification. The link and intersecting segments for each road segment are also input as numbers. The input for an evacuation tree, therefore, becomes a numerical system.

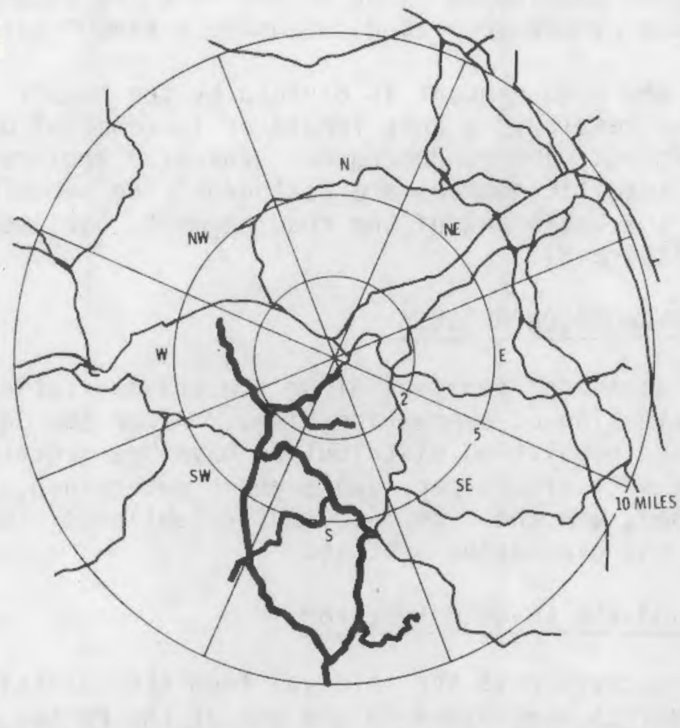


FIGURE 2. Designation of Evacuation Trees

An evacuation path for each road segment will later be established by determining the traffic routes for the quickest evacuation. Since an evacuation path must be programmed into the computer model, the first such path is determined by a "shortest-route" approach. In effect, each road segment usually has one shortest path to the outer edge of the 10-mile radius, and this path becomes the initial input route. If two or more equally short evacuation routes exist for a road segment, then one is arbitrarily chosen. After the initial run of the computer model, the programmer has a better knowledge of where difficulties or delays arise in the evacuation plan and can reduce the traffic on the road segment by directing vehicles to alternate routes. Eventually, detailed information on each road segment becomes available.

DISTRIBUTION OF VEHICLE POPULATION AND ASSIGNMENT OF VEHICLE DEPARTURE POSITIONS

After data on the population and the transportation network for a particular zone in an evacuation tree have been entered into the program, the number of persons assigned to each road segment can be calculated. Dividing the length of a specific road segment by the total length of all road segments in the zone determines the fraction of the zone's vehicle population that may be served by that road segment. The starting positions of vehicles on the transportation network are determined by the length of the segment rather than its vehicle capacity. If the vehicle capacity of a road segment rather than the length of a road segment were used to distribute the population, then some road segments would begin with a disproportionate number of vehicles.

After the vehicle population of a road segment has been determined, the vehicles are assigned a departure position along the road segment. This procedure ensures an even population distribution over the road segment and incorporates a random number generator to ensure a random evacuation process.

The length of the road segment is divided by the number of vehicles assigned to it. The result is a unit length or incremental distance separating the vehicles. The random number generator arbitrarily selects positions to which specific numbers are assigned. The vehicles thus appear evenly spaced from the beginning of the road segment, but are numbered in a random order (see Figure 3).

SIMULATION OF THE EVACUATION PROCESS

The method of advancing vehicles along the transportation network is critical to the estimation of evacuation times. After the data for the transportation network and population distribution have been entered into the program, the number of vehicles per road segment determined, the positions of the vehicles assigned, and the time increment established, the CLEAR model begins to simulate the evacuation process.

Evacuation Stages and the Loading Function

Evacuation time represents the interval from the detection of an incident that ultimately requires evacuation to the end of the period required for individuals to physically move out of the area. However, there are several stages before a population group is ready to begin its movement. Decision time is the time between the detection of an incident and the moment a decision is made by an individual authorized to order an evacuation. The time

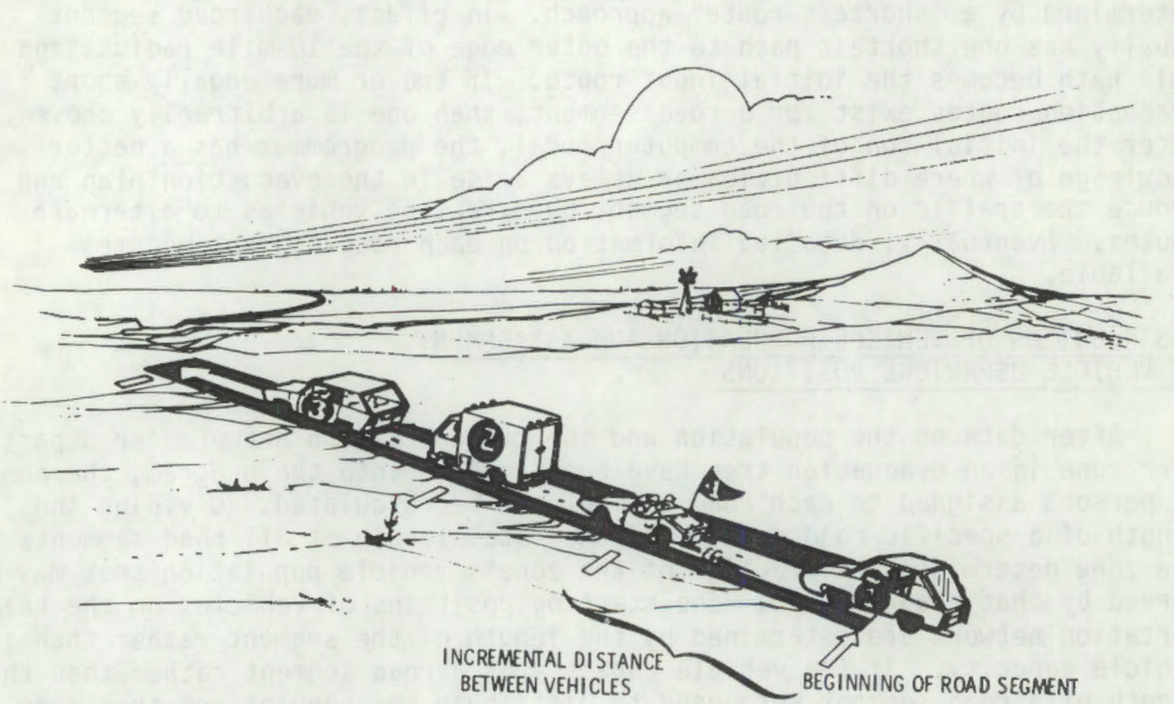


FIGURE 3. Incremental Distance Between Vehicles

required to notify all individuals within the EPZ of the need to evacuate is called notification time. Preparation time is that required for individuals to prepare to evacuate the EPZ. These three components together with response time, the time necessary for individuals to physically move out of the EPZ, constitute the evacuation time (Urbanik et al., 1980). However, evacuation time estimates only include notification, preparation, and response time estimates (NRC, FEMA 1980).

In an area designated for evacuation, there is a distribution of times for each of the components of evacuation time just described. For the purpose of simulating the departure rate of the evacuees, a loading function in the CLEAR model determines the percentage of the population initiating their evacuation during a given increment of time based upon the notification and preparation time curve given in NUREG-0654 Rev. 1. The evacuation time estimates for the CLEAR model are, therefore, a summation of the notification, preparation, and response times plus the decision time. If appropriate, then some notification or decision time may be added to the evacuation time estimate generated by the CLEAR model.

The loading function in the computer model uses two input variables to determine the rate of departure of the vehicles. The first variable estimates the overall time it takes for all individuals to begin evacuating by establishing a maximum departure time. This represents the maximum notification time plus the slowest preparation time for any individual.

The second variable determines the rate and distribution at which individuals begin their evacuation within the maximum departure time. This variable represents the percentage of the population within the entire EPZ that begins its evacuation before one-fourth of the maximum departure time has transpired. According to this function, which describes a histogram, 25% of the remaining population leaves during the second quarter of the maximum departure time, 50% departs during the third quarter, and 25% leaves during the last quarter. Therefore, the function with a variable fraction equal to one-tenth would be represented as the histogram shown in Figure 4.

Handling Simultaneous Activities

The activities on all road segments during any one increment of time occur simultaneously in theory, but the model looks at only one road segment at a time. For each evacuation tree, the model analyzes all the road segments in a zone, one at a time. When all the road segments for that tree in a particular zone have been processed, the road segments in the next zone are analyzed. All zones that have road segments in the evacuation tree are processed in groups. First are those between the 2-mile radius and 5-mile radii; next are those between the 5-mile and the 10-mile radii; and finally any zones beyond the 10-mile radius are processed. Road segment information flags are used to ensure that each road segment in an evacuation tree is processed only once during each increment of time.

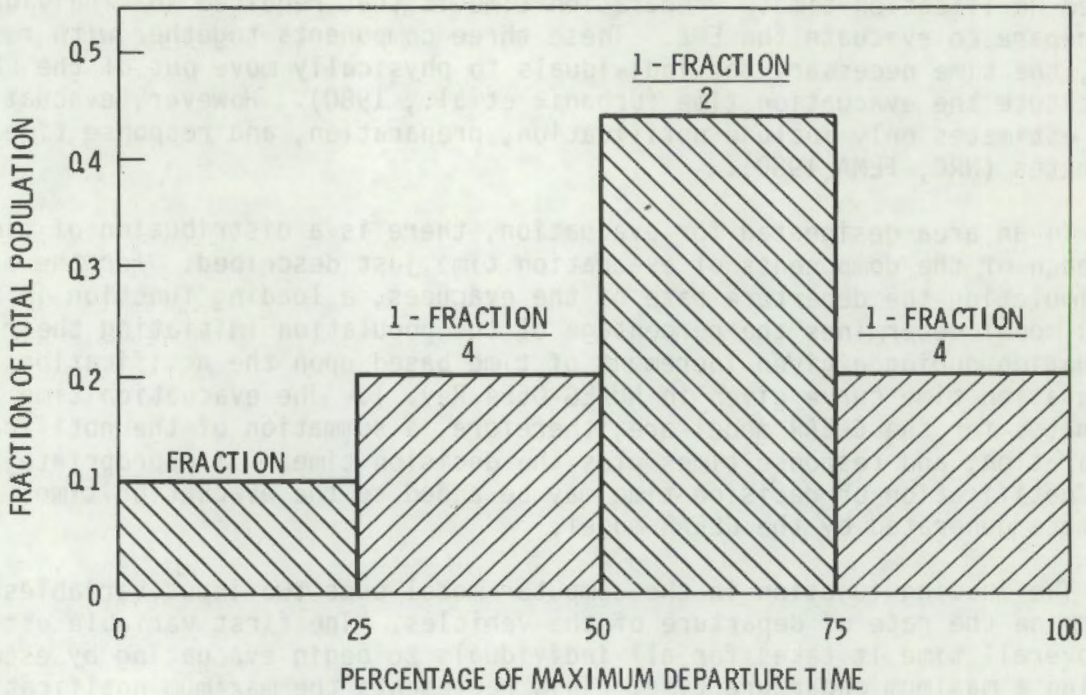


FIGURE 4. Histogram for the Loading Function

Loading the Link

Having selected a road segment in a particular zone for processing, the CLEAR model begins preparing for vehicle movement by determining whether the link of the road segment being processed has been loaded for this increment of time. A road segment, intersecting segment, or link segment is loaded when the specified number of vehicles scheduled to begin their evacuation from that segment during a particular time increment has been assigned starting positions and occupies space on the segment. Loading is a separate process from advancing along the transportation network, although both steps may occur for a single vehicle during the same increment of time.

In order for the model to represent the simultaneous occurrence of several evacuation stages accurately, the link of a road segment must be loaded before the vehicles on the road segment itself can be set in motion. If vehicles from a road segment advanced along the transportation network during an increment of time, then some of the vehicles could continue onto the link of the road segment. When the model later loaded the link for the same increment of time, there would already be vehicles on the link that had come from the initial road segment. Vehicles compete for available space on the transportation network; therefore, vehicles moving from the road segment to the link before the link is loaded would give an advantage to vehicles on the road segment. The link of the road segment is therefore loaded before vehicles on the road segment itself are moved. When vehicles are loaded on the link, they assume a starting position and occupy space on the link, but they are not advanced along the transportation network until the link itself is processed as a road segment.

According to the structure of the transportation network, the order in which the road segments of an evacuation tree are loaded can vary. In order for the model to represent accurately simultaneous occurrences, it is critical that a road segment be loaded before the vehicles on the road segment itself are set in motion. Two examples are shown in figure 5.

If the link has not been loaded for the current increment of time, the program tests to determine whether the elapsed time is greater than the maximum departure time. Since all vehicles will have been loaded by the maximum departure time, the loading procedure is not used after that point. If the link has not been loaded and the increment of time under consideration precedes the maximum departure time, then the number of vehicles scheduled to be loaded is transferred from the random queue into the loading queue.

The Queue System

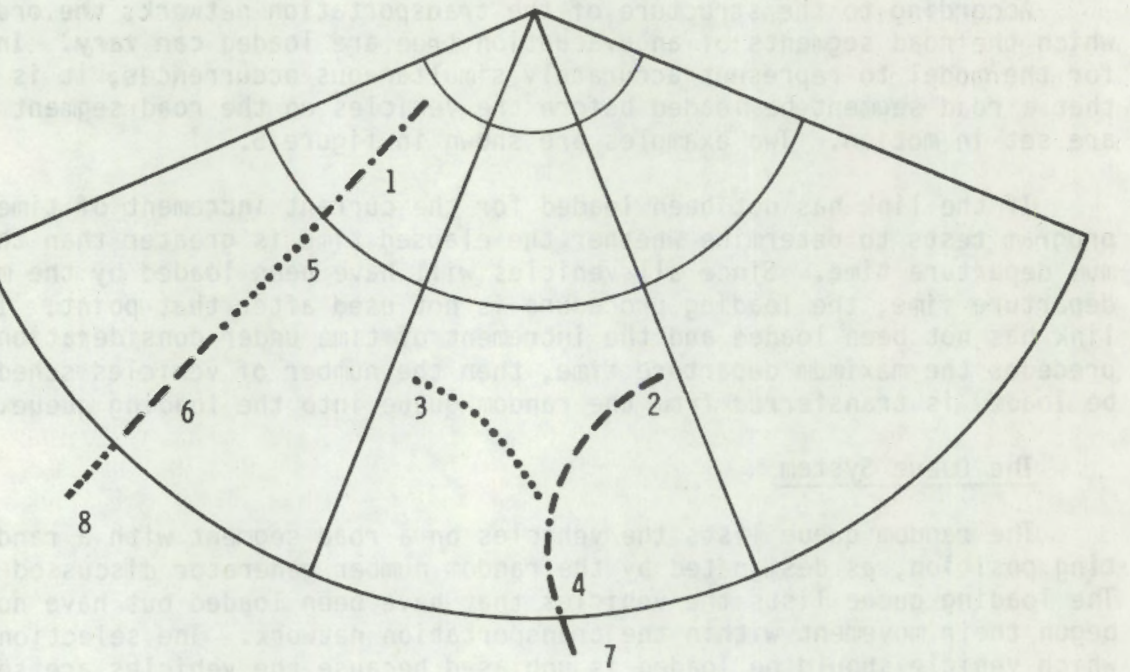
The random queue lists the vehicles on a road segment with a random starting position, as designated by the random number generator discussed earlier. The loading queue lists the vehicles that have been loaded but have not yet begun their movement within the transportation network. The selection of which vehicle should be loaded is unbiased because the vehicles are selected in numerical order from the random queue.

The loading queue is one of two types of delaying queues used by the model to hold and account for vehicles that are not advancing on the transportation network during a given increment of time. The second type of delaying queue is the back-up queue, which is used to handle traffic jams and is based on link capacity and maximum allowable density.

Link capacity affects the queueing of vehicles on a road segment. The basic figure for maximum allowable density is determined using the link capacity in units of vehicles per hour per lane and a minimum speed of 15 mph, which is an input variable. The maximum allowable density on a road segment, equated with effective vehicle length in the code, determines the space a vehicle occupies at the density at which vehicles begin to queue (46.59 feet). This occurs at the selected minimum velocity of travel on a road segment of 15 mph. While 15 mph is the minimum speed for moving vehicles on a road segment, the effective operating speed for queued vehicles is less than 15 mph.

When one effective vehicle length for a single vehicle is added to the total effective vehicle lengths for all vehicles on a road segment and the sum exceeds the length of the road segment, then the vehicle is placed in a back-up queue. This simulates the situation that would exist when the addition of a single vehicle to a road segment would cause the volume of traffic to exceed the total capacity for the road segment. Once placed in a back-up queue at the beginning of the road segment, a vehicle cannot continue its evacuation until there is adequate space for it on the road segment.

For each road segment during each increment of time, the CLEAR model forms a combined list of vehicles from those in the loading queue and those that may exist in a back-up queue. This combined list, or total queue, is



ORDER OF EVENTS

TO PROCESS ROAD SEGMENT NO. 1:
A. LOAD ROAD SEGMENT NO. 5
B. LOAD ROAD SEGMENT NO. 1
C. ADVANCE VEHICLES ON RS NO. 1

TO PROCESS ROAD SEGMENT NO. 2:
A. LOAD ROAD SEGMENT NO. 4
B. LOAD ROAD SEGMENT NO. 2
C. ADVANCE VEHICLES ON RS NO. 2

TO PROCESS ROAD SEGMENT NO. 3:
A. RS NO. 4 HAS BEEN LOADED
B. LOAD ROAD SEGMENT NO. 3
C. ADVANCE VEHICLES ON RS NO. 3

TO PROCESS ROAD SEGMENT NO. 4:
A. RS NO. 7 IS AN EXIT LINK
B. RS NO. 4 HAS BEEN LOADED
C. ADVANCE VEHICLES ON RS NO. 4

TO PROCESS ROAD SEGMENT NO. 5:
A. LOAD ROAD SEGMENT NO. 6
B. RS NO. 5 HAS BEEN LOADED
C. ADVANCE VEHICLES ON RS NO. 5

TO PROCESS ROAD SEGMENT NO. 6:
A. RS NO. 8 IS AN EXIT LINK
B. RS NO. 6 HAS BEEN LOADED
C. ADVANCE VEHICLES ON RS NO. 6

FIGURE 5. Order of Events in Processing a Road Segment (RS) in an Evacuation Tree

used to add vehicles to a road segment. A decision block tests whether the addition of one vehicle from the total queue would exceed the total capacity of the road segment. If so, then the vehicle remains in its loading or back-up queue and is included in the total queue formed during the next increment of time.

During the formation of the total queue, a priority for loading or continuing the evacuation movement is established in the total queue. Since a traffic jam on a road segment disperses from the end to the beginning of a road segment and the vehicles in the loading queue are ahead of those in the back-up queue, the vehicles in the loading queue are given priority to advance on to the road segment when an adequate opening develops. Therefore, the total queue lists vehicles in a specific order. Vehicles from the loading queue are listed chronologically in order of their placement into that queue, and are followed by vehicles in the back-up queue. Although vehicles are transferred from the random queue to the loading queue only before the end of maximum departure time, the CLEAR model attempts to add queued vehicles from the loading and back-up queues to the transportation network during each increment of time until the evacuation is completed.

Assessing the Vehicle Capacity of the Link

Before adding vehicles to the link, a decision block tests whether the addition of one more vehicle would exceed the capacity of the link, as determined by its maximum flow rate. The maximum flow rate of a segment is calculated using the minimum velocity. Since the minimum speed is assumed to be the slowest rate of travel occurring on the transportation network, the effective vehicle length at that velocity is the minimum space a moving vehicle could ever occupy. The total capacity of a road segment is calculated, therefore, by dividing the product of the road segment's total length (meters) and number of lanes by a vehicle's effective length at the minimum speed of travel.

If there is room on the link segment for the addition of one more vehicle, then the first vehicle in the link's total queue is added to the link's list of moving vehicles. The list of moving vehicles contains all those in motion or advancing on a given road segment. After the vehicle is moving, it is deleted from both the total queue and the loading or back-up queue from which it originated.

A subsequent test is made to determine whether any vehicles are left in the total queue. If there are, then the code determines whether the addition of yet another vehicle to the link would exceed its capacity. Vehicles continue to be added to the link's list of moving vehicles until either the capacity of the link is full or the total queue is empty.

Velocity of Travel as a Function of Vehicle Density

Because the addition and deletion of vehicles from a road segment alter the density of traffic, they also affect the velocity of travel on the road segment. With the addition of a vehicle to the link, the velocity of travel for the link must be recalculated according to its new traffic density. This is accomplished using a velocity versus density function.

A subroutine changes the velocity of movement on a road segment after the number of vehicles on it exceeds some percentage of the maximum density of the link based on the current speed. Until the traffic density reaches that point, the velocity of travel is assumed to be constant at the free-flow or nominal value. The percentage used represents the point at which free flow is no longer possible on the road segment. Once this point is reached, vehicle speed decreases linearly as traffic density increases until the maximum density is reached at the minimum speed of 15 mph (see Figure 6). When the traffic reaches the maximum density, any additional vehicles are placed in a back-up queue at the beginning of the road segment. Vehicles in this back-up queue can continue their evacuation only when there is adequate space for them on the road segment.

According to this function, the velocity of travel on a road segment ranges from the free-flow or nominal speed down to the selected minimum speed. For a given road segment, the velocity of travel can be calculated as follows:

$$\text{Velocity of travel} = \left(\frac{\text{Free-flow}}{\text{rate}} \times \frac{\text{Number}}{\text{of lanes}} \times \frac{\text{Length}}{\text{of segment}}\right) \div \frac{\text{Current Number}}{\text{of vehicles}}$$

In other words,

$$\left(\frac{\text{Autos}}{\text{Lane}\cdot\text{hour}} \times \text{Lanes} \times \text{Miles}\right) \div \text{Autos} \rightarrow \frac{\text{Miles}}{\text{Hour}}$$

or

$$\left(\frac{\text{Autos}}{\text{Lane}\cdot\text{Second}} \times \text{Lanes} \times \text{Meters}\right) \div \text{Autos} \rightarrow \frac{\text{Meters}}{\text{Second}}$$

Loading the Road Segment

After the velocity of travel on the link segment is calculated for the new traffic density, the loading status of the current road segment is checked. The procedure for loading and setting vehicles in motion on the road segment is the same as that described for its link. Since it is possible that the current road segment is the link for another road segment that may have already been processed (see Figure 5), it is important to check whether the road segment has already been loaded for this increment of time.

Advancing Vehicles Along the Transportation Network

Upon completion of the loading sequence for both the link and the road segment, the CLEAR model is prepared to simulate the advancement of vehicles through the transportation network. The moving vehicles on each road segment

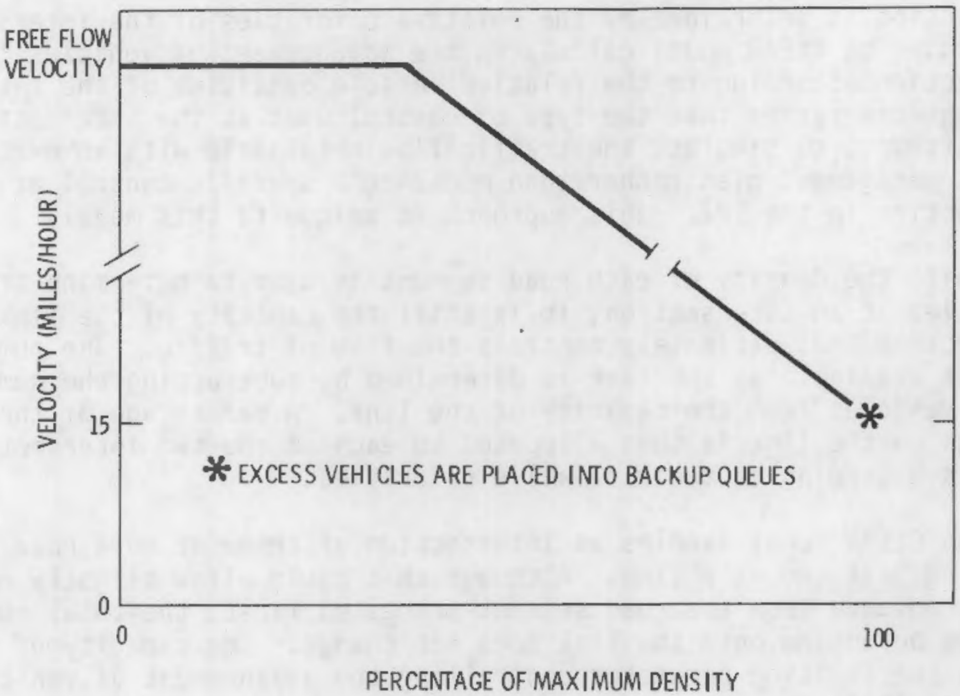


FIGURE 6. Velocity Versus Density Function

are listed in a queue with their specific position on the road segment. Every vehicle is processed in an attempt to advance it along the network once during each increment of time.

Because a vehicle may advance from a road segment to its link during an increment of time, the first decision block assesses the vehicle information flags to determine whether a given vehicle has already been advanced from another road segment during the current increment of time. If the vehicle has already been processed for this increment of time, then the next vehicle in the list of moving vehicles is tested. If the vehicle has not been processed, then the next decision block calculates how far the vehicle can travel during this increment of time.

If the advancing vehicle stays on the road segment, then its new position is recorded and the next vehicle is processed. If the vehicle has sufficient time to advance onto the link of the road segment, it is advanced to the beginning of the link and several conditions are tested. If another road intersects where the road segment and its link meet, then a function is used to allocate openings on the link according to the demands of the two intersecting roads.

Handling Traffic at Intersections

According to traffic flow theory, the type of control methods used at an intersection is determined by the relative priorities of the intersecting road segments. The CLEAR model calculates the advancement of vehicles through an intersection according to the relative vehicle densities of the intersecting road segments rather than the type of control used at the intersection. The model attempts to simulate the traffic flow obtainable with an evacuation traffic management plan rather than modeling a specific control at each intersection in the EPZ. This approach is unique to this model.

While the density of each road segment is used to determine traffic priorities at an intersection, it is still the capacity of the link beyond the intersection that ultimately controls the flow of traffic. The number of openings available on the link is determined by subtracting the number of moving vehicles from the capacity of the link. A percentage of the number of openings on the link is then allocated to each of the two intersecting road segments according to their relative priorities.

The CLEAR model handles an intersection of three or more road segments by analyzing just two at a time. Although this could allow slightly more vehicles to advance from the road segment processed first, the total number of vehicles advancing onto the link does not change. The capacity of the link remains the limiting parameter controlling the advancement of vehicles through an intersection.

In two situations, a vehicle may reach the beginning of a link before the end of an increment of time but will be unable to advance onto the link segment. This can occur when there is insufficient room on the link, or when the addition of a vehicle would exceed the number of vehicles allocated to the link segment according to the intersection condition.

The advancement of each moving vehicle on the road segment is analyzed individually. If a vehicle leaves the road segment and proceeds onto its link, the speed on the road segment is recalculated according to the number of moving vehicles remaining on the road segment.

When as many vehicles as possible have been advanced and the velocity of travel for the remaining vehicles on the road segment has been recalculated for this increment of time, the road segment has been processed completely for this time interval. Consequently, the code proceeds to the next road segment scheduled to be processed for this increment of time. Should there not be any more road segments in the zone currently being processed, the code moves to the next zone. When the moving vehicles on the road segments in all zones have been processed for the current increment of time, road and vehicle information flags specific to this increment of time are removed.

Random Population Sampling for High-Population Areas

The CLEAR model converts from a total-population model to a random sample calculation by changing specific parameters to allow the model to simulate the expected events of an evacuation using a smaller percentage of the population. This enhancement allows the CLEAR model to calculate evacuation time estimates for high population areas that would ordinarily exceed the memory size of small computers. Some parameters that are altered include vehicle occupancy, effective vehicle length and density. When the number of individuals per vehicle is enlarged beyond the actual figure, the same percentage increase of the effective vehicle length has a cancelling effect. It is possible, therefore, to calculate the evacuation time estimate for the total population by analyzing a fractional random sample. For the critical evacuation tree tested, the evacuation time estimate did not change until the random sample was less than 16.67% or 1/6 of the total population.

OUTPUT FROM THE CLEAR MODEL

The output from the CLEAR model can be printed at variable increments of time. Since the increment of time used for processing may be relatively short (~12 seconds), it may be desirable to print out a status report on the advancement of vehicles over longer periods of time, perhaps every 5 minutes.

The output registers the position and state of all vehicles in the EPZ for that instant. In essence, the output is a picture of the vehicles on the transportation network at that one moment. The output begins with the initial vehicle population for the EPZ and the time elapsed in total seconds, as well as in hours, minutes, and seconds. The output continues with the vehicle population on each road segment and in each queue in an evacuation tree in each of the eight possible zones within the 2-mile radius. After the vehicle population has been recorded for each road segment in a zone, the total vehicle population for that zone is listed. When the information for all zones within the 2-mile radius containing road segments on that evacuation tree has been recorded in this manner, the total vehicle population for these zones is printed as the vehicle population within the 2-mile radius.

The vehicle population is registered in this manner for the road segments and zones of the entire EPZ. The vehicle population within the 5-mile radius is the sum of the vehicle populations in the eight zones between the 2-mile radius and the 5-mile radius and the vehicle population in the eight zones within the 2-mile radius. Similarly, the total vehicle population in the EPZ is the sum of the vehicle populations in all 24 zones within the 10-mile radius plus any additional zones outside the 10-mile radius being modeled.

The output also includes a table of the vehicle population as a function of radial distance from the nuclear facility, in mile increments. Therefore, the approximate vehicle population in each of the ten or more 1-mile-wide annulus comprising the EPZ is recorded for each increment of time. In addition, the output includes the percentage of vehicles contained in each radial increment relative to the initial vehicle population and to the total vehicle population remaining in the EPZ. Finally, the output registers the remaining vehicle population and the initial vehicle population for comparison.

Each time the vehicle population within the EPZ registers above zero, a new time increment is added to the present time and the code returns to process the road segments in all zones for another increment of time. When the vehicle population within the EPZ is zero, the evacuation has been completed, and the elapsed time is the evacuation time estimate.

APPLICATION OF THE MODEL: BEAVER VALLEY NUCLEAR POWER PLANT

The CLEAR model was used to calculate an evacuation time estimate for an EPZ with a radius of 10 miles surrounding the Beaver Valley Nuclear Power Plant in Pennsylvania. The estimate was then compared with those prepared for this facility by three other groups: Wilbur Smith and Associates, a contractor to the Federal Emergency Management Agency (FEMA); Duquesne Light, the utility operating the power plant; and the Pennsylvania Emergency Management Agency (PEMA).

The population information used as input to the program was compiled from two sources: 1) the study by Wilbur Smith and Associates, which listed a value for the total population in the EPZ, and 2) the report submitted to NRC by Duquesne Light, which included a map of population densities by zones. Because the zones used by Duquesne Light did not correspond exactly to those used in CLEAR, the population information was altered slightly to fit the input format for CLEAR. A population figure was used for each of the 24 zones within the Beaver Valley EPZ.

The transportation network in the Beaver Valley EPZ was developed for input into CLEAR using 7.5 minute (1:24,000) U.S. Geological Survey (USGS) maps of the area. Once the road segments and their direction of evacuation had been identified and defined, each segment was assigned parameters including length, number of lanes, radial distance from the plant, link, and possible intersecting segments. Because the USGS maps presented a complete picture of the transportation system, the network could be separated or divided into evacuation trees according to interacting segments.

RESULTS

The evacuation time estimate calculated by CLEAR for the 10-mile-radius EPZ surrounding the Beaver Valley Nuclear Power Plant was 235 minutes (3 hours and 55 minutes). The slowest evacuation tree, which includes one major intersection with very large demands placed on it, had a time estimate of 205-notification decision minutes (3 hours and 25 minutes). This time plus the 30-minute time results in the overall evacuation time. Evacuation time estimates for the other 17 evacuation trees ranged from 120 to 200 minutes.

The model also calculated time estimates for evacuating areas with radii of 2 and 5 miles within the EPZ. The estimate for an area with a radius of 2-miles around the power plant was 145 minutes. Some zones in this area had evacuation time estimates ranging from 120 to 125 minutes. The area with a radius of 5 miles around the Beaver Valley plant had an evacuation time estimate of 150 minutes. Specific zones within the 5-mile radius had evacuation time estimates ranging from 120 to 140 minutes.

According to the data, most evacuation trees in the Beaver Valley EPZ contained intersections that caused a delay in the evacuation process. In one-third of the zones, the traffic queues increased evacuation times by 5 to 125 minutes. In two-thirds of the trees, however, the queues formed at intersections or on small road segments dissipated before the maximum departure time (largest notification time plus longest preparation time). In most of the zones, the evacuation time estimated was the sum of the decision-notification time (30 minutes), the maximum departure time (90 minutes), and the response or travel time (5 to 35 minutes).

COMPARISON OF TIME ESTIMATES FROM CLEAR AND OTHER STUDIES

The evacuation time estimate calculated by CLEAR for the 10-mile EPZ was within 5% of that reported by Wilbur Smith and Associates (Wilbur Smith and Associates 1980). The FEMA contractor estimated an evacuation time of 243 minutes for the Beaver Valley EPZ (see Table 1).

The CLEAR calculations were also compared with those prepared recently by the state of Pennsylvania in developing their own evacuation time estimates. The Pennsylvania Emergency Management Agency interviewed numerous local policemen and officials, state policemen, and state traffic engineers to identify the troublesome areas in the Beaver Valley EPZ. In addition, PEMA conducted onsite field studies to determine the evacuation rate. After equating several variables used to determine evacuation time estimates were equated, the PEMA and CLEAR time estimates also proved to be within 5%.

One assumed variable that originally differed between the PEMA and the CLEAR evacuation time estimates was the number of vehicles per lane hour. The calculations used in CLEAR assumed that during a predominantly outbound evacuation approximately 1700 vehicles could pass through one lane in 1 hour. An extremely conservative figure of 750 vehicles per lane·hour was used by PEMA. The 950-vehicle difference between the CLEAR figure and the PEMA figure resulted in the evacuation time estimates initially being significantly different. When an adjustment was made to account for this difference, the CLEAR evacuation time estimate was within 5% of that developed by the PEMA.

TABLE 1. Comparison of Evacuation Time Estimates for the Beaver Valley Emergenecy Planning Zone.

AREA	Evacuation Time in Minutes Estimated by CLEAR[a]	FEMA[b]	PEMA[c]	Licensee[d]
360°, 2-Mile Radius	145			
360°, 5-Mile Radius	150			
360°, 10-Mile Radius	235	243	420	270

[a] Only CLEAR calculated time estimates for the 2-mile and 5-mile radii within the EPZ.

[b] Estimated for the Federal Emergency Management Agency by Wilbur Smith and Associates (Wilbur Smith and Associates 1980).

[c] Pennsylvania Emergency Management Agency.

[d] Duquesne Light (Duquesne Light Company 1980).

Other variables that may have caused differences between the CLEAR and PEMA evacuation time estimates include the population input, the evacuation pathways used in the transportation network, the function used to initiate vehicle movement, and the relative velocity of travel on a road segment. The differences in vehicle movement resulted primarily because the resources used to identify the zone populations for input to CLEAR were not exact. The total population used for all four models, however, was within 10%. The input of road network pathways was an arbitrary decision, although it was calculated based upon the best information available.

The primary transportation network differences resulted from different interpretations of the USGS map. There were, however, no serious omissions or differences between the CLEAR and PEMA road networks. One difference in the estimates centered on when vehicles would begin their movement onto the road networks. The PEMA calculations did not include preparation time. Because PEMA considered all populations as leaving concurrently at the time of notification, they did not stagger vehicle departure as was done in the CLEAR model. Similarily, the PEMA calculations held the velocity of travel on all roadways fixed at 35 mph throughout the entire evacuation, whereas the CLEAR model used a function to continually adjust the velocity versus density relationship.

The CLEAR model identified two major intersections within the EPZ that would cause significant delay. Based on its interviews with traffic engineers, PEMA also concluded that these two intersections would be troublesome. In its evacuation calculation, PEMA indicated that a significantly large number of vehicles would pass through these intersections and cause a serious delay. However, only CLEAR was able to calculate the size and duration of the potential traffic holdups.

In comparison to the 243-minute evacuation time calculated using CLEAR, an estimate of 270 minutes was reported by Duquesne Light (Duquesne Light Company 1980). A lack of documentation prevents a detailed comparison of the results of CLEAR and those reported by Duquesne Light (Urbanik 1980). One speculation as to the 35-minute difference (<13%) concerns the population being evacuated. If the licensee considered the evacuation incomplete until all hospitals had been evacuated, the final time estimate would be higher than that calculated by CLEAR because hospital patients are the slowest evacuees. Because the CLEAR time estimates consider only the general public (or <u>about</u> 100% of the total EPZ population), it is not unrealistic for the CLEAR estimates to be lower.

EFFECT OF ASSUMPTIONS USED IN CALCULATING TIME ESTIMATES

Although the evacuation time estimates calculated by CLEAR for Beaver Valley agree with the results reported by FEMA and PEMA, further calculations were made to determine the significance of the assumptions used in estimating evacuation times. In order to test the sensitivity of the evacuation time estimate to assumed notification and preparation times, an evacuation time was calculated by CLEAR for the critical (235-minute) tree using maximum departure times of 10, 40, and 90 minutes. The resulting evacuation times were 135, 135, and 235 minutes, respectively. An analysis of how the assumed departure times affect the flow of traffic indicates the significance of vehicle density and the extent to which traffic queues delay the traffic flow: although the maximum departure times (of 10 and 40 minutes) differed by 30 minutes, the evacuation times were the same because the vehicles were delayed in notification and preparation in one case and in traffic queues in the other. For the 235 minute evacuation, it appears that vehicles were delayed both in the notification and preparation stages and later in traffic queues. This trend would be quite significant if it were generally applicable to evacuation times for other EPZs.

Although the maximum departure time incorporated into the CLEAR model closely agrees with that outlined by FEMA, uncertainties surrounding these critical variables remain (NRC, FEMA 1980). Because the notification and preparation times are much greater than the travel time, the accuracy of the evacuation time estimates depends heavily on the values assumed for these key factors.

The evacuation time estimates for some of the more heavily populated evacuation trees were calculated using a random population sample rather than the entire population. The random sample used for the high-population areas in the Beaver Valley EPZ was one-third the actual population. The use of a random sample enabled the time estimate to be calculated on a small computer.

CONCLUSIONS

The value of the CLEAR model lies in its ability to calculate realistic evacuation time estimates. The model provides estimates using realistic hypotheses in current traffic flow theory. For this reason, the resulting estimates are generally slightly lower than those producted by other, more conservative models. While a licensee may prefer a conservative approach to assure that his time estimates are not less than those that would actually be required for an evacuation, the availability of models for developing realistic estimates is essential for making decisions relative to the selection of alternative plant sites, reviewing the risks associated with existing plants, and in estimating the actual consequences to an evacuating population.

Advantages of the CLEAR model include its ability to model site specific components of evacuation time and its ability to identify troublesome areas within an EPZ. In addition, the model can be relatively inexpensive to run because it does not necessarily require a large memory space, if suitable systems programs are available.

Applications of the CLEAR model have shown that assumptions concerning specific parameters can have a significant effect on the estimates of evacuation times. These parameters include notification and preparation time, free flow speed, and road segment capacity.

The results of the application of the CLEAR model to the Beaver Valley site reveal the need for work to establish additional criteria for acceptable models. Guidance is needed in determining appropriate values for traffic flow characteristics, the number of persons per vehicle, and notification and preparation times. Until such guidance is available, it will be difficult to make comparisons of overall evacuation time estimates produced by the various models currently available.

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APPENDIX I:
COMPUTER CODE FOR THE CLEAR MODEL

The material following in this appendix is the actual lines of computer code comprising the CLEAR model. This code is compatible with the RTE FORTRAN 4X compiler which conforms to the American National Standard Institute FORTRAN IV specifications as described in the ASA publication X3.9-1966 (FORTRAN 66), with only a few exceptions. The CLEAR code has been used successfully on both Hewlett-Packard and Digital machines.

&CLEAR

```
FTN4,L
$EMA(LCOM,0)
$FILES(3,3)
      PROGRAM CLEAR
C
C     CLEAR - CALCULATES LOGICAL EVACUATION AND RESPONSE.
C
C     * * * * * * * * * * * * * * * * * * * * * *  RU,LOADR WITH
C     *            MATTHEW P. MUELLER             *  REL,%CLEAR
C     * BATTELLE PACIFIC NORTHWEST LABORATORIES *  REL,%MIRND
C     *            BOX 999 - 3000 AREA            *  END
C     *        RICHLAND, WASHINGTON  99352        *
C     *      (509) 376-9817 / FTS:  444-9817      *
C     * * * * * * * * * * * * * * * * * * * * * *
C
C     DECLARATION OF VARIABLES.
C
         IMPLICIT INTEGER (D)
C
C        LABELLED COMMON:
C
         COMMON/LCOM/DIST(49,800),DISRAN(49,800),DISLOD(49,800),
     X               DISBAC(49,800),DISTOT(49,800),ZNRDT(49,800)
C
C                 DIST  - DISTANCE FOR VEH TO REACH LINK FOR ZNRD
C                 DISRAN- DISTANCE FOR VEH TO REACH LINK FOR NRAN
C                 DISLOD- DISTANCE FOR VEH TO REACH LINK FOR NLOD
C                 DISBAC- DISTANCE FOR VEH TO REACH LINK FOR NBAC
C                 DISTOT- DISTANCE FOR VEH TO REACH LINK FOR NTOT
C                 ZNRDT - FLAGS PROCESSING OF A VEHICLE FOR EACH DELT
C
         REAL     FRACT
C                         FRACTION OF POP LEAVING WITHIN .25*MAXDEP
         REAL     PERLEN
C                         PERCENTAGE OF ROAD ZONE'S LENGTH
         REAL     PERCP
C                         PERCENTAGE FOR GREEN LIGHT CONDITION
         REAL     FREFLO
C                         FREE FLOW RATE IN AUTOS PER SEC-LANE-METER
         REAL     POPZN
C                         POPULATION PLACEHOLDER FOR A ZONE
         REAL     LENRDS
C                         TOTAL LENGTH OF ROADS IN A ZONE
         REAL     EVL
C                         EFFECTIVE VEHICLE LEN. OF AUTO AT MIN. SPEED
C
         INTEGER  M,
C                         INDENTIFIER FOR ZONE NUMBERS
     X            J,
C                         IDENTIFIER FOR ROAD NUMBERS
     X            N,
C                         IDENTIFIER FOR SPECIFIC VEHICLE NUMBERS
     X            K,
C                         COUNTER OR PLACEHOLDER
     X            A,
C                         COUNTER OR PLACEHOLDER
     X            B,
C                         COUNTER OR PLACEHOLDER
```

```
     X             C,
C                            COUNTER OR PLACEHOLDER
     X             I,
C                            COUNTER OR PLACEHOLDER
     X             EX,
C                            NUMBER ASSIGNED TO THE DUMMY EXIT ROAD
     X             EPZ,
C                            FIRST RADIAL DISTANCE MILE OUTSIDE EPZ
     X             TYP,
C                            PRINT OUTPUT ONCE EVERY TYP*DELT
     X             ZTWO,
C                            HIGHEST ZONE NUMBER IN TWO MILE RADIUS
     X             ZFIV,
C                            HIGHEST ZONE NUMBER IN FIVE MILE RADIUS
     X             ZTEN,
C                            HIGHEST ZONE NUMBER IN TEN MILE RADIUS
     X             ZEPZ,
C                            HIGHEST ZONE NUMBER WITHIN EPZ
     X             FLORAT,
C                            INPUT VEHICLES PER HOUR-LANE-MILE
     X             POP,
C                            POPULATION PLACEHOLDER FOR A ROAD
     X             POPVEH,
C                            POPULATION NUMBER PER VEHICLE
     X             LGCODE,
C                            MODELS RANDOM SAMPLE (1/LGCODE) OF TOTAL POP
     X             POPTWO,
C                            POPULATION IN TWO MILE RADIUS
     X             POPFIV,
C                            POPULATION IN FIVE MILE RADIUS
     X             POPTEN,
C                            POPULATION IN TEN MILE RADIUS
     X             POPEPZ,
C                            POPULATION WITHIN THE EPZ
     X             INIPOP,
C                            INITIAL VEHICLE POPULATION AT TIME=0
     X             MAXDEP,
C                            MAXIMUM TIME OF DEPARTURE (MIN=4*DELT)
     X             DELT,
C                            UNIT OF TIME FOR SIMILTANEOUS EVACUATION
     X             SAVET,
C                            SAVES OR STORES VALUE OF DELT DURING LOOP
     X             TIME,
C                            CUMMULATIVE TIME FROM BEGINNING OF EVAC
     X             INT,
C                            INTEGER COUNTER USED TO INCREMENT TIME
     X             ISTG,
C                            NUM OF INDEPENDENT SPECIAL TRAFFIC GENERATOR
     X             LENSTG,
C                            LENGTH FOR STG TO NEXT LINK
     X             POPSTG,
C                            POPULATION FORMING STG
     X             PVSTG,
C                            POPVEH FOR STG
     X             CAPVM,
C                            CAPACITY FOR A ROAD BEING PROCESSED
     X             CAPNR,
C                            CAPACITY FOR ROAD'S INTERSECTING ROAD
     X             CAPLK,
C                            CAPACITY FOR ROAD'S LINK
```

```
     X                GREEN,
C                                COUNTER FOR GREEN LIGHT CONDITION
     X                PERAD,
C                                NUMBER OF VEHICLES FOR GREEN LIGHT CONDITION
     X                MINSPD,
C                                MINIMUM SPEED OF TRAVEL ON A ROAD SEGMENT
     X                LU,
C                                OUTPUT PRINTING CODE
C
C          INTEGER
     X                ZNRD(11,80),
C                                          REFERENCES ZONE M, ROAD J
     X                POPRD(49),
C                                          POPULATION OF A ROAD ZNRD(M,J)
     X                LEN(49),
C                                          LENGTH OF ROAD ZNRD(M,J)
     X                RADIS(49),
C                                          RADIAL DISTANCE OF ZNRD(M,J)
     X                POPRAD(21),
C                                          POPULATION BY RADIAL DISTANCE
     X                NLANES(49),
C                                          NUMBER OF LANES ON ZNRD(M,J)
     X                NRSEC(49),
C                                          0 OR ROAD# INTERSECTING WITH ZNRD
     X                NOMVEL(49),
C                                          NOMINAL VELOCITY OF ZNRD(M,J)
     X                VEL(49),
C                                          ACTUAL VELOCITY OF TRAVEL ON ROAD
     X                VMOTO(49),
C                                          NUMBER OF MOVING VEHICLES ON ROAD
     X                LDT(49),
C                                          FLAGS LOADING FOR EACH DELT
     X                NRDS(11),
C                                          NUMBER OF ROADS IN A ZONE
     X                QFL(49),
C                                          FLAGS BACK UP QUEUE FOR EACH ROAD
     X                LINK(49),
C                                          NEXT ROAD BEYOND ZNRD(M,J) IN PATH
     X                RANP(800),
C                                          USED TO RELIST VEH FOR IRND SELECT
     X                QROAD(49),
C                                          REFERS TO A SPECIFIC ROAD'S QUEUE
     X                NRAN(800),
C                                          NUMBER OF VEHICLES IN RANDOM QUEUE
     X                FLRAN(49),
C                                          FLAGS THAT NRAN EXISTS (.NE.0)
     X                NLOD(800),
C                                          NUMBER OF VEHICLES IN LOADING QUEUE
     X                FLLOD(49),
C                                          FLAGS THAT NLOD EXISTS (.NE.0)
     X                NBAC(800),
C                                          NUMBER OF VEHICLES IN BACK UP QUEUE
     X                FLBAC(49),
C                                          FLAGS NBAC EXISTS (.NE.0)
     X                NTOT(800),
C                                          NUMBER OF VEHS IN LOAD & BACK QUEUE
     X                FLTOT(49),
C                                          FLAGS NTOT EXISTS (.NE.0)
     X                NAME(7),
C                                          OUTPUT FILE
```

```
      X                  IFILE(30)
C                                         OUTPUT FILE COMMENT
C
C     BEGIN PROGRAM.
      WRITE(1,10)
 10      FORMAT(" *THE COMPUTER EVACUATION MODEL HAS BEGUN*")
C
C     OPEN DATA FILE.
      OPEN(02,FILE='&TREE',IOSTAT=IERR,ERR=575)
C
C     OPEN OUTPUT FILE.
      WRITE (1,'(" ENTER A SIX CHARACTER FILE NAME: _")')
      READ (1,'(3A2)')NAME(1),NAME(2),NAME(3)
      NAME(4)=2H::
      NAME(5)=2H44
      NAME(6)=2H::
      NAME(7)=2H-1
C
      OPEN(3,FILE=NAME,IOSTAT=IERR,ERR=580,STATUS='NE')
      WRITE(1,'(" GIVE A 60 CHARACTER FILE DESCRIPTION")')
      READ(1,'(30A2)') IFILE
      WRITE(3,'(30A2)') IFILE
C
C     READ IN INFORMATION CONCERNING TIME, POPULATION, AND OUTPUT.
      READ(02,15) LU,DELT,TYP,FRACT,MAXDEP,POPVEH,LGCODE,FLORAT,MINSPD
 15      FORMAT(I1,I4,I3,F4.2,I5,I2,I2,I5,I3)
C
C     PRINT HEADINGS
      WRITE(LU,20)  LGCODE
 20      FORMAT(//,I2,14X,"CLEAR",10X,"MOELLER",10X,"CLEAR",10X,
      X          "BATTELLE",10X,"CLEAR",10X,"MOELLER",10X,"CLEAR")
C
C     WRITE INFORMATION CONCERNING TIME, POPULATION, AND OUTPUT.
         WRITE(LU,25)  LU,DELT,TYP,FRACT,MAXDEP,POPVEH,LGCODE,FLORAT,
      X          MINSPD
 25         FORMAT(//," LU= ",I1," DELT= ",I4," TYP= ",I3,
      X               " FRACT= ",F4.2," MAXDEP= ",I5," POPVEH= ",I2,
      X               " LGCODE= ",I2," FLORAT= ",I5," MINSPD= ",I3)
C
C     DETERMINE FREFLO FROM FLORAT.
      FREFLO=FLOAT(FLORAT)/(3600.0*FLOAT(LGCODE))
C
C     ADJUST POPVEH TO FIT RANDOM SAMPLE OR LARGE CODE.
      POPVEH=POPVEH*LGCODE
C
C     DETERMINE EFFECTIVE VEHICLE LENGTH AND FIT TO RANDOM SAMPLE.
C     NOTE:  THERE ARE 1609.35 METERS IN ONE MILE.
      EVL=(((1609.35*FLOAT(MINSPD))*FLOAT(LGCODE))/FLOAT(FLORAT))
C
C     READ INFORMATION ON ZONES.
      READ(02,30) ZTWO,ZFIV,ZTEN,ZEPZ,ISTG,EX,EPZ
 30      FORMAT(I3,I3,I3,I3,I3,I3,I3)
C
C     WRITE INFORMATION ON ZONES.
      WRITE(LU,35)  ZTWO,ZFIV,ZTEN,ZEPZ,ISTG,EX,EPZ
 35      FORMAT(" ZTWO= ",I3," ZFIV= ",I3," ZTEN= ",I3,
      X          " ZEPZ= ",I3," ISTG= ",I3," EX= ",I3," EPZ= ",I3)
C
C     ASSIGN EACH VEHICLE ON ALL ROADS A LOADING POSITION BY EQUALLY
C     DISTRIBUTING THE POPULATION IN GROUPS OF POP.VEH PER VEHICLE
```

```
C      ALONG THE ROADWAY SECTION PROPORTIONAL TO THEIR LENGTH.  THE
C      FIRST VEHICLE IS ASSIGNED TO THE BEGINNING OF THE ROADWAY AND
C      EACH VEHICLE THEREAFTER AN INCREMENTAL DISTANCE AWAY.
C
C      PROCESS EACH ROAD IN ALL ZONES OF THE EPZ.
C
       M=0
  40   IF (M .GT. ZEPZ) GO TO 120
          M=M+1
          J=0
          READ(02,45) POPZN,NRDS(M),LENRDS
  45         FORMAT(F10.0,I10,F10.0)
C
C      WRITE ZONE INFORMATION.
       WRITE(LU,50)   M,POPZN,NRDS(M),LENRDS
  50      FORMAT(" ZONE: ",I2," POPZN= ",F10.0," NRDS= ",
      X          I10," LENRDS= ",F10.0)
C
  55      IF (J .EQ. NRDS(M)) GO TO 115
             J=J+1
             READ(02,60) ZNRD(M,J),LINK(ZNRD(M,J)),LEN(ZNRD(M,J)),
      X                  RADIS(ZNRD(M,J)),NOMVEL(ZNRD(M,J)),
      X                  NLANES(ZNRD(M,J)),NRSEC(ZNRD(M,J))
  60            FORMAT(I10,I10,I10,I10,I10,I10,I10)
C
       WRITE(LU,65)   ZNRD(M,J),LINK(ZNRD(M,J)),LEN(ZNRD(M,J)),
      X      RADIS(ZNRD(M,J)),NOMVEL(ZNRD(M,J)),
      X      NLANES(ZNRD(M,J)),NRSEC(ZNRD(M,J))
  65      FORMAT(" ZNRD: ",I10," LINK= ",I10," LEN= ",
      X          I10," RADIS= ",I10," NOMVEL= ",I10," NLANES= ",
      X          I10," NRSEC= ",I10)
C
C            CHANGE VELOCITY FROM MILES/HOUR TO METERS/SECOND.
             NOMVEL(ZNRD(M,J))=(FLOAT(NOMVEL(ZNRD(M,J))))* .447)
C
C            INITIALLY, THERE ARE NO TRAFFIC JAMS OR QUEUES ON THE
C            ROADS, SET FLAGS TO ZERO.
             QFL(ZNRD(M,J))=0
C
C            INITIALLY, NO ROADS HAVE BEEN LOADED. FLAG LDT KEEPS
C            RECORD OF THIS - (LDT=1:LOADED  LDT=0:NOT LOADED)
             LDT(ZNRD(M,J))=0
C
C            INITIALLY, VELOCITY OF TRAVEL ON ROAD IS
C            EQUAL TO THE ROAD'S NOMINAL VELOCITY.
             VEL(ZNRD(M,J))=NOMVEL(ZNRD(M,J))
C
C            INITIALIZE ARRAYS TO ZERO TO START.
             QROAD(ZNRD(M,J))=ZNRD(M,J)
             NRAN(ZNRD(M,J))=0
             FLRAN(ZNRD(M,J))=0
             NLOD(ZNRD(M,J))=0
             FLLOD(ZNRD(M,J))=0
             NBAC(ZNRD(M,J))=0
             FLBAC(ZNRD(M,J))=0
             NTOT(ZNRD(M,J))=0
             FLTOT(ZNRD(M,J))=0
C
C            CONDITION AVOIDS PROCESSING FINAL DUMMY LINK.
             IF (M .GT. ZEPZ) GO TO 120
```

```
C
C           CONDITION AVIODS DIVISION BY ZERO WHEN POPZN=0.
            IF (POPZN .EQ. 0) GO TO 110
C
            PERLEN=FLOAT(LEN(ZNRD(M,J)))/LENRDS
            POPRD(ZNRD(M,J))=PERLEN*POPZN
C
C           MAKE NRAN ROUNDUP BY ADDING POPVEH-1 TO POPULATION.
            NRAN(ZNRD(M,J))=(POPRD(ZNRD(M,J))+(POPVEH-1))/POPVEH
            POPRD(ZNRD(M,J))=NRAN(ZNRD(M,J))*POPVEH
            INCDIS=LEN(ZNRD(M,J))/NRAN(ZNRD(M,J))
C
C           WRITE(LU,70)  POPRD(ZNRD(M,J)),NRAN(ZNRD(M,J)),INCDIS
C70             FORMAT(" POPRD= ",I8," NRAN= ",I8," INCDIS= ",I8)
C
C           RANDOMLY ASSIGN THE NRAN VEHICLES A LOADING POSITION ON
C           ROADWAY ZNRD(M,J) AND PUT THEM IN A QUEUE QROAD(ZNRD(M,J))
            A=0
 75         IF (A .GE. NRAN(ZNRD(M,J))) GO TO 80
                A=A+1
                RANP(A)=A
                GO TO 75
 80         CONTINUE
C
            K=NRAN(ZNRD(M,J))
            N=0
 85         IF (N .GE. NRAN(ZNRD(M,J))) GO TO 110
                N=N+1
C
C               FLAG NRAN.
C               FLRAN(ZNRD(M,J))=1
C
C               RANDOMLY SELECT A NUMBER I FROM ZERO TO NRAN-1.
                A=IRND(K)
                A=A+1
                I=RANP(A)
                DISRAN(QROAD(ZNRD(M,J)),N)=LEN(ZNRD(M,J))-(INCDIS*(I-1))
C
C               INITIALLY, NO VEHICLES HAVE BEEN PROCESSED,
C               CONSEQUENTLY SET FLAG TO ZERO.
 90             ZNRDT(ZNRD(M,J),N)=0
C
C       *** CHECK ***
C       WRITE(LU,95)  NRAN(ZNRD(M,J)),K,A,DISRAN(QROAD(ZNRD(M,J)),N)
C95         FORMAT(" NRAN: ",I5," #LEFT= ",I5,
C    X          " RANDOM NUMBER: ",I5," DIST= ",I10)
C
C               REMOVE NUMBER I FROM BEING PROCESSED AGAIN BY
C               RELISTING REMAINING NUMBERS.
                B=A
 100            IF (B .EQ. K) GO TO 105
                    RANP(B)=RANP(B+1)
                    B=B+1
                    GO TO 100
 105            CONTINUE
C
                K=K-1
C
                GO TO 85
 110        CONTINUE
```

```
C
            GO TO 55
  115     CONTINUE
C
          GO TO 40
  120 CONTINUE
C
C     ADD INDEPENDENT SPECIAL TRAFFIC GENERATORS TO CORRESPONDING
C     ROADS.  THE ADDITIONAL VEHICLES WILL BE PUT ON THE END OF THE
C     EXISTING NRAN LIST.
  125 IF (ISTG .EQ. 0) GO TO 150
C
C         READ IN INDEPENDENT SPECIAL TRAFFIC GENERATOR INFORMATION.
          READ(02,130) ZNRD(M,J),LENSTG,POPSTG,PVSTG
  130        FORMAT(I10,I10,I10,I10)
C
C     WRITE INDEPENDENT SPECIAL TRAFFIC GENERATOR INFORMATION.
      WRITE(LU,135) ZNRD(M,J),LENSTG,POPSTG,PVSTG
  135     FORMAT(" **ISTG: ROAD= ",I10," LENSTG= ",I10," POPSTG= ",
     X            I10," PVSTG= ",I10)
C
C         DETERMINE AND ADD NUMBER OF VEHICLES TO NRAN LIST.
          A=(POPSTG+((PVSTG*LGCODE)-1))/(PVSTG*LGCODE)
          DO 145 B=(NRAN(ZNRD(M,J))+1),(NRAN(ZNRD(M,J))+A)
             DISRAN(QROAD(ZNRD(M,J)),B)=LENSTG
C
C     *** CHECK ***
C     WRITE(LU,140) ZNRD(M,J),A,B,LENSTG
C140      FORMAT(" ISTG: ROAD= ",I10," A= ",I4," B= ",I4,
C    X            " LENSTG= ",I10)
C
  145     CONTINUE
C
          NRAN(ZNRD(M,J))=NRAN(ZNRD(M,J))+A
          POPRD(ZNRD(M,J))=POPRD(ZNRD(M,J))+(A*POPVEH)
          ISTG=ISTG-1
          GO TO 125
  150 CONTINUE
C
C     INITTALIZE INTEGER INT USED TO INCREMENT TIME.
      INT=0
      TIME=0
      C=0
C
C     SAVE THE VALUE OF DELT IN SAVET BECAUSE DELT MAY BE REDUCED
C     BY THE AMOUNT OF TIME NECESSARY FOR A VEHICLE TO REACH THE
C     LINKING ROAD AT THE ROAD'S VELOCITY OF TRAVEL.  SAVET WILL
C     RESTORE DELT ORIGINAL VALUE AT THE END OF EACH VEHICLE LOOP.
      SAVET=DELT
C
C     PRINT INITIAL POPULATION STATISTICS.
      GO TO 360
C
C     MAIN LOOP - STOPPING CONDITION WHEN
C     POPULATION IS TOTALLY EVACUATED.
  155 IF (POPEPZ .EQ. 0) GO TO 575
C
C         INCREMENT TIME
          TIME=INT*DELT
C
```

```
C         EXECUTE THE EVACUATION MOVEMENT ONE ZONE, ONE ROAD, AND ONE
C         POPULATION GROUP IN A VEHICLE AT A TIME.
          M=0
 160      IF (M .EQ. ZEPZ) GO TO 340
             M=M+1
             J=0
C
 165         IF (J .EQ. NRDS(M)) GO TO 335
                J=J+1
C
C               LOAD THE LOADING QUEUE OF THE LINK OF ZNRD(M,J) IF
C               IT HAS NOT ALREADY BEEN LOADED FOR THIS DELT AND SET
C               UP A TOTAL LIST OF QUEUED VEHICLES BY COMBINING THE
C               LOADING QUEUE AND BACKUP QUEUE.
                IF (LDT(LINK(ZNRD(M,J))) .NE. 0) GO TO 185
C
C                  LOAD THE QUEUE ONLY IF THERE IS AN EVACUATING
C                  POPULATION SCHEDULED TO LEAVE DURING THIS DELT.
                   IF (TIME .GT. MAXDEP) GO TO 180
C
C      *** CHECK ***
C      WRITE(LU,170) TIME,ZNRD(M,J),LINK(ZNRD(M,J))
C170      FORMAT(" READY TO LOAD LINK:  TIME= ",I10,
C     X         " ROAD: ",I10," LINK= ",I10)
C
C                     USE SUBROUTINE LOAD
                      CALL LOAD(LINK(ZNRD(M,J)),LU,DELT,TIME,MAXDEP,
     X                         FRACT,POPVEH,QROAD(LINK(ZNRD(M,J))),
     X                         NRAN(LINK(ZNRD(M,J))),
     X                         FLRAN(LINK(ZNRD(M,J))),
     X                         NLOD(LINK(ZNRD(M,J))),
     X                         FLLOD(LINK(ZNRD(M,J))),
     X                         NBAC(LINK(ZNRD(M,J))),
     X                         FLBAC(LINK(ZNRD(M,J))),
     X                         NTOT(LINK(ZNRD(M,J))),
     X                         FLTOT(LINK(ZNRD(M,J))),
     X                         POPRD(LINK(ZNRD(M,J))))
C
C                     FLAG LINK AS HAVING BEEN LOADED FOR THIS DELT.
                      LDT(LINK(ZNRD(M,J)))=1
C
C      *** CHECK ***
C      WRITE(LU,175) LINK(ZNRD(M,J)),FLTOT(LINK(ZNRD(M,J)))
C175      FORMAT(" ROAD-L: ",I10," HAS BEEN LOADED."," FLTOT= ",I3)
C
 180               CONTINUE
C
                   B=LEN(LINK(ZNRD(M,J)))*NLANES(LINK(ZNRD(M,J)))
C
C                  IF THERE IS ROOM ON THE ROAD, PLACE VEHICLES ON THE
C                  ROADWAY LINK FROM THE TOTAL QUEUE LIST.  DELETE
C                  VEHICLES FROM QUEUES IF PLACED ON LINK'S LIST OF
C                  MOVING VEHICLES.  USE SUBROUTINE PLACE.
                   CALL PLACE(LINK(ZNRD(M,J)),LU,VMOTO(LINK(ZNRD(M,J)))
     X                       ,QROAD(LINK(ZNRD(M,J))),
     X                       NRAN(LINK(ZNRD(M,J))),
     X                       FLRAN(LINK(ZNRD(M,J))),
     X                       NLOD(LINK(ZNRD(M,J))),
     X                       FLLOD(LINK(ZNRD(M,J))),
     X                       NBAC(LINK(ZNRD(M,J))),
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```
      X                    FLBAC(LINK(ZNRD(M,J))),
      X                    NTOT(LINK(ZNRD(M,J))),
      X                    FLTOT(LINK(ZNRD(M,J))),
      X                    B,LEN(LINK(ZNRD(M,J))),EVL)
C
C           DETERMINE VELOCITY OF TRAVEL ON LINK.  USE
C           SUBROUTINE VELCP.
            CALL VELCP(LINK(ZNRD(M,J)),
      X                    NLANES(LINK(ZNRD(M,J))),
      X                    NOMVEL(LINK(ZNRD(M,J))),
      X                    VMOTO(LINK(ZNRD(M,J))),
      X                    VEL(LINK(ZNRD(M,J))),
      X                    LEN(LINK(ZNRD(M,J))),
      X                    FREFLO,MINSPD,LU)
C
  185     CONTINUE
C
C         LOAD THE LOADING QUEUE FOR ROAD ZNRD(M,J) IF IT HAS
C         NOT ALREADY BEEN LOADED FOR THIS DELT AND SET UP A
C         TOTAL LIST OF QUEUED VEHICLES BY COMBINING THE LOADING
C         QUEUE AND BACKUP QUEUE.
          IF (LDT(ZNRD(M,J)) .NE. 0) GO TO 195
C
C           LOAD THE QUEUE ONLY IF THERE IS AN EVACUATING
C           POPULATION SCHEDULED TO LEAVE DURING THIS DELT.
            IF (TIME .GT. MAXDEP) GO TO 190
C
C             USE SUBROUTINE LOAD
              CALL LOAD(ZNRD(M,J),LU,DELT,TIME,MAXDEP,FRACT,
      X                    POPVEH,QROAD(ZNRD(M,J)),
      X                    NRAN(ZNRD(M,J)),FLRAN(ZNRD(M,J)),
      X                    NLOD(ZNRD(M,J)),FLLOD(ZNRD(M,J)),
      X                    NBAC(ZNRD(M,J)),FLBAC(ZNRD(M,J)),
      X                    NTOT(ZNRD(M,J)),FLTOT(ZNRD(M,J)),
      X                    POPRD(ZNRD(M,J)))
C
C             FLAG ROAD AS HAVING BEEN LOADED FOR THIS DELT.
              LDT(ZNRD(M,J))=1
  190       CONTINUE
C
            B=LEN(ZNRD(M,J))*NLANES(ZNRD(M,J))
C
C           IF THERE IS ROOM ON THE ROAD, PLACE VEHICLES ONTO
C           ROADWAY FROM TOTAL QUEUE LIST.  DELETE VEHICLES
C           FROM QUEUES IF PLACED IN ROAD'S LIST OF MOVING
C           VEHICLES.  USE SUBROUTINE PLACE.
            CALL PLACE(ZNRD(M,J),LU,VMOTO(ZNRD(M,J)),
      X                    QROAD(ZNRD(M,J)),
      X                    NRAN(ZNRD(M,J)),FLRAN(ZNRD(M,J)),
      X                    NLOD(ZNRD(M,J)),FLLOD(ZNRD(M,J)),
      X                    NBAC(ZNRD(M,J)),FLBAC(ZNRD(M,J)),
      X                    NTOT(ZNRD(M,J)),FLTOT(ZNRD(M,J)),
      X                    B,LEN(ZNRD(M,J)),EVL)
C
C           DETERMINE VELOCITY OF TRAVEL ON ROAD.  USE
C           SUBROUTINE VELCP.
            CALL VELCP(ZNRD(M,J),NLANES(ZNRD(M,J)),
      X                    NOMVEL(ZNRD(M,J)),VMOTO(ZNRD(M,J)),
      X                    VEL(ZNRD(M,J)),LEN(ZNRD(M,J)),
      X                    FREFLO,MINSPD,LU)
```

```
C
  195         CONTINUE
C
C             CHECK IF ZNRD(M,J) INTERSECTS WITH ANY OTHER ROADS
C             AT ITS LINK.  IF SO, DETERMINE THE PERCENTAGE OF
C             GREEN LIGHT TIME, PERCP, GIVEN TO ZNRD(M,J) AND THE
C             CORRESPONDING NUMBER OF VEHICLES TO ADVANCE.
              IF (NRSEC(ZNRD(M,J)) .EQ. 0) GO TO 200
                 IF (ZNRDT(NRSEC(ZNRD(M,J)),1) .EQ. 0) GO TO 215
C
  200         CONTINUE
C
C                THERE IS NO INTERSECTING ROAD OR THE OTHER
C                INTERSECTING ROAD HAS ALREADY BEEN PROCESSED
C                AND USED ITS SHARE OF THE LINKS CAPACITY.
  205            PERAD=9999
                 GREEN=-9999
C
C      *** CHECK ***
C      WRITE(LU,210) ZNRD(M,J),NRSEC(ZNRD(M,J))
C210      FORMAT(" +INTERSECTION HAS A GREEN LIGHT ", "CONDITION FOR ROAD=
C    X         ",I4 " INTERSECTING WITH NRSEC= "I4)
C
                 GO TO 230
  215         CONTINUE
C
C             THERE IS AN INTERSECTING ROAD AND IT HAS NOT BEEN
C             PROCESSED FOR THIS DELT.  DETERMINE THE NUMBER OF
C             VEHICLES THAT COULD ADVANCE, PERAD, BY THE PERCENTAGE
C             OF VEHICLES IN MOTION ON THE TWO ROADS.
              IF ((VMOTO(NRSEC(ZNRD(M,J))) .GT. 0) .AND.
     X              (VMOTO(ZNRD(M,J)) .GT. 0)) GO TO 220
                 GO TO 205
  220         CONTINUE
C
C             DETERMINE CAPACITIES ON ROAD, INTERSECT, AND LINK.
              CAPVM=(FREFLO*FLOAT(NLANES(ZNRD(M,J)))*
     X              FLOAT(LEN(ZNRD(M,J))))/FLOAT(VEL(ZNRD(M,J)))
              CAPNR=(FREFLO*FLOAT(NLANES(NRSEC(ZNRD(M,J))))*
     X              FLOAT(LEN(NRSEC(ZNRD(M,J)))))/
     X              FLOAT(VEL(NRSEC(ZNRD(M,J))))
              CAPLK=(FREFLO*FLOAT(NLANES(LINK(ZNRD(M,J))))*
     X              FLOAT(LEN(LINK(ZNRD(M,J)))))/
     X              FLOAT(VEL(LINK(ZNRD(M,J))))
C
C             CALCULATE THE MOVING VEHICLE VERSUS CAPACITY
C             RELATIONSHIP FOR THE ROAD AND THE INTERSECTING ROAD
C             IN ORDER TO DETERMINE THE PERCENTAGE OF AVAILABLE
C             OPENINGS ASSIGNED TO THE ROAD'S MOVING VEHICLES.
              PERCP=(FLOAT(VMOTO(ZNRD(M,J)))/FLOAT(CAPVM))/
     X              ((FLOAT(VMOTO(NRSEC(ZNRD(M,J))))/FLOAT(CAPNR))+
     X              (FLOAT(VMOTO(ZNRD(M,J)))/FLOAT(CAPVM)))
C
C
C             DETERMINE NUMBER OF OPENINGS AVAILABLE ON LINK.
              PERAD=PERCP*(CAPLK-VMOTO(LINK(ZNRD(M,J))))
C
C             INITIALIZE NUMBER OF VEHICLES ADVANCING ON GREEN LIGHT.
              GREEN=1
C
```

```
C      *** CHECK ***
C      WRITE(LU,225) PERCP,CAPLK,PERAD,VMOTO(NRSEC(ZNRD(M,J))),
C     X      VMOTO(ZNRD(M,J)),VMOTO(LINK(ZNRD(M,J)))
C225       FORMAT(" +INTERSECTION: PERCP= ",F9.4," CAPLK= ",I5,
C     X          " PERAD= ",I5," VMOTO(NRSEC)= ",I5,
C     X          " VMOTO(ROAD)= ",I5," VMOTO(LINK)= ",I5)
C
  230             CONTINUE
C
C                 ADVANCE THE VEHICLES IN MOTION ON THE ROAD ZNRD(M,J)
C                 ACCORDING TO DELT AND THE VELOCITY OF TRAVEL ON THE
C                 ROAD.  IF A VEHICLE HAS SUFFICIENT TIME AND RATE TO
C                 ADVANCE TO THE NEXT LINKING ROAD, DETERMINE IF THE
C                 VEHICLE SHOULD BE PUT IN A QUEUE OR TRAVEL ON THE LINK.
                  N=0
  235             IF (N .EQ. VMOTO(ZNRD(M,J))) GO TO 330
                     N=N+1
C
C      *** CHECK ***
C      WRITE(LU,240) VMOTO(ZNRD(M,J)),DIST(ZNRD(M,J),N),
C     X      ZNRDT(ZNRD(M,J),N)
C240       FORMAT(" CAL DIST: VMOTO= ",I3," DIST= ",I10," ZNRDT= ",I2)
C
C                    CHECK IF VEHICLE HAS ALREADY BEEN PROCESSED FOR
C                    THIS DELT.  (ZNRDT=0:NO, =1:YES.)
                     IF (ZNRDT(ZNRD(M,J),N) .NE. 0) GO TO 325
C
C      *** CHECK ***
C      WRITE(LU,245) LINK(ZNRD(M,J)),LEN(LINK(ZNRD(M,J))),M,J,N
C245       FORMAT(" BEFORE-LINK=",I10," LEN=",I10," M=",I2,
C     X          " J=",I2," N=",I2)
C
C                       DETERMINE IF VEHICLE WILL GO BEYOND ROAD
C                       DURING THIS DELT.  (TIME=DISTANCE / RATE)
                        IF (DELT .LE. (FLOAT(DIST(ZNRD(M,J),N))/
      X                       FLOAT(VEL(ZNRD(M,J))))) GO TO 315
C
C      *** CHECK ***
C      WRITE(LU,250) LINK(ZNRD(M,J)),LEN(LINK(ZNRD(M,J)))
C250       FORMAT(" BEYOND-LINK=",I10," LEN=",I10)
C
                        A=(EVL*(FLOAT(VMOTO(LINK(ZNRD(M,J))))+1.))
                        B=FLOAT(NLANES(LINK(ZNRD(M,J))))*
      X                       FLOAT(LEN(LINK(ZNRD(M,J))))
C
C                          IF THE VEHICLE GOES BEYOND THE ROAD ZNRD(M,J),
C                          CHECK IF ANY ROADS LEADING INTO THE LINK ARE
C                          BACKED UP - IF A BACKUP QUEUE EXISTS OR IF
C                          THIS VEHICLE WILL CAUSE THE ROAD TO EXCEED
C                          CAPACITY.  AVERAGE VEHICLE LENGTH AT 15 MILES
C                          PER HOUR IS EQUAL TO 14.20 METERS.
                           IF ((FLBAC(LINK(ZNRD(M,J))) .EQ. 1) .OR.
      X                          (A .GT. B)) GO TO 255
                              GO TO 290
C
C                             THERE IS A BACKUP OR QUEUE. PUT THE
C                             VEHICLE AT THE END AN EXISTING QUEUE OR
C                             FORM A NEW ONE.  THIS SIMULATES A TRAFFIC
C                             JAM OR STOP AND GO TRAFFIC BY STACKING
C                             THE VEHICLES.
```

```
C
 255                       CONTINUE
C
C     *** CHECK ***
C     WRITE(LU,260) FLBAC(LINK(ZNRD(M,J))),A,B,GREEN,PERAD
C260     FORMAT(" FLBAC=ONE:",I2," ? OR LEN OF CARS=",I10,
C    X           " > LEN OF ROAD=",I10," OR GREEN=",I6," > PERAD=",I6)
C
C                          IF A ROAD HAS A FLAG THEN THE QUEUE
C                          ALREADY EXISTS.
                           IF (FLBAC(LINK(ZNRD(M,J))) .EQ. 0) GO TO 270
C
C     *** CHECK ***
C     WRITE(LU,265) LINK(ZNRD(M,J)),LEN(LINK(ZNRD(M,J)))
C265     FORMAT(" DECIDE-LINK=",I10," LEN=",I10)
C
C                             ADD VEHICLE TO THE END OF THE
C                             EXISTING BACKUP QUEUE.
                              NBAC(LINK(ZNRD(M,J)))=
     X                              NBAC(LINK(ZNRD(M,J)))+1
                              GO TO 275
 270                       CONTINUE
C
C                             START A QUEUE AS VEHICLES IN MOTION BE-
C                             GIN TO EXCEED ROAD'S SPACE LIMITATIONS.
                              NBAC(LINK(ZNRD(M,J)))=1
                              FLBAC(LINK(ZNRD(M,J)))=1
 275                       CONTINUE
C
C     *** CHECK ***
C     WRITE(LU,280) LINK(ZNRD(M,J)),LEN(LINK(ZNRD(M,J)))
C280     FORMAT(" BACKUP-LINK=",I10," LEN=",I10)
C
C                          SET VEHICLES DISTANCE IN BACKUP QUEUE.
                           DISBAC(QROAD(LINK(ZNRD(M,J))),NBAC(LINK(ZNRD
     X                           (M,J))))=LEN(LINK(ZNRD(M,J)))+2
C
C     *** CHECK ***
C     WRITE(LU,285) ZNRD(M,J),LINK(ZNRD(M,J))
C285     FORMAT(" ***** WARNING: VEHICLE FROM ROAD INTO ",
C    X           "BACKUP QUEUE! ***** ROAD=",I10," LINK=",I10)
C
                           GO TO 300
 290                    CONTINUE
C
C                       DETERMINE IF THIS VEHICLE SHOULD BE ADVANCED
C                       UNDER GREEN LIGHT CONDITIONS.
                        IF (GREEN .GT. PERAD) GO TO 255
                           GREEN=GREEN+1
C
C                       THE PATH INTO THE LINK IS CLEAR AND THE
C                       VEHICLE GOES BEYOND THE ROAD ONTO THE NEXT
C                       ROAD, ITS LINK.  DETERMINE DELT REMAINING.
                        DELT=DELT-(FLOAT(DIST(ZNRD(M,J),N)) /
     X                        FLOAT(VEL(ZNRD(M,J))))
C
C                       ADD THE NEW VEHICLE TO THE LINK'S LIST OF
C                       MOVING VEHICLES.
                        VMOTO(LINK(ZNRD(M,J)))=
     X                        VMOTO(LINK(ZNRD(M,J)))+1
```

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C
C                              I BECOMES NEXT MOVING VEHICLE IN LINK.
                                  I=VMOTO(LINK(ZNRD(M,J)))
C
C                              DETERMINE POSITION OF VEHICLE I ON LINK.
                               DIST(LINK(ZNRD(M,J)),I)=LEN(LINK(ZNRD(M,J)))-
     X                               (DELT*VEL(LINK(ZNRD(M,J))))
C
C                              FLAG THIS VEHICLE SO THAT IT WILL NOT BE
C                              PROCESSED AGAIN FOR THIS DELT.
                               ZNRDT(LINK(ZNRD(M,J)),I)=1
C
C      *** CHECK ***
C      WRITE(LU,295) DELT,DIST(LINK(ZNRD(M,J)),I)
C295       FORMAT(" CAL DISTANCE-VEH ONTO LINK! - DELT= ",I3,
C    X           " NEW DISTANCE FOR VEH ON LINK= ",I10)
C
C                              RETURN DELT TO ORIGINAL VALUE.
                               DELT=SAVET
C
  300                       CONTINUE
C
C                           SINCE THE VEHICLE PASSED BEYOND THE ROAD INTO
C                           ITS LINK, RELIST ALL OTHER MOVING VEHICLES ON THE
C                           ROAD SEQUENTIALLY.
                            A=N
  305                       IF (A .EQ. VMOTO(ZNRD(M,J))) GO TO 310
                               DIST(ZNRD(M,J),A)=DIST(ZNRD(M,J),A+1)
                               ZNRDT(ZNRD(M,J),A)=ZNRDT(ZNRD(M,J),A+1)
                               A=A+1
                               GO TO 305
  310                       CONTINUE
C
                            VMOTO(ZNRD(M,J))=VMOTO(ZNRD(M,J))-1
                            N=N-1
C
                            GO TO 325
  315                    CONTINUE
C
C                        THE MOVING VEHICLE STAYS WITHIN THE ROAD
C                        ZNRD(M,J) DURING DELT.  DETERMINE ITS NEW POSITION
C                        ON THE ROADWAY.
                         DIST(ZNRD(M,J),N)=DIST(ZNRD(M,J),N)-
     X                         (DELT*VEL(ZNRD(M,J)))
                         ZNRDT(ZNRD(M,J),N)=1
C
C      *** CHECK ***
C      WRITE(LU,320) DIST(ZNRD(M,J),N),VEL(ZNRD(M,J))
C320       FORMAT(" CAL DISTANCE-VEH STAYS ON ROAD- NEW DISTANCE= ",
C    X           ,I10," ROAD VELOCITY USED TO CAL WAS= ",I10)
C
  325                 CONTINUE
C
                      GO TO 235
  330              CONTINUE
C
C                  REEVALUATE VELOCITY OF TRAVEL ON ROAD ZNRD(M,J) USING THE
C                  SUBROUTINE VELCP.
                   CALL VELCP(ZNRD(M,J),NLANES(ZNRD(M,J)),NOMVEL(ZNRD(M,J)),
     X                        VMOTO(ZNRD(M,J)),VEL(ZNRD(M,J)),
```

```
     X                        LEN(ZNRD(M,J)),FREFLO,MINSPD,LU)
C
              GO TO 165
  335     CONTINUE
C
          GO TO 160
  340 CONTINUE
C
C     INITIALIZE FLAGS TO ZERO SINCE THIS DELT HAS BEEN COMPLETED.
      DO 355 M=1,ZEPZ
C
C         PULL LOADING FLAGS FROM ALL ROADS.
          DO 350 J=1,NRDS(M)
              LDT(ZNRD(M,J))=0
C
C             PULL PROCESS FLAGS FROM ALL VEHICLES.
              DO 345 N=1,VMOTO(ZNRD(M,J))
                  ZNRDT(ZNRD(M,J),N)=0
C
  345         CONTINUE
  350     CONTINUE
  355 CONTINUE
C
C     INCREMENT TIME USING INTEGER INT.
  360 INT=INT+1
      C=C+1
C
C     PRINT OUTPUT ONCE EVERY FIVE MINUTES.
      IF ((C .NE. TYP) .AND. (POPEPZ .NE. 0)) GO TO 570
          C=0
C
C     CLEAR DUMMY EXIT ROAD OF VEHICLES.
      VMOTO(EX)=0
C
C     CALCULATE TIME IN HOURS, MINUTES, AND SECONDS.
      K=TIME
      I=0
      B=0
C
  365 IF (K .LT. 3600) GO TO 370
          K=K-3600
          I=I+1
          GO TO 365
  370 CONTINUE
C
  375 IF (K .LT. 60) GO TO 380
          K=K-60
          B=B+1
          GO TO 375
  380 CONTINUE
C
C     PRINT INITIAL VEHICLE POPULATION.
      WRITE(LU,385) INTPOP
  385     FORMAT(///," THE INITIAL VEHICLE POPULATION WAS = ",I9)
C
C     PRINT PRESENT TIME.
      WRITE(LU,390) TIME,I,B,K
  390     FORMAT(" TOTAL TIME ELAPSED=",I7," SECONDS OR ",I2,
     X              " HOURS, ",I2," MINUTES, AND ",I2," SECONDS.")
C
```

```
C     INITIALIZE POPULATION BY RADIAL DISTANCE TO ZERO.
      DO 395 A=1,EPZ
         POPRAD(A)=0
 395  CONTINUE
C
C     PRINT POPULATION ON EACH ROAD SEGMENT IN THE ZTWO
C     NUMBER OF ZONES BETWEEN THE ORIGIN AND THE TWO MILE RADIUS
C     AND DETERMINE THE POPULATION IN TWO MILE RADIUS.
      POPTWO=0
      POPZN=0
      M=0
 400  IF (M .EQ. ZTWO) GO TO 425
         M=M+1
         J=0
C
 405     IF (J .EQ. NRDS(M)) GO TO 415
            J=J+1
            POP=(NRAN(ZNRD(M,J))+NLOD(ZNRD(M,J))+
     X           NBAC(ZNRD(M,J))+VMOTO(ZNRD(M,J)))
            IF (POP .EQ. 0) GO TO 405
               WRITE(LU,410) M,J,POP,NRAN(ZNRD(M,J)),NLOD(ZNRD(M,J)),
     X               NBAC(ZNRD(M,J)),VMOTO(ZNRD(M,J))
 410              FORMAT(" VEHICLE POPULATION OF ZONE=",I2," ROAD=",
     X                   I4," IS EQUAL TO ",I7,11X," QUEUES: NRAN= ",I4,
     X                   " NLOD= ",I4," NBAC= ",I4," VMOTO= ",I4)
               POPZN=POPZN+POP
               POPRAD(RADIS(ZNRD(M,J)))=POPRAD(RADIS(ZNRD(M,J)))+POP
            GO TO 405
 415     CONTINUE
C
         WRITE(LU,420) M,POPZN
 420        FORMAT(16X," THE VEHICLE POPULATION IN ZONE=",I2," IS ",F9.0)
         POPTWO=POPTWO+POPZN
         POPZN=0
         GO TO 400
 425  CONTINUE
C
      WRITE(LU,430) POPTWO
 430     FORMAT(9X," THE VEHICLE POPULATION IN THE TWO MILE RADIOS",
     X           " IS ",I9)
C
C     PRINT THE POPULATION OF EACH ROAD SEGMENT IN THE ZFIV
C     NUMBER OF ZONES BETWEEN THE TWO AND FIVE MILE RADIUS
C     AND DETERMINE THE POPULATION IN THE FIVE MILE RADIUS.
      POPFIV=POPTWO
 435  IF (M .EQ. ZFIV) GO TO 460
         M=M+1
         J=0
C
 440     IF (J .EQ. NRDS(M)) GO TO 450
            J=J+1
            POP=(NRAN(ZNRD(M,J))+NLOD(ZNRD(M,J))+
     X             NBAC(ZNRD(M,J))+VMOTO(ZNRD(M,J)))
            IF (POP .EQ. 0) GO TO 440
               WRITE(LU,445) M,J,POP,NRAN(ZNRD(M,J)),NLOD(ZNRD(M,J)),
     X               NBAC(ZNRD(M,J)),VMOTO(ZNRD(M,J))
 445              FORMAT(" VEHICLE POPULATION OF ZONE=",I2," ROAD=",
     X                   I4," IS EQUAL TO ",I7,11X," QUEUES: NRAN= ",I4,
     X                   " NLOD= ",I4," NBAC= ",I4," VMOTO= ",I4)
               POPZN=POPZN+POP
```

```
                  POPRAD(RADIS(ZNRD(M,J)))=POPRAD(RADIS(ZNRD(M,J)))+POP
               GO TO 440
 450        CONTINUE
C
            WRITE(LU,455) M,POPZN
 455           FORMAT(16X," THE VEHICLE POPULATION IN ZONE=",I2," IS ",F9.0)
            POPFIV=POPFIV+POPZN
            POPZN=0
            GO TO 435
 460     CONTINUE
C
         WRITE(LU,465) POPFIV
 465        FORMAT(8X," THE VEHICLE POPULATION IN THE FIVE MILE RADIUS",
     X            " IS ",I9)
C
C        PRINT POPULATION OF EACH ROAD SEGMENT IN THE ZTEN
C        ZONES BETWEEN THE FIVE AND TEN MILE RADIUS AND
C        DETERMINE THE POPULATION IN THE TEN MILE RADIUS.
         POPTEN=POPFIV
 470     IF (M .EQ. ZTEN) GO TO 495
            M=M+1
            J=0
C
 475        IF (J .EQ. NRDS(M)) GO TO 485
               J=J+1
               POP=(NRAN(ZNRD(M,J))+NLOD(ZNRD(M,J))+
     X               NBAC(ZNRD(M,J))+VMOTO(ZNRD(M,J)))
               IF (POP .EQ. 0) GO TO 475
                  WRITE(LU,480) M,J,POP,NRAN(ZNRD(M,J)),NLOD(ZNRD(M,J)),
     X                  NBAC(ZNRD(M,J)),VMOTO(ZNRD(M,J))
 480                 FORMAT(" VEHICLE POPULATION IN ZONE=",I2," ROAD=",I4,
     X                     " IS EQUAL TO ",I7,11X," QUEUES: NRAN= ",I4,
     X                     " NLOD= ",I4," NBAC= ",I4," VMOTO= ",I4)
               POPZN=POPZN+POP
               POPRAD(RADIS(ZNRD(M,J)))=POPRAD(RADIS(ZNRD(M,J)))+POP
               GO TO 475
 485        CONTINUE
C
            WRITE(LU,490) M,POPZN
 490           FORMAT(16X," THE VEHICLE POPULATION IN ZONE=",I2," IS ",F9.0)
            POPTEN=POPTEN+POPZN
            POPZN=0
            GO TO 470
 495     CONTINUE
C
         WRITE(LU,500) POPTEN
 500        FORMAT(6X," THE TOTAL VEHICLE POPULATION IN THE TEN MILE ",
     X            "RADIUS = ",I9)
C
C        PRINT POPULATION OF EACH ROAD SEGMENT IN THE ZEPZ
C        ZONES BETWEEN THE TEN MILE RADIUS AND THE BOUNDARIES
C        FOR THE ENTIRE EPZ AND DETERMINE POPULATION IN THE EPZ.
         POPEPZ=POPTEN
 505     IF (M .EQ. ZEPZ) GO TO 530
            M=M+1
            J=0
C
 510        IF (J .EQ. NRDS(M)) GO TO 520
               J=J+1
               POP=(NRAN(ZNRD(M,J))+NLOD(ZNRD(M,J))+
```

```
     X             NBAC(ZNRD(M,J))+VMOTO(ZNRD(M,J)))
            IF (POP .EQ. 0) GO TO 510
               WRITE(LU,515) M,J,POP,NRAN(ZNRD(M,J)),NLOD(ZNRD(M,J)),
     X                NBAC(ZNRD(M,J)),VMOTO(ZNRD(M,J))
  515             FORMAT(" VEHICLE POPULATION IN ZONE=",I2," ROAD=",I4,
     X                  " IS EQUAL TO ",I7,11X," QUEUES: NRAN= ",I4,
     X                  " NLOD= ",I4," NBAC= ",I4," VMOTO= ",I4)
            POPZN=POPZN+POP
            POPRAD(RADIS(ZNRD(M,J)))=POPRAD(RADIS(ZNRD(M,J)))+POP
            GO TO 510
  520    CONTINUE
C
         WRITE(LU,525) M,POPZN
  525       FORMAT(16X," THE VEHICLE POPULATION IN ZONE=",I2," IS ",F9.0)
         POPEPZ=POPEPZ+POPZN
         POPZN=0
         GO TO 505
  530 CONTINUE
C
      WRITE(LU,535) POPEPZ
  535    FORMAT(6X," THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=",
     X         I16)
C
         WRITE(LU,540) INT
  540       FORMAT(" ----------------------------------------------",
     X             "----------------------------------------------",
     X             "--------------------------",I4)
C
C     RECORD INITIAL POPULATION.
      IF (INT .EQ. 1) INTPOP=POPEPZ
C
C     PRINT POPULATION AS A FUNCTION OF RADIAL DISTANCE.
      WRITE(LU,545) I,B,K
  545    FORMAT(/," VEHICLE POPULATION AS A FUNCTION OF RADIAL ",
     X         "DISTANCE AT TIME:",I3," HOURS, ",I2," MINUTES, AND ",
     X         I2," SECONDS.")
C
      B=0
      DO 555 A=1,EPZ
         IF ((POPRAD(A) .EQ. 0) .AND. (B .EQ. 0)) GO TO 555
            B=1
         PERLEN=((FLOAT(POPRAD(A))/FLOAT(POPEPZ))*100.0)
         PERCP=((FLOAT(POPRAD(A))/FLOAT(INTPOP))*100.0)
         WRITE(LU,550) A-1,A,POPRAD(A),PERLEN,PERCP
  550       FORMAT(" RADIUS---",I2,"-TO-",I2,"---POPULATION= ",I9,
     X             "  *  THE % OF REMAINING VEHICLES=",F6.2," %   * ",
     X             " THE % OF INITIAL VEHICLES= ",F6.2," % ")
  555 CONTINUE
C
C     PRINT VEHICLES REMAINING AND NUMBER OF VEHICLES EXITED.
      A=INTPOP-POPTEN
      WRITE(LU,560) POPTEN,A
  560    FORMAT(" -------TOTAL VEHICLE POPULATION WITHIN TEN MILES= ",
     X         I9," ---VEHICLE POPULATION OUTSIDE TEN MILES= ",I9,
     X         " --------------------")
C
      A=INTPOP-POPEPZ
      PERCP=((FLOAT(POPEPZ)/FLOAT(INTPOP))*100.0)
      WRITE(LU,565) POPEPZ,A,PERCP
  565    FORMAT("VEHICLE POPULATION WITHIN EPZ= "I7," * ",
```

```
      X          "VEHICLE POPULATION OUTSIDE EPZ= ",I7," * ",
      X          "PERCENTAGE OF TOTAL WITHIN EPZ= ",F6.2,"%")
C
C     END OF MAIN LOOP
C
 570     CONTINUE
C
         GO TO 155
 575  CONTINUE
      WRITE(LU,'("1")')
      CLOSE(02)
      CLOSE(3,IOSTAT=IERR,ERR=580)
      STOP
 580  WRITE(LU,585) IERR
 585     FORMAT(3X,"OPEN FILE ERROR #",I6)
C     ****************************************************************
      END
$EMA(LCOM,0)
      SUBROUTINE LOAD(ROAD,LU,DELT,TIME,MAXDEP,FRACT,POPVEH,
      X                 QROAD,NRAN,FLRAN,NLOD,FLLOD,NBAC,FLBAC,
      X                 NTOT,FLTOT,POPRD)
C
C        AN INTERNAL PROCEDURE LOAD LOADS STATIONARY VEHICLES INTO
C        THE LOADING QUEUE FOR THE ROADWAY PARAMETERIZED.
C
C        DECLARATION OF VARIABLES.
C
            IMPLICIT INTEGER (D)
C
C           LABELLED COMMON:
C
            COMMON/LCOM/DIST(49,800),DISRAN(49,800),DISLOD(49,800),
      X                 DISBAC(49,800),DISTOT(49,800),ZNRDT(49,800)
C
            REAL        VEHLD(99)
C                                 NUMBER OF VEH LOADING IN THIS DELT
            REAL        FRACT
C                                 =FRACT
            INTEGER     A(99)
C                                 COUNTER FOR VEHICLES ORIGINAL POS.
            INTEGER     LU,
C                                 =LU
      X                 TIME,
C                                 =TIME
      X                 MAXDEP,
C                                 =MAXDEP
      X                 POPVEH,
C                                 =POPVEH
      X                 POPRD,
C                                 =POPRD(ROAD)
      X                 I,
C                                 REPRESENTS VEHICLE NUMBER
      X                 B,
C                                 SAVES NLOD
      X                 ROAD,
C                                 REPRESENTS ROAD PARAMETER EXCHANGED
      X                 QROAD,
C                                 =QROAD
      X                 NRAN,
C                                 =NRAN(ROAD)
```

```
      X                        FLRAN,
C                                        =FLRAN(ROAD)
      X                        NLOD,
C                                        =NLOD(ROAD)
      X                        FLLOD,
C                                        =FLLOD(ROAD)
      X                        NBAC,
C                                        =NBAC(ROAD)
      X                        NTOT,
C                                        =NTOT(ROAD)
      X                        FLTOT
C                                        =FLTOT(ROAD)
C
C      *** CHECK ***
C      WRITE(LU,590) TIME,ROAD,NLOD
C590       FORMAT(" LOAD: TIME= ",I7," ROAD= ",I7," NLOD=",I3)
C      WRITE(LU,595) FRACT,DELT,MAXDEP,POPRD,POPVEH
C595       FORMAT(" LOAD: FRACT= ",F4.2," DELT= ",I10,
C     X           " MAXDEP= ",I10," POPRD= ",I5," POPVEH= ",I4)
C
C         INITIALIZE VEHICLE LOADING ARRAY TO ZERO AT THE START.
          IF (TIME .NE. DELT) GO TO 600
             VEHLD(ROAD)=0.0
             A(ROAD)=0
 600      CONTINUE
C
C         DETERMINE THE PERCENTAGE OF THE POPULATION AND THE
C         CORRESPONDING NUMBER OF VEHICLES THAT SHOULD BE LOADED
C         DURING DELT ACCORDING TO THE LOADING FUNCTION.
          IF (((MAXDEP*0.5) .GE. TIME) .OR. (TIME .GT. (MAXDEP*0.75)))
      X         GO TO 610
             VEHLD(ROAD)=((((1.-FRACT)*FLOAT(DELT))/(FLOAT(MAXDEP)*
      X         .5))*(FLOAT(POPRD)/FLOAT(POPVEH)))+VEHLD(ROAD)
C
C      *** CHECK ***
C      WRITE(LU,470) VEHLD(ROAD)
C605       FORMAT(" LOAD * : VEHLD= ",F9.6)
C
 610      CONTINUE
C
          IF ((TIME .LE. (MAXDEP*.25)) .OR. ((TIME .GT. (MAXDEP
      X   *.5)) .AND. (TIME .LE. (MAXDEP*.75)))) GO TO 620
             VEHLD(ROAD)=((((1.-FRACT)*FLOAT(DELT))/FLOAT(MAXDEP))*
      X         (FLOAT(POPRD)/FLOAT(POPVEH)))+VEHLD(ROAD)
C
C      *** CHECK ***
C      WRITE(LU,615) VEHLD(ROAD)
C615       FORMAT(" LOAD ** : VEHLD= ",F9.6)
C
 620      CONTINUE
C
          IF (TIME .GT. (MAXDEP*.25)) GO TO 630
             VEHLD(ROAD)=(((FRACT*FLOAT(DELT))/(.25*
      X            FLOAT(MAXDEP)))*(FLOAT(POPRD)/FLOAT(POPVEH)))+
      X            VEHLD(ROAD)
C
C      *** CHECK ***
C      WRITE(LU,625) VEHLD(ROAD)
C625       FORMAT(" LOAD *** : VEHLD= ",F9.6)
C
```

```
 630      CONTINUE
C
C       *** CHECK ***
C       WRITE(LU,635) ROAD,POPRD,VEHLD(ROAD)
C635      FORMAT(" LOAD#1:ROAD: ",I5," POPRD= ",I7," %= ",F9.6)
C
C         IN AN EFFORT TO AVOID ROUND-OFF ERROR, REDUCE REQUIREMENT
C         TO LOAD VEHICLE WHEN NRAN IS EQUAL TO THE LAST VEHICLE.
          IF ((NRAN .NE. 1) .OR. (TIME .NE. MAXDEP)) GO TO 640
             VEHLD(ROAD)=1.0
 640      CONTINUE
C
C         LOAD THE VEHICLES INTO THE LOADING QUEUE IN ORDER FROM
C         RANDOMLY ORDERED QUEUE NRAN FOR THIS DELT.
 645      IF (VEHLD(ROAD) .LT. 1.0) GO TO 680
C
             I=NLOD+1
             A(ROAD)=A(ROAD)+1
C
C       *** CHECK ***
C       WRITE(LU,655) A(ROAD),NRAN
C655      FORMAT(" LOAD:VEH INTO LOADING QUE: A= ",I2," NRAN= ",I3)
C
             IF (NRAN .EQ. 0) GO TO 675
                DISLOD(QROAD,I)=DISRAN(QROAD,A(ROAD))
C
C       *** CHECK ***
C       WRITE(LU,660) I,DISLOD(QROAD,I)
C660      FORMAT(" LOADR:NRAN:VEH= ",I3," :DIST= ",I10)
C
                NRAN=NRAN-1
                NLOD=NLOD+1
C
C               IF THE VEHICLE IS THE FIRST ELEMENT IN THE
C               ROAD'S LOADING QUEUE, PUT A FLAG ON THE QUEUE.
                IF (NLOD .GT. 1) GO TO 665
                   FLLOD=1
 665            CONTINUE
C
C       ***CHECK***
C       WRITE(LU,670) FLLOD
C670      FORMAT(" LOADR: FLLOD= ",I2)
C
C               REDUCE VEHLD(ROAD) BY THE VEHICLE LOADED.
                VEHLD(ROAD)=VEHLD(ROAD)-1.0
C
             GO TO 630
C
 675         CONTINUE
 680      CONTINUE
          RETURN
C         *****************************************************************
          END
$EMA(LCOM,0)
        SUBROUTINE PLACE(ROAD,LU,VMOTO,QROAD,NRAN,FLRAN,NLOD,FLLOD,
      X                     NBAC,FLBAC,NTOT,FLTOT,NLLEN,LEN,EVL)
C
C         AN INTERNAL PROCEDURE PLACE WILL DETERMINE IF A ROAD'S
C         CAPACITY IS FULL AND SET VEHICLES IN MOTION FROM THE COMBINED
C         LIST OF NTOT.
```

```
      C
      C        DECLARATION OF VARIABLES.
      C
                  IMPLICIT INTEGER (D)
      C
                  LABELLED COMMON:
      C
                  COMMON/LCOM/DIST(49,800),DISRAN(49,800),DISLOD(49,800),
           X                     DISBAC(49,800),DISTOT(49,800),ZNRDT(49,800)
      C
                  REAL        EVL
      C                                       EFFECTIVE VEHICLE LENGTH
                  INTEGER     LU,
           X                  A,
           X                  B,
           X                  C,
           X                  I,
           X                  ROAD,
      C                                       REPRESENTS ROAD PARAMETER
           X                  NLLEN,
      C                                       REPRESENTS ROAD LENGTH * NLANES
           X                  LEN,
      C                                       REPRESENTS ROAD LENGTH
           X                  VMOTO,
      C                                       REPRESENTS VMOTO(ROAD)
           X                  QROAD,
      C                                       REPRESENTS ROAD FOR QUEUE
           X                  NRAN,
           X                  FLRAN,
           X                  NLOD,
           X                  FLLOD,
           X                  NBAC,
           X                  FLBAC,
           X                  NTOT,
           X                  FLTOT
      C
      C        SET UP A TOTAL LIST OF QUEUED VEHICLES TO BE PUT
      C        ON THE ROAD BY COMBINING LOAD ON TOP OF BACKUP QUEUE.
               NTOT=0
               IF (FLLOD .EQ. 0) GO TO 705
                  I=0
       685        IF (I .EQ. NLOD) GO TO 695
                     I=I+1
                     NTOT=NTOT+1
                     DISTUT(QROAD,NTOT)=DISLOD(QROAD,I)
      C
      C     *** CHECK ***
      C     WRITE(LU,690) NTOT,DISTOT(QROAD,NTOT)
      C690     FORMAT(" PLACE:NTOT:VEH= ",I3," :DIST= ",I10)
      C
                     GO TO 685
       695        CONTINUE
      C
                  FLTOT=1
      C
      C     *** CHECK ***
      C     WRITE(LU,700) FLLOD,FLBAC,FLTOT
      C700     FORMAT(" PLACE: FLLOD= ",I2," FLBAC= ",I2,
      C    X          " FLTOT= ",I2)
      C
```

```
            GO TO 710
  705     CONTINUE
C
            FLTOT=0
  710     CONTINUE
C
          IF (FLBAC .EQ. 0) GO TO 745
            I=0
C
  715       IF (I .EQ. NBAC) GO TO 725
              I=I+1
              NTOT=NTOT+1
              DISTOT(QROAD,NTOT)=DISBAC(QROAD,I)
C
C      *** CHECK ***
C      WRITE(LU,720) DISBAC(QROAD,I)
C720      FORMAT(" PLACE:NBAC:DIST= ",I7)
C
              GO TO 715
  725       CONTINUE
C
            FLTOT=1
C
C      *** CHECK ***
C      WRITE(LU,730) FLBAC,FLLOD,FLTOT
C730         FORMAT(" PLACE:FLBAC= ",I2," FLLOD= ",I2," FLTOT= ",I2)
C
C
            IF (FLLOD .EQ. 1) GO TO 735
              NTOT=NBAC
              GO TO 740
  735       CONTINUE
C
              NTOT=NLOD+NBAC
  740       CONTINUE
C
  745     CONTINUE
C
C         CHECK THE CAPACITY OF THE LENGTH OF THE ROAD.  AS LONG AS
C         THERE IS ROOM ON THE ROAD AND VEHICLES IN NTOT, THEY WILL
C         BE PLACED ON THE ROAD.  IF THE LENGTH OF ALL VEHICLES ON THE
C         ROAD PLUS THE NEW ONE IS LESS THAN THE LENGTH OF THE ROAD
C         THEN IT WILL BE ADDED.  AT 15 MILES PER HOUR AN AVERAGE
C         VEHICLE OCCUPIES 14.20 METERS.
C
C      *** CHECK ***
C      WRITE(LU,750) ROAD,FLTOT
C750      FORMAT(" PLACE: ROAD= ",I7," FLTOT= ",I3)
C
          A=0
          B=0
  755     IF ((FLTOT .EQ. 0) .OR. (B .EQ. -1)) GO TO 805
            IF ((EVL*(VMOTO+1)) .GT. NLLEN) GO TO 780
              VMOTO=VMOTO+1
              A=A+1
C
              IF (DISTOT(QROAD,A) .GT. LEN) GO TO 760
                DIST(ROAD,VMOTO)=DIST(QROAD,A)
                ZNRDT(ROAD,VMOTO)=0
                GO TO 765
```

```
 760          CONTINUE
C
                DIST(ROAD,VMOTO)=LEN
                ZNRDT(ROAD,VMOTO)=1
 765          CONTINUE
C
C     *** CHECK ***
C     WRITE(LU,770) VMOTO,DISTOT(QROAD,A)
C770     FORMAT(" PLACE#2: VMOTO= ",I5," DIST OUT = "I7)
C
              NTOT=NTOT-1
C
              IF (NTOT .GT. 0) GO TO 775
                FLTOT=0
                NTOT=0
                FLLOD=0
                NLOD=0
                FLBAC=0
                NBAC=0
                RETURN
 775          CONTINUE
C
              GO TO 800
 780        CONTINUE
C
C             WRITE(LU,785) ROAD
C785            FORMAT(" *****WARNING:  ROAD=",I4,
C    X                " HAS EXCEEDED CAPACITY.*****")
C
              DO 795 C=A+1,NTOT
                IF (DIST(QROAD,C) .LE. LEN) GO TO 790
                  DIST(QROAD,C)=LEN
 790            CONTINUE
 795          CONTINUE
C
              B=-1
 800        CONTINUE
C
            GO TO 755
 805      CONTINUE
C
C         DELETE PLACED VEHICLES FROM THE QUEUES THEY WERE ORIGINALLY
C         IN. (EITHER NLOD OR NBAC.)
          IF (A .EQ. 0) GO TO 845
            B=NLOD-A
C
            IF (B .NE. 0) GO TO 810
              FLLOD=0
              NLOD=0
              GO TO 835
 810        CONTINUE
C
            IF (B .GT. 0) GO TO 815
              FLLOD=0
              NLOD=0
              NBAC=NBAC+B
              GO TO 840
 815        CONTINUE
C
            IF (B .LT. 0) GO TO 830
```

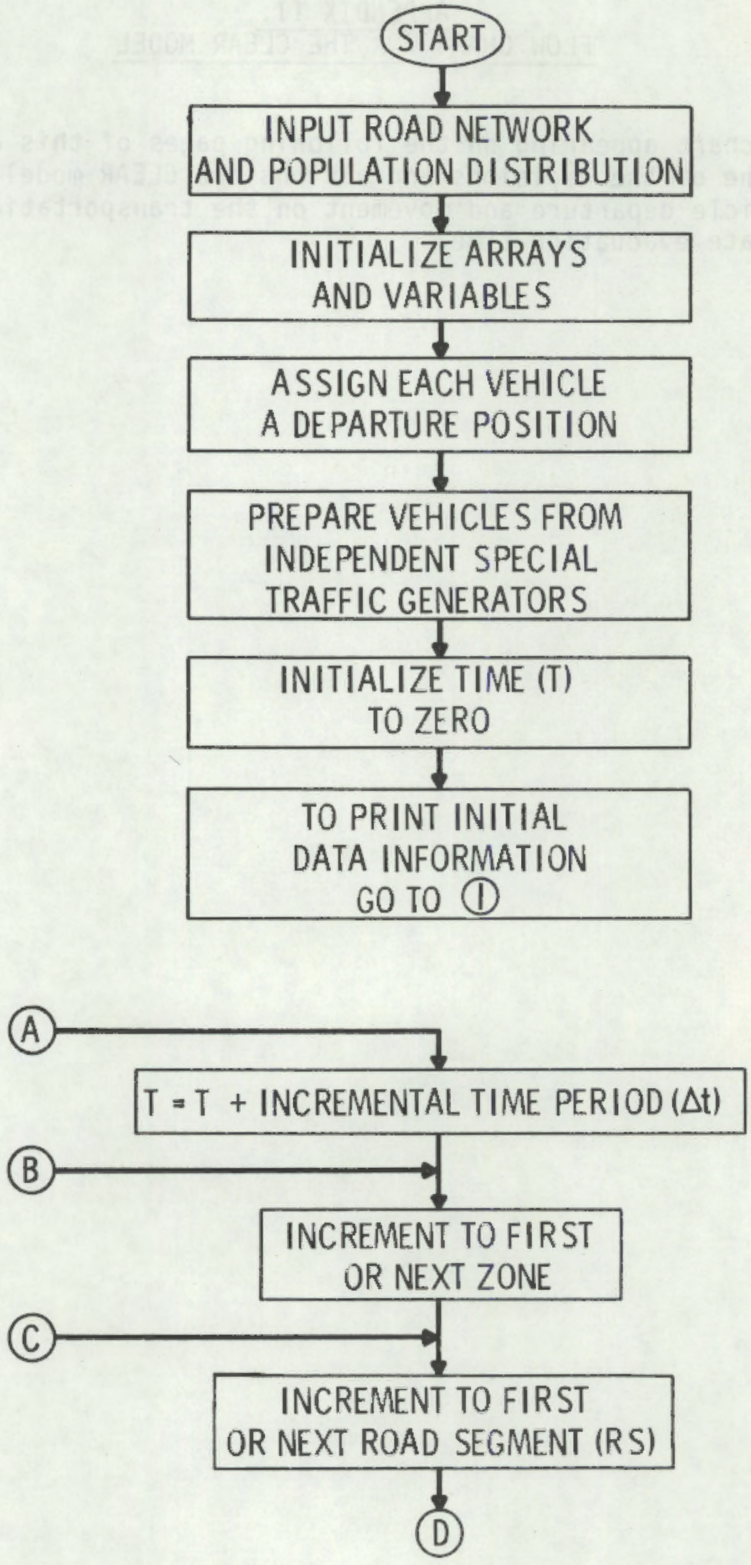
```
          I=0
  820     IF (I .GE. (NLOD-A)) GO TO 825
              DISLOD(QROAD,NLOD-A)=DISLOD(QROAD,NLOD)
              NLOD=NLOD-1
              GO TO 820
  825     CONTINUE
          NLOD=B
C
  830   CONTINUE
C
  835   CONTINUE
C
  840   CONTINUE
C
  845 CONTINUE
C
      RETURN
C
C     ******************************************************************
      END
      SUBROUTINE VELCP(ROAD,NLANES,NMVEL,
     X             VVMOTO,VVEL,VLEN,FREFLO,MINSPD,LU)
C
C     AN INTERNAL PROCEDURE VELCP DETERMINES THE VELOCITY OF
C     TRAVEL ON A ROADWAY ACCORDING TO THE CAPACITY FUNCTION.
C     THEREFORE, CHECK IF THE NUMBER OF VEHICLES LOADING WILL
C     INCREASE THE ROAD'S VEHICLE POPULATION BEYOND THE ROAD'S
C     NOMINAL LOADING CAPACITY.  THE MINIMUM VELOCITY SET FOR
C     A ROAD IS STOP AND GO TRAFFIC AT MINSPD (MILES PER HOUR).
C     MINVEL IS EQUAL TO MINSPD IN METERS PER SECOND.
C
C     DECLARATION OF VARIABLES.
C
            REAL     MM
C                              SLOPE OF THE VELOCITY CAPACITY FUNCTION
            REAL     Z
C                              FRACTION OF MAXIMUM CAPACITY PRESENT ON
C                              ROAD SEGMENT WHEN VELOCITY IS MINIMUM
            REAL     FREFLO
C                              IS FREE FLOW RATE IN AUTOS/LANE-SECOND
            INTEGER X,
C                              VALUE OF X COORDINATE OF FUNCTION
     X               B,
C                              Y-INTERCEPT OF FUNCTIONS SLOPING LINE
     X               ROAD,
C                              REPRESENTS ROAD PARAMETER
     X               NLANES,
C                              REPRESENTS NUMBER OF LANES ON ROADWAY
     X               NMVEL,
C                              REPRESENTS NOMINAL VELOCITY PARAMETER
     X               VVMOTO,
C                              REPRESENTS VMOTO PARAMETER
     X               VVEL,
C                              REPRESENTS VELOCITY PARAMETER
     X               VLEN,
C                              REPRESENTS ROAD LENGTH PARAMETER
     X               V,
C                              IS MIN. VEL  IN MI/HR = 15.0
     X               NMCAP,
C                              ROAD'S CAPACITY AT FREE FLOW VELOCITY
```

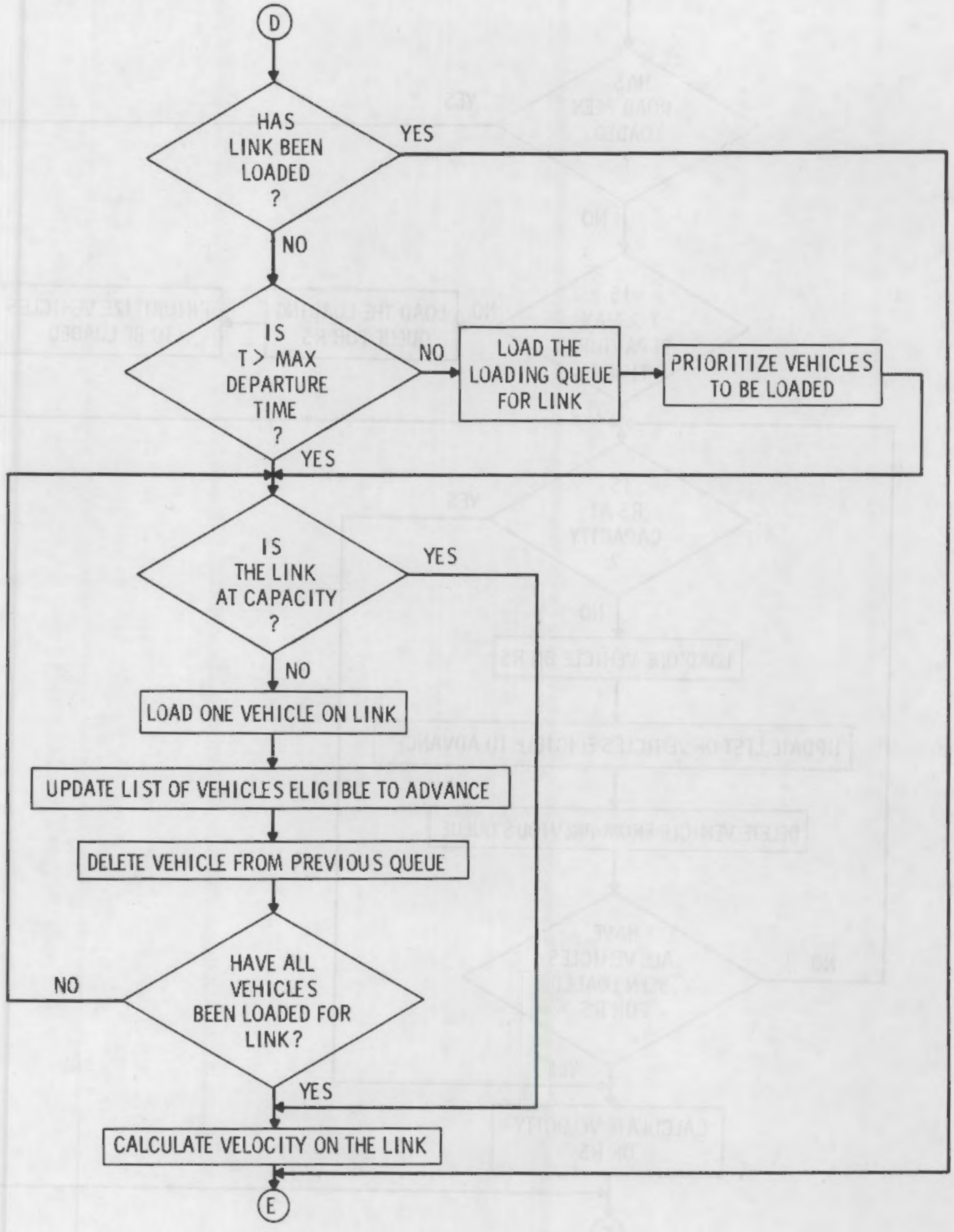
```
      X              MXCAP,
C                                 ROAD'S CAPACITY AT MINIMUM VELOCITY
      X              MINSPD,
C                                 MIN. SPEED IN MILES/HOUR
      X              MINVEL,
C                                 MIN. VEL. IN METERS/SECOND
      X              LU
C                                 OUTPUT FORMAT
C
C         FIND THE ROAD'S VELOCITY BY THE LINEAR FUNCTION Y=(M*X)+B.
C         IF THE NUMBER OF VEHICLES IN MOTION AND LOADING FOR THIS
C         DELT DOES NOT EXCEED THE ROAD'S NOMINAL CAPACITY, THEN THE
C         ROAD'S VELOCITY REMAINS THE NOMINAL VELOCITY.
C
          MINVEL=(FLOAT(MINSPD)*.447)
C
C       *** CHECK ***
C       WRITE(LU,850) ROAD,VVMOTO,NLANES,FREFLO,VLEN,MINVEL
C850      FORMAT(" VELCP: ROAD= ",I7," VVMOTO= ",I7," NLANES= ",
C     X         I7," FREFLO= ",F9.3," VLEN= ",I9," MINVEL= ",I5)
C
C         DETERMINE CAPACITY FROM MAX. VELOCITY AND MIN. VEL. SLOPE.
          NMCAP=(FREFLO*FLOAT(NLANES)*FLOAT(VLEN))/FLOAT(NMVEL)
          MXCAP=(FREFLO*FLOAT(NLANES)*FLOAT(VLEN))/FLOAT(MINVEL)
C
C       *** CHECK ***
C       WRITE(LU,855) FREFLO,MXCAP,NMCAP
C855      FORMAT(" VELCP: FREFLO= ",F9.7," NMCAP= ",I9," MXCAP= ",I9)
C
C         DETERMINE PERCENTAGE OF MAXIMUM CAPACITY PRESENT ON ROAD
C         SEGMENT WHEN SPEED OF TRAVEL IS MINIMUM VELOCITY.
          IF (NMVEL .GE. 30) GO TO 860
              Z= 0.7
              GO TO 875
C
 860      IF (NMVEL .GE. 40) GO TO 865
              Z= 0.6
              GO TO 875
C
 865      IF (NMVEL .GE. 50) GO TO 870
              Z= 0.5
              GO TO 875
C
 870      Z= 0.4
C
C         TEST IF NUMBER OF VEHICLES ON ROAD SEGMENT
C         IS LESS THAN NOMINAL CAPACITY.
 875      IF (VVMOTO .LE. (Z*NMCAP)) GO TO 895
C
C       ***CHECK***
C       WRITE(LU,880) VVMOTO,NMCAP,ROAD
C880      FORMAT(" *** NOTICE: VEHICLES= ",I10," HAVE EXCEEDED",
C     X         " Z* CAPACITY= ",I10," ON ROAD= ",I4)
C
C              MM=NOMINAL VELOCITY OF THE ROAD DIVIDED BY ITS NOMINAL
C              CAPACITY.
               MM=(FLOAT(MINVEL)-FLOAT(NMVEL))/
      X            (FLOAT(MXCAP)-(Z*FLOAT(NMCAP)))
C
C              X=NUMBER OF VEHICLES IN MOTION PLUS THE NUMBER LOADING
```

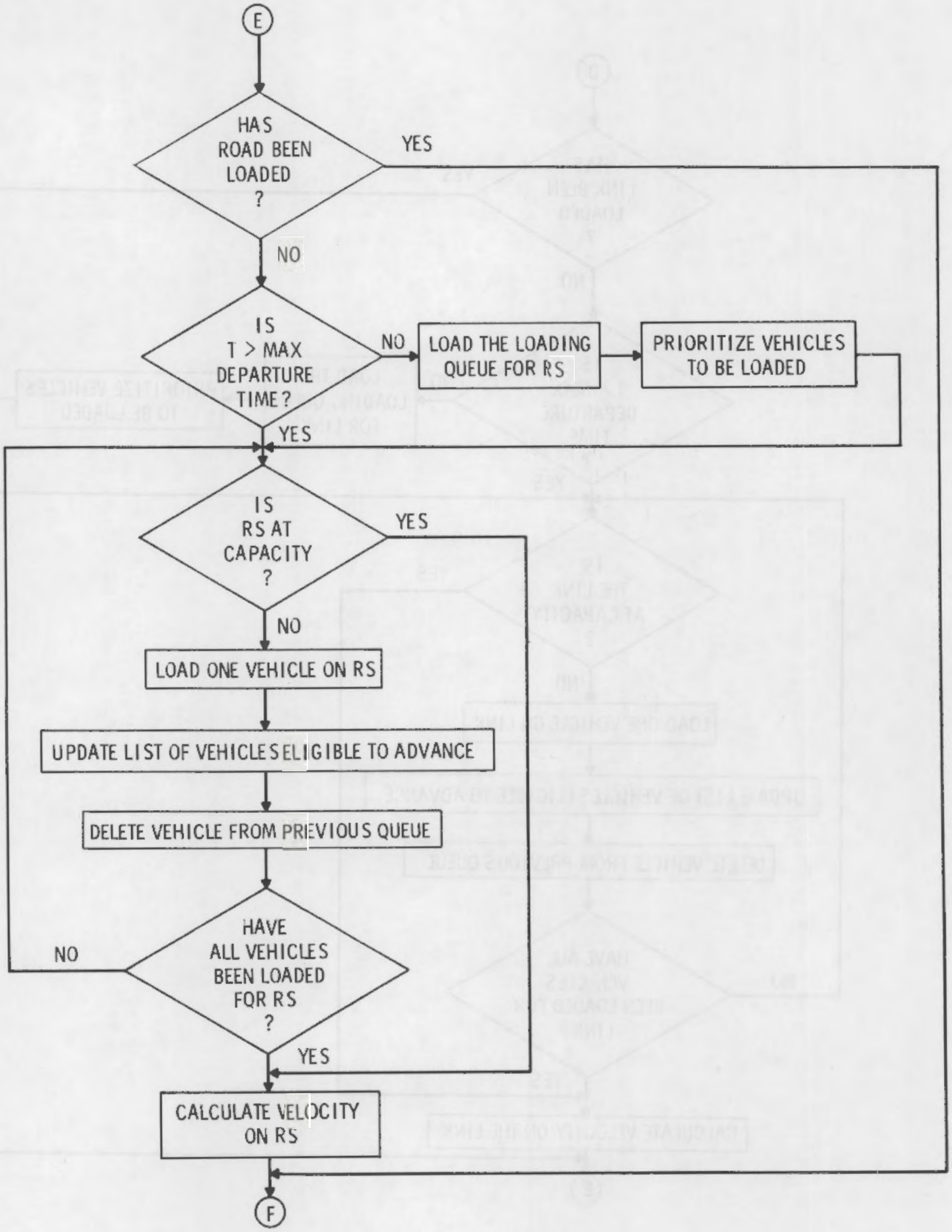
```
C             MINUS THE ROAD'S NOMINAL CAPACITY.
              X=(VVMOTO-(Z*NMCAP))
C
C             B=THE ROAD'S NOMINAL VELOCITY.
              B=NMVEL
C
C             DETERMINE NEW VELOCITY OF TRAVEL
              VVEL=(MM*X)+B
C
C       *** CHECK ***
C       WRITE(LU,885) VVEL
C885        FORMAT(" VFLCP: VVEL= ",I7)
C
C             BE SURE MIN VALUE OF ROAD'S VELOCITY IS MINVEL.
              IF (VVEL .GE. MINVEL) GO TO 890
                 VVEL=MINVEL
  890         CONTINUE
C
  895       CONTINUE
C
C       *** CHECK ***
C       WRITE(LU,900) VVEL
C900        FORMAT(" VFLCP:: VVEL= ",I7)
C
            RETURN
C
            END
```

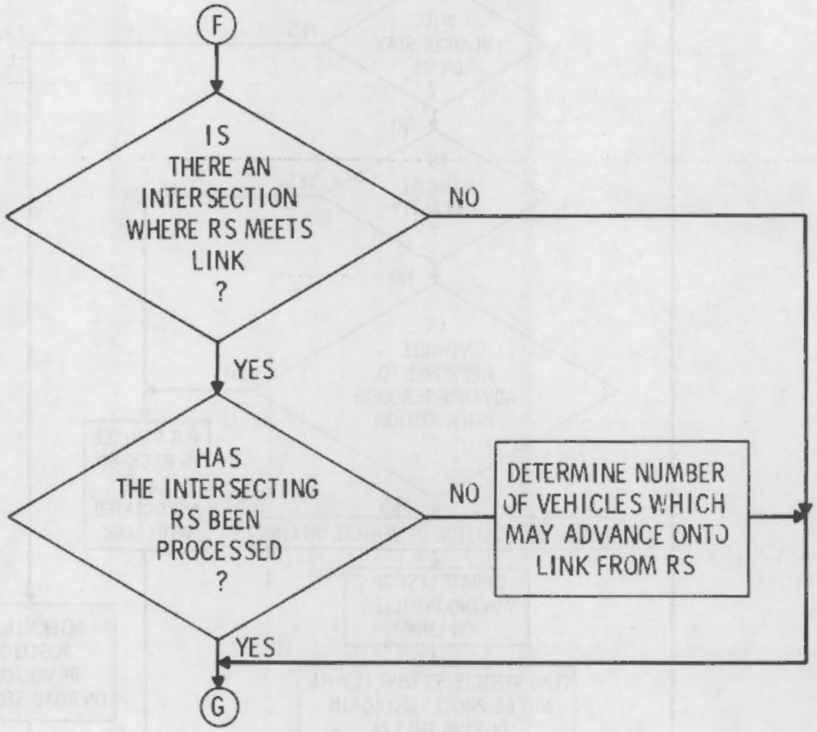
APPENDIX II:
FLOW CHART FOR THE CLEAR MODEL

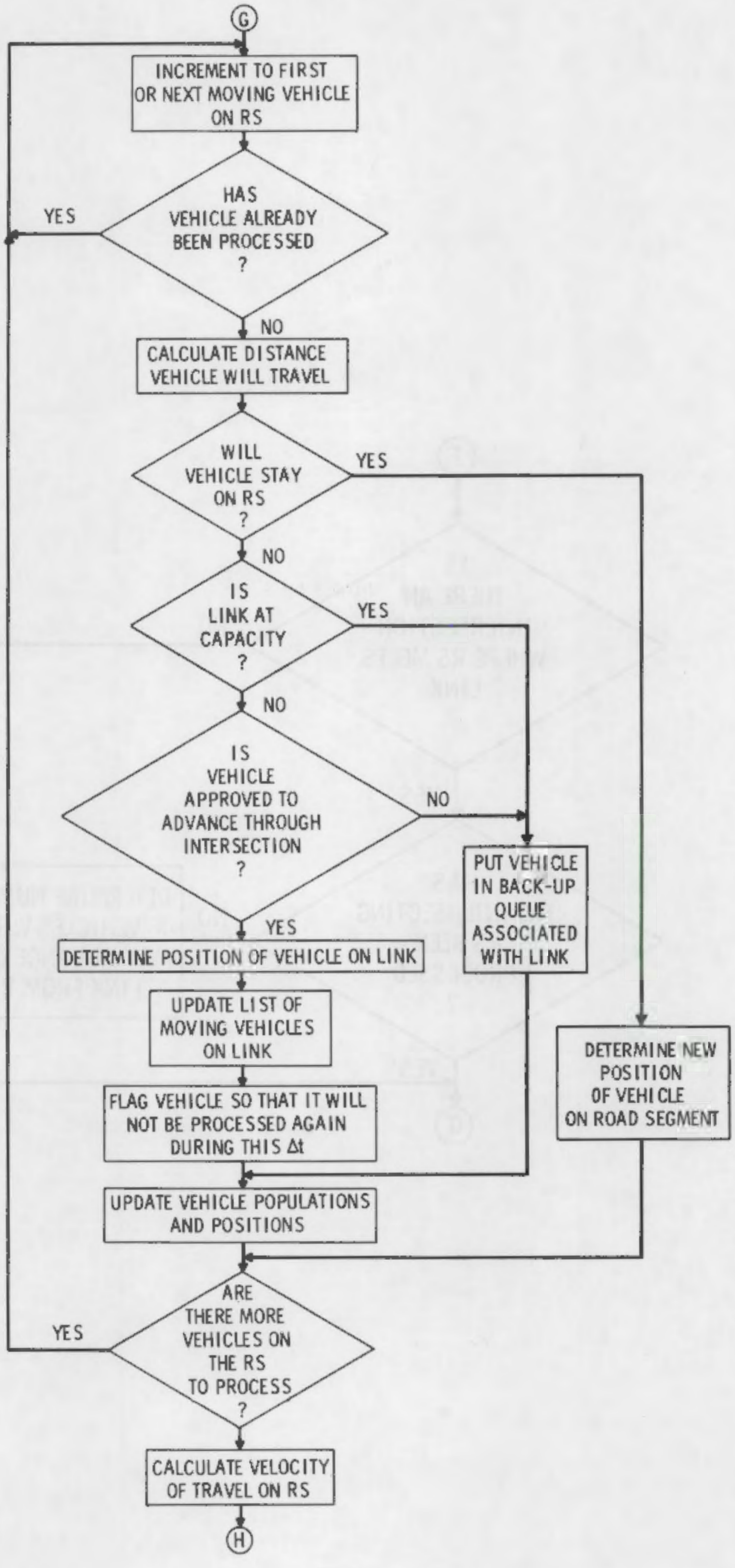
The flow chart appearing on the following pages of this appendix are a detailed outline of the decisions and actions the CLEAR model makes in simulating vehicle departure and movement on the transportation network in order to estimate evacuation time.

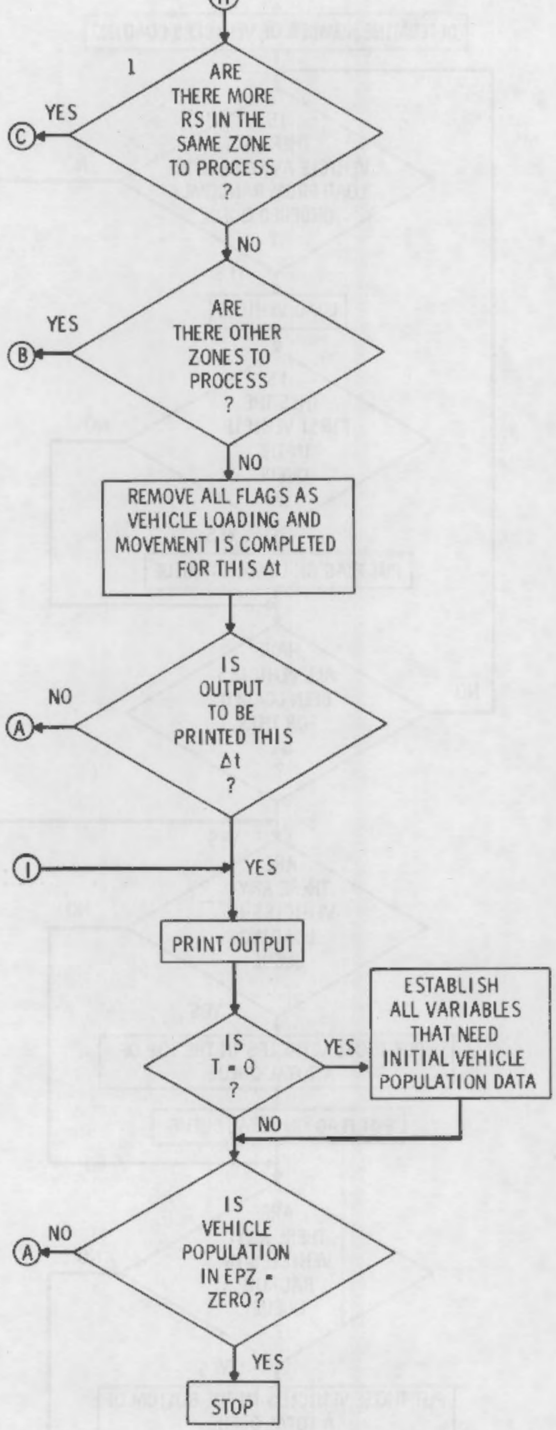

START
INPUT ROAD NETWORK AND POPULATION DISTRIBUTION
INITIALIZE ARRAYS AND VARIABLES
ASSIGN EACH VEHICLE A DEPARTURE POSITION
PREPARE VEHICLES FROM INDEPENDENT SPECIAL TRAFFIC GENERATORS
INITIALIZE TIME (T) TO ZERO
TO PRINT INITIAL DATA INFORMATION GO TO ①
A
T = T + INCREMENTAL TIME PERIOD (Δt)
B
INCREMENT TO FIRST OR NEXT ZONE
C
INCREMENT TO FIRST OR NEXT ROAD SEGMENT (RS)
D

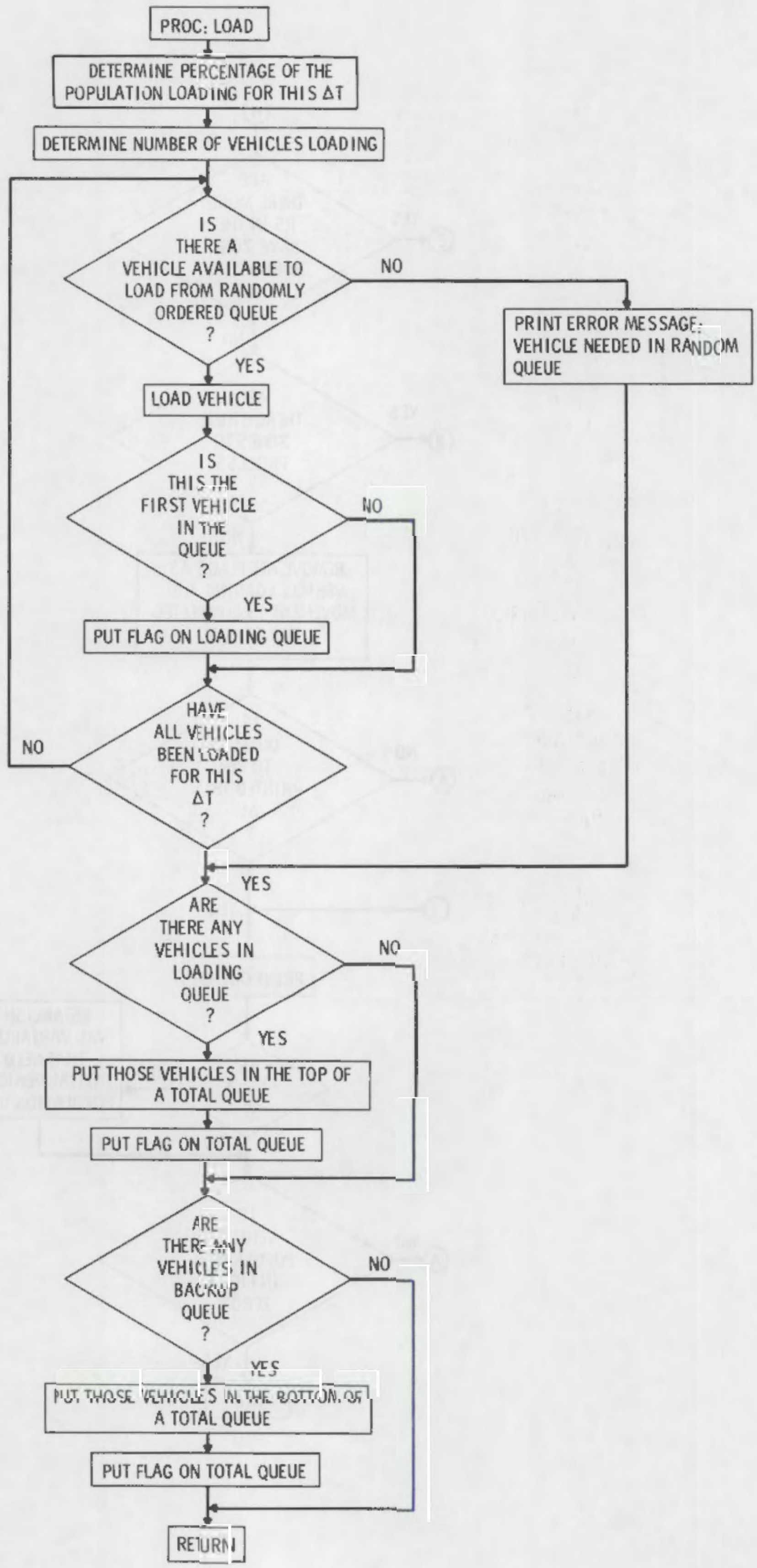

D
HAS
LINK BEEN
LOADED
?
YES
NO
IS
T > MAX
DEPARTURE
TIME
?
NO
LOAD THE
LOADING QUEUE
FOR LINK
PRIORITIZE VEHICLES
TO BE LOADED
YES
IS
THE LINK
AT CAPACITY
?
YES
NO
LOAD ONE VEHICLE ON LINK
UPDATE LIST OF VEHICLES ELIGIBLE TO ADVANCE
DELETE VEHICLE FROM PREVIOUS QUEUE
HAVE ALL
VEHICLES
BEEN LOADED FOR
LINK?
NO
YES
CALCULATE VELOCITY ON THE LINK
E

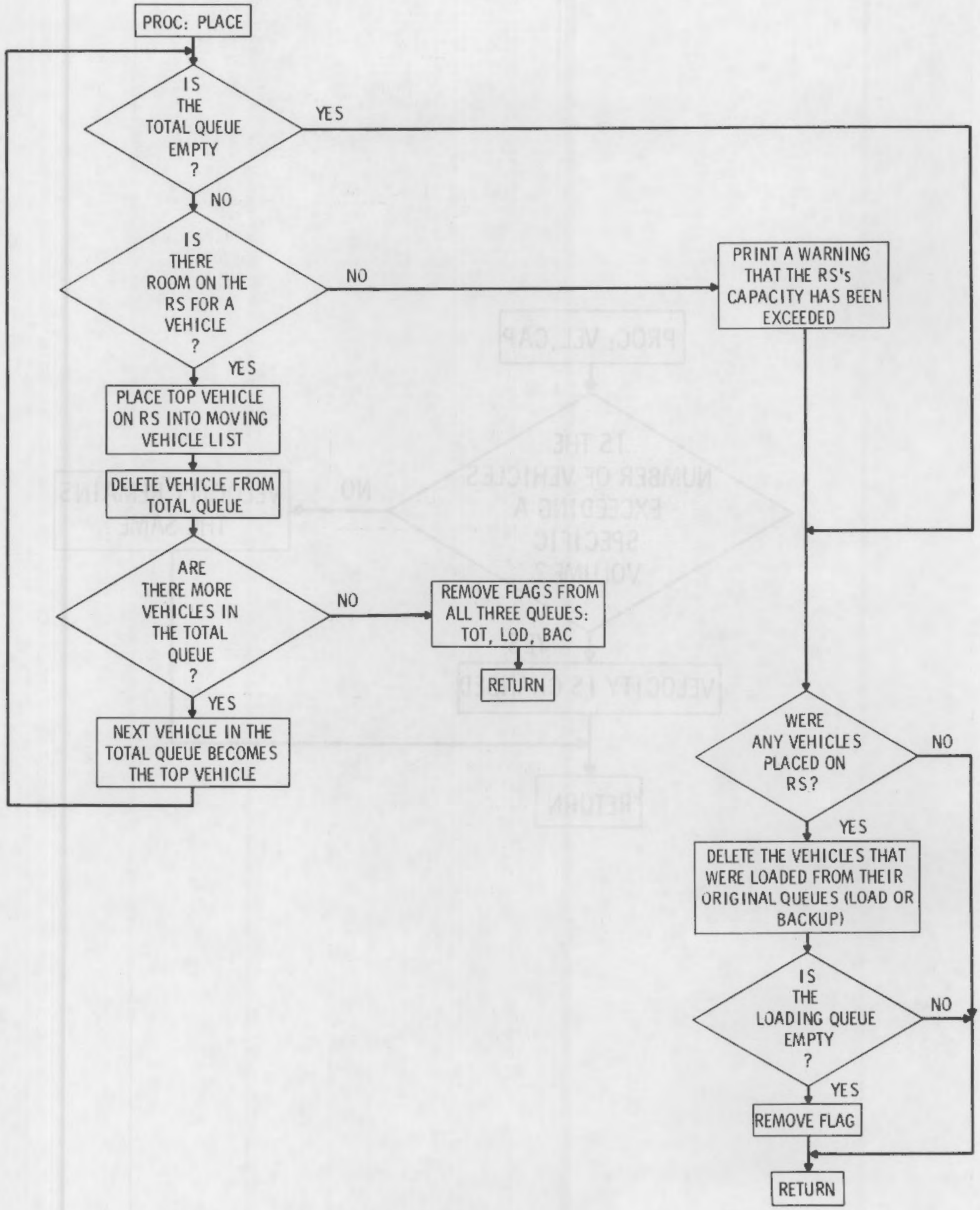

E
HAS ROAD BEEN LOADED ?
YES
NO
IS T > MAX DEPARTURE TIME ?
NO
LOAD THE LOADING QUEUE FOR RS
PRIORITIZE VEHICLES TO BE LOADED
YES
IS RS AT CAPACITY ?
YES
NO
LOAD ONE VEHICLE ON RS
UPDATE LIST OF VEHICLES ELIGIBLE TO ADVANCE
DELETE VEHICLE FROM PREVIOUS QUEUE
HAVE ALL VEHICLES BEEN LOADED FOR RS ?
NO
YES
CALCULATE VELOCITY ON RS
F

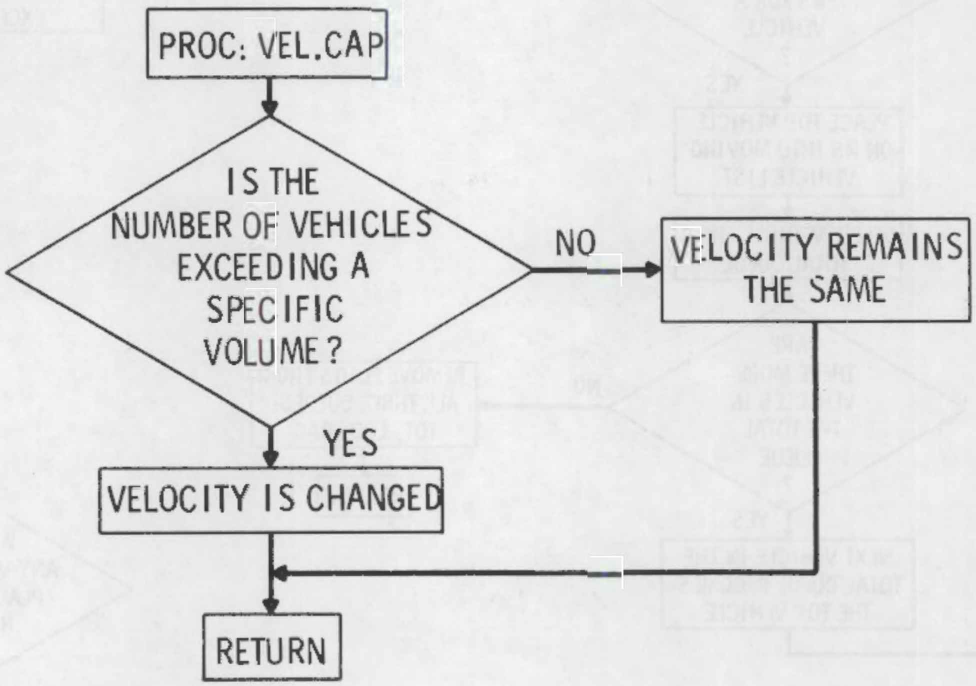

F
IS THERE AN INTERSECTION WHERE RS MEETS LINK ?
NO
YES
HAS THE INTERSECTING RS BEEN PROCESSED ?
NO
DETERMINE NUMBER OF VEHICLES WHICH MAY ADVANCE ONTO LINK FROM RS
YES
G


G
INCREMENT TO FIRST OR NEXT MOVING VEHICLE ON RS
HAS VEHICLE ALREADY BEEN PROCESSED ?
YES
NO
CALCULATE DISTANCE VEHICLE WILL TRAVEL
WILL VEHICLE STAY ON RS ?
YES
NO
IS LINK AT CAPACITY ?
YES
NO
IS VEHICLE APPROVED TO ADVANCE THROUGH INTERSECTION ?
NO
YES
PUT VEHICLE IN BACK-UP QUEUE ASSOCIATED WITH LINK
DETERMINE POSITION OF VEHICLE ON LINK
UPDATE LIST OF MOVING VEHICLES ON LINK
DETERMINE NEW POSITION OF VEHICLE ON ROAD SEGMENT
FLAG VEHICLE SO THAT IT WILL NOT BE PROCESSED AGAIN DURING THIS Δt
UPDATE VEHICLE POPULATIONS AND POSITIONS
ARE THERE MORE VEHICLES ON THE RS TO PROCESS ?
YES
CALCULATE VELOCITY OF TRAVEL ON RS
H


H
1
ARE THERE MORE RS IN THE SAME ZONE TO PROCESS ?
YES
C
NO
ARE THERE OTHER ZONES TO PROCESS ?
YES
B
NO
REMOVE ALL FLAGS AS VEHICLE LOADING AND MOVEMENT IS COMPLETED FOR THIS Δt
IS OUTPUT TO BE PRINTED THIS Δt ?
NO
A
I
YES
PRINT OUTPUT
IS T = 0 ?
YES
ESTABLISH ALL VARIABLES THAT NEED INITIAL VEHICLE POPULATION DATA
NO
IS VEHICLE POPULATION IN EPZ = ZERO?
NO
A
YES
STOP

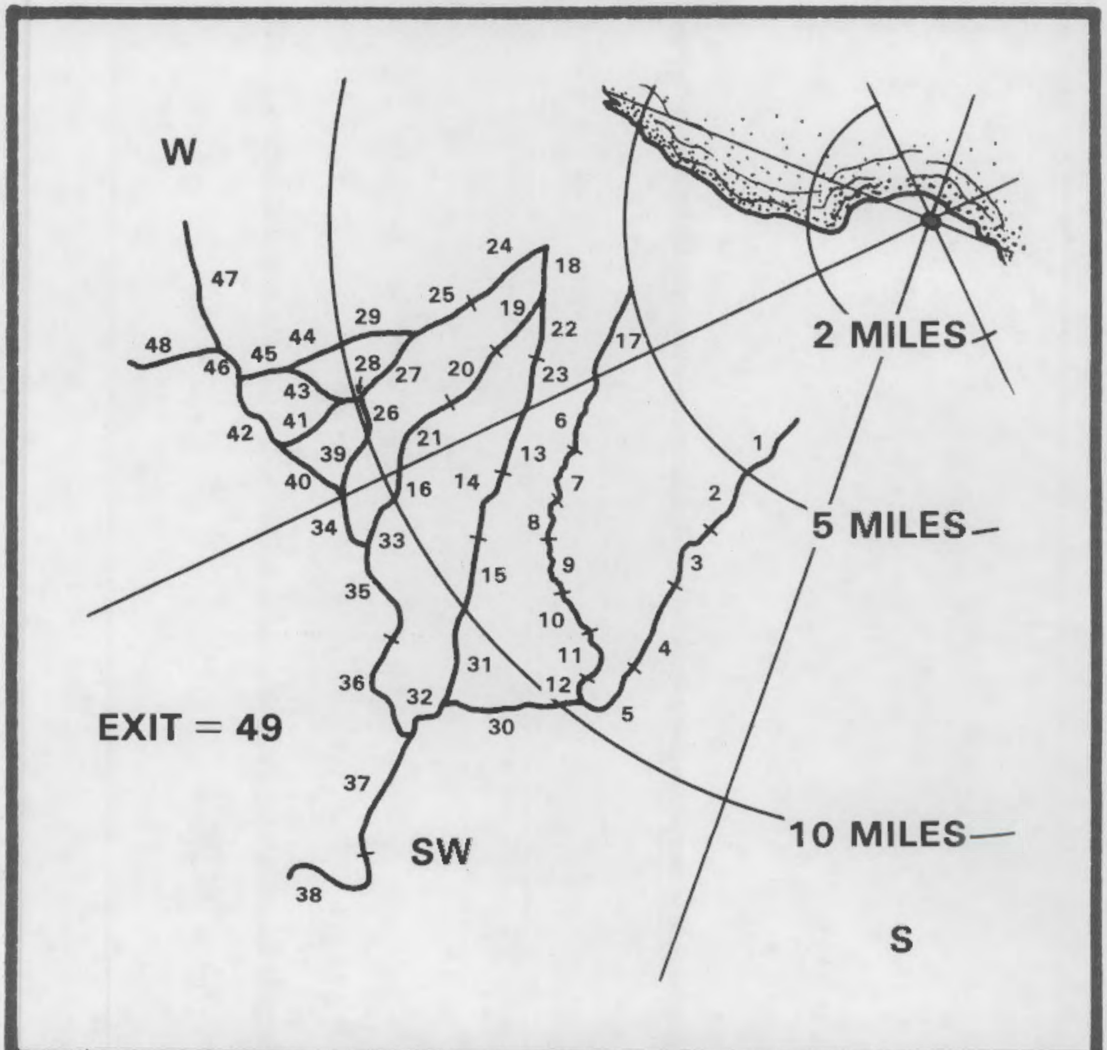

PROC: LOAD
DETERMINE PERCENTAGE OF THE POPULATION LOADING FOR THIS ΔT
DETERMINE NUMBER OF VEHICLES LOADING
IS THERE A VEHICLE AVAILABLE TO LOAD FROM RANDOMLY ORDERED QUEUE ?
NO
PRINT ERROR MESSAGE: VEHICLE NEEDED IN RANDOM QUEUE
YES
LOAD VEHICLE
IS THIS THE FIRST VEHICLE IN THE QUEUE ?
NO
YES
PUT FLAG ON LOADING QUEUE
HAVE ALL VEHICLES BEEN LOADED FOR THIS ΔT ?
NO
YES
ARE THERE ANY VEHICLES IN LOADING QUEUE ?
NO
YES
PUT THOSE VEHICLES IN THE TOP OF A TOTAL QUEUE
PUT FLAG ON TOTAL QUEUE
ARE THERE ANY VEHICLES IN BACKUP QUEUE ?
NO
YES
PUT THOSE VEHICLES IN THE BOTTOM OF A TOTAL QUEUE
PUT FLAG ON TOTAL QUEUE
RETURN


PROC: PLACE
IS THE TOTAL QUEUE EMPTY ?
YES
NO
IS THERE ROOM ON THE RS FOR A VEHICLE ?
NO
PRINT A WARNING THAT THE RS's CAPACITY HAS BEEN EXCEEDED
YES
PLACE TOP VEHICLE ON RS INTO MOVING VEHICLE LIST
DELETE VEHICLE FROM TOTAL QUEUE
ARE THERE MORE VEHICLES IN THE TOTAL QUEUE ?
NO
REMOVE FLAGS FROM ALL THREE QUEUES: TOT, LOD, BAC
RETURN
YES
NEXT VEHICLE IN THE TOTAL QUEUE BECOMES THE TOP VEHICLE
WERE ANY VEHICLES PLACED ON RS?
NO
YES
DELETE THE VEHICLES THAT WERE LOADED FROM THEIR ORIGINAL QUEUES (LOAD OR BACKUP)
IS THE LOADING QUEUE EMPTY ?
NO
YES
REMOVE FLAG
RETURN

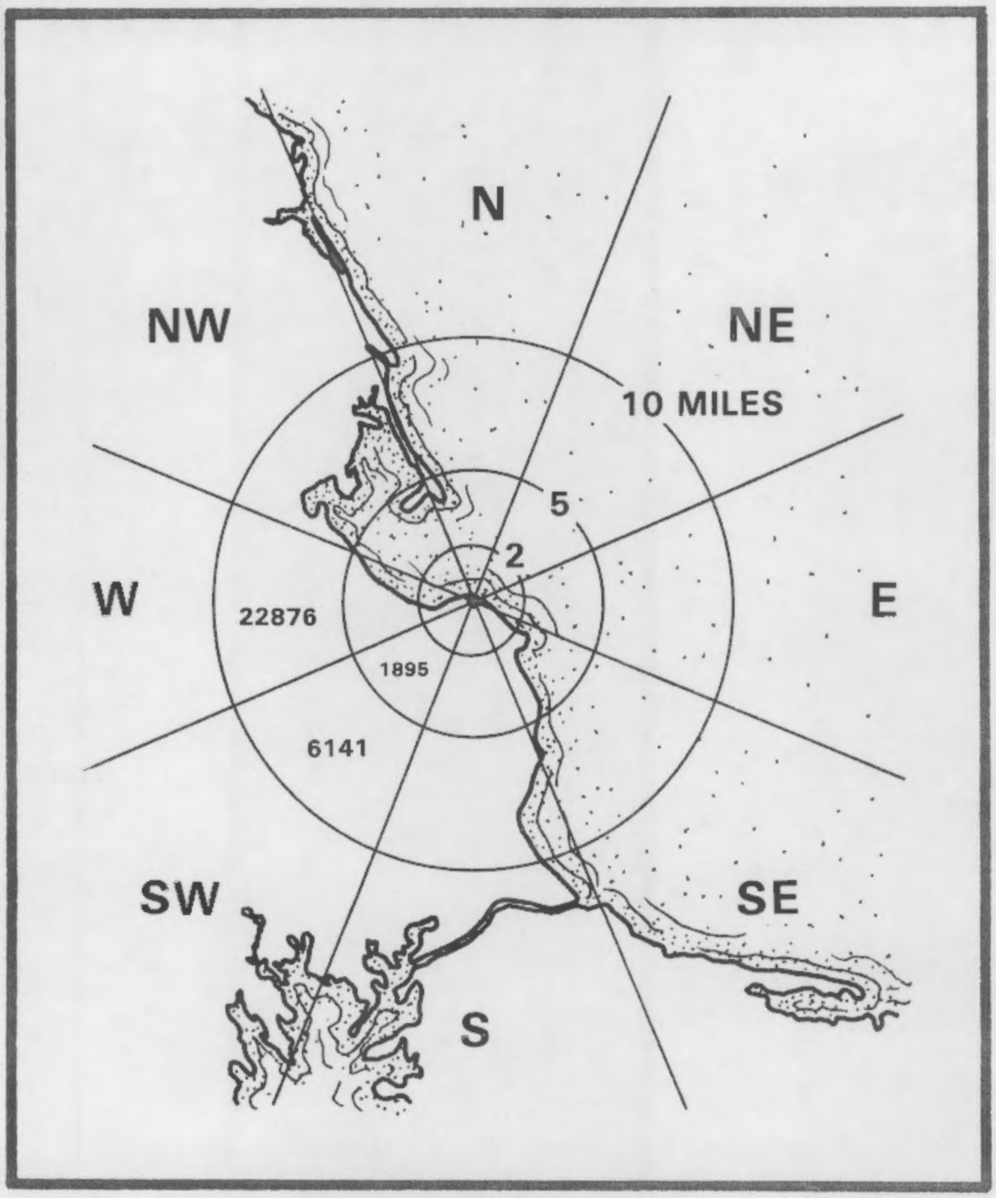

PROC: VEL.CAP
IS THE NUMBER OF VEHICLES EXCEEDING A SPECIFIC VOLUME?
NO
VELOCITY REMAINS THE SAME
YES
VELOCITY IS CHANGED
RETURN

APPENDIX III

EXAMPLE OF AN EVACUATION TREE



POPULATION DATA FOR EXAMPLE EVACUATION TREE



TOTAL

0	0-2 MILES
1895	2-5 MILES
29017	5-10 MILES
30912	

APPENDIX V: CLEAR INPUT FOR EXAMPLE EVACUATION TREE

The material on the following page of this appendix is an example of how information on the population distribution and transportation network, as well as assumptions, are input into the CLEAR model. This example input corresponds with to information illustrated in Appendices III and IV. The first two pages of output (Appendix VI) explain which variable each number represents.

3 12 25 .10 5400 3 3 1700 15

0 1 3 5 0 49 13

1895	1	1400				
1	2	1400	5	25	1	0
6141	15	29500				
2	3	2300	6	25	1	0
3	4	2600	7	25	1	0
4	5	2300	8	25	1	0
5	12	2300	9	25	1	11
6	7	1000	7	25	1	0
7	8	1000	8	25	1	0
8	9	1200	8	25	1	0
9	10	2000	9	25	1	0
10	11	3000	9	25	1	0
11	12	3000	9	25	1	5
12	30	1400	10	25	1	0
13	14	2100	8	45	1	0
14	15	2100	9	30	1	0
15	31	1500	10	30	1	0
16	33	1600	10	30	1	0
22876	13	62300				
17	6	1500	6	25	1	0
18	19	1000	7	45	1	0
19	20	1200	7	30	1	0
20	21	2100	8	30	1	0
21	16	2100	9	30	1	0
22	23	2000	7	45	1	0
23	13	1300	7	45	1	0
24	25	3000	7	40	1	0
25	27	1500	9	45	1	0
26	38	1300	10	35	1	0
27	28	2600	10	40	1	0
28	42	300	10	35	1	0
29	43	2100	10	35	1	0
000	9	17200				
30	32	800	11	25	1	31
31	32	1700	11	45	1	30
32	37	900	11	25	1	36
33	35	800	11	30	1	34
34	35	1000	11	45	1	33
35	36	3000	11	45	1	0
36	37	3000	11	45	1	32
37	38	3000	12	45	1	0
38	49	3000	13	55	1	0
000	10	20200				
39	34	1200	11	45	1	0
40	42	2300	11	30	1	41
41	42	2500	11	45	1	40
42	46	2000	12	35	1	45
43	45	2100	11	35	1	44
44	45	1500	11	35	1	43
45	46	1300	11	30	1	42
46	47	800	12	20	1	47
47	48	3500	11	45	1	46
48	49	3000	13	40	1	0
000	1	9900				
49	49	9900	14	3	999	0

APPENDIX VI:
CLEAR OUTPUT FOR EXAMPLE EVACUATION TREE

The output generated by the CLEAR model for the example input described in Appendix V is listed below.

OUTPUT FROM EXAMPLE EVACUATION TREE

```
3              CLEAR          MOELLER          CLEAR          BATTELLE          CLEAR          MOELLER          CLEAR

LU= 3 DELT=   12 TYP=  25 FRACT= 0.10 MAXDEP=  5400 POPVEH=  3 LGCODE=  3 FLORAT=  1700 MINSPD=  15
ZTWO=   0 ZFIV=   1 ZTEN=   3 ZEPZ=   5 ISTG=   0 EX=  49 EPZ=  13
ZONE:  1 POPZN=      1895, NRDS=          1 LENRDS=      1400.
ZNRD:        1 LINK=        2 LEN=     1400 RADIS=          5 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZONE:  2 POPZN=      6141, NRDS=         15 LENRDS=     29500.
ZNRD:        2 LINK=        3 LEN=     2300 RADIS=          6 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:        3 LINK=        4 LEN=     2600 RADIS=          7 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:        4 LINK=        5 LEN=     2300 RADIS=          8 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:        5 LINK=       12 LEN=     2300 RADIS=          9 NOMVEL=        25 NLANES=          1 NRSEC=        11
ZNRD:        6 LINK=        7 LEN=     1000 RADIS=          7 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:        7 LINK=        8 LEN=     1000 RADIS=          8 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:        8 LINK=        9 LEN=     1200 RADIS=          8 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:        9 LINK=       10 LEN=     2000 RADIS=          9 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:       10 LINK=       11 LEN=     3000 RADIS=          9 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:       11 LINK=       12 LEN=     3000 RADIS=          9 NOMVEL=        25 NLANES=          1 NRSEC=         5
ZNRD:       12 LINK=       30 LEN=     1400 RADIS=         10 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:       13 LINK=       14 LEN=     2100 RADIS=          5 NOMVEL=        45 NLANES=          1 NRSEC=         0
ZNRD:       14 LINK=       15 LEN=     2100 RADIS=          9 NOMVEL=        30 NLANES=          1 NRSEC=         0
ZNRD:       15 LINK=       31 LEN=     1500 RADIS=         10 NOMVEL=        30 NLANES=          1 NRSEC=         0
ZNRD:       16 LINK=       33 LEN=     1600 RADIS=         10 NOMVEL=        30 NLANES=          1 NRSEC=         0
ZONE:  3 POPZN=     22676, NRDS=         13 LENRDS=     62300.
ZNRD:       17 LINK=        6 LEN=     1500 RADIS=          6 NOMVEL=        25 NLANES=          1 NRSEC=         0
ZNRD:       18 LINK=       19 LEN=     1000 RADIS=          7 NOMVEL=        45 NLANES=          1 NRSEC=         0
ZNRD:       19 LINK=       20 LEN=     1200 RADIS=          7 NOMVEL=        30 NLANES=          1 NRSEC=         0
ZNRD:       20 LINK=       21 LEN=     2100 RADIS=          8 NOMVEL=        30 NLANES=          1 NRSEC=         0
ZNRD:       21 LINK=       16 LEN=     2100 RADIS=          9 NOMVEL=        30 NLANES=          1 NRSEC=         0
ZNRD:       22 LINK=       23 LEN=     2000 RADIS=          7 NOMVEL=        45 NLANES=          1 NRSEC=         0
ZNRD:       23 LINK=       13 LEN=     1300 RADIS=          7 NOMVEL=        45 NLANES=          1 NRSEC=         0
ZNRD:       24 LINK=       25 LEN=     3000 RADIS=          7 NOMVEL=        40 NLANES=          1 NRSEC=         0
ZNRD:       25 LINK=       27 LEN=     1500 RADIS=          9 NOMVEL=        45 NLANES=          1 NRSEC=         0
ZNRD:       26 LINK=       38 LEN=     1300 RADIS=         10 NOMVEL=        35 NLANES=          1 NRSEC=         0
ZNRD:       27 LINK=       28 LEN=     2600 RADIS=         10 NOMVEL=        40 NLANES=          1 NRSEC=         0
ZNRD:       28 LINK=       42 LEN=      300 RADIS=         10 NOMVEL=        35 NLANES=          1 NRSEC=         0
ZNRD:       29 LINK=       43 LEN=     2100 RADIS=         10 NOMVEL=        35 NLANES=          1 NRSEC=         0
ZONE:  4 POPZN=         0, NRDS=          9 LENRDS=     17200.
ZNRD:       30 LINK=       32 LEN=      800 RADIS=         11 NOMVEL=        25 NLANES=          1 NRSEC=        31
ZNRD:       31 LINK=       32 LEN=     1700 RADIS=         11 NOMVEL=        45 NLANES=          1 NRSEC=        30
ZNRD:       32 LINK=       37 LEN=      900 RADIS=         11 NOMVEL=        25 NLANES=          1 NRSEC=        36
ZNRD:       33 LINK=       35 LEN=      800 RADIS=         11 NOMVEL=        30 NLANES=          1 NRSEC=        34
ZNRD:       34 LINK=       35 LEN=     1000 RADIS=         11 NOMVEL=        45 NLANES=          1 NRSEC=        33
ZNRD:       35 LINK=       36 LEN=     3000 RADIS=         11 NOMVEL=        45 NLANES=          1 NRSEC=         0
ZNRD:       36 LINK=       37 LEN=     3000 RADIS=         11 NOMVEL=        45 NLANES=          1 NRSEC=        32
ZNRD:       37 LINK=       38 LEN=     3000 RADIS=         12 NOMVEL=        45 NLANES=          1 NRSEC=         0
ZNRD:       38 LINK=       49 LEN=     3000 RADIS=         13 NOMVEL=        55 NLANES=          1 NRSEC=         0
ZONE:  5 POPZN=         0, NRDS=         10 LENRDS=     20200.
ZNRD:       39 LINK=       34 LEN=     1200 RADIS=         11 NOMVEL=        45 NLANES=          1 NRSEC=         0
ZNRD:       40 LINK=       42 LEN=     2300 RADIS=         11 NOMVEL=        30 NLANES=          1 NRSEC=        41
ZNRD:       41 LINK=       42 LEN=     2500 RADIS=         11 NOMVEL=        45 NLANES=          1 NRSEC=        40
ZNRD:       42 LINK=       46 LEN=     2000 RADIS=         12 NOMVEL=        35 NLANES=          1 NRSEC=        45
ZNRD:       43 LINK=       45 LEN=     2100 RADIS=         11 NOMVEL=        35 NLANES=          1 NRSEC=        44
ZNRD:       44 LINK=       45 LEN=     1500 RADIS=         11 NOMVEL=        35 NLANES=          1 NRSEC=        43
ZNRD:       45 LINK=       46 LEN=     1300 RADIS=         11 NOMVEL=        30 NLANES=          1 NRSEC=        42
ZNRD:       46 LINK=       47 LEN=      800 RADIS=         12 NOMVEL=        20 NLANES=          1 NRSEC=        47
ZNRD:       47 LINK=       48 LEN=     3500 RADIS=         11 NOMVEL=        45 NLANES=          1 NRSEC=        46
ZNRD:       48 LINK=       49 LEN=     3000 RADIS=         13 NOMVEL=        40 NLANES=          1 NRSEC=         0
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ZONE:  6 POPZN=           0, NRDS=           1 LENRDS=        9900,
ZNRD:          49 LINK=          49 LEN=        9900 RADIS=         14 NOMVEL=          3 NLANES=          999 NRSEC=          0


THE INITIAL VEHICLE POPULATION WAS =          0
TOTAL TIME ELAPSED=        0 SECONDS OR  0 HOURS,  0 MINUTES, AND  0 SECONDS.
        THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO     211            QUEUES: NRAN=  211 NLOD=    0 NBAC=    0 VMOTO=    0
              THE VEHICLE POPULATION IN ZONE= 1 IS       211.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS         211
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO      54            QUEUES: NRAN=   54 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO      61            QUEUES: NRAN=   61 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO      54            QUEUES: NRAN=   54 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO      54            QUEUES: NRAN=   54 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO      24            QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO      24            QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO      28            QUEUES: NRAN=   28 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO      47            QUEUES: NRAN=   47 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO      70            QUEUES: NRAN=   70 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO      70            QUEUES: NRAN=   70 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      33            QUEUES: NRAN=   33 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO      49            QUEUES: NRAN=   49 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO      49            QUEUES: NRAN=   49 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO      35            QUEUES: NRAN=   35 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO      37            QUEUES: NRAN=   37 NLOD=    0 NBAC=    0 VMOTO=    0
              THE VEHICLE POPULATION IN ZONE= 2 IS       689.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO      62            QUEUES: NRAN=   62 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO      41            QUEUES: NRAN=   41 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO      49            QUEUES: NRAN=   49 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO      86            QUEUES: NRAN=   86 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO      86            QUEUES: NRAN=   86 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO      82            QUEUES: NRAN=   82 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO      53            QUEUES: NRAN=   53 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO     123            QUEUES: NRAN=  123 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO      62            QUEUES: NRAN=   62 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO      53            QUEUES: NRAN=   53 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO     106            QUEUES: NRAN=  106 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO      13            QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO      86            QUEUES: NRAN=   86 NLOD=    0 NBAC=    0 VMOTO=    0
              THE VEHICLE POPULATION IN ZONE= 3 IS       902.
     THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =        1802
              THE VEHICLE POPULATION IN ZONE= 4 IS         0.
              THE VEHICLE POPULATION IN ZONE= 5 IS         0.
     THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=              1802
------------------------------------------------------------------------------------------------------------------------------   1

VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS,  0 MINUTES, AND  0 SECONDS,
RADIUS--- 4-TO- 5---POPULATION=       211  *  THE % OF REMAINING VEHICLES= 11.71 %   *  THE % OF INITIAL VEHICLES=  11.71 %
RADIUS--- 5-TO- 6---POPULATION=       116  *  THE % OF REMAINING VEHICLES=  6.44 %   *  THE % OF INITIAL VEHICLES=   6.44 %
RADIUS--- 6-TO- 7---POPULATION=       433  *  THE % OF REMAINING VEHICLES= 24.03 %   *  THE % OF INITIAL VEHICLES=  24.03 %
RADIUS--- 7-TO- 8---POPULATION=       241  *  THE % OF REMAINING VEHICLES= 13.37 %   *  THE % OF INITIAL VEHICLES=  13.37 %
RADIUS--- 8-TO- 9---POPULATION=       438  *  THE % OF REMAINING VEHICLES= 24.31 %   *  THE % OF INITIAL VEHICLES=  24.31 %
RADIUS--- 9-TO-10---POPULATION=       363  *  THE % OF REMAINING VEHICLES= 20.14 %   *  THE % OF INITIAL VEHICLES=  20.14 %
RADIUS---10-TO-11---POPULATION=         0  *  THE % OF REMAINING VEHICLES=  0.00 %   *  THE % OF INITIAL VEHICLES=   0.00 %
RADIUS---11-TO-12---POPULATION=         0  *  THE % OF REMAINING VEHICLES=  0.00 %   *  THE % OF INITIAL VEHICLES=   0.00 %
RADIUS---12-TO-13---POPULATION=         0  *  THE % OF REMAINING VEHICLES=  0.00 %   *  THE % OF INITIAL VEHICLES=   0.00 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1802 ---VEHICLE POPULATION OUTSIDE TEN MILES=         0 --------------
VEHICLE POPULATION WITHIN EPZ=    1802 * VEHICLE POPULATION OUTSIDE EPZ=        0 * PERCENTAGE OF TOTAL WITHIN EPZ= 100.00%
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THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=    300 SECONDS OR  0 HOURS,  5 MINUTES, AND  0 SECONDS.
          THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO       207            QUEUES: NRAN=  207 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 1 IS       207.
          THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS        207
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO        56            QUEUES: NRAN=   53 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO        62            QUEUES: NRAN=   60 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO        55            QUEUES: NRAN=   53 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO        53            QUEUES: NRAN=   53 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO        25            QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO        24            QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO        28            QUEUES: NRAN=   28 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO        46            QUEUES: NRAN=   46 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO        70            QUEUES: NRAN=   69 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO        70            QUEUES: NRAN=   69 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO        35            QUEUES: NRAN=   33 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO        51            QUEUES: NRAN=   48 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO        48            QUEUES: NRAN=   48 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO        36            QUEUES: NRAN=   35 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO        37            QUEUES: NRAN=   37 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 2 IS       696.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO        61            QUEUES: NRAN=   61 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO        41            QUEUES: NRAN=   41 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO        48            QUEUES: NRAN=   48 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO        86            QUEUES: NRAN=   85 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO        86            QUEUES: NRAN=   85 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO        81            QUEUES: NRAN=   81 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO        52            QUEUES: NRAN=   52 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO       121            QUEUES: NRAN=  121 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO        61            QUEUES: NRAN=   61 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO        52            QUEUES: NRAN=   52 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       108            QUEUES: NRAN=  104 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO        13            QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO        85            QUEUES: NRAN=   85 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 3 IS       895.
       THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =        1798
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO         1            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO         1            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
                THE VEHICLE POPULATION IN ZONE= 4 IS         2.
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO         1            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO         1            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
                THE VEHICLE POPULATION IN ZONE= 5 IS         2.
       THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             1802
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS,  5 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       207  *  THE % OF REMAINING VEHICLES= 11.49 %   *  THE % OF INITIAL VEHICLES=  11.49 %
RADIUS--- 5-TO- 6---POPULATION=       117  *  THE % OF REMAINING VEHICLES=  6.49 %   *  THE % OF INITIAL VEHICLES=   6.49 %
RADIUS--- 6-TO- 7---POPULATION=       430  *  THE % OF REMAINING VEHICLES= 23.86 %   *  THE % OF INITIAL VEHICLES=  23.86 %
RADIUS--- 7-TO- 8---POPULATION=       244  *  THE % OF REMAINING VEHICLES= 13.54 %   *  THE % OF INITIAL VEHICLES=  13.54 %
RADIUS--- 8-TO- 9---POPULATION=       434  *  THE % OF REMAINING VEHICLES= 24.08 %   *  THE % OF INITIAL VEHICLES=  24.08 %
RADIUS--- 9-TO-10---POPULATION=       366  *  THE % OF REMAINING VEHICLES= 20.31 %   *  THE % OF INITIAL VEHICLES=  20.31 %
RADIUS---10-TO-11---POPULATION=         2  *  THE % OF REMAINING VEHICLES=  0.11 %   *  THE % OF INITIAL VEHICLES=   0.11 %
RADIUS---11-TO-12---POPULATION=         1  *  THE % OF REMAINING VEHICLES=  0.06 %   *  THE % OF INITIAL VEHICLES=   0.06 %
RADIUS---12-TO-13---POPULATION=         1  *  THE % OF REMAINING VEHICLES=  0.06 %   *  THE % OF INITIAL VEHICLES=   0.06 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=       1798 ---VEHICLE POPULATION OUTSIDE TEN MILES=         4 -------------
VEHICLE POPULATION WITHIN EPZ=    1802 * VEHICLE POPULATION OUTSIDE EPZ=       0 * PERCENTAGE OF TOTAL WITHIN EPZ= 100.00%
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THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=    600 SECONDS OR  0 HOURS, 10 MINUTES, AND  0 SECONDS.
          THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO     202          QUEUES: NRAN=  202 NLOD=    0 NBAC=    0 VMOTO=    0
                 THE VEHICLE POPULATION IN ZONE= 1 IS      202.
          THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS       202
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO      55          QUEUES: NRAN=   52 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO      64          QUEUES: NRAN=   59 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO      56          QUEUES: NRAN=   52 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO      56          QUEUES: NRAN=   52 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO      23          QUEUES: NRAN=   23 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO      26          QUEUES: NRAN=   23 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO      27          QUEUES: NRAN=   27 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO      48          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO      67          QUEUES: NRAN=   67 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO      71          QUEUES: NRAN=   67 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      32          QUEUES: NRAN=   32 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO      49          QUEUES: NRAN=   47 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO      50          QUEUES: NRAN=   47 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO      37          QUEUES: NRAN=   34 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO      39          QUEUES: NRAN=   36 NLOD=    0 NBAC=    0 VMOTO=    3
                 THE VEHICLE POPULATION IN ZONE= 2 IS      700.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO      60          QUEUES: NRAN=   60 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO      40          QUEUES: NRAN=   40 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO      47          QUEUES: NRAN=   47 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO      84          QUEUES: NRAN=   83 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO      85          QUEUES: NRAN=   83 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO      79          QUEUES: NRAN=   79 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO      51          QUEUES: NRAN=   51 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO     118          QUEUES: NRAN=  118 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO      61          QUEUES: NRAN=   60 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO      51          QUEUES: NRAN=   51 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO     103          QUEUES: NRAN=  102 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO      14          QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO      83          QUEUES: NRAN=   83 NLOD=    0 NBAC=    0 VMOTO=    0
                 THE VEHICLE POPULATION IN ZONE= 3 IS      876.
       THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =       1778
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO       3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO       1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
                 THE VEHICLE POPULATION IN ZONE= 4 IS       12.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO       2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO       1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO       4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
                 THE VEHICLE POPULATION IN ZONE= 5 IS       11.
       THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             1801
------------------------------------------------------------------------------------------------------------------------- 51

VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 10 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=        202  *  THE % OF REMAINING VEHICLES= 11.22 %   *  THE % OF INITIAL VEHICLES=  11.21 %
RADIUS--- 5-TO- 6---POPULATION=        115  *  THE % OF REMAINING VEHICLES=  6.39 %   *  THE % OF INITIAL VEHICLES=   6.38 %
RADIUS--- 6-TO- 7---POPULATION=        422  *  THE % OF REMAINING VEHICLES= 23.43 %   *  THE % OF INITIAL VEHICLES=  23.42 %
RADIUS--- 7-TO- 8---POPULATION=        242  *  THE % OF REMAINING VEHICLES= 13.44 %   *  THE % OF INITIAL VEHICLES=  13.43 %
RADIUS--- 8-TO- 9---POPULATION=        438  *  THE % OF REMAINING VEHICLES= 24.32 %   *  THE % OF INITIAL VEHICLES=  24.31 %
RADIUS--- 9-TO-10---POPULATION=        359  *  THE % OF REMAINING VEHICLES= 19.93 %   *  THE % OF INITIAL VEHICLES=  19.92 %
RADIUS---10-TO-11---POPULATION=         10  *  THE % OF REMAINING VEHICLES=  0.56 %   *  THE % OF INITIAL VEHICLES=   0.55 %
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RADIUS===11=TO=12===POPULATION=        11  *  THE % OF REMAINING VEHICLES=  0.61 %   *  THE % OF INITIAL VEHICLES=   0.61 %
RADIUS===12=TO=13===POPULATION=         2  *  THE % OF REMAINING VEHICLES=  0.11 %   *  THE % OF INITIAL VEHICLES=   0.11 %
=======TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1778 ===VEHICLE POPULATION OUTSIDE TEN MILES=        24 ==============
VEHICLE POPULATION WITHIN EPZ=    1801 * VEHICLE POPULATION OUTSIDE EPZ=        1 * PERCENTAGE OF TOTAL WITHIN EPZ=  99.94%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=    900 SECONDS OR  0 HOURS, 15 MINUTES, AND  0 SECONDS.
        THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS           0
VEHICLE POPULATION OF ZONE= 1 ROAD=    1 IS EQUAL TO      197          QUEUES: NRAN=  197 NLOD=    0 NBAC=    0 VMOTO=    0
               THE VEHICLE POPULATION IN ZONE= 1 IS       197.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS         197
VEHICLE POPULATION IN ZONE= 2 ROAD=    1 IS EQUAL TO       55          QUEUES: NRAN=   51 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=    2 IS EQUAL TO       61          QUEUES: NRAN=   57 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=    3 IS EQUAL TO       58          QUEUES: NRAN=   51 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=    4 IS EQUAL TO       58          QUEUES: NRAN=   51 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=    5 IS EQUAL TO       24          QUEUES: NRAN=   23 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=    6 IS EQUAL TO       23          QUEUES: NRAN=   23 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=    7 IS EQUAL TO       28          QUEUES: NRAN=   27 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=    8 IS EQUAL TO       48          QUEUES: NRAN=   44 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=    9 IS EQUAL TO       70          QUEUES: NRAN=   66 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=   10 IS EQUAL TO       66          QUEUES: NRAN=   66 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   11 IS EQUAL TO       36          QUEUES: NRAN=   31 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=   12 IS EQUAL TO       47          QUEUES: NRAN=   46 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   13 IS EQUAL TO       49          QUEUES: NRAN=   46 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   14 IS EQUAL TO       36          QUEUES: NRAN=   33 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   15 IS EQUAL TO       38          QUEUES: NRAN=   35 NLOD=    0 NBAC=    0 VMOTO=    3
               THE VEHICLE POPULATION IN ZONE= 2 IS       697.
VEHICLE POPULATION IN ZONE= 3 ROAD=    1 IS EQUAL TO       58          QUEUES: NRAN=   58 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=    2 IS EQUAL TO       39          QUEUES: NRAN=   39 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=    3 IS EQUAL TO       46          QUEUES: NRAN=   46 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=    4 IS EQUAL TO       84          QUEUES: NRAN=   81 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=    5 IS EQUAL TO       81          QUEUES: NRAN=   81 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=    6 IS EQUAL TO       77          QUEUES: NRAN=   77 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=    7 IS EQUAL TO       50          QUEUES: NRAN=   50 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=    8 IS EQUAL TO      115          QUEUES: NRAN=  115 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=    9 IS EQUAL TO       59          QUEUES: NRAN=   58 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   10 IS EQUAL TO       50          QUEUES: NRAN=   50 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   11 IS EQUAL TO      102          QUEUES: NRAN=   99 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=   12 IS EQUAL TO       13          QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   13 IS EQUAL TO       81          QUEUES: NRAN=   81 NLOD=    0 NBAC=    0 VMOTO=    0
               THE VEHICLE POPULATION IN ZONE= 3 IS       855.
     THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =       1749
VEHICLE POPULATION IN ZONE= 4 ROAD=    1 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 4 ROAD=    2 IS EQUAL TO        1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 4 ROAD=    3 IS EQUAL TO        6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 4 ROAD=    4 IS EQUAL TO        3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 4 ROAD=    6 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 4 ROAD=    8 IS EQUAL TO        6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 4 ROAD=    9 IS EQUAL TO        3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
               THE VEHICLE POPULATION IN ZONE= 4 IS        25.
VEHICLE POPULATION IN ZONE= 5 ROAD=    4 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 5 ROAD=    5 IS EQUAL TO        1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 5 ROAD=    8 IS EQUAL TO        3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 5 ROAD=    9 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 5 ROAD=   10 IS EQUAL TO        6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
               THE VEHICLE POPULATION IN ZONE= 5 IS        18.
     THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             1792
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 15 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       197  *  THE % OF REMAINING VEHICLES= 10.99 %   *  THE % OF INITIAL VEHICLES=  10.93 %
RADIUS--- 5-TO- 6---POPULATION=       113  *  THE % OF REMAINING VEHICLES=  6.31 %   *  THE % OF INITIAL VEHICLES=   6.27 %
RADIUS--- 6-TO- 7---POPULATION=       412  *  THE % OF REMAINING VEHICLES= 22.99 %   *  THE % OF INITIAL VEHICLES=  22.86 %
RADIUS--- 7-TO- 8---POPULATION=       240  *  THE % OF REMAINING VEHICLES= 13.39 %   *  THE % OF INITIAL VEHICLES=  13.32 %
RADIUS--- 8-TO- 9---POPULATION=       431  *  THE % OF REMAINING VEHICLES= 24.05 %   *  THE % OF INITIAL VEHICLES=  23.92 %
RADIUS--- 9-TO-10---POPULATION=       356  *  THE % OF REMAINING VEHICLES= 19.87 %   *  THE % OF INITIAL VEHICLES=  19.76 %
RADIUS---10-TO-11---POPULATION=        21  *  THE % OF REMAINING VEHICLES=  1.17 %   *  THE % OF INITIAL VEHICLES=   1.17 %
RADIUS---11-TO-12---POPULATION=        13  *  THE % OF REMAINING VEHICLES=  0.73 %   *  THE % OF INITIAL VEHICLES=   0.72 %
RADIUS---12-TO-13---POPULATION=         9  *  THE % OF REMAINING VEHICLES=  0.50 %   *  THE % OF INITIAL VEHICLES=   0.50 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1749 ---VEHICLE POPULATION OUTSIDE TEN MILES=        53 ------------
VEHICLE POPULATION WITHIN EPZ=    1792 * VEHICLE POPULATION OUTSIDE EPZ=       10 * PERCENTAGE OF TOTAL WITHIN EPZ=  99.45%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   1200 SECONDS OR  0 HOURS, 20 MINUTES, AND  0 SECONDS.
        THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO     193          QUEUES: NRAN=  193 NLOD=    0 NBAC=    0 VMOTO=    0
              THE VEHICLE POPULATION IN ZONE= 1 IS       193.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS        193
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO      53          QUEUES: NRAN=   50 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO      61          QUEUES: NRAN=   56 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO      55          QUEUES: NRAN=   50 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO      55          QUEUES: NRAN=   50 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO      22          QUEUES: NRAN=   22 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO      24          QUEUES: NRAN=   22 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO      27          QUEUES: NRAN=   26 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO      44          QUEUES: NRAN=   43 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO      68          QUEUES: NRAN=   64 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO      74          QUEUES: NRAN=   64 NLOD=    0 NBAC=    0 VMOTO=   10
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      35          QUEUES: NRAN=   31 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO      45          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO      48          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO      35          QUEUES: NRAN=   32 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO      37          QUEUES: NRAN=   34 NLOD=    0 NBAC=    0 VMOTO=    3
              THE VEHICLE POPULATION IN ZONE= 2 IS       683.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO      57          QUEUES: NRAN=   57 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO      38          QUEUES: NRAN=   38 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO      45          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO      82          QUEUES: NRAN=   79 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO      79          QUEUES: NRAN=   79 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO      75          QUEUES: NRAN=   75 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO      50          QUEUES: NRAN=   49 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO     113          QUEUES: NRAN=  113 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO      57          QUEUES: NRAN=   57 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO      49          QUEUES: NRAN=   49 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO     101          QUEUES: NRAN=   97 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO      12          QUEUES: NRAN=   12 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO      79          QUEUES: NRAN=   79 NLOD=    0 NBAC=    0 VMOTO=    0
              THE VEHICLE POPULATION IN ZONE= 3 IS       837.
     THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =       1713
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO       1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO       9          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    9
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO       4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO       3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO       3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      12          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   12
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
              THE VEHICLE POPULATION IN ZONE= 4 IS        40.
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VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO        1           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        1           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        6           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO        3           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO        5           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     5
          THE VEHICLE POPULATION IN ZONE= 5 IS          16.
     THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=          1769
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 20 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       193  *  THE % OF REMAINING VEHICLES= 10.91 %   *  THE % OF INITIAL VEHICLES=  10.71 %
RADIUS--- 5-TO- 6---POPULATION=       110  *  THE % OF REMAINING VEHICLES=  6.22 %   *  THE % OF INITIAL VEHICLES=   6.10 %
RADIUS--- 6-TO- 7---POPULATION=       404  *  THE % OF REMAINING VEHICLES= 22.84 %   *  THE % OF INITIAL VEHICLES=  22.42 %
RADIUS--- 7-TO- 8---POPULATION=       233  *  THE % OF REMAINING VEHICLES= 13.17 %   *  THE % OF INITIAL VEHICLES=  12.93 %
RADIUS--- 8-TO- 9---POPULATION=       425  *  THE % OF REMAINING VEHICLES= 24.02 %   *  THE % OF INITIAL VEHICLES=  23.58 %
RADIUS--- 9-TO-10---POPULATION=       348  *  THE % OF REMAINING VEHICLES= 19.67 %   *  THE % OF INITIAL VEHICLES=  19.31 %
RADIUS---10-TO-11---POPULATION=        26  *  THE % OF REMAINING VEHICLES=  1.47 %   *  THE % OF INITIAL VEHICLES=   1.44 %
RADIUS---11-TO-12---POPULATION=        19  *  THE % OF REMAINING VEHICLES=  1.07 %   *  THE % OF INITIAL VEHICLES=   1.05 %
RADIUS---12-TO-13---POPULATION=        11  *  THE % OF REMAINING VEHICLES=  0.62 %   *  THE % OF INITIAL VEHICLES=   0.61 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1713 ---VEHICLE POPULATION OUTSIDE TEN MILES=        89 ------------
VEHICLE POPULATION WITHIN EPZ=    1769 * VEHICLE POPULATION OUTSIDE EPZ=      33 * PERCENTAGE OF TOTAL WITHIN EPZ=  98.17%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   1500 SECONDS OR  0 HOURS, 25 MINUTES, AND  0 SECONDS.
       THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO      185           QUEUES: NRAN=  185 NLOD=     0 NBAC=     0 VMOTO=     0
          THE VEHICLE POPULATION IN ZONE= 1 IS         185.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS        185
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       54           QUEUES: NRAN=   48 NLOD=     0 NBAC=     0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       60           QUEUES: NRAN=   54 NLOD=     0 NBAC=     0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       53           QUEUES: NRAN=   48 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       56           QUEUES: NRAN=   48 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO       23           QUEUES: NRAN=   21 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO       21           QUEUES: NRAN=   21 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO       27           QUEUES: NRAN=   25 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO       45           QUEUES: NRAN=   42 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       66           QUEUES: NRAN=   62 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       66           QUEUES: NRAN=   62 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO       39           QUEUES: NRAN=   29 NLOD=     0 NBAC=     0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO       45           QUEUES: NRAN=   43 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO       47           QUEUES: NRAN=   43 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO       34           QUEUES: NRAN=   31 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO       39           QUEUES: NRAN=   33 NLOD=     0 NBAC=     0 VMOTO=     6
          THE VEHICLE POPULATION IN ZONE= 2 IS         675.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO       55           QUEUES: NRAN=   55 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       36           QUEUES: NRAN=   36 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO       44           QUEUES: NRAN=   43 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO       80           QUEUES: NRAN=   76 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       78           QUEUES: NRAN=   76 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO       72           QUEUES: NRAN=   72 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO       48           QUEUES: NRAN=   47 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO      108           QUEUES: NRAN=  108 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO       57           QUEUES: NRAN=   55 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO       47           QUEUES: NRAN=   47 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       97           QUEUES: NRAN=   93 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO       12           QUEUES: NRAN=   12 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO       76           QUEUES: NRAN=   76 NLOD=     0 NBAC=     0 VMOTO=     0
          THE VEHICLE POPULATION IN ZONE= 3 IS         810.
     THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =        1670
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VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO        5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       11          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   11
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       12          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   12
             THE VEHICLE POPULATION IN ZONE= 4 IS        48.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO        5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO        6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
             THE VEHICLE POPULATION IN ZONE= 5 IS        20.
     THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=           1738
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 25 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       185  *  THE % OF REMAINING VEHICLES= 10.64 %   *  THE % OF INITIAL VEHICLES=  10.27 %
RADIUS--- 5-TO- 6---POPULATION=       109  *  THE % OF REMAINING VEHICLES=  6.27 %   *  THE % OF INITIAL VEHICLES=   6.05 %
RADIUS--- 6-TO- 7---POPULATION=       391  *  THE % OF REMAINING VEHICLES= 22.50 %   *  THE % OF INITIAL VEHICLES=  21.70 %
RADIUS--- 7-TO- 8---POPULATION=       226  *  THE % OF REMAINING VEHICLES= 13.00 %   *  THE % OF INITIAL VEHICLES=  12.54 %
RADIUS--- 8-TO- 9---POPULATION=       415  *  THE % OF REMAINING VEHICLES= 23.88 %   *  THE % OF INITIAL VEHICLES=  23.03 %
RADIUS--- 9-TO-10---POPULATION=       344  *  THE % OF REMAINING VEHICLES= 19.79 %   *  THE % OF INITIAL VEHICLES=  19.09 %
RADIUS---10-TO-11---POPULATION=        32  *  THE % OF REMAINING VEHICLES=  1.84 %   *  THE % OF INITIAL VEHICLES=   1.78 %
RADIUS---11-TO-12---POPULATION=        18  *  THE % OF REMAINING VEHICLES=  1.04 %   *  THE % OF INITIAL VEHICLES=   1.00 %
RADIUS---12-TO-13---POPULATION=        18  *  THE % OF REMAINING VEHICLES=  1.04 %   *  THE % OF INITIAL VEHICLES=   1.00 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1670 ---VEHICLE POPULATION OUTSIDE TEN MILES=      132 -------------
VEHICLE POPULATION WITHIN EPZ=    1738 * VEHICLE POPULATION OUTSIDE EPZ=      64 * PERCENTAGE OF TOTAL WITHIN EPZ=  96.45%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   1800 SECONDS OR  0 HOURS, 30 MINUTES, AND  0 SECONDS.
        THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO      174          QUEUES: NRAN=  174 NLOD=    0 NBAC=    0 VMOTO=    0
             THE VEHICLE POPULATION IN ZONE= 1 IS       174.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS        174
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       53          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       61          QUEUES: NRAN=   51 NLOD=    0 NBAC=    0 VMOTO=   10
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       52          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       54          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    9
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO       20          QUEUES: NRAN=   20 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO       22          QUEUES: NRAN=   20 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO       27          QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO       41          QUEUES: NRAN=   39 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       68          QUEUES: NRAN=   58 NLOD=    0 NBAC=    0 VMOTO=   10
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       66          QUEUES: NRAN=   58 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO       38          QUEUES: NRAN=   28 NLOD=    0 NBAC=    0 VMOTO=   10
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO       43          QUEUES: NRAN=   41 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO       48          QUEUES: NRAN=   41 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO       33          QUEUES: NRAN=   29 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO       38          QUEUES: NRAN=   31 NLOD=    0 NBAC=    0 VMOTO=    7
             THE VEHICLE POPULATION IN ZONE= 2 IS       664.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO       52          QUEUES: NRAN=   52 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       34          QUEUES: NRAN=   34 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO       42          QUEUES: NRAN=   41 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO       74          QUEUES: NRAN=   71 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       78          QUEUES: NRAN=   71 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO       68          QUEUES: NRAN=   68 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO       45          QUEUES: NRAN=   44 NLOD=    0 NBAC=    0 VMOTO=    1
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VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO      102          QUEUES: NRAN=  102 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO       53          QUEUES: NRAN=   52 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO       44          QUEUES: NRAN=   44 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       92          QUEUES: NRAN=   88 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO       14          QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO       71          QUEUES: NRAN=   71 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 3 IS       769.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =       1607
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO        6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       17          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   17
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       23          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   23
                THE VEHICLE POPULATION IN ZONE= 4 IS        68.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO        6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
                THE VEHICLE POPULATION IN ZONE= 5 IS        30.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             1705
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME;  0 HOURS, 30 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=      174  *  THE % OF REMAINING VEHICLES= 10.21 %   *  THE % OF INITIAL VEHICLES=   9.66 %
RADIUS--- 5-TO- 6---POPULATION=      105  *  THE % OF REMAINING VEHICLES=  6.16 %   *  THE % OF INITIAL VEHICLES=   5.83 %
RADIUS--- 6-TO- 7---POPULATION=      372  *  THE % OF REMAINING VEHICLES= 21.82 %   *  THE % OF INITIAL VEHICLES=  20.64 %
RADIUS--- 7-TO- 8---POPULATION=      218  *  THE % OF REMAINING VEHICLES= 12.79 %   *  THE % OF INITIAL VEHICLES=  12.10 %
RADIUS--- 8-TO- 9---POPULATION=      408  *  THE % OF REMAINING VEHICLES= 23.93 %   *  THE % OF INITIAL VEHICLES=  22.64 %
RADIUS--- 9-TO-10---POPULATION=      330  *  THE % OF REMAINING VEHICLES= 19.35 %   *  THE % OF INITIAL VEHICLES=  18.31 %
RADIUS---10-TO-11---POPULATION=       40  *  THE % OF REMAINING VEHICLES=  2.35 %   *  THE % OF INITIAL VEHICLES=   2.22 %
RADIUS---11-TO-12---POPULATION=       29  *  THE % OF REMAINING VEHICLES=  1.70 %   *  THE % OF INITIAL VEHICLES=   1.61 %
RADIUS---12-TO-13---POPULATION=       29  *  THE % OF REMAINING VEHICLES=  1.70 %   *  THE % OF INITIAL VEHICLES=   1.61 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1607 ---VEHICLE POPULATION OUTSIDE TEN MILES=       195 --------------.
VEHICLE POPULATION WITHIN EPZ=    1705 * VEHICLE POPULATION OUTSIDE EPZ=       97 * PERCENTAGE OF TOTAL WITHIN EPZ=  94.62%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED= . 2100 SECONDS OR  0 HOURS, 35 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS         0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO      164          QUEUES: NRAN=  164 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 1 IS       164.
         THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS       164
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       49          QUEUES: NRAN=   42 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       60          QUEUES: NRAN=   48 NLOD=    0 NBAC=    0 VMOTO=   12
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       52          QUEUES: NRAN=   42 NLOD=    0 NBAC=    0 VMOTO=   10
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       53          QUEUES: NRAN=   42 NLOD=    0 NBAC=    0 VMOTO=   11
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO       19          QUEUES: NRAN=   19 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO       20          QUEUES: NRAN=   19 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO       25          QUEUES: NRAN=   22 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO       41          QUEUES: NRAN=   37 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       63          QUEUES: NRAN=   55 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       64          QUEUES: NRAN=   55 NLOD=    0 NBAC=    0 VMOTO=    9
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO       43          QUEUES: NRAN=   26 NLOD=    0 NBAC=    0 VMOTO=   17
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO       39          QUEUES: NRAN=   38 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO       44          QUEUES: NRAN=   38 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO       34          QUEUES: NRAN=   28 NLOD=    0 NBAC=    0 VMOTO=    6
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VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO       35          QUEUES: NRAN=   29 NLOD=     0 NBAC=     0 VMOTO=     6
                THE VEHICLE POPULATION IN ZONE= 2 IS       641.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO       49          QUEUES: NRAN=   49 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       32          QUEUES: NRAN=   32 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO       40          QUEUES: NRAN=   38 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO       70          QUEUES: NRAN=   67 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       72          QUEUES: NRAN=   67 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO       64          QUEUES: NRAN=   64 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO       43          QUEUES: NRAN=   42 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO       96          QUEUES: NRAN=   96 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO       50          QUEUES: NRAN=   49 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO       42          QUEUES: NRAN=   42 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       87          QUEUES: NRAN=   83 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO       14          QUEUES: NRAN=   11 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO       67          QUEUES: NRAN=   67 NLOD=     0 NBAC=     0 VMOTO=     0
                THE VEHICLE POPULATION IN ZONE= 3 IS       726.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =       1531
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       14          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     7
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       28          QUEUES: NRAN=    0 NLOD=     0 NBAC=     5 VMOTO=    23
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       16          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    16
                THE VEHICLE POPULATION IN ZONE= 4 IS        85.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO        9          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       12          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    12
                THE VEHICLE POPULATION IN ZONE= 5 IS        37.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=            1653
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 35 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       164  *  THE % OF REMAINING VEHICLES=  9.92 %   *  THE % OF INITIAL VEHICLES=   9.10 %
RADIUS--- 5-TO- 6---POPULATION=        98  *  THE % OF REMAINING VEHICLES=  5.93 %   *  THE % OF INITIAL VEHICLES=   5.44 %
RADIUS--- 6-TO- 7---POPULATION=       354  *  THE % OF REMAINING VEHICLES= 21.42 %   *  THE % OF INITIAL VEHICLES=  19.64 %
RADIUS--- 7-TO- 8---POPULATION=       206  *  THE % OF REMAINING VEHICLES= 12.46 %   *  THE % OF INITIAL VEHICLES=  11.43 %
RADIUS--- 8-TO- 9---POPULATION=       387  *  THE % OF REMAINING VEHICLES= 23.41 %   *  THE % OF INITIAL VEHICLES=  21.48 %
RADIUS--- 9-TO-10---POPULATION=       322  *  THE % OF REMAINING VEHICLES= 19.48 %   *  THE % OF INITIAL VEHICLES=  17.87 %
RADIUS---10-TO-11---POPULATION=        54  *  THE % OF REMAINING VEHICLES=  3.27 %   *  THE % OF INITIAL VEHICLES=   3.00 %
RADIUS---11-TO-12---POPULATION=        40  *  THE % OF REMAINING VEHICLES=  2.42 %   *  THE % OF INITIAL VEHICLES=   2.22 %
RADIUS---12-TO-13---POPULATION=        28  *  THE % OF REMAINING VEHICLES=  1.69 %   *  THE % OF INITIAL VEHICLES=   1.55 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=       1531 ---VEHICLE POPULATION OUTSIDE TEN MILES=       271 ------------
VEHICLE POPULATION WITHIN EPZ=    1653 * VEHICLE POPULATION OUTSIDE EPZ=      149 * PERCENTAGE OF TOTAL WITHIN EPZ=  91.73%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   2400 SECONDS OR  0 HOURS, 40 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO      153          QUEUES: NRAN=  153 NLOD=     0 NBAC=     0 VMOTO=     0
                THE VEHICLE POPULATION IN ZONE= 1 IS       153.
         THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS       153
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       48          QUEUES: NRAN=   40 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       55          QUEUES: NRAN=   45 NLOD=     0 NBAC=     0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       51          QUEUES: NRAN=   40 NLOD=     0 NBAC=     0 VMOTO=    11
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       54          QUEUES: NRAN=   40 NLOD=     0 NBAC=     0 VMOTO=    14
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VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO       19          QUEUES: NRAN=   18 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO       19          QUEUES: NRAN=   18 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO       23          QUEUES: NRAN=   21 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO       39          QUEUES: NRAN=   35 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       61          QUEUES: NRAN=   51 NLOD=    0 NBAC=    0 VMOTO=   10
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       63          QUEUES: NRAN=   51 NLOD=    0 NBAC=    0 VMOTO=   12
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO       45          QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=   21
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO       38          QUEUES: NRAN=   36 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO       40          QUEUES: NRAN=   36 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO       31          QUEUES: NRAN=   26 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO       34          QUEUES: NRAN=   27 NLOD=    0 NBAC=    0 VMOTO=    7
           THE VEHICLE POPULATION IN ZONE= 2 IS       620.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO       45          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       30          QUEUES: NRAN=   30 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO       37          QUEUES: NRAN=   36 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO       65          QUEUES: NRAN=   63 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       70          QUEUES: NRAN=   63 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO       60          QUEUES: NRAN=   60 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO       40          QUEUES: NRAN=   39 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO       90          QUEUES: NRAN=   90 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO       47          QUEUES: NRAN=   45 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO       39          QUEUES: NRAN=   39 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       82          QUEUES: NRAN=   77 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO       12          QUEUES: NRAN=   10 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO       63          QUEUES: NRAN=   63 NLOD=    0 NBAC=    0 VMOTO=    0
           THE VEHICLE POPULATION IN ZONE= 3 IS       680.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =       1453
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO       19          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   19
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       36          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   36
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       21          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
           THE VEHICLE POPULATION IN ZONE= 4 IS       102.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO        5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       12          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   12
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       13          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   13
           THE VEHICLE POPULATION IN ZONE= 5 IS        40.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=           1595
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 40 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=      153  *  THE % OF REMAINING VEHICLES=  9.59 %   *  THE % OF INITIAL VEHICLES=   8.49 %
RADIUS--- 5-TO- 6---POPULATION=       93  *  THE % OF REMAINING VEHICLES=  5.83 %   *  THE % OF INITIAL VEHICLES=   5.16 %
RADIUS--- 6-TO- 7---POPULATION=      331  *  THE % OF REMAINING VEHICLES= 20.75 %   *  THE % OF INITIAL VEHICLES=  18.37 %
RADIUS--- 7-TO- 8---POPULATION=      196  *  THE % OF REMAINING VEHICLES= 12.29 %   *  THE % OF INITIAL VEHICLES=  10.88 %
RADIUS--- 8-TO- 9---POPULATION=      374  *  THE % OF REMAINING VEHICLES= 23.45 %   *  THE % OF INITIAL VEHICLES=  20.75 %
RADIUS--- 9-TO-10---POPULATION=      306  *  THE % OF REMAINING VEHICLES= 19.18 %   *  THE % OF INITIAL VEHICLES=  16.98 %
RADIUS---10-TO-11---POPULATION=       60  *  THE % OF REMAINING VEHICLES=  3.76 %   *  THE % OF INITIAL VEHICLES=   3.33 %
RADIUS---11-TO-12---POPULATION=       48  *  THE % OF REMAINING VEHICLES=  3.01 %   *  THE % OF INITIAL VEHICLES=   2.66 %
RADIUS---12-TO-13---POPULATION=       34  *  THE % OF REMAINING VEHICLES=  2.13 %   *  THE % OF INITIAL VEHICLES=   1.89 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1453 ---VEHICLE POPULATION OUTSIDE TEN MILES=        349 -----------
VEHICLE POPULATION WITHIN EPZ=    1595 * VEHICLE POPULATION OUTSIDE EPZ=      207 * PERCENTAGE OF TOTAL WITHIN EPZ=  88.51%


THE INITIAL VEHICLE POPULATION WAS =      1802
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TOTAL TIME ELAPSED=   2700 SECONDS OR  0 HOURS, 45 MINUTES, AND  0 SECONDS.
        THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=    1 IS EQUAL TO      143           QUEUES: NRAN=  143 NLOD=     0 NBAC=     0 VMOTO=     0
                THE VEHICLE POPULATION IN ZONE= 1 IS      143.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS        143
VEHICLE POPULATION IN ZONE= 2 ROAD=    1 IS EQUAL TO       44           QUEUES: NRAN=   37 NLOD=     0 NBAC=     0 VMOTO=     7
VEHICLE POPULATION IN ZONE= 2 ROAD=    2 IS EQUAL TO       52           QUEUES: NRAN=   42 NLOD=     0 NBAC=     0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=    3 IS EQUAL TO       49           QUEUES: NRAN=   37 NLOD=     0 NBAC=     0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 2 ROAD=    4 IS EQUAL TO       50           QUEUES: NRAN=   37 NLOD=     0 NBAC=     0 VMOTO=    13
VEHICLE POPULATION IN ZONE= 2 ROAD=    5 IS EQUAL TO       18           QUEUES: NRAN=   17 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 2 ROAD=    6 IS EQUAL TO       18           QUEUES: NRAN=   17 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 2 ROAD=    7 IS EQUAL TO       21           QUEUES: NRAN=   19 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 2 ROAD=    8 IS EQUAL TO       36           QUEUES: NRAN=   32 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 2 ROAD=    9 IS EQUAL TO       58           QUEUES: NRAN=   48 NLOD=     0 NBAC=     0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=   10 IS EQUAL TO       62           QUEUES: NRAN=   48 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 2 ROAD=   11 IS EQUAL TO       40           QUEUES: NRAN=   23 NLOD=     0 NBAC=     0 VMOTO=    17
VEHICLE POPULATION IN ZONE= 2 ROAD=   12 IS EQUAL TO       35           QUEUES: NRAN=   34 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 2 ROAD=   13 IS EQUAL TO       39           QUEUES: NRAN=   34 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=   14 IS EQUAL TO       29           QUEUES: NRAN=   24 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=   15 IS EQUAL TO       32           QUEUES: NRAN=   25 NLOD=     0 NBAC=     0 VMOTO=     7
                THE VEHICLE POPULATION IN ZONE= 2 IS      583.
VEHICLE POPULATION IN ZONE= 3 ROAD=    1 IS EQUAL TO       42           QUEUES: NRAN=   42 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=    2 IS EQUAL TO       28           QUEUES: NRAN=   28 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=    3 IS EQUAL TO       35           QUEUES: NRAN=   34 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=    4 IS EQUAL TO       61           QUEUES: NRAN=   59 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 3 ROAD=    5 IS EQUAL TO       63           QUEUES: NRAN=   59 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=    6 IS EQUAL TO       56           QUEUES: NRAN=   56 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=    7 IS EQUAL TO       38           QUEUES: NRAN=   36 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 3 ROAD=    8 IS EQUAL TO       83           QUEUES: NRAN=   83 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=    9 IS EQUAL TO       45           QUEUES: NRAN=   42 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=   10 IS EQUAL TO       36           QUEUES: NRAN=   36 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   11 IS EQUAL TO       76           QUEUES: NRAN=   72 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=   12 IS EQUAL TO        9           QUEUES: NRAN=    9 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   13 IS EQUAL TO       59           QUEUES: NRAN=   59 NLOD=     0 NBAC=     0 VMOTO=     0
                THE VEHICLE POPULATION IN ZONE= 3 IS      631.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =       1357
VEHICLE POPULATION IN ZONE= 4 ROAD=    1 IS EQUAL TO       18           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    18
VEHICLE POPULATION IN ZONE= 4 ROAD=    2 IS EQUAL TO        3           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 4 ROAD=    3 IS EQUAL TO       30           QUEUES: NRAN=    0 NLOD=     0 NBAC=     9 VMOTO=    21
VEHICLE POPULATION IN ZONE= 4 ROAD=    4 IS EQUAL TO        3           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 4 ROAD=    6 IS EQUAL TO        7           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     7
VEHICLE POPULATION IN ZONE= 4 ROAD=    7 IS EQUAL TO        7           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     7
VEHICLE POPULATION IN ZONE= 4 ROAD=    8 IS EQUAL TO       40           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    40
VEHICLE POPULATION IN ZONE= 4 ROAD=    9 IS EQUAL TO       28           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    28
                THE VEHICLE POPULATION IN ZONE= 4 IS      136.
VEHICLE POPULATION IN ZONE= 5 ROAD=    4 IS EQUAL TO        9           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 5 ROAD=    5 IS EQUAL TO        1           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 5 ROAD=    7 IS EQUAL TO        2           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 5 ROAD=    8 IS EQUAL TO        6           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 5 ROAD=    9 IS EQUAL TO       12           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 5 ROAD=   10 IS EQUAL TO       10           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    10
                THE VEHICLE POPULATION IN ZONE= 5 IS       40.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             1533
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 45 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=        143  *  THE % OF REMAINING VEHICLES=  9.33 %   *  THE % OF INITIAL VEHICLES=   7.94 %
RADIUS--- 5-TO- 6---POPULATION=         86  *  THE % OF REMAINING VEHICLES=  5.61 %   *  THE % OF INITIAL VEHICLES=   4.77 %
RADIUS--- 6-TO- 7---POPULATION=        310  *  THE % OF REMAINING VEHICLES= 20.22 %   *  THE % OF INITIAL VEHICLES=  17.20 %
RADIUS--- 7-TO- 8---POPULATION=        184  *  THE % OF REMAINING VEHICLES= 12.00 %   *  THE % OF INITIAL VEHICLES=  10.21 %
RADIUS--- 8-TO- 9---POPULATION=        353  *  THE % OF REMAINING VEHICLES= 23.03 %   *  THE % OF INITIAL VEHICLES=  19.59 %
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RADIUS=== 9=TO=10===POPULATION=       281  *  THE % OF REMAINING VEHICLES= 18.33 %   *  THE % OF INITIAL VEHICLES=  15.59 %
RADIUS===10=TO=11===POPULATION=        83  *  THE % OF REMAINING VEHICLES=  5.41 %   *  THE % OF INITIAL VEHICLES=   4.61 %
RADIUS===11=TO=12===POPULATION=        55  *  THE % OF REMAINING VEHICLES=  3.59 %   *  THE % OF INITIAL VEHICLES=   3.05 %
RADIUS===12=TO=13===POPULATION=        38  *  THE % OF REMAINING VEHICLES=  2.48 %   *  THE % OF INITIAL VEHICLES=   2.11 %
=======TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1357 ===VEHICLE POPULATION OUTSIDE TEN MILES=       445 =============
VEHICLE POPULATION WITHIN EPZ=    1533 * VEHICLE POPULATION OUTSIDE EPZ=      269 * PERCENTAGE OF TOTAL WITHIN EPZ=  85.07%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   3000 SECONDS OR  0 HOURS, 50 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO      122          QUEUES: NRAN=  122 NLOD=     0 NBAC=     0 VMOTO=     0
                THE VEHICLE POPULATION IN ZONE= 1 IS        122.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS       122
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       46          QUEUES: NRAN=   32 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       52          QUEUES: NRAN=   36 NLOD=     0 NBAC=     0 VMOTO=    16
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       45          QUEUES: NRAN=   32 NLOD=     0 NBAC=     0 VMOTO=    13
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       49          QUEUES: NRAN=   32 NLOD=     0 NBAC=     0 VMOTO=    17
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO       16          QUEUES: NRAN=   14 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO       17          QUEUES: NRAN=   14 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO       21          QUEUES: NRAN=   17 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO       35          QUEUES: NRAN=   27 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       52          QUEUES: NRAN=   41 NLOD=     0 NBAC=     0 VMOTO=    11
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       58          QUEUES: NRAN=   41 NLOD=     0 NBAC=     0 VMOTO=    17
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO       49          QUEUES: NRAN=   19 NLOD=     0 NBAC=     0 VMOTO=    30
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO       34          QUEUES: NRAN=   29 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO       39          QUEUES: NRAN=   29 NLOD=     0 NBAC=     0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO       28          QUEUES: NRAN=   21 NLOD=     0 NBAC=     0 VMOTO=     7
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO       31          QUEUES: NRAN=   22 NLOD=     0 NBAC=     0 VMOTO=     9
                THE VEHICLE POPULATION IN ZONE= 2 IS        572.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO       36          QUEUES: NRAN=   36 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       24          QUEUES: NRAN=   24 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO       30          QUEUES: NRAN=   29 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO       54          QUEUES: NRAN=   50 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       64          QUEUES: NRAN=   50 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO       48          QUEUES: NRAN=   48 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO       32          QUEUES: NRAN=   31 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO       71          QUEUES: NRAN=   71 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO       39          QUEUES: NRAN=   36 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO       31          QUEUES: NRAN=   31 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       70          QUEUES: NRAN=   61 NLOD=     0 NBAC=     0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO       12          QUEUES: NRAN=    8 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO       50          QUEUES: NRAN=   50 NLOD=     0 NBAC=     0 VMOTO=     0
                THE VEHICLE POPULATION IN ZONE= 3 IS        561.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =       1255
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        5          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO       47          QUEUES: NRAN=    0 NLOD=     0 NBAC=    26 VMOTO=    21
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO       12          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     7
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       41          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    41
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       31          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    31
                THE VEHICLE POPULATION IN ZONE= 4 IS        151.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO       13          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    13
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        3          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        8          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       13          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    13
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       10          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    10
                THE VEHICLE POPULATION IN ZONE= 5 IS         51.
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      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=          1457
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 50 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       122  *  THE % OF REMAINING VEHICLES=  8.37 %   *  THE % OF INITIAL VEHICLES=   6.77 %
RADIUS--- 5-TO- 6---POPULATION=        82  *  THE % OF REMAINING VEHICLES=  5.63 %   *  THE % OF INITIAL VEHICLES=   4.55 %
RADIUS--- 6-TO- 7---POPULATION=       273  *  THE % OF REMAINING VEHICLES= 18.74 %   *  THE % OF INITIAL VEHICLES=  15.15 %
RADIUS--- 7-TO- 8---POPULATION=       171  *  THE % OF REMAINING VEHICLES= 11.74 %   *  THE % OF INITIAL VEHICLES=   9.49 %
RADIUS--- 8-TO- 9---POPULATION=       336  *  THE % OF REMAINING VEHICLES= 23.06 %   *  THE % OF INITIAL VEHICLES=  18.65 %
RADIUS--- 9-TO-10---POPULATION=       271  *  THE % OF REMAINING VEHICLES= 18.60 %   *  THE % OF INITIAL VEHICLES=  15.04 %
RADIUS---10-TO-11---POPULATION=        99  *  THE % OF REMAINING VEHICLES=  6.79 %   *  THE % OF INITIAL VEHICLES=   5.49 %
RADIUS---11-TO-12---POPULATION=        62  *  THE % OF REMAINING VEHICLES=  4.26 %   *  THE % OF INITIAL VEHICLES=   3.44 %
RADIUS---12-TO-13---POPULATION=        41  *  THE % OF REMAINING VEHICLES=  2.81 %   *  THE % OF INITIAL VEHICLES=   2.28 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=       1255 ---VEHICLE POPULATION OUTSIDE TEN MILES=        547 -------------
VEHICLE POPULATION WITHIN EPZ=    1457 * VEHICLE POPULATION OUTSIDE EPZ=      345 * PERCENTAGE OF TOTAL WITHIN EPZ=  80.85%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   3300 SECONDS OR  0 HOURS, 55 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO       101           QUEUES: NRAN=  101 NLOD=     0 NBAC=     0 VMOTO=     0
              THE VEHICLE POPULATION IN ZONE= 1 IS       101.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS        101
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO        40           QUEUES: NRAN=   26 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO        50           QUEUES: NRAN=   29 NLOD=     0 NBAC=     0 VMOTO=    21
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO        47           QUEUES: NRAN=   26 NLOD=     0 NBAC=     0 VMOTO=    21
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO        45           QUEUES: NRAN=   26 NLOD=     0 NBAC=     0 VMOTO=    19
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO        14           QUEUES: NRAN=   12 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO        15           QUEUES: NRAN=   12 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO        18           QUEUES: NRAN=   14 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO        31           QUEUES: NRAN=   23 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO        52           QUEUES: NRAN=   34 NLOD=     0 NBAC=     0 VMOTO=    18
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO        53           QUEUES: NRAN=   34 NLOD=     0 NBAC=     0 VMOTO=    19
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO        57           QUEUES: NRAN=   16 NLOD=     0 NBAC=     9 VMOTO=    32
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO        29           QUEUES: NRAN=   24 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO        32           QUEUES: NRAN=   24 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO        29           QUEUES: NRAN=   17 NLOD=     0 NBAC=     0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO        25           QUEUES: NRAN=   18 NLOD=     0 NBAC=     0 VMOTO=     7
              THE VEHICLE POPULATION IN ZONE= 2 IS       537.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO        30           QUEUES: NRAN=   30 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO        20           QUEUES: NRAN=   20 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO        25           QUEUES: NRAN=   24 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO        45           QUEUES: NRAN=   41 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO        56           QUEUES: NRAN=   41 NLOD=     0 NBAC=     0 VMOTO=    15
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO        39           QUEUES: NRAN=   39 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO        28           QUEUES: NRAN=   26 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO        59           QUEUES: NRAN=   59 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO        33           QUEUES: NRAN=   30 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO        26           QUEUES: NRAN=   26 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO        60           QUEUES: NRAN=   51 NLOD=     0 NBAC=     0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO        10           QUEUES: NRAN=    7 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO        41           QUEUES: NRAN=   41 NLOD=     0 NBAC=     0 VMOTO=     0
              THE VEHICLE POPULATION IN ZONE= 3 IS       472.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =        1110
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO        14           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO         6           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO        73           QUEUES: NRAN=    0 NLOD=     0 NBAC=    52 VMOTO=    21
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO        10           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        12           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        10           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    10
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VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       45            QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    45
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       33            QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    33
          THE VEHICLE POPULATION IN ZONE= 4 IS           203.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO       14            QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        4            QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        3            QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO       15            QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    15
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       22            QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    22
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       12            QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    12
          THE VEHICLE POPULATION IN ZONE= 5 IS            70.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=          1383
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  0 HOURS, 55 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       101  *  THE % OF REMAINING VEHICLES=  7.30 %   *  THE % OF INITIAL VEHICLES=   5.60 %
RADIUS--- 5-TO- 6---POPULATION=        70  *  THE % OF REMAINING VEHICLES=  5.06 %   *  THE % OF INITIAL VEHICLES=   3.88 %
RADIUS--- 6-TO- 7---POPULATION=       235  *  THE % OF REMAINING VEHICLES= 16.99 %   *  THE % OF INITIAL VEHICLES=  13.04 %
RADIUS--- 7-TO- 8---POPULATION=       154  *  THE % OF REMAINING VEHICLES= 11.14 %   *  THE % OF INITIAL VEHICLES=   8.55 %
RADIUS--- 8-TO- 9---POPULATION=       302  *  THE % OF REMAINING VEHICLES= 21.84 %   *  THE % OF INITIAL VEHICLES=  16.76 %
RADIUS--- 9-TO-10---POPULATION=       248  *  THE % OF REMAINING VEHICLES= 17.93 %   *  THE % OF INITIAL VEHICLES=  13.76 %
RADIUS---10-TO-11---POPULATION=       154  *  THE % OF REMAINING VEHICLES= 11.14 %   *  THE % OF INITIAL VEHICLES=   8.55 %
RADIUS---11-TO-12---POPULATION=        74  *  THE % OF REMAINING VEHICLES=  5.35 %   *  THE % OF INITIAL VEHICLES=   4.11 %
RADIUS---12-TO-13---POPULATION=        45  *  THE % OF REMAINING VEHICLES=  3.25 %   *  THE % OF INITIAL VEHICLES=   2.50 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=      1110 ---VEHICLE POPULATION OUTSIDE TEN MILES=       692 ------------
VEHICLE POPULATION WITHIN EPZ=    1383 * VEHICLE POPULATION OUTSIDE EPZ=     419 * PERCENTAGE OF TOTAL WITHIN EPZ=  76.75%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   3600 SECONDS OR  1 HOURS,  0 MINUTES, AND  0 SECONDS.
       THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS           0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO       60            QUEUES: NRAN=   60 NLOD=     0 NBAC=     0 VMOTO=     0
          THE VEHICLE POPULATION IN ZONE= 1 IS            60.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          60
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       35            QUEUES: NRAN=   21 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       44            QUEUES: NRAN=   23 NLOD=     0 NBAC=     0 VMOTO=    21
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       45            QUEUES: NRAN=   21 NLOD=     0 NBAC=     0 VMOTO=    24
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       48            QUEUES: NRAN=   21 NLOD=     0 NBAC=     0 VMOTO=    27
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO       10            QUEUES: NRAN=    9 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO       12            QUEUES: NRAN=    9 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO       17            QUEUES: NRAN=   11 NLOD=     0 NBAC=     0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO       26            QUEUES: NRAN=   18 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       44            QUEUES: NRAN=   27 NLOD=     0 NBAC=     0 VMOTO=    17
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       48            QUEUES: NRAN=   27 NLOD=     0 NBAC=     0 VMOTO=    21
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO       81            QUEUES: NRAN=   13 NLOD=     0 NBAC=    37 VMOTO=    31
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO       24            QUEUES: NRAN=   19 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO       28            QUEUES: NRAN=   19 NLOD=     0 NBAC=     0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO       22            QUEUES: NRAN=   14 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO       27            QUEUES: NRAN=   14 NLOD=     0 NBAC=     0 VMOTO=    13
          THE VEHICLE POPULATION IN ZONE= 2 IS           511.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO       24            QUEUES: NRAN=   24 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       16            QUEUES: NRAN=   16 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO       20            QUEUES: NRAN=   19 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO       38            QUEUES: NRAN=   33 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       41            QUEUES: NRAN=   33 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO       31            QUEUES: NRAN=   31 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO       23            QUEUES: NRAN=   20 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO       47            QUEUES: NRAN=   47 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO       27            QUEUES: NRAN=   24 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO       20            QUEUES: NRAN=   20 NLOD=     0 NBAC=     0 VMOTO=     0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       48            QUEUES: NRAN=   40 NLOD=     0 NBAC=     0 VMOTO=     8
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VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO        7           QUEUES: NRAN=    5 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO       33           QUEUES: NRAN=   33 NLOD=     0 NBAC=     0 VMOTO=     0
                THE VEHICLE POPULATION IN ZONE= 3 IS      375.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =        966
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       17           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    17
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO       10           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO       98           QUEUES: NRAN=    0 NLOD=     0 NBAC=    79 VMOTO=    19
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO        7           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     7
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO       14           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO       18           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    18
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       52           QUEUES: NRAN=    0 NLOD=     0 NBAC=     2 VMOTO=    50
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       32           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    32
                THE VEHICLE POPULATION IN ZONE= 4 IS      248.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO       15           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    15
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        3           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        4           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO       21           QUEUES: NRAN=    0 NLOD=     0 NBAC=     3 VMOTO=    18
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       22           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    22
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       20           QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    20
                THE VEHICLE POPULATION IN ZONE= 5 IS       85.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             1299
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME: 1 HOURS, 0 MINUTES, AND 0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=        80  *  THE % OF REMAINING VEHICLES=  6.16 %   *  THE % OF INITIAL VEHICLES=    4.44 %
RADIUS--- 5-TO- 6---POPULATION=        59  *  THE % OF REMAINING VEHICLES=  4.54 %   *  THE % OF INITIAL VEHICLES=    3.27 %
RADIUS--- 6-TO- 7---POPULATION=       191  *  THE % OF REMAINING VEHICLES= 14.70 %   *  THE % OF INITIAL VEHICLES=   10.60 %
RADIUS--- 7-TO- 8---POPULATION=       136  *  THE % OF REMAINING VEHICLES= 10.47 %   *  THE % OF INITIAL VEHICLES=    7.55 %
RADIUS--- 8-TO- 9---POPULATION=       262  *  THE % OF REMAINING VEHICLES= 20.17 %   *  THE % OF INITIAL VEHICLES=   14.54 %
RADIUS--- 9-TO-10---POPULATION=       238  *  THE % OF REMAINING VEHICLES= 18.32 %   *  THE % OF INITIAL VEHICLES=   13.21 %
RADIUS---10-TO-11---POPULATION=       193  *  THE % OF REMAINING VEHICLES= 14.86 %   *  THE % OF INITIAL VEHICLES=   10.71 %
RADIUS---11-TO-12---POPULATION=        88  *  THE % OF REMAINING VEHICLES=  6.77 %   *  THE % OF INITIAL VEHICLES=    4.88 %
RADIUS---12-TO-13---POPULATION=        52  *  THE % OF REMAINING VEHICLES=  4.00 %   *  THE % OF INITIAL VEHICLES=    2.89 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        966 ---VEHICLE POPULATION OUTSIDE TEN MILES=        836 -------------
VEHICLE POPULATION WITHIN EPZ=    1299 * VEHICLE POPULATION OUTSIDE EPZ=     503 * PERCENTAGE OF TOTAL WITHIN EPZ=  72.09%


THE INITIAL VEHICLE POPULATION WAS =        1802
TOTAL TIME ELAPSED=   3900 SECONDS OR  1 HOURS,  5 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO       58           QUEUES: NRAN=   58 NLOD=     0 NBAC=     0 VMOTO=     0
                THE VEHICLE POPULATION IN ZONE= 1 IS       58.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS         58
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       30           QUEUES: NRAN=   15 NLOD=     0 NBAC=     0 VMOTO=    15
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       39           QUEUES: NRAN=   17 NLOD=     0 NBAC=     0 VMOTO=    22
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       39           QUEUES: NRAN=   15 NLOD=     0 NBAC=     0 VMOTO=    24
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       43           QUEUES: NRAN=   15 NLOD=     0 NBAC=     0 VMOTO=    28
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO        8           QUEUES: NRAN=    7 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO       10           QUEUES: NRAN=    7 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO       12           QUEUES: NRAN=    8 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO       22           QUEUES: NRAN=   13 NLOD=     0 NBAC=     0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       39           QUEUES: NRAN=   20 NLOD=     0 NBAC=     0 VMOTO=    19
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       44           QUEUES: NRAN=   20 NLOD=     0 NBAC=     0 VMOTO=    24
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      107           QUEUES: NRAN=   10 NLOD=     0 NBAC=    67 VMOTO=    30
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO       19           QUEUES: NRAN=   14 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO       24           QUEUES: NRAN=   14 NLOD=     0 NBAC=     0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO       19           QUEUES: NRAN=   10 NLOD=     0 NBAC=     0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO       25           QUEUES: NRAN=   11 NLOD=     0 NBAC=     0 VMOTO=    14
                THE VEHICLE POPULATION IN ZONE= 2 IS      480.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO       18           QUEUES: NRAN=   18 NLOD=     0 NBAC=     0 VMOTO=     0
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VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       12          QUEUES: NRAN=   12 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO       16          QUEUES: NRAN=   14 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO       28          QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       33          QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=    9
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO       23          QUEUES: NRAN=   23 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO       17          QUEUES: NRAN=   15 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO       34          QUEUES: NRAN=   34 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO       21          QUEUES: NRAN=   18 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO       15          QUEUES: NRAN=   15 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       38          QUEUES: NRAN=   30 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO        6          QUEUES: NRAN=    4 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO       24          QUEUES: NRAN=   24 NLOD=    0 NBAC=    0 VMOTO=    0
            THE VEHICLE POPULATION IN ZONE= 3 IS      285.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =        823
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       16          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   16
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      141          QUEUES: NRAN=    0 NLOD=    0 NBAC=  120 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO       14          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   14
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO       14          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   14
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       67          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   67
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       22          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   22
            THE VEHICLE POPULATION IN ZONE= 4 IS      287.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO       16          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   16
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO       23          QUEUES: NRAN=    0 NLOD=    0 NBAC=    7 VMOTO=   16
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       20          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   20
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       25          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   25
            THE VEHICLE POPULATION IN ZONE= 5 IS       91.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=         1201
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS,  5 MINUTES, AND   0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       58  *  THE % OF REMAINING VEHICLES=  4.83 %   *  THE % OF INITIAL VEHICLES=   3.22 %
RADIUS--- 5-TO- 6---POPULATION=       48  *  THE % OF REMAINING VEHICLES=  4.00 %   *  THE % OF INITIAL VEHICLES=   2.66 %
RADIUS--- 6-TO- 7---POPULATION=      149  *  THE % OF REMAINING VEHICLES= 12.41 %   *  THE % OF INITIAL VEHICLES=   8.27 %
RADIUS--- 7-TO- 8---POPULATION=      108  *  THE % OF REMAINING VEHICLES=  8.99 %   *  THE % OF INITIAL VEHICLES=   5.99 %
RADIUS--- 8-TO- 9---POPULATION=      226  *  THE % OF REMAINING VEHICLES= 18.82 %   *  THE % OF INITIAL VEHICLES=  12.54 %
RADIUS--- 9-TO-10---POPULATION=      234  *  THE % OF REMAINING VEHICLES= 19.48 %   *  THE % OF INITIAL VEHICLES=  12.99 %
RADIUS---10-TO-11---POPULATION=      225  *  THE % OF REMAINING VEHICLES= 18.73 %   *  THE % OF INITIAL VEHICLES=  12.49 %
RADIUS---11-TO-12---POPULATION=      106  *  THE % OF REMAINING VEHICLES=  8.83 %   *  THE % OF INITIAL VEHICLES=   5.88 %
RADIUS---12-TO-13---POPULATION=       47  *  THE % OF REMAINING VEHICLES=  3.91 %   *  THE % OF INITIAL VEHICLES=   2.61 %
*******TOTAL VEHICLE POPULATION WITHIN TEN MILES=       823 ---VEHICLE POPULATION OUTSIDE TEN MILES=       979 -------------
VEHICLE POPULATION WITHIN EPZ=    1201 * VEHICLE POPULATION OUTSIDE EPZ=      601 * PERCENTAGE OF TOTAL WITHIN EPZ=  66.65%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=    4200 SECONDS OR  1 HOURS, 10 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO       43          QUEUES: NRAN=   43 NLOD=    0 NBAC=    0 VMOTO=    0
            THE VEHICLE POPULATION IN ZONE= 1 IS       43.
         THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS        43
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       20          QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=    9
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       33          QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=   20
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       33          QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=   22
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       41          QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=   30
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO        7          QUEUES: NRAN=    5 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO        6          QUEUES: NRAN=    5 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO        9          QUEUES: NRAN=    6 NLOD=    0 NBAC=    0 VMOTO=    3
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VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO      18          QUEUES: NRAN=   10 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO      32          QUEUES: NRAN=   15 NLOD=    0 NBAC=    0 VMOTO=   17
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO      39          QUEUES: NRAN=   15 NLOD=    0 NBAC=    0 VMOTO=   24
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO     136          QUEUES: NRAN=    7 NLOD=    0 NBAC=  102 VMOTO=   27
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO      12          QUEUES: NRAN=   10 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO      21          QUEUES: NRAN=   10 NLOD=    0 NBAC=    0 VMOTO=   11
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO      15          QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO      15          QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=   10
          THE VEHICLE POPULATION IN ZONE= 2 IS       440.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO      13          QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       9          QUEUES: NRAN=    9 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO      10          QUEUES: NRAN=   10 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO      22          QUEUES: NRAN=   18 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO      25          QUEUES: NRAN=   18 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO      17          QUEUES: NRAN=   17 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE=.3 ROAD=   7 IS EQUAL TO      12          QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO      25          QUEUES: NRAN=   25 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO      15          QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO      11          QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO      28          QUEUES: NRAN=   22 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO       4          QUEUES: NRAN=    3 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO      18          QUEUES: NRAN=   18 NLOD=    0 NBAC=    0 VMOTO=    0
          THE VEHICLE POPULATION IN ZONE= 3 IS       209.
    THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =        692
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO      16          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   16
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO       5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO     164          QUEUES: NRAN=    0 NLOD=    0 NBAC=  143 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO       8          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO      15          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   15
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO      14          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   14
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      90          QUEUES: NRAN=    0 NLOD=    0 NBAC=   20 VMOTO=   70
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO      24          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   24
          THE VEHICLE POPULATION IN ZONE= 4 IS       336.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO      12          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   12
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO       2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO       2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO      29          QUEUES: NRAN=    0 NLOD=    0 NBAC=   11 VMOTO=   18
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO      21          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO      22          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   22
          THE VEHICLE POPULATION IN ZONE= 5 IS        68.
    THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=            1116
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 10 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=        43  *  THE % OF REMAINING VEHICLES=  3.85 %   *  THE % OF INITIAL VEHICLES=   2.39 %
RADIUS--- 5-TO- 6---POPULATION=        33  *  THE % OF REMAINING VEHICLES=  2.96 %   *  THE % OF INITIAL VEHICLES=   1.83 %
RADIUS--- 6-TO- 7---POPULATION=       113  *  THE % OF REMAINING VEHICLES= 10.13 %   *  THE % OF INITIAL VEHICLES=   6.27 %
RADIUS--- 7-TO- 8---POPULATION=        82  *  THE % OF REMAINING VEHICLES=  7.35 %   *  THE % OF INITIAL VEHICLES=   4.55 %
RADIUS--- 8-TO- 9---POPULATION=       191  *  THE % OF REMAINING VEHICLES= 17.11 %   *  THE % OF INITIAL VEHICLES=  10.60 %
RADIUS--- 9-TO-10---POPULATION=       230  *  THE % OF REMAINING VEHICLES= 20.61 %   *  THE % OF INITIAL VEHICLES=  12.76 %
RADIUS---10-TO-11---POPULATION=       247  *  THE % OF REMAINING VEHICLES= 22.13 %   *  THE % OF INITIAL VEHICLES=  13.71 %
RADIUS---11-TO-12---POPULATION=       131  *  THE % OF REMAINING VEHICLES= 11.74 %   *  THE % OF INITIAL VEHICLES=   7.27 %
RADIUS---12-TO-13---POPULATION=        46  *  THE % OF REMAINING VEHICLES=  4.12 %   *  THE % OF INITIAL VEHICLES=   2.55 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=       692 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1110 ------------
VEHICLE POPULATION WITHIN EPZ=    1116 * VEHICLE POPULATION OUTSIDE EPZ=      686 * PERCENTAGE OF TOTAL WITHIN EPZ=  61.93%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   4500 SECONDS OR  1 HOURS, 15 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS         0
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VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO      32           QUEUES: NRAN=   32 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 1 IS         32.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          32
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO      16           QUEUES: NRAN=    9 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO      21           QUEUES: NRAN=   10 NLOD=    0 NBAC=    0 VMOTO=   11
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO      27           QUEUES: NRAN=    9 NLOD=    0 NBAC=    0 VMOTO=   18
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO      34           QUEUES: NRAN=    9 NLOD=    0 NBAC=    0 VMOTO=   25
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO       5           QUEUES: NRAN=    4 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO       6           QUEUES: NRAN=    4 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO       7           QUEUES: NRAN=    5 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO      12           QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO      23           QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=   12
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO      30           QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=   19
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO     173           QUEUES: NRAN=    5 NLOD=    1 NBAC=  135 VMOTO=   32
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO      10           QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO      12           QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO      11           QUEUES: NRAN=    6 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO      14           QUEUES: NRAN=    6 NLOD=    0 NBAC=    0 VMOTO=    8
                THE VEHICLE POPULATION IN ZONE= 2 IS        401.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO      10           QUEUES: NRAN=   10 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO       7           QUEUES: NRAN=    7 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO       8           QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO      16           QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO      18           QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO      13           QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO      10           QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO      19           QUEUES: NRAN=   19 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO      11           QUEUES: NRAN=   10 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO       8           QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO      20           QUEUES: NRAN=   16 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO       5           QUEUES: NRAN=    2 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO      13           QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 3 IS        158.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         591
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       6           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO       5           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO     187           QUEUES: NRAN=    0 NLOD=    0 NBAC=  166 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO       5           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO      11           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   11
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO      13           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   13
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO     114           QUEUES: NRAN=    0 NLOD=    0 NBAC=   44 VMOTO=   70
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO      18           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   18
                THE VEHICLE POPULATION IN ZONE= 4 IS        359.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO       8           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO       2           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO       2           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO      19           QUEUES: NRAN=    0 NLOD=    0 NBAC=    4 VMOTO=   15
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO      24           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   24
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO      21           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
                THE VEHICLE POPULATION IN ZONE= 5 IS         76.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             1026
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 15 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=        32  *  THE % OF REMAINING VEHICLES=  3.12 %   *  THE % OF INITIAL VEHICLES=   1.78 %
RADIUS--- 5-TO- 6---POPULATION=        26  *  THE % OF REMAINING VEHICLES=  2.53 %   *  THE % OF INITIAL VEHICLES=   1.44 %
RADIUS--- 6-TO- 7---POPULATION=        83  *  THE % OF REMAINING VEHICLES=  8.09 %   *  THE % OF INITIAL VEHICLES=   4.61 %
RADIUS--- 7-TO- 8---POPULATION=        66  *  THE % OF REMAINING VEHICLES=  6.43 %   *  THE % OF INITIAL VEHICLES=   3.66 %
RADIUS--- 8-TO- 9---POPULATION=       140  *  THE % OF REMAINING VEHICLES= 13.65 %   *  THE % OF INITIAL VEHICLES=   7.77 %
RADIUS--- 9-TO-10---POPULATION=       244  *  THE % OF REMAINING VEHICLES= 23.78 %   *  THE % OF INITIAL VEHICLES=  13.54 %
RADIUS---10-TO-11---POPULATION=       255  *  THE % OF REMAINING VEHICLES= 24.85 %   *  THE % OF INITIAL VEHICLES=  14.15 %
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RADIUS===11=TO=12===POPULATION=        141  *  THE % OF REMAINING VEHICLES= 13.74 %   *  THE % OF INITIAL VEHICLES=   7.82 %
RADIUS===12=TO=13===POPULATION=         39  *  THE % OF REMAINING VEHICLES=  3.80 %   *  THE % OF INITIAL VEHICLES=   2.16 %
=======TOTAL VEHICLE POPULATION WITHIN TEN MILES=        591 ===VEHICLE POPULATION OUTSIDE TEN MILES=       1211 =============
VEHICLE POPULATION WITHIN EPZ=    1026 * VEHICLE POPULATION OUTSIDE EPZ=      776 * PERCENTAGE OF TOTAL WITHIN EPZ=  56.94%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   4800 SECONDS OR  1 HOURS, 20 MINUTES, AND  0 SECONDS.
           THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS           0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO       22            QUEUES: NRAN=   22 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 1 IS        22.
           THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS         22
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       13            QUEUES: NRAN=    6 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       17            QUEUES: NRAN=    7 NLOD=    0 NBAC=    0 VMOTO=   10
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       17            QUEUES: NRAN=    6 NLOD=    0 NBAC=    0 VMOTO=   11
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       25            QUEUES: NRAN=    6 NLOD=    0 NBAC=    0 VMOTO=   19
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO        4            QUEUES: NRAN=    3 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO        5            QUEUES: NRAN=    3 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO        6            QUEUES: NRAN=    3 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO       10            QUEUES: NRAN=    5 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       13            QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       26            QUEUES: NRAN=    8 NLOD=    0 NBAC=    0 VMOTO=   18
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      185            QUEUES: NRAN=    4 NLOD=    0 NBAC=  153 VMOTO=   28
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO        8            QUEUES: NRAN=    5 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO       10            QUEUES: NRAN=    5 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO       10            QUEUES: NRAN=    4 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO       10            QUEUES: NRAN=    4 NLOD=    0 NBAC=    0 VMOTO=    6
                THE VEHICLE POPULATION IN ZONE= 2 IS       359.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO        7            QUEUES: NRAN=    7 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO        5            QUEUES: NRAN=    5 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO        5            QUEUES: NRAN=    5 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO       12            QUEUES: NRAN=    9 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       14            QUEUES: NRAN=    9 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO        9            QUEUES: NRAN=    9 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO        7            QUEUES: NRAN=    6 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO       13            QUEUES: NRAN=   13 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO        8            QUEUES: NRAN=    7 NLOD=    0 NBAC=    0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO        6            QUEUES: NRAN=    6 NLOD=    0 NBAC=    0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       15            QUEUES: NRAN=   11 NLOD=    0 NBAC=    0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO        5            QUEUES: NRAN=    2 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO        9            QUEUES: NRAN=    9 NLOD=    0 NBAC=    0 VMOTO=    0
                THE VEHICLE POPULATION IN ZONE= 3 IS       115.
         THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =          496
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       14            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   14
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        3            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      203            QUEUES: NRAN=    0 NLOD=    0 NBAC=  186 VMOTO=   17
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO        7            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        6            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    6
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        9            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    9
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      114            QUEUES: NRAN=    0 NLOD=    0 NBAC=   44 VMOTO=   70
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       34            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   34
                THE VEHICLE POPULATION IN ZONE= 4 IS       390.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO        7            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        2            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        2            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        5            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       22            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   22
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       20            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   20
                THE VEHICLE POPULATION IN ZONE= 5 IS        58.
         THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             944
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME: 1 HOURS, 20 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=        22  *  THE % OF REMAINING VEHICLES=  2.33 %   *  THE % OF INITIAL VEHICLES=   1.22 %
RADIUS--- 5-TO- 6---POPULATION=        20  *  THE % OF REMAINING VEHICLES=  2.12 %   *  THE % OF INITIAL VEHICLES=   1.11 %
RADIUS--- 6-TO- 7---POPULATION=        60  *  THE % OF REMAINING VEHICLES=  6.36 %   *  THE % OF INITIAL VEHICLES=   3.33 %
RADIUS--- 7-TO- 8---POPULATION=        48  *  THE % OF REMAINING VEHICLES=  5.09 %   *  THE % OF INITIAL VEHICLES=   2.66 %
RADIUS--- 8-TO- 9---POPULATION=       106  *  THE % OF REMAINING VEHICLES= 11.23 %   *  THE % OF INITIAL VEHICLES=   5.88 %
RADIUS--- 9-TO-10---POPULATION=       240  *  THE % OF REMAINING VEHICLES= 25.42 %   *  THE % OF INITIAL VEHICLES=  13.32 %
RADIUS---10-TO-11---POPULATION=       268  *  THE % OF REMAINING VEHICLES= 28.39 %   *  THE % OF INITIAL VEHICLES=  14.87 %
RADIUS---11-TO-12---POPULATION=       126  *  THE % OF REMAINING VEHICLES= 13.35 %   *  THE % OF INITIAL VEHICLES=   6.99 %
RADIUS---12-TO-13---POPULATION=        54  *  THE % OF REMAINING VEHICLES=  5.72 %   *  THE % OF INITIAL VEHICLES=   3.00 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=       496 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1306 ------------
VEHICLE POPULATION WITHIN EPZ=     944 * VEHICLE POPULATION OUTSIDE EPZ=     858 * PERCENTAGE OF TOTAL WITHIN EPZ=  52.39%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   5100 SECONDS OR  1 HOURS, 25 MINUTES, AND  0 SECONDS.
      THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
VEHICLE POPULATION OF ZONE= 1 ROAD=   1 IS EQUAL TO       11          QUEUES: NRAN=   11 NLOD=     0 NBAC=     0 VMOTU=    0
           THE VEHICLE POPULATION IN ZONE= 1 IS        11.
      THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS        11
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO       10          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO       15          QUEUES: NRAN=    4 NLOD=     0 NBAC=     0 VMOTO=   11
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO       14          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=   11
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       17          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=   14
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO        2          QUEUES: NRAN=    2 NLOD=     0 NBAC=     0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO        3          QUEUES: NRAN=    2 NLOD=     0 NBAC=     0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO        5          QUEUES: NRAN=    2 NLOD=     0 NBAC=     0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO        6          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO       12          QUEUES: NRAN=    4 NLOD=     0 NBAC=     0 VMOTO=    8
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       17          QUEUES: NRAN=    4 NLOD=     0 NBAC=     0 VMOTO=   13
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      197          QUEUES: NRAN=    2 NLOD=     0 NBAC=   165 VMOTO=   30
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO        6          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO        8          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO        9          QUEUES: NRAN=    2 NLOD=     0 NBAC=     0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO        9          QUEUES: NRAN=    2 NLOD=     0 NBAC=     0 VMOTO=    7
           THE VEHICLE POPULATION IN ZONE= 2 IS       330.
VEHICLE POPULATION IN ZONE= 3 ROAD=   1 IS EQUAL TO        4          QUEUES: NRAN=    4 NLOD=     0 NBAC=     0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   2 IS EQUAL TO        3          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO        3          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO        7          QUEUES: NRAN=    5 NLOD=     0 NBAC=     0 VMOTO=    2
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO       10          QUEUES: NRAN=    5 NLOD=     0 NBAC=     0 VMOTO=    5
VEHICLE POPULATION IN ZONE= 3 ROAD=   6 IS EQUAL TO        5          QUEUES: NRAN=    5 NLOD=     0 NBAC=     0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO        3          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   8 IS EQUAL TO        7          QUEUES: NRAN=    7 NLOD=     0 NBAC=     0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO        5          QUEUES: NRAN=    4 NLOD=     0 NBAC=     0 VMOTO=    1
VEHICLE POPULATION IN ZONE= 3 ROAD=  10 IS EQUAL TO        3          QUEUES: NRAN=    3 NLOD=     0 NBAC=     0 VMOTO=    0
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO       10          QUEUES: NRAN=    6 NLOD=     0 NBAC=     0 VMOTO=    4
VEHICLE POPULATION IN ZONE= 3 ROAD=  12 IS EQUAL TO        4          QUEUES: NRAN=    1 NLOD=     0 NBAC=     0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 3 ROAD=  13 IS EQUAL TO        5          QUEUES: NRAN=    5 NLOD=     0 NBAC=     0 VMOTO=    0
           THE VEHICLE POPULATION IN ZONE= 3 IS        69.
     THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =        410
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       16          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=   16
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        3          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    3
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      217          QUEUES: NRAN=    0 NLOD=     0 NBAC=   196 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        7          QUEUES: NRAN=    0 NLOD=     0 NBAC=     0 VMOTO=    7
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      107          QUEUES: NRAN=    0 NLOD=     0 NBAC=    40 VMOTO=   67
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VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO        30          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    30
            THE VEHICLE POPULATION IN ZONE= 4 IS        394.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO         6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO         2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO         1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO         8          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO        12          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO        12          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    12
            THE VEHICLE POPULATION IN ZONE= 5 IS         41.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=          845
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 25 MINUTES, AND  0 SECONDS.
RADIUS--- 4-TO- 5---POPULATION=       11  *  THE % OF REMAINING VEHICLES=  1.30 %   *  THE % OF INITIAL VEHICLES=   0.61 %
RADIUS--- 5-TO- 6---POPULATION=       14  *  THE % OF REMAINING VEHICLES=  1.66 %   *  THE % OF INITIAL VEHICLES=   0.78 %
RADIUS--- 6-TO- 7---POPULATION=       38  *  THE % OF REMAINING VEHICLES=  4.50 %   *  THE % OF INITIAL VEHICLES=   2.11 %
RADIUS--- 7-TO- 8---POPULATION=       35  *  THE % OF REMAINING VEHICLES=  4.14 %   *  THE % OF INITIAL VEHICLES=   1.94 %
RADIUS--- 8-TO- 9---POPULATION=       75  *  THE % OF REMAINING VEHICLES=  8.88 %   *  THE % OF INITIAL VEHICLES=   4.16 %
RADIUS--- 9-TO-10---POPULATION=      237  *  THE % OF REMAINING VEHICLES= 28.05 %   *  THE % OF INITIAL VEHICLES=  13.15 %
RADIUS---10-TO-11---POPULATION=      272  *  THE % OF REMAINING VEHICLES= 32.19 %   *  THE % OF INITIAL VEHICLES=  15.09 %
RADIUS---11-TO-12---POPULATION=      121  *  THE % OF REMAINING VEHICLES= 14.32 %   *  THE % OF INITIAL VEHICLES=   6.71 %
RADIUS---12-TO-13---POPULATION=       42  *  THE % OF REMAINING VEHICLES=  4.97 %   *  THE % OF INITIAL VEHICLES=   2.33 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=       410 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1392 ------------
VEHICLE POPULATION WITHIN EPZ=     845 * VEHICLE POPULATION OUTSIDE EPZ=     957 * PERCENTAGE OF TOTAL WITHIN EPZ=  46.89%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   5400 SECONDS OR   1 HOURS, 30 MINUTES, AND   0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
            THE VEHICLE POPULATION IN ZONE= 1 IS          0.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
VEHICLE POPULATION IN ZONE= 2 ROAD=   1 IS EQUAL TO         9          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO        10          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO        12          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO        15          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    15
VEHICLE POPULATION IN ZONE= 2 ROAD=   5 IS EQUAL TO         1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 2 ROAD=   6 IS EQUAL TO         2          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 2 ROAD=   7 IS EQUAL TO         5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO         3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO        10          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO        12          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO       191          QUEUES: NRAN=    0 NLOD=    1 NBAC=  166 VMOTO=    24
VEHICLE POPULATION IN ZONE= 2 ROAD=  12 IS EQUAL TO         5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO         5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO         6          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO         7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     7
            THE VEHICLE POPULATION IN ZONE= 2 IS        293.
VEHICLE POPULATION IN ZONE= 3 ROAD=   3 IS EQUAL TO         1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   4 IS EQUAL TO         4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO         5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 3 ROAD=   7 IS EQUAL TO         1          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 3 ROAD=   9 IS EQUAL TO         3          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 3 ROAD=  11 IS EQUAL TO         5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
            THE VEHICLE POPULATION IN ZONE= 3 IS         19.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         312
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO        18          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    18
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO         4          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO       236          QUEUES: NRAN=    0 NLOD=    0 NBAC=  215 VMOTO=    21
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO         5          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO         7          QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     7
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VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO       10            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      105            QUEUES: NRAN=    0 NLOD=    0 NBAC=   39 VMOTO=    66
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       29            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    29
          THE VEHICLE POPULATION IN ZONE= 4 IS       414.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO        9            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 5 ROAD=   5 IS EQUAL TO        2            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 5 ROAD=   7 IS EQUAL TO        2            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        8            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       11            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    11
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       12            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    12
          THE VEHICLE POPULATION IN ZONE= 5 IS        44.
    THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=          770
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 30 MINUTES, AND  0 SECONDS.
RADIUS--- 5-TO- 6---POPULATION=        9  *  THE % OF REMAINING VEHICLES=  1.17 %   *  THE % OF INITIAL VEHICLES=   0.50 %
RADIUS--- 6-TO- 7---POPULATION=       13  *  THE % OF REMAINING VEHICLES=  1.69 %   *  THE % OF INITIAL VEHICLES=   0.72 %
RADIUS--- 7-TO- 8---POPULATION=       28  *  THE % OF REMAINING VEHICLES=  3.64 %   *  THE % OF INITIAL VEHICLES=   1.55 %
RADIUS--- 8-TO- 9---POPULATION=       53  *  THE % OF REMAINING VEHICLES=  6.88 %   *  THE % OF INITIAL VEHICLES=   2.94 %
RADIUS--- 9-TO-10---POPULATION=      209  *  THE % OF REMAINING VEHICLES= 27.14 %   *  THE % OF INITIAL VEHICLES=  11.60 %
RADIUS---10-TO-11---POPULATION=      295  *  THE % OF REMAINING VEHICLES= 38.31 %   *  THE % OF INITIAL VEHICLES=  16.37 %
RADIUS---11-TO-12---POPULATION=      122  *  THE % OF REMAINING VEHICLES= 15.84 %   *  THE % OF INITIAL VEHICLES=   6.77 %
RADIUS---12-TO-13---POPULATION=       41  *  THE % OF REMAINING VEHICLES=  5.32 %   *  THE % OF INITIAL VEHICLES=   2.28 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=       312 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1490 -----------
VEHICLE POPULATION WITHIN EPZ=     770 * VEHICLE POPULATION OUTSIDE EPZ=    1032 * PERCENTAGE OF TOTAL WITHIN EPZ=  42.73%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   5700 SECONDS OR  1 HOURS, 35 MINUTES, AND  0 SECONDS.
        THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
          THE VEHICLE POPULATION IN ZONE= 1 IS         0.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
VEHICLE POPULATION IN ZONE= 2 ROAD=   2 IS EQUAL TO        6            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     6
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO        9            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO       12            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    12
VEHICLE POPULATION IN ZONE= 2 ROAD=   8 IS EQUAL TO        3            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO        8            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO       10            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    10
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      188            QUEUES: NRAN=    0 NLOD=    0 NBAC=  156 VMOTO=    32
VEHICLE POPULATION IN ZONE= 2 ROAD=  13 IS EQUAL TO        1            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 2 ROAD=  14 IS EQUAL TO        5            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 2 ROAD=  15 IS EQUAL TO        3            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     3
          THE VEHICLE POPULATION IN ZONE= 2 IS       245.
VEHICLE POPULATION IN ZONE= 3 ROAD=   5 IS EQUAL TO        2            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     2
          THE VEHICLE POPULATION IN ZONE= 3 IS         2.
    THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =          247
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       14            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 4 ROAD=   2 IS EQUAL TO        1            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      246            QUEUES: NRAN=    0 NLOD=    0 NBAC=  225 VMOTO=    21
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO        5            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        7            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     7
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        5            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      121            QUEUES: NRAN=    0 NLOD=    0 NBAC=   51 VMOTO=    70
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       16            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    16
          THE VEHICLE POPULATION IN ZONE= 4 IS       415.
VEHICLE POPULATION IN ZONE= 5 ROAD=   4 IS EQUAL TO        3            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 5 ROAD=   8 IS EQUAL TO        4            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO       14            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       11            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=    11
          THE VEHICLE POPULATION IN ZONE= 5 IS        32.
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      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=            694
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 35 MINUTES, AND   0 SECONDS.
RADIUS--- 6-TO- 7---POPULATION=          6  *  THE % OF REMAINING VEHICLES=  0.86 %   *  THE % OF INITIAL VEHICLES=   0.33 %
RADIUS--- 7-TO- 8---POPULATION=          9  *  THE % OF REMAINING VEHICLES=  1.30 %   *  THE % OF INITIAL VEHICLES=   0.50 %
RADIUS--- 8-TO- 9---POPULATION=         36  *  THE % OF REMAINING VEHICLES=  5.19 %   *  THE % OF INITIAL VEHICLES=   2.00 %
RADIUS--- 9-TO-10---POPULATION=        196  *  THE % OF REMAINING VEHICLES= 28.24 %   *  THE % OF INITIAL VEHICLES=  10.88 %
RADIUS---10-TO-11---POPULATION=        292  *  THE % OF REMAINING VEHICLES= 42.07 %   *  THE % OF INITIAL VEHICLES=  16.20 %
RADIUS---11-TO-12---POPULATION=        128  *  THE % OF REMAINING VEHICLES= 18.44 %   *  THE % OF INITIAL VEHICLES=   7.10 %
RADIUS---12-TO-13---POPULATION=         27  *  THE % OF REMAINING VEHICLES=  3.89 %   *  THE % OF INITIAL VEHICLES=   1.50 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        247 ---VEHICLE POPULATION OUTSIDE TEN MILES=        1555 ------------
VEHICLE POPULATION WITHIN EPZ=     694 * VEHICLE POPULATION OUTSIDE EPZ=     1108 * PERCENTAGE OF TOTAL WITHIN EPZ=  38.51%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   6000 SECONDS OR   1 HOURS, 40 MINUTES, AND   0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS           0
                THE VEHICLE POPULATION IN ZONE= 1 IS          0.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS           0
VEHICLE POPULATION IN ZONE= 2 ROAD=   3 IS EQUAL TO        2            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     2
VEHICLE POPULATION IN ZONE= 2 ROAD=   4 IS EQUAL TO        9            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     9
VEHICLE POPULATION IN ZONE= 2 ROAD=   9 IS EQUAL TO        3            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO        8            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     8
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      177            QUEUES: NRAN=     0 NLOD=     0 NBAC=   145 VMOTO=    32
                THE VEHICLE POPULATION IN ZONE= 2 IS        199.
                THE VEHICLE POPULATION IN ZONE= 3 IS          0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         199
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       14            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      248            QUEUES: NRAN=     0 NLOD=     0 NBAC=   233 VMOTO=    15
VEHICLE POPULATION IN ZONE= 4 ROAD=   4 IS EQUAL TO        1            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 4 ROAD=   6 IS EQUAL TO        4            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     4
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        5            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     5
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      115            QUEUES: NRAN=     0 NLOD=     0 NBAC=    45 VMOTO=    70
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       33            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=    33
                THE VEHICLE POPULATION IN ZONE= 4 IS        420.
VEHICLE POPULATION IN ZONE= 5 ROAD=   9 IS EQUAL TO        3            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     3
VEHICLE POPULATION IN ZONE= 5 ROAD=  10 IS EQUAL TO       11            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=    11
                THE VEHICLE POPULATION IN ZONE= 5 IS         14.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=            633
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 40 MINUTES, AND   0 SECONDS.
RADIUS--- 7-TO- 8---POPULATION=          2  *  THE % OF REMAINING VEHICLES=  0.32 %   *  THE % OF INITIAL VEHICLES=   0.11 %
RADIUS--- 8-TO- 9---POPULATION=         20  *  THE % OF REMAINING VEHICLES=  3.16 %   *  THE % OF INITIAL VEHICLES=   1.11 %
RADIUS--- 9-TO-10---POPULATION=        177  *  THE % OF REMAINING VEHICLES= 27.96 %   *  THE % OF INITIAL VEHICLES=   9.82 %
RADIUS---10-TO-11---POPULATION=        275  *  THE % OF REMAINING VEHICLES= 43.44 %   *  THE % OF INITIAL VEHICLES=  15.26 %
RADIUS---11-TO-12---POPULATION=        115  *  THE % OF REMAINING VEHICLES= 18.17 %   *  THE % OF INITIAL VEHICLES=   6.38 %
RADIUS---12-TO-13---POPULATION=         44  *  THE % OF REMAINING VEHICLES=  6.95 %   *  THE % OF INITIAL VEHICLES=   2.44 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        199 ---VEHICLE POPULATION OUTSIDE TEN MILES=        1603 ------------
VEHICLE POPULATION WITHIN EPZ=     633 * VEHICLE POPULATION OUTSIDE EPZ=     1169 * PERCENTAGE OF TOTAL WITHIN EPZ=  35.13%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   6300 SECONDS OR   1 HOURS, 45 MINUTES, AND   0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS           0
                THE VEHICLE POPULATION IN ZONE= 1 IS          0.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS           0
VEHICLE POPULATION IN ZONE= 2 ROAD=  10 IS EQUAL TO        3            QUEUES: NRAN=     0 NLOD=     0 NBAC=     0 VMOTO=     3
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VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      156           QUEUES: NRAN=     0 NLOD=     0 NBAC=  124 VMOTO=    32
                 THE VEHICLE POPULATION IN ZONE= 2 IS       159.
                 THE VEHICLE POPULATION IN ZONE= 3 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         159
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       18           QUEUES: NRAN=     0 NLOD=     0 NBAC=    4 VMOTO=    14
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      252           QUEUES: NRAN=     0 NLOD=     0 NBAC=  233 VMOTO=    19
VEHICLE POPULATION IN ZONE= 4 ROAD=   7 IS EQUAL TO        1           QUEUES: NRAN=     0 NLOD=     0 NBAC=    0 VMOTO=     1
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       98           QUEUES: NRAN=     0 NLOD=     0 NBAC=   30 VMOTO=    68
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       31           QUEUES: NRAN=     0 NLOD=     0 NBAC=    0 VMOTO=    31
                 THE VEHICLE POPULATION IN ZONE= 4 IS       400.
                 THE VEHICLE POPULATION IN ZONE= 5 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=               559
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 45 MINUTES, AND  0 SECONDS.
RADIUS--- 8-TO- 9---POPULATION=         3  *  THE % OF REMAINING VEHICLES=  0.54 %   *  THE % OF INITIAL VEHICLES=   0.17 %
RADIUS--- 9-TO-10---POPULATION=       156  *  THE % OF REMAINING VEHICLES= 27.91 %   *  THE % OF INITIAL VEHICLES=   8.66 %
RADIUS---10-TO-11---POPULATION=       271  *  THE % OF REMAINING VEHICLES= 48.48 %   *  THE % OF INITIAL VEHICLES=  15.04 %
RADIUS---11-TO-12---POPULATION=        98  *  THE % OF REMAINING VEHICLES= 17.53 %   *  THE % OF INITIAL VEHICLES=   5.44 %
RADIUS---12-TO-13---POPULATION=        31  *  THE % OF REMAINING VEHICLES=  5.55 %   *  THE % OF INITIAL VEHICLES=   1.72 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        159 ---VEHICLE POPULATION OUTSIDE TEN MILES=       1643 -------------
VEHICLE POPULATION WITHIN EPZ=      559 * VEHICLE POPULATION OUTSIDE EPZ=     1243 * PERCENTAGE OF TOTAL WITHIN EPZ=  31.02%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   6600 SECONDS OR  1 HOURS, 50 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS           0
                 THE VEHICLE POPULATION IN ZONE= 1 IS         0.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS            0
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      121           QUEUES: NRAN=     0 NLOD=     0 NBAC=   90 VMOTO=    31
                 THE VEHICLE POPULATION IN ZONE= 2 IS       121.
                 THE VEHICLE POPULATION IN ZONE= 3 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         121
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO       20           QUEUES: NRAN=     0 NLOD=     0 NBAC=    2 VMOTO=    18
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      250           QUEUES: NRAN=     0 NLOD=     0 NBAC=  236 VMOTO=    14
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       88           QUEUES: NRAN=     0 NLOD=     0 NBAC=   18 VMOTO=    70
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       27           QUEUES: NRAN=     0 NLOD=     0 NBAC=    0 VMOTO=    27
                 THE VEHICLE POPULATION IN ZONE= 4 IS       385.
                 THE VEHICLE POPULATION IN ZONE= 5 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=               506
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 50 MINUTES, AND  0 SECONDS.
RADIUS--- 9-TO-10---POPULATION=       121  *  THE % OF REMAINING VEHICLES= 23.91 %   *  THE % OF INITIAL VEHICLES=   6.71 %
RADIUS---10-TO-11---POPULATION=       270  *  THE % OF REMAINING VEHICLES= 53.36 %   *  THE % OF INITIAL VEHICLES=  14.98 %
RADIUS---11-TO-12---POPULATION=        88  *  THE % OF REMAINING VEHICLES= 17.39 %   *  THE % OF INITIAL VEHICLES=   4.58 %
RADIUS---12-TO-13---POPULATION=        27  *  THE % OF REMAINING VEHICLES=  5.34 %   *  THE % OF INITIAL VEHICLES=   1.50 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        121 ---VEHICLE POPULATION OUTSIDE TEN MILES=       1681 --------------
VEHICLE POPULATION WITHIN EPZ=      506 * VEHICLE POPULATION OUTSIDE EPZ=     1296 * PERCENTAGE OF TOTAL WITHIN EPZ=  28.08%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   6900 SECONDS OR  1 HOURS, 55 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS           0
                 THE VEHICLE POPULATION IN ZONE= 1 IS         0.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS            0
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO       85           QUEUES: NRAN=     0 NLOD=     0 NBAC=   53 VMOTO=    32
                 THE VEHICLE POPULATION IN ZONE= 2 IS        85.
                 THE VEHICLE POPULATION IN ZONE= 3 IS         0.
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      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         85
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO      18           QUEUES: NRAN=    0 NLOD=    0 NBAC=    2 VMOTO=   16
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO     253           QUEUES: NRAN=    0 NLOD=    0 NBAC=  232 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      73           QUEUES: NRAN=    0 NLOD=    0 NBAC=   10 VMOTO=   63
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO      23           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   23
             THE VEHICLE POPULATION IN ZONE= 4 IS      367.
             THE VEHICLE POPULATION IN ZONE= 5 IS        0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=           452
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  1 HOURS, 55 MINUTES, AND  0 SECONDS.
RADIUS--- 9-TO-10---POPULATION=        85  *  THE % OF REMAINING VEHICLES= 18.81 %   *  THE % OF INITIAL VEHICLES=   4.72 %
RADIUS---10-TO-11---POPULATION=       271  *  THE % OF REMAINING VEHICLES= 59.96 %   *  THE % OF INITIAL VEHICLES=  15.04 %
RADIUS---11-TO-12---POPULATION=        73  *  THE % OF REMAINING VEHICLES= 16.15 %   *  THE % OF INITIAL VEHICLES=   4.05 %
RADIUS---12-TO-13---POPULATION=        23  *  THE % OF REMAINING VEHICLES=  5.09 %   *  THE % OF INITIAL VEHICLES=   1.28 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        85 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1717 ------------
VEHICLE POPULATION WITHIN EPZ=     452 * VEHICLE POPULATION OUTSIDE EPZ=    1350 * PERCENTAGE OF TOTAL WITHIN EPZ=  25.08%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   7200 SECONDS OR  2 HOURS,  0 MINUTES, AND  0 SECONDS.
        THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
             THE VEHICLE POPULATION IN ZONE= 1 IS        0.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
VEHICLE POPULATION IN ZONE= 2 ROAD=  11 IS EQUAL TO      44           QUEUES: NRAN=    0 NLOD=    0 NBAC=   12 VMOTO=   32
             THE VEHICLE POPULATION IN ZONE= 2 IS       44.
             THE VEHICLE POPULATION IN ZONE= 3 IS        0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         44
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO      25           QUEUES: NRAN=    0 NLOD=    0 NBAC=   11 VMOTO=   14
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO     245           QUEUES: NRAN=    0 NLOD=    0 NBAC=  224 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      52           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   52
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO      43           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   43
             THE VEHICLE POPULATION IN ZONE= 4 IS      365.
             THE VEHICLE POPULATION IN ZONE= 5 IS        0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=           409
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS,  0 MINUTES, AND  0 SECONDS.
RADIUS--- 9-TO-10---POPULATION=        44  *  THE % OF REMAINING VEHICLES= 10.76 %   *  THE % OF INITIAL VEHICLES=   2.44 %
RADIUS---10-TO-11---POPULATION=       270  *  THE % OF REMAINING VEHICLES= 66.01 %   *  THE % OF INITIAL VEHICLES=  14.98 %
RADIUS---11-TO-12---POPULATION=        52  *  THE % OF REMAINING VEHICLES= 12.71 %   *  THE % OF INITIAL VEHICLES=   2.89 %
RADIUS---12-TO-13---POPULATION=        43  *  THE % OF REMAINING VEHICLES= 10.51 %   *  THE % OF INITIAL VEHICLES=   2.39 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        44 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1758 ------------
VEHICLE POPULATION WITHIN EPZ=     409 * VEHICLE POPULATION OUTSIDE EPZ=    1393 * PERCENTAGE OF TOTAL WITHIN EPZ=  22.70%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   7500 SECONDS OR  2 HOURS,  5 MINUTES, AND  0 SECONDS.
        THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
             THE VEHICLE POPULATION IN ZONE= 1 IS        0.
       THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
             THE VEHICLE POPULATION IN ZONE= 2 IS        0.
             THE VEHICLE POPULATION IN ZONE= 3 IS        0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =          0
VEHICLE POPULATION IN ZONE= 4 ROAD=   1 IS EQUAL TO      37           QUEUES: NRAN=    0 NLOD=    0 NBAC=   19 VMOTO=   18
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO     241           QUEUES: NRAN=    0 NLOD=    0 NBAC=  220 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO      21           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO      44           QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   44
             THE VEHICLE POPULATION IN ZONE= 4 IS      343.
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            THE VEHICLE POPULATION IN ZONE= 5 IS          0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=              343
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS,  5 MINUTES, AND  0 SECONDS.
RADIUS---10-TO-11---POPULATION=       278  *  THE % OF REMAINING VEHICLES= 81.05 %   *  THE % OF INITIAL VEHICLES=  15.43 %
RADIUS---11-TO-12---POPULATION=        21  *  THE % OF REMAINING VEHICLES=  6.12 %   *  THE % OF INITIAL VEHICLES=   1.17 %
RADIUS---12-TO-13---POPULATION=        44  *  THE % OF REMAINING VEHICLES= 12.83 %   *  THE % OF INITIAL VEHICLES=   2.44 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=          0 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1802 ---------------
VEHICLE POPULATION WITHIN EPZ=     343 * VEHICLE POPULATION OUTSIDE EPZ=    1459 * PERCENTAGE OF TOTAL WITHIN EPZ=  19.03%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   7800 SECONDS OR  2 HOURS, 10 MINUTES, AND  0 SECONDS.
          THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS            0
            THE VEHICLE POPULATION IN ZONE= 1 IS          0.
         THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS            0
            THE VEHICLE POPULATION IN ZONE= 2 IS          0.
            THE VEHICLE POPULATION IN ZONE= 3 IS          0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =             0
VEHICLE POPULATION IN ZONE= 4 ROAD=    3 IS EQUAL TO      242           QUEUES: NRAN=     0 NLOD=     0 NBAC=  223 VMOTO=    19
VEHICLE POPULATION IN ZONE= 4 ROAD=    8 IS EQUAL TO       19           QUEUES: NRAN=     0 NLOD=     0 NBAC=    0 VMOTO=    19
VEHICLE POPULATION IN ZONE= 4 ROAD=    9 IS EQUAL TO       17           QUEUES: NRAN=     0 NLOD=     0 NBAC=    0 VMOTO=    17
            THE VEHICLE POPULATION IN ZONE= 4 IS        278.
            THE VEHICLE POPULATION IN ZONE= 5 IS          0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=              278
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 10 MINUTES, AND  0 SECONDS.
RADIUS---10-TO-11---POPULATION=       242  *  THE % OF REMAINING VEHICLES= 87.05 %   *  THE % OF INITIAL VEHICLES=  13.43 %
RADIUS---11-TO-12---POPULATION=        19  *  THE % OF REMAINING VEHICLES=  6.83 %   *  THE % OF INITIAL VEHICLES=   1.05 %
RADIUS---12-TO-13---POPULATION=        17  *  THE % OF REMAINING VEHICLES=  6.12 %   *  THE % OF INITIAL VEHICLES=   0.94 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=          0 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1802 ---------------
VEHICLE POPULATION WITHIN EPZ=     278 * VEHICLE POPULATION OUTSIDE EPZ=    1524 * PERCENTAGE OF TOTAL WITHIN EPZ=  15.43%


THE INITIAL VEHICLE POPULATION WAS =       1802
TOTAL TIME ELAPSED=   8100 SECONDS OR  2 HOURS, 15 MINUTES, AND  0 SECONDS.
          THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS            0
            THE VEHICLE POPULATION IN ZONE= 1 IS          0.
         THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS            0
            THE VEHICLE POPULATION IN ZONE= 2 IS          0.
            THE VEHICLE POPULATION IN ZONE= 3 IS          0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =             0
VEHICLE POPULATION IN ZONE= 4 ROAD=    3 IS EQUAL TO      209           QUEUES: NRAN=     0 NLOD=     0 NBAC=  188 VMOTO=    21
VEHICLE POPULATION IN ZONE= 4 ROAD=    8 IS EQUAL TO       14           QUEUES: NRAN=     0 NLOD=     0 NBAC=    0 VMOTO=    14
VEHICLE POPULATION IN ZONE= 4 ROAD=    9 IS EQUAL TO       17           QUEUES: NRAN=     0 NLOD=     0 NBAC=    0 VMOTO=    17
            THE VEHICLE POPULATION IN ZONE= 4 IS        240.
            THE VEHICLE POPULATION IN ZONE= 5 IS          0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=              240
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 15 MINUTES, AND  0 SECONDS.
RADIUS---10-TO-11---POPULATION=       209  *  THE % OF REMAINING VEHICLES= 87.08 %   *  THE % OF INITIAL VEHICLES=  11.60 %
RADIUS---11-TO-12---POPULATION=        14  *  THE % OF REMAINING VEHICLES=  5.83 %   *  THE % OF INITIAL VEHICLES=   0.78 %
RADIUS---12-TO-13---POPULATION=        17  *  THE % OF REMAINING VEHICLES=  7.08 %   *  THE % OF INITIAL VEHICLES=   0.94 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=          0 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1802 ---------------
VEHICLE POPULATION WITHIN EPZ=     240 * VEHICLE POPULATION OUTSIDE EPZ=    1562 * PERCENTAGE OF TOTAL WITHIN EPZ=  13.32%
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THE INITIAL VEHICLE POPULATION WAS =      1802
TOTAL TIME ELAPSED=   8400 SECONDS OR  2 HOURS, 20 MINUTES, AND  0 SECONDS.
          THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
                  THE VEHICLE POPULATION IN ZONE= 1 IS         0.
         THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
                  THE VEHICLE POPULATION IN ZONE= 2 IS         0.
                  THE VEHICLE POPULATION IN ZONE= 3 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =          0
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      167            QUEUES: NRAN=    0 NLOD=    0 NBAC=  146 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       21            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       14            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   14
                  THE VEHICLE POPULATION IN ZONE= 4 IS       202.
                  THE VEHICLE POPULATION IN ZONE= 5 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=          202
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 20 MINUTES, AND  0 SECONDS.
RADIUS---10-TO-11---POPULATION=       167  *  THE % OF REMAINING VEHICLES= 82.67 %   *  THE % OF INITIAL VEHICLES=   9.27 %
RADIUS---11-TO-12---POPULATION=        21  *  THE % OF REMAINING VEHICLES= 10.40 %   *  THE % OF INITIAL VEHICLES=   1.17 %
RADIUS---12-TO-13---POPULATION=        14  *  THE % OF REMAINING VEHICLES=  6.93 %   *  THE % OF INITIAL VEHICLES=   0.78 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        0 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1802 ---------------
VEHICLE POPULATION WITHIN EPZ=     202 * VEHICLE POPULATION OUTSIDE EPZ=    1600 * PERCENTAGE OF TOTAL WITHIN EPZ=  11.21%


THE INITIAL VEHICLE POPULATION WAS =      1802
TOTAL TIME ELAPSED=   8700 SECONDS OR  2 HOURS, 25 MINUTES, AND  0 SECONDS.
          THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
                  THE VEHICLE POPULATION IN ZONE= 1 IS         0.
         THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
                  THE VEHICLE POPULATION IN ZONE= 2 IS         0.
                  THE VEHICLE POPULATION IN ZONE= 3 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =          0
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO      125            QUEUES: NRAN=    0 NLOD=    0 NBAC=  104 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       21            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       21            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
                  THE VEHICLE POPULATION IN ZONE= 4 IS       167.
                  THE VEHICLE POPULATION IN ZONE= 5 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=          167
*************************************************************************************************************************** 726

VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 25 MINUTES, AND  0 SECONDS.
RADIUS---10-TO-11---POPULATION=       125  *  THE % OF REMAINING VEHICLES= 74.85 %   *  THE % OF INITIAL VEHICLES=   6.94 %
RADIUS---11-TO-12---POPULATION=        21  *  THE % OF REMAINING VEHICLES= 12.57 %   *  THE % OF INITIAL VEHICLES=   1.17 %
RADIUS---12-TO-13---POPULATION=        21  *  THE % OF REMAINING VEHICLES= 12.57 %   *  THE % OF INITIAL VEHICLES=   1.17 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=        0 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1802 ---------------
VEHICLE POPULATION WITHIN EPZ=     167 * VEHICLE POPULATION OUTSIDE EPZ=    1635 * PERCENTAGE OF TOTAL WITHIN EPZ=   9.27%


THE INITIAL VEHICLE POPULATION WAS =      1802
TOTAL TIME ELAPSED=   9000 SECONDS OR  2 HOURS, 30 MINUTES, AND  0 SECONDS.
          THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
                  THE VEHICLE POPULATION IN ZONE= 1 IS         0.
         THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
                  THE VEHICLE POPULATION IN ZONE= 2 IS         0.
                  THE VEHICLE POPULATION IN ZONE= 3 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =          0
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO       89            QUEUES: NRAN=    0 NLOD=    0 NBAC=   72 VMOTO=   17
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VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       21             QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       15             QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   15
            THE VEHICLE POPULATION IN ZONE= 4 IS        125.
            THE VEHICLE POPULATION IN ZONE= 5 IS          0.
     THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=            125
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 30 MINUTES, AND  0 SECONDS.
RADIUS---10-TO-11---POPULATION=        89  *  THE % OF REMAINING VEHICLES= 71.20 %   *  THE % OF INITIAL VEHICLES=   4.94 %
RADIUS---11-TO-12---POPULATION=        21  *  THE % OF REMAINING VEHICLES= 16.80 %   *  THE % OF INITIAL VEHICLES=   1.17 %
RADIUS---12-TO-13---POPULATION=        15  *  THE % OF REMAINING VEHICLES= 12.00 %   *  THE % OF INITIAL VEHICLES=   0.83 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=          0 ---VEHICLE POPULATION OUTSIDE TEN MILES=       1802 --------------
VEHICLE POPULATION WITHIN EPZ=     125 * VEHICLE POPULATION OUTSIDE EPZ=    1677 * PERCENTAGE OF TOTAL WITHIN EPZ=   6.94%


THE INITIAL VEHICLE POPULATION WAS =      1802
TOTAL TIME ELAPSED=   9300 SECONDS OR  2 HOURS, 35 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
            THE VEHICLE POPULATION IN ZONE= 1 IS          0.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
            THE VEHICLE POPULATION IN ZONE= 2 IS          0.
            THE VEHICLE POPULATION IN ZONE= 3 IS          0.
     THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =          0
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO       55             QUEUES: NRAN=    0 NLOD=    0 NBAC=   34 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       19             QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   19
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       15             QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   15
            THE VEHICLE POPULATION IN ZONE= 4 IS         89.
            THE VEHICLE POPULATION IN ZONE= 5 IS          0.
     THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             89
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 35 MINUTES, AND  0 SECONDS.
RADIUS---10-TO-11---POPULATION=        55  *  THE % OF REMAINING VEHICLES= 61.80 %   *  THE % OF INITIAL VEHICLES=   3.05 %
RADIUS---11-TO-12---POPULATION=        19  *  THE % OF REMAINING VEHICLES= 21.35 %   *  THE % OF INITIAL VEHICLES=   1.05 %
RADIUS---12-TO-13---POPULATION=        15  *  THE % OF REMAINING VEHICLES= 16.85 %   *  THE % OF INITIAL VEHICLES=   0.83 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=          0 ---VEHICLE POPULATION OUTSIDE TEN MILES=       1802 --------------
VEHICLE POPULATION WITHIN EPZ=      89 * VEHICLE POPULATION OUTSIDE EPZ=    1713 * PERCENTAGE OF TOTAL WITHIN EPZ=   4.94%


THE INITIAL VEHICLE POPULATION WAS =      1802
TOTAL TIME ELAPSED=   9600 SECONDS OR  2 HOURS, 40 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS          0
            THE VEHICLE POPULATION IN ZONE= 1 IS          0.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS          0
            THE VEHICLE POPULATION IN ZONE= 2 IS          0.
            THE VEHICLE POPULATION IN ZONE= 3 IS          0.
     THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =          0
VEHICLE POPULATION IN ZONE= 4 ROAD=   3 IS EQUAL TO       20             QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   20
VEHICLE POPULATION IN ZONE= 4 ROAD=   8 IS EQUAL TO       21             QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   21
VEHICLE POPULATION IN ZONE= 4 ROAD=   9 IS EQUAL TO       12             QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMOTO=   12
            THE VEHICLE POPULATION IN ZONE= 4 IS         53.
            THE VEHICLE POPULATION IN ZONE= 5 IS          0.
     THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=             53
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 40 MINUTES, AND  0 SECONDS.
RADIUS---10-TO-11---POPULATION=        20  *  THE % OF REMAINING VEHICLES= 37.74 %   *  THE % OF INITIAL VEHICLES=   1.11 %
RADIUS---11-TO-12---POPULATION=        21  *  THE % OF REMAINING VEHICLES= 39.62 %   *  THE % OF INITIAL VEHICLES=   1.17 %
RADIUS---12-TO-13---POPULATION=        12  *  THE % OF REMAINING VEHICLES= 22.64 %   *  THE % OF INITIAL VEHICLES=   0.67 %
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-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=         0 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1802 ---------------
VEHICLE POPULATION WITHIN EPZ=      53 * VEHICLE POPULATION OUTSIDE EPZ=    1749 * PERCENTAGE OF TOTAL WITHIN EPZ=   2.94%


THE INITIAL VEHICLE POPULATION WAS =      1802
TOTAL TIME ELAPSED=   9900 SECONDS OR  2 HOURS, 45 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS         0
                THE VEHICLE POPULATION IN ZONE= 1 IS         0.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS         0
                THE VEHICLE POPULATION IN ZONE= 2 IS         0.
                THE VEHICLE POPULATION IN ZONE= 3 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         0
VEHICLE POPULATION IN ZONE= 4 ROAD=    9 IS EQUAL TO       20            QUEUES: NRAN=    0 NLOD=    0 NBAC=    0 VMDTO=   20
                THE VEHICLE POPULATION IN ZONE= 4 IS        20.
                THE VEHICLE POPULATION IN ZONE= 5 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=            20
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 45 MINUTES, AND  0 SECONDS.
RADIUS---12-TO-13---POPULATION=        20  *  THE % OF REMAINING VEHICLES=100.00 %   *  THE % OF INITIAL VEHICLES=   1.11 %
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=         0 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1802 ---------------
VEHICLE POPULATION WITHIN EPZ=      20 * VEHICLE POPULATION OUTSIDE EPZ=    1782 * PERCENTAGE OF TOTAL WITHIN EPZ=   1.11%


THE INITIAL VEHICLE POPULATION WAS =      1802
TOTAL TIME ELAPSED=  10200 SECONDS OR  2 HOURS, 50 MINUTES, AND  0 SECONDS.
         THE VEHICLE POPULATION IN THE TWO MILE RADIUS IS         0
                THE VEHICLE POPULATION IN ZONE= 1 IS         0.
        THE VEHICLE POPULATION IN THE FIVE MILE RADIUS IS         0
                THE VEHICLE POPULATION IN ZONE= 2 IS         0.
                THE VEHICLE POPULATION IN ZONE= 3 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE TEN MILE RADIUS =         0
                THE VEHICLE POPULATION IN ZONE= 4 IS         0.
                THE VEHICLE POPULATION IN ZONE= 5 IS         0.
      THE TOTAL VEHICLE POPULATION IN THE ENTIRE EPZ=            0
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VEHICLE POPULATION AS A FUNCTION OF RADIAL DISTANCE AT TIME:  2 HOURS, 50 MINUTES, AND  0 SECONDS.
-------TOTAL VEHICLE POPULATION WITHIN TEN MILES=         0 ---VEHICLE POPULATION OUTSIDE TEN MILES=      1802 ---------------
VEHICLE POPULATION WITHIN EPZ=       0 * VEHICLE POPULATION OUTSIDE EPZ=    1802 * PERCENTAGE OF TOTAL WITHIN EPZ=   0.00%
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16. ABSTRACT (200 words or less)

This paper describes the methodology and application of the computer model CLEAR (Calculates Logical Evacuation and Response) which estimates the time required for a specific population density and distribution to evacuate an area using a specific transportation network. The CLEAR model simulates vehicle departure and movement on a transportation network according to the conditions and consequences of traffic flow. These include handling vehicles at intersecting road segments, calculating the velocity of travel on a road segment as a function of its vehicle density, and accounting for the delay of vehicles in traffic queues. The program also models the distribution of times required by individuals to prepare for an evacuation. In order to test its accuracy, the CLEAR model was used to estimate evacuation times for the emergency planning zone surrounding the Beaver Valley Nuclear Power Plant. The Beaver Valley site was selected because evacuation times estimates had previously been prepared by the licensee, Dequesne Light, as well as by the Federal Emergency Management Agency and the Pennsylvania Emergency Management Agency. A lack of documentation prevented a detailed comparison of the estimates based on the CLEAR model and those obtained by Duquesne Light. However, the CLEAR model results compared favorably with the estimates prepared by the other two agencies.

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