

WM. H. ZIMMER

NUCLEAR POWER STATION
UNIT 1

TRANSPORT OF TOXIC CHEMICALS

AND

CONTROL ROOM HABITABILITY

STUDY

(REVISION #4 RESPONSE)

MAY 18, 1983

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INTRODUCTION

On October 28, 1981, The Wm. H. Zimmer "Transport of Toxic Chemicals and Control Room Habitability Study" was completed and submitted to the NRC for review. This study was conducted in order to provide a revised response to previous positions Q 312.33 (6.4) and Q 312.34 (6.4). The study provides a detailed risk assessment with the intent to prove compliance with the guidelines set forth in Reg. Guide 1.78.

As a result of the review of that report, the NRC verbally requested revisions to the calculations and additional information on the areas of concern. In response to this request, a third phase of the U.S. 52 truck study was initiated. The purpose of this supplemental study was to collect additional information regarding the types of materials being transported by truck on U.S. 52 in the vicinity of Zimmer Station. The required information was obtained by questioning truck drivers regarding their cargoes while they were stopped for lane closures on the U.S. 52 re-paving project conducted during late summer of 1982.

This procedure continued for approximately three weeks, until completion of the paving project on September 20, 1982. At this time, questioning of drivers became impossible, however the survey continued on a reduced scale until October 15, 1982. The reduced survey consisted of listing the names of trucking companies, license numbers, trailer numbers and warning placards. Attempts were made to contact the observed companies at a later date, as was the practice in Phase 2. From this supplemental study, it is intended to reduce the number of unidentified trucks which were conservatively classified as toxic chemical carriers in the original report. Trucking companies which were not observed in the original study were not used in the revised calculations. In addition, it is hoped to further reduce the number of trucks posing a threat to control room habitability by use of additional information received from the Federal Department of Transportation.

The following report is presented in a five-part format. Part I contains a description of the information obtained in the original study. Part II describes the supplemental study of September, 1982. The data generated in these sections is then applied in the calculation section (Part III) to determine the probability of the described chemical spill scenario. Conclusions and discussions are presented in Part IV, and exhibits referenced throughout the report are presented in Part V. Supplemental information is included in separate binders. It is hoped the detailed risk analysis provided in this report will satisfy the concerns addressed in Reg. Guide 1.78 regarding transport of toxic chemicals and Control Room habitability.

PART I
ZIMMER TRUCK SURVEY
PHASES 1 AND 2
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The following information is being furnished as a revised response to previous position Q312.33 (6.4) and present position Q312.334 (6.4). This detailed risk assessment is intended to prove compliance with the guidelines set forth in Reg. Guide 1.78.

In order to address the above question, a truck survey was implemented on U.S. 52 which would enable the identification of the materials being transported past the Zimmer Nuclear Power Station. Survey personnel were provided by the on-site security company, W.W. Protection Agency, Inc. This survey consisted of a two (2) phase study in which Phase 1 provided data on average daily truck traffic, and Phase 2 provided information for determining the types of materials being transported in the area. Both phases utilized the survey tally sheet and instructions shown in Exhibit 1. Survey personnel were stationed in a vehicle at the main construction entrance facing U.S. 52, such that the vehicle's headlamps could be used to read the truck markings at night.

Phase 1 was initiated on Thursday, July 23, 1981 at 9:00 AM, and continued on a 24-hour per day basis for one (1) week. The intent of Phase 1 was to determine truck traffic patterns, and ultimately, periods of peak flow.

After completion of Phase 1 on Friday, July 31, 1981, the generated information was used to plot a graph of trucks per hour for each day (Exhibit 2). The trucks were divided into the categories of (1) tankers, (2) enclosed tractor trailers, and (3) miscellaneous trucks, as shown on the survey sheet. Emphasis was placed on tankers having a cargo capacity of 50,000 pounds. Enclosed tractor trailers

were stipulated on the survey sheet for the reason that 55 gallon drums of toxic chemicals could be contained within the trailer. However, these trucks were disregarded in the final tally of toxic chemical trucks due to double containment, as approved in a telephone conversation between Messrs. K. Campe (NRC) and P. E. Bogen (CG&E) on July 27, 1981. Provision was also made for trucks entering the Zimmer Nuclear Power Plant site, which were not believed to be indicative of future traffic patterns when the plant is operational. From the generated graph, it was determined that peak flows occur between 7:00 AM and 5:00 PM, Monday through Friday. It was further noted that the average daily truck traffic observed by the study fell within the 400-600 trucks per day average previously predicted by the Ohio Department of Transportation (ODOT).

Using the above information, Phase 2 of the survey was implemented on Monday, August 3, 1981, at 8:00 AM. The companies transporting bulk materials on U.S. 52 were thus identified and catalogued for future reference when determining cargo types. Phase 2 consisted of one (1) 8-hour shift per day, Monday through Friday, for one (1) month. Starting times of the 8-hour shifts were varied on a weekly basis throughout the month in order to obtain a representative sampling of the trucks passing the site during the hours of peak flow. A sub-total of the three (3) categories of trucks was tallied on a daily basis for the 8-hour shifts (Exhibit 3). A list of trucking company names from the observed tankers was compiled for future reference when the companies would be contacted regarding the types of cargo being transported on U.S. 52 (Exhibit 4).

Upon completion of Phase 2 of the survey at 4:00 PM, Friday, August 28, 1981, the cargo identification process began. Using the compiled list of trucking companies whose tankers were spotted during both phases of the survey, local telephone directories and nationwide business directories were consulted for addresses and telephone numbers. The local office of a legal hazardous waste disposer (Clermont Environmental Reclamation Inc.) was also contacted for information regarding the listed trucking companies. A list of companies and agencies contacted is included in Exhibit 5.

Using the list of trucking companies and the obtained telephone numbers, a telephone survey was implemented to identify the materials being transported on U.S. 52 past the Zimmer Nuclear Power Station. A checklist of standardized questions was organized to be used when contacting the companies (Exhibit 6). The primary purpose of the survey checklist was to determine whether or not toxic chemicals are transported by the various companies, and if so, are they transported on U.S. 52 past Zimmer Station. In addition, mitigating factors such as low toxicity concentrations or light truck loadings due to the reduced load limits on U.S. 52 bridges were solicited.

By utilizing the above information, all observed tank trucks were classified as either toxic, non-toxic, or indeterminate. Trucks belonging to companies which occasionally transport toxic chemicals on U.S. 52 were conservatively classified as toxic chemical carriers, although there was no indication that the observed trucks were actually carrying toxic chemicals at that time. Some of these classified toxic chemical carriers were eliminated from the final toxic chemical count however, based upon their lack of potential hazard to surrounding areas (see page 6). Toxic chemicals which the Control Room is presently protected against (i.e. Ammonia, Chlorine Gas) were also removed from consideration. Contacted companies which do not haul toxic chemicals on U.S. 52 were classified as non-toxic. Likewise, all single-axle, non-tractor trailer tankers were also classified as non-toxic since their capacity is substantially less than the 50,000 pound maximum loading outlined in section 2.2.1 -Transport of Toxic Chemicals. All remaining trucks, which were either unmarked or unlisted by the observed company name, were categorized as indeterminate. A percentage of these were later assumed to be toxic in the probability calculations, based upon the ratio of observed potentially hazardous toxic chemical carriers to the non-toxic carriers. This assumption was based upon the theory that the identified trucks represent a random sampling, which would also be indicative of the indeterminate trucks. The company classification sheets and tallies are included in Exhibits 7 and 8 in Part V of this report.

PART II
ZIMMER TRUCK SURVEY
PHASE 3
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In order to further reduce the number of trucks assumed to be toxic chemical carriers at the end of Phase 2, a third phase of the truck survey was implemented. Utilizing technicians of Belcan Engineering Services as survey personnel, Phase 3 began at 8:00 AM on Monday, August 30, 1982. The intent was to question truck drivers regarding their cargoes while stopped for lane closures on U.S. 52 in the vicinity of the Zimmer Nuclear Power Station. The lane closures were part of the Ohio Department of Transportation (ODOT) U.S. 52 Repaving Project, and the survey was conducted with the approval of the ODOT Project Engineer. The survey personnel were stationed with the flagmen at each end of the paving zone, and the survey-takers entered traffic upon stoppage by the flagmen to question the truck drivers. A standardized checklist and instructions (Exhibit 13) were utilized in order to obtain the maximum amount of information in a minimum amount of time. The survey personnel were also given a list of trucking companies which were frequently observed in the previous phases of the truck study, but could not be contacted by the listed company name. These trucks were to be given priority in the event of numerous trucks being stopped at a given time.

This portion of Phase 3 continued through September 20, 1982 when the paving project was completed. A limited amount of information was obtained by this portion of the survey, due to minimal delays to traffic. The trucking companies interviewed and their respective cargoes are given in Exhibits 14 and 15. (Note: Drivers of enclosed tractor trailers were also questioned for informational purposes only). In order to obtain additional information, the survey personnel remained stationed at various roadside locations 8 hours per day, five (5) days per week, until October 15, 1982. By use of the larger survey crew located at a closer proximity to the road, license numbers and trailer numbers were obtained, which were unobtainable in Phases 1 and 2. Attempts were made at a later date to contact these companies by telephone and determine the trucks' contents, as was the practice in

closer proximity to the road, license numbers and trailer numbers were obtained, which were unobtainable in Phases 1 and 2. Attempts were made at a later date to contact these companies by telephone and determine the trucks' contents, as was the practice in Phase 2. The information thus obtained was categorized as toxic, non-toxic, or indeterminate.

The information obtained in Phase 3 was used only to identify the contents of trucks which were previously observed in Phases 1 and 2, and classified as indeterminate. It was hoped that by directly talking to the drivers or ascertaining additional information on trailer numbers, license numbers, etc., the contents of more trucks could be determined and the number of indeterminate trucks remaining at the end of Phase 2 could be reduced. It should be noted that the information obtained on trucks observed in Phase 3 but not observed in Phases 1 and 2, was not included in the probability calculations. Strictly those trucks previously observed were included, in order to maintain a random sampling. Data obtained on new companies is being retained as a matter of record only. Some of the newly observed companies contacted in Phase 3 do transport toxic chemicals on occasion, however no definite toxics were observed in this phase.

Concurrently with Phase 3 of the truck survey, additional information received from the Federal Department of Transportation was being analyzed. Publication DOT P 5800.2-"1980 Emergency Response Guidebook - Hazardous Materials" provides information on chemicals which require evacuation upon spillage. A list of these chemicals is shown in Exhibit 17. As indicated on the classification sheets in Exhibit 7, chemicals which are classified as toxic, however do not require evacuation in the event of a spill, (ie. those not included in Exhibit 17), are not included in the final count of toxic chemical carriers. These were removed on the basis that despite their toxicity at close range, they would not pose a threat to Control Room habitability.

As a mitigating factor, state and local police departments were contacted regarding the addition of the Zimmer Control Room to their list of agencies to be contacted in the event of a chemical spill. These lists include such agencies as the Ohio Environmental Protection Agency, which would require immediate notification of such an accident. Copies of the letters documenting the agreements with the Ohio State Highway Patrol, the Village of Moscow Police Department, and the Village of New Richmond Police Department, are included as Exhibit 18. It is believed that with adequate advance notice as would be provided by the Police, the Control Room air intakes could be closed prior to diffusion of a toxic chemical spill to the plant site, and remain closed during the danger period. It is therefore believed that the danger to the Control Room Operators from toxic chemical spills has been minimized.

PART III
ZIMMER TRUCK SURVEY
CALCULATIONS
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SUMMARY OF CALCULATIONS

As previously discussed, the information obtained in Phases 1 through 3 was used to categorize the observed tank trucks as toxic, non-toxic, or indeterminate. The list of toxic chemical carriers was further refined to include only those chemicals which would pose a hazard to the Control Room in the event of a spill, plus a percentage of the indeterminate trucks which were assumed to be toxic chemical carriers.

By thus determining a percentage of tankers which are possibly carrying toxic chemicals, and then multiplying by the percentage of trucks passing the site which are tankers, it is intended to determine the probability of the described toxic chemical spill, and compare with the maximum acceptable probability.

Accident statistics for U.S. 52 in Clermont County were obtained from the Ohio Department of Transportation (ODOT), Bureau of Traffic Control (Exhibit 9). From these figures (years 1978, 1979, 1980) an accident rate in truck accidents per million truck miles per year was calculated. The vehicles included in calculating this rate were all class "B and C Commercial" trucks, i.e. all dual rear wheel, single-axle trucks or larger. Likewise, all trucks recorded in The Zimmer Truck Survey were in the "B and C Commercial" classifications.

By totaling the number of accidents in each year involving "B and C Commercial" trucks for the years 1978, 1979, and 1980, the truck accident rate per million truck miles traveled was determined. The applied equation, adapted from the Fatality per Million Mile Equation in the "Traffic Engineers Handbook" (from The Safety Engineers Institute of Traffic), states:

$$R = \frac{A \times 1,000,000 \text{ Miles}}{L \times T \times 365 \text{ Day/Year}}$$

Where R = Truck accident rate (Truck accidents per million miles per year)

A = Number of truck accidents (Accidents per year)

L = Road segment length (Miles)

T = Average daily traffic (Trucks per day)

An accident rate was thereby determined which could be applied to the number of toxic chemical tank trucks conservatively assumed to be using U.S. 52 in Clermont County. The probability of a truck accident involving toxic chemicals can thus be calculated.

In order to calculate the probability of a total loss of lading toxic chemical accident, a percentage of the previously described accidents must be categorized as serious enough to allow total loss of lading. It is assumed that an overturning accident would best typify this type of accident, reasoning that the tank could rupture when turning over and the contents would completely escape. Since there were no occurrences of truck overturning in the available statistics for U.S. 52 in Clermont County (years 1978, 1979, and 1980), the next most serious accident types were chosen. These involved the striking of substantial fixed objects such as trees, bridges, culverts and utility poles. Head-on collisions were also considered. During the three (3) years studied, only five (5) such accidents occurred, and it should be further noted that none of these accidents involved a fatality. The calculated probabilities of loss of lading accidents for the three (3) statistical years were averaged for use in the final probability calculation.

To this point, the probability of a total loss of lading toxic chemical truck accident has been calculated. In order to calculate the probability of the released toxic fumes actually reaching the control room, factors for proximity and meteorological conditions must be applied. As outlined in Reg. Guide 1.78, a five-mile radius from the control room is considered to be the critical exposure distance for chemical releases. Since the offset of the control room to U.S. 52 is considered negligible (approximately 1/4 mile), a ten-mile segment is assumed to be critical. A factor of ten-miles is therefore applied for exposure distance. Since the accident rate is expressed in units of truck-miles, the exposure distance must be multiplied by the average 500 trucks per day. The exposure distance of 5000 truck-miles is therefore multiplied times the previously determined probability.

In order to complete the analysis, a meteorological factor was calculated. From Figure 2.3 of the Environmental Statement, a summation of the time-percentages when the wind blows in the direction of the plant was taken. The time percentages for winds blowing from the eastern hemisphere were totalled, and then averaged to account for the fact that an accident could occur in either the northern or southern quadrant at any given time. A Meteorological Factor of 20.45% was therefore applied.

CALCULATIONS

Statistics were obtained from the Ohio Department of Transportation - Bureau of Traffic Control.

The Accident Rate Equation was adapted from the Fatality Rate Equation in "The Traffic Engineers Handbook", supplied by The Safety Engineers Institute of Traffic.

$$R = \frac{A \times 1,000,000 \text{ Miles}}{L \times T \times 365 \text{ Days/Year}}$$

Where R = Accident Rate, in truck accidents/million miles/year (specific to U.S. 2 in Clermont County)

A = Number of truck accidents per year from ODOT statistics

L = Length of road segment in miles (for accident statistics in Clermont County)

T = Average daily truck traffic, in trucks per day (500 trucks per day as determined previously from ODOT for the initial response to the toxic chemical question)

NOTE: Factor of 1,000,000 miles is applied to the numerator for workability of numbers, therefore the unit "per million truck miles" is introduced.

1978

A = 25 truck accidents

L = 25 miles

T = 500 trucks per day

$$R = \frac{25 \times 1,000,000}{25 \times 500 \times 365} = \frac{5.48}{1,000,000} = 5.48 \frac{\text{Truck accidents}}{\text{Million Truck Miles}}$$

The following three (3) accidents were classified as possible total loss of lading accidents:

Accident #8710 - 0669
Tractor/Semi-trailer

:Head-on collision

Accident #8760 - 0407
Tractor/Semi-trailer

:Collision with utility
light pole

Accident #8656 - 0392
Tractor/Semi-trailer

:Collision with bridge
abutment/culvert

Percentage of assumed total loss of lading accidents:

$$\frac{3 \text{ Loss of lading}}{25 \text{ Truck accidents}} = 0.12 = 12\%$$

Annual %
Probability Factor = $\frac{5.48}{1,000,000} \times 0.12 = \underline{6.576 \times 10E-7}$

1979

A = 20 Truck accidents
L = 25 Miles
T = 500 trucks/day

$$R = \frac{20 \times 1,000,000}{25 \times 500 \times 365} \times \frac{4.38}{1,000,000} = 4.38 \frac{\text{Truck Accidents}}{\text{Million Truck Miles}}$$

One (1) accident was classified as a possible total loss of lading accident:

Accident #9607 - 0171
Truck tractor

: Collision with bridge
abutment/culvert

Percentage of assumed total loss of lading accidents:

$$\frac{1 \text{ Loss of Lading}}{20 \text{ Truck accidents}} = 0.05 = 5\%$$

$$\begin{array}{l} \text{Annual \%} \\ \text{Probability Factor} \end{array} = \frac{4.38}{1,000,000} \times .05 = 2.19 \times 10E-7$$

1980

A = 17 Truck accidents
L = 25 Miles
T = 500 Trucks per day

$$R = \frac{17 \times 1,000,000}{25 \times 500 \times 365} = \frac{3.726}{1,000,000} = 3.726 \frac{\text{Truck Accidents}}{\text{Million Truck Miles}}$$

One (1) accident was classified as a possible total loss of lading accident:

Accident #6014-560
Tractor/semi-trailer : Collision with tree

Percentage of assumed total loss of lading accidents:

$$\frac{1 \text{ Loss of Lading}}{17 \text{ Truck accidents}} = 0.059 = 5.9\%$$

$$\begin{array}{l} \text{Annual \%} \\ \text{Probability Factor} \end{array} = \frac{3.726}{1,000,000} \times .059 = 2.198 \times 10E-7$$

Average Annual %
Probability Factor

$$\text{Probability (1978)} = 6.576 \times 10E-7$$

$$\text{Probability (1979)} = 2.190 \times 10E-7$$

$$\text{Probability (1980)} = \frac{2.198 \times 10E-7}{10.964 \times 10E-7}$$

$$\begin{aligned} \text{Average Probability} &= \frac{10.964 \times 10E-7}{3} \\ &= 3.655 \times 10E-7 \end{aligned}$$

Using the average probability factor to determine the final probability of a toxic chemical spill allowing fumes to enter the control room, the following calculations were made:

Ratio of observed tank trucks to total number of observed trucks:

Total tankers = 609
Total of all trucks = 7,595

$$\text{Ratio} = \frac{609}{7,595} = .080 = 8\%$$

Total observed tank trucks	: 609
Total non-toxic	: 456
Total toxic	: 32
Total indeterminate	: 121

Toxic - Requiring evacuation	: 13
Not requiring evacuation	: 19

Note: Six (6) trucks of Herbert-Verkamp-Calvert (HVC) Industries were observed by the truck study. According to an HVC Industries spokesman, Chlorine Gas and Anhydrous Ammonia are periodically transported on U.S. 52. The Zimmer Control Room presently has isolation capability for potential effects of Chlorine and Ammonia, therefore these trucks were deleted from the toxic chemical count in the probability calculation.

Final Classified Toxic Chemical Transporters:

13 - 6 = 7 Trucks

A portion of the "indeterminate" trucks are assumed to be toxic chemical carriers based upon a percentage of those observed which could pose a threat to Control Room Habitability:

$$\% \text{ toxic} = \frac{7}{609} = 0.0115 = 1.15\%$$

$$0.0115 \times 121 = 1.39, \text{ say } 2 \text{ trucks}$$

The total final count of assumed toxic chemical carriers which pose a threat to the Control room is:

Total Toxic:	7 + 2 = 9
% Toxic:	$\frac{9}{609} = 0.0148 = 1.48\%$

Meteorological Factor

Using figure 2.3 (Exhibit 10 page 1) from the Environmental Report, it is shown that the winds which could feasibly affect the plant are those blowing from the eastern hemisphere of the wind rose. Since an accident could occur in either the northeast or southeast quadrant, an average value for the 2 quadrants was used for the probability calculation.

$$\begin{aligned}\text{Wind \%} &= 2.9\% + 2.75\% + 2.2\% + 3\% + 5.2\% \\ &\quad + 12.25\% + 12.6\% = 40.9\%\end{aligned}$$

$$\text{Avg. Wind\%} = \frac{40.9}{2} = 20.45\%$$

Exposure Distance

Based upon a 5 mile radius of exposure to the plant, a 10 mile segment of U.S. 52 is used as an exposure distance. Since the probability factor is expressed in truck accidents per truck miles, the exposure distance must be multiplied by the factor of 500 trucks per day. The exposure distance is thus expressed in truck miles.

$$10 \text{ miles} \times 500 \text{ trucks} = 5000 \text{ truck miles}$$

PROBABILITY

$$3.655 \times 10E7 \times .08 \times .0148 \times .2045 \times 5000 = \underline{4.42 \times 10E-7}$$

(AVG.Accident	Tank Truck	Toxic Tanker	Wind Direction	Exposure)
(Probability Factor	X Percentage	X Percentage	X Factor	X Distance)

The maximum allowable probability for conservative figures, as outlined in Reg. Guide 1.91 - "Evaluations of Explosions Postulated to Occur on Transportation Routes Near Nuclear Power Plants," is $1 \times 10E-6$. Since $4.42 \times 10E-7 < 1 \times 10E-6$, the Control Room is safe.

PART IV
ZIMMER TRUCK SURVEY

CONCLUSION

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It is believed that the final calculated probability of $4.42 \times 10E-7$ adequately satisfies the minimum acceptance criteria for conservative figures. Due to the assumptions listed on page 16, the calculations are considered to be conservative, especially regarding the classification of toxic chemical carriers. It should be noted that any observed truck belonging to a company which occasionally transports toxic chemicals, was assumed to be carrying toxic chemicals. This classification was made despite the fact that "toxic" warning placards were not attached to any of the tankers. Placards for identification of hazardous materials are the subject of Federal Regulations which are presently being phased into effect. The use of these assumed toxic chemical carriers in classifying a percentage of the indeterminate trucks expands the conservative even further. Additional reduction of the probability could be achieved by analysis of dispersion rates of specific chemicals, however, since specifically observed chemicals were not determined, dispersion analysis was not possible. Dispersion was considered to the extent that chemicals not requiring evacuation (as determined by Publication DOT P 5800.2) were eliminated from the probability calculations, and a meteorological factor was applied to account for times when the wind is blowing away from the plant.

In order to compensate for any lack of conservatism introduced by indeterminate transporters, an additional safety margin was introduced by contacting the area police departments. By receiving adequate advance notice, the Control Room air intakes could be closed prior to toxic fumes reaching the area.

In conclusion, due to the generated probability and the advance warning program, it is believed that Control Room habitability is safe within acceptable limits regarding transport of toxic chemicals on U.S. 52.

DISCUSSION

In support of the above conclusion, the following observations are submitted. Analysis of the traffic patterns and the observed trucking companies has lead to the assumption that the large majority of tank trucks using U.S. 52 near Moscow, Ohio can be categorized as local traffic, principally involving the transport of petroleum products. Since the graph in Exhibit 2 shows that truck traffic volumes sharply decrease after 5:00 PM on weekdays and for the entire duration of the weekends, it is believed that this is an indication that most shipments do not involve overnight travel. Long distance overnight travel would best be characterized by constant or random traffic volumes, day and night. Since an obvious daily pattern emerged from Phase 1 of the study, it is assumed that mostly local truck traffic is being observed.

The observation that the traffic in question involves local tank trucks is supported by a theory regarding the number of petroleum storage tanks located along the Ohio River in the Greater Cincinnati Area. These storage tanks are filled from barges docked on the river and serve as distribution centers for truck shipments to area gasoline wholesalers and retailers. Many of the unmarked tankers observed by the survey takers appeared to be gasoline haulers, although they were classified as indeterminate due to the lack of proof to the contrary.

In addition, many of the observed tankers having company markings were positively identified as petroleum transporters.

These described vehicles do not pose a threat to the safety of the Control Room in the event of an accident and explosion. In satisfying the guidelines set forth in Reg. Guide 1.91 - "Evaluations of Explosions Postulated to Occur on Transportation Routes Near Nuclear Power Plants", the Control Room has been modified to protect the operators in such an emergency.

These observations are included in order to supplement the quantitative probability analysis. These theories and assumptions were not used in any of the calculations, and are discussed only for the purpose of showing safety beyond the calculated probability. Therefore, it is once again concluded that the Control Room is safe against transportation accidents, and further modifications will be unnecessary.

The following log estimated man-hours was recorded in compiling this report:

Engineering	520 Man Hours
Secretarial	158 Man Hours
Survey Personnel	1190 Man Hours
Miscellaneous	30 Man Hours
<u>Total</u>	<u>1898 Man Hours</u>

ASSUMPTIONS

REALISTIC

- * Single-axle trucks were assumed to be carrying loads substantially less than the 50,000 pound maximum load designated in Section 2.2.1 on transport of toxic chemicals, and were therefore disregarded.
- * Seasonal traffic flows were not assumed since the observed chemical companies gave no indication that their output would fluctuate with the local climate changes. Furthermore, it is believed that if seasonal patterns do occur, traffic flows will be highest on U.S. 52 during the summer months. During the winter months, many trucks will probably use the nearby interstate highways which receive greater maintenance during hazardous road conditions.
- * Traffic accident statistics utilized were very specific for the Zimmer Plant, and therefore were more reliable than national averages.
- * Toxic chemicals which do not necessitate evacuation under accident conditions were disregarded.

CONSERVATIVE

- * All companies which carry toxic chemicals on U.S. 52 occasionally were assumed to be carrying toxic chemicals every time they were observed by the survey taker. However none of the observed tankers indicated that toxic chemicals were actually being transported.
- * Concentrations of the various chemicals assumed to be passing the Zimmer Station were assumed to be high enough to reach the Control Room in lethal doses.
- * It was assumed the trucks were fully loaded, despite the reduced load limits on various bridges along U.S. 52.

* Despite the lack of fatalities which would be expected in a total loss of lading accident, the accident types listed below were assumed to involve total loss of lading for the accidents recorded in the statistics.

- (A) Head-on collisions
- (B) Collisions with utility and light poles
- (C) Collisions with bridge abutments
- (D) Collisions with culverts
- (E) Collisions with trees

Overturning accidents were considered most indicative of total loss of lading accidents (due to tank rupture); however, no instances of truck overturning were recorded during the three (3) years of available statistics. The above described accidents were averaged over the three (3) statistical years. No record of a toxic chemical accident in Clermont County requiring evacuation has been located.

ZIMMER TRUCK SURVEY
EXHIBITS

ZIMMER TRUCK SURVEY EXHIBITS

Exhibit 1 . . . . .	.Instructions - U.S. 52 Truck Survey
Exhibit 2 . . . . .	.U.S. 52 Truck Survey Graph - Phase 1
Exhibit 3 . . . . .	.Daily Truck Tally
Exhibit 4 . . . . .	.4A Trucking Companies Observed (Phases 1&2) 4B Trucking Companies Contacted Regarding Transport of Toxic Chemicals (Phases 1&2)
Exhibit 5 . . . . .	.Agencies and Companies Contacted Regarding The Transport of Toxic Chemicals
Exhibit 6 . . . . .	.Telephone Survey Checklist
Exhibit 7 . . . . .	.Company Classifications and Tally Sheets
*Exhibit 8 . . . . .	.Company Checklists
Exhibit 9 . . . . .	.Traffic Accident Listing - Rural State Highway System (ODOT)
Exhibit 10 . . . . .	.Figure 2.3 From The Zimmer Environmental Report - The Zimmer Site Wind Rose
Exhibit 11 . . . . .	.Toxic Chemical Survey Conducted by Sargent & Lundy For Original Toxic Chemical Response
*Exhibit 12 . . . . .	.U.S. 52 - Truck Survey - Daily Survey Sheets

Exhibit 13 . . . . .	.U.S. 52 Truck Survey - Phase 3 Questionnaire And Instructions
*Exhibit 14 . . . . .	.Driver Questionnaires - Tank Trucks (Phase 3)
*Exhibit 15 . . . . .	.Driver Questionnaires - Miscellaneous Tractor Trailers (Phase 3)
*Exhibit 16 . . . . .	.Completed Company Checklists (Phase 3)
Exhibit 17. . . . .	.Toxic Chemicals Possibly Requiring Evacuation Under Accident Conditions
Exhibit 18. . . . .	.Documentation of Advance Warning Agreements

EXHIBIT 1
INSTRUCTIONS - U.S. 52
TRUCK SURVEY
(Pages)

INSTRUCTIONS - U.S. 52 TRUCK SURVEY

The purpose of this survey and the accompanying survey sheet is to determine the quantities and types of commercial trucks passing the Zimmer Power Station on U.S. 52. The survey will be conducted for one (1) week on a 24 hour per day basis to determine the period of maximum truck traffic volume. The study shall then continue for an additional month on a reduced scale, using only the periods of peak flow.

The survey should be conducted from the main gate at the east end of the second shift parking lot. Survey takers shall be stationed in a vehicle pointing toward the road, such that headlights may be used to read markings on the trucks after dark. Changes in location may be made as necessary to adequately observe the trucks and their markings.

The following instructions are intended as a guide to aid the traffic counter in properly categorizing the passing vehicles and to emphasize the types of observations critical to the study.

The survey form is intended to serve as a tally sheet on which a running count will be maintained. The form is divided into three (3) main categories: (1) Tank Trucks, (2) Enclosed Tractor Trailers, and (3) Miscellaneous Trucks. The first two (2) categories are further sub-divided into "Quantity/Remarks" and "Enter ZPS-1" columns. Brief descriptions of these columns are included below.

Quantity/Remarks

This category is intended to provide the essential information of the survey. The small division at the left of the category is to indicate the multiple passing of identical trucks, and to maintain a record of observed trucks without further comment.

The main body of the column is for recording all observations on the passing trucks. Trucking company names, content markings, warnings, and miscellaneous comments should be recorded in this column. Single axle trailers and non-tractor trailer tankers should likewise be noted.

Enter ZPS-1

The purpose of this column is to record by check mark only those vehicles in the specified category which enter the power plant site. This column is intended to eliminate the vehicles involved in construction of the plant, which will not be indicative of traffic flow after completion of the plant.

The main headings on the survey sheet are arranged in order of decreasing importance from left to right. Tank trucks should therefore be given priority during times of heavy flow when there is inadequate time for complete note-taking. Enclosed trailers should be observed for factors indicating reduced load capacity, such as a single axle or a canvas top cover. Reduced load will indicate reduced importance. The final category of "Miscellaneous Trucks" has the lowest priority and shall contain all trucks in the Department of Transportation (DOT) classification "B&C Commercial" which do not fall into the two (2) categories previously discussed. The "B&C Commercial" classification is outlined on the attached page. A simple tally without further description will suffice for this column. Also attached is a page of eleven (11) numbered examples and an appropriately marked survey sheet for the corresponding example numbers.

VEHICLE CLASSIFICATIONS

PASSENGER/A COMMERCIAL *

1. Cars
2. Pickups
3. Panel Trucks
4. Recreational Vehicles

B&C COMMERCIAL

1. Dual Tire Trucks
2. Trucks with Trailers
3. Tractor Trailers
4. Dump Trucks

*TO BE DISREGARDED

EXAMPLES

1. Single axle Sohio gasoline truck, entered plant site
2. Unmarked tank truck; black material spilled on side
3. Enclosed tractor trailer, Ajax Trucking Co. entered plant site
4. Tractor trailer; trailer is half the normal height and top is covered with canvas.
5. Concrete truck
6. Cattle truck
7. Flat bed
8. Tow truck
9. Unmarked, enclosed tractor trailer
10. Three (3) Allied Chemical tank trucks, flammable markings on trailers
11. Pick-up truck - DISREGARD

TANK TRUCKS			ENCLOSED TRACTOR TRAILERS			MISC. TRUCKS
QUANTITY/REMARKS CO. NAME, TRAILER MARKINGS MISC. COMMENTS	ENTER ZPS-1		QUANTITY/REMARKS CO. NAME, TRAILER MARKGS. MISC. COMMENTS	ENTER ZPS-1		
1. 1 SOHIO GAS; 1-AXLE, "NON-SEMI"	✓					
2. 1 APPARENT ASPHALT TRUCK (BLACK SPILL ON SIDE)						
3.			1 AJAY TRUCKING Co.	✓		
4. THRU 8.						III
9.			1			
10. III ALLIED CHEMICAL Co. - "FLAMABLE"						
11.						

TANK TRUCKS		ENCLOSED TRACTOR TRAILERS		MISC. TRUCKS	
QUANTITY/REMARKS CO. NAME, TRAILER MARKINGS MISC. COMMENTS	ENTER ZPS-1	QUANTITY/REMARKS CO. NAME, TRAILER MARKGS. MISC. COMMENTS	ENTER ZPS-1	U.S. 52	ZPS

EXHIBIT 2
U.S. 52 TRUCK SURVEY
GRAPH - PHASE 1
(1 Page)

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EXHIBIT 3
DAILY TRUCK TALLY
(2 Pages)

DAILY TRUCK TALLY

<u>DAY</u>	<u>DATE</u>	<u>TANKERS</u>	<u>ENCLOSED</u>	<u>MISC.</u>	<u>TOTAL</u>
*Thursday	07/23	10	48	132	190
*Friday	07/24	13	65	203	281
Saturday	07/25	11	56	39	106
Sunday	07/26	2	50	53	105
Monday	07/27	25	112	233	370
Tuesday	07/28	47	121	291	459
Wednesday	07/29	42	129	286	457
Thursday	07/30	35	154	295	485
Friday	07/31	51	131	236	418

BEGIN 8 HOUR SURVEY	Sub. 236	Sub. 866	Sub. 1,768	Sub. 2,871
---------------------	----------	----------	------------	------------

Monday	08/03	19	50	189	258
Tuesday	08/04	17	49	172	238
Wednesday	08/05	12	60	234	306
Thursday	08/06	14	55	222	291
Friday	08/07	19	54	172	245
Monday	08/10	5	44	170	219
Tuesday	08/11	15	49	122	186
Wednesday	08/12	10	23	103	136
Thursday	08/13	21	50	142	213
Friday	08/14	20	44	134	198
Monday	08/17	18	64	154	236
Tuesday	08/18	20	46	153	219
Wednesday	08/19	18	93	172	283
Thursday	08/20	22	77	147	246
Friday	08/21	29	100	136	265
Monday	08/24	27	92	122	241
Tuesday	08/25	25	97	105	227
Wednesday	08/26	22	59	156	237
Thursday	08/27	22	71	158	251
Friday	08/28	18	66	145	229

Sub. 373	Sub. 1,243	Sub. 3,108	Sub. 4,724
----------	------------	------------	------------

Total 609	Total 2,109	Total 4,876	Total 7,595
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*
Reduced traffic flow due to temporary bridge closure on U.S. 52 at Higginsport.

PHASE 1
PERCENTAGE OF DAILY TRUCKS
PASSING DURING PEAK HOURS
(8:00 AM to 4:00 PM)

<u>TIME PERIOD</u>	<u>MONDAY</u> <u>07/27</u>	<u>TUESDAY</u> <u>07/28</u>	<u>WEDNESDAY</u> <u>07/29</u>	<u>THURSDAY</u> <u>07/30</u>	<u>FRIDAY</u> <u>07/31</u>
8:00	16	27	24	38	25
9:00	31	37	22	41	30
10:00	28	23	39	39	36
11:00	25	38	31	29	36
12:00	22	26	35	36	36
1:00	30	32	42	31	32
2:00	22	34	35	27	30
3:00	22	37	29	34	25
SUB TOTAL	196	254	257	275	250
DAILY TOTAL	370	459	457	485	418
PERCENTAGE	53	55	56	57	60

EXHIBIT 4A
TRUCKING COMPANIES OBSERVED
BY THE U.S. 52 TRUCK SURVEY
(TANKERS ONLY)
(1Page)

EXHIBIT 4A
TRUCKING COMPANIES OBSERVED
BY THE U.S. 52 TRUCK SURVEY
(TANKERS ONLY)
PHASES 1 AND 2

Ace Liquid Waste
ADM
AGA Burdox
Air Products
Allied Chemical Co.
Ashland Chemicals
Ashland Oil
ATS

Blue Flame
Brighton Mills Flour
Bulk Transit

C.P.
Carter
Chemcentral
Chemetron - Cardox
Chemicals Inc.
Coastal Tank Lines
Colgan Cement
Commonwealth Propane

D&A Lubricant Co.
D&L Lubricant
D&L Transport

Ford Brothers
Fuller Transport
Frankfort

Gantz
Georgia Pacific

Halzit
Highway Transport (HT)
Hill & Griffith Co.
HVC Industries
(Herbert-Verkamp-Calvert)

LA Democrate
Leaseway Transport
Liquid Air
Liquid Transport Co.
Lubricate Co.

M. J. Daly Co.
Mack Lack
Mason-Dixon Trucking Co.
Matlack Inc.
Maxwell Trucking Co.
Maysville Ready Mix
McKesson Chemical Co.
Mead Chemical Co.
Molasses

Nappin Mossler
Nease

Ohio Waste Oil
OIAH

Pipeline
Propane Transport Co.

Ripley Oil Co.
River Bend Transport
Rogers

Schneider
Skelley Oil
Strothman Express

Transo

(U.S.) Rockwood Corporation
Union Carbide

Indian River Co.

W. R. Grace

Jack's Carbon Dioxide

XX (Double X)

Koch Fuels

EXHIBIT 4B
TRUCKING COMPANIES CONTACTED
REGARDING TRANSPORT OF
TOXIC CHEMICALS
(2 Pages)

ZIMMER TRUCK SURVEY
EXHIBIT 4B

(Trucking Companies contacted regarding transport of toxic chemicals)

Ace Liquid Waste
3715 Beechmont Ct.
Cincinnati, Ohio
Phone: (513) 871-8397

AGA Burdax
2015 E. Galbraith Road
Cincinnati, Ohio
Phone: (513) 761-7823

Air Products
2500 Yankee Road
Middletown, Ohio
Phone: (513) 579-8891

Allied Chemical Co.
3330 S. Third Street
Ironton, Ohio 45638
Phone: (614) 553-1040
Home office - New Jersey
Phone: (201) 455-6200

Ashland Chemicals
2788 Glendale-Milford Road
Cincinnati, Ohio 45241
Phone: (513) 563-6660

ALS Transport Inc.
N. Ridgeville, Ohio
Phone: (216) 365-8389

Brighton Mills Flour
2641 Spring Grove Avenue
Cincinnati, Ohio
Phone: (513) 681-2550

Buckeye Gas
8050 Hosbrook Road
Cincinnati, Ohio
Phone: (513) 793-8175

Chemcentral/Cincinnati
4619 Reading Rd. PO Box 17067
Cincinnati, Ohio 45246
Phone: (513) 242-7700

Chemetron-Cardox
9740 Near Drive
Cincinnati, Ohio 45246
Phone: (513) 874-4100

Chemicals Incorporated
614 Shepherd Drive
Cincinnati, Ohio 45215
Phone: (513) 733-5444

Coastal Tank Lines
8528 North Gilmore Road
Fairfield, Ohio
Phone: (513) 874-2844

Commonwealth Propane Co.
27 Water Street
Phone: (513) 831-6000

D&L Transport Inc.
3800 S. Laramie Avenue
Cicero, Illinois 60650

Daly, M.J. Co.
38 Elm. Street
Ludlow, Kentucky 41016
Phone: (606) 581-7046

Ford Bros.
P.O. 727
Coal Grove, Ohio 45638
Phone: (614) 532-3143

Frankfort Materials Co
P.O. box 797
Frankfort, Kentucky 40601
Phone: (502) 223-2573

Bulk Material Hauling
4165 Colerain Avenue
Cincinnati, Ohio
Phone: (513) 541-4093
Cincinnati, Ohio

Grace, W. R.
112 North Street
Wilder, Kentucky 41071
Phone: (606) 291-3500

Halzit/c/oAshland Ohio Inc.
James Avenue & 32nd Street
Covington, Kentucky
Phone: (606) 581-5800

Herbert-Vewrkamp-Calvert
(HVC) Ind.
4600 Dues Cr.
Cincinnati, Ohio
Phone: (513) 874-9261

Hill & Griffith
1262 St. Avenue
Cincinnati, Ohio 45204
Phone: (513) 921-1075

Indian River Transport Co.
Box AG
Winterhaven, Florida
Phone: (813) 324-2430

Leaseway Transportation-Co.
Refiners Transport & Terminal
5225 Duff
Cincinnati, Ohio 45246
Phone: (513) 874-6622

Liquid Air Co.
11445 Rockfeld Court
Cincinnati, Ohio
Phone: (513) 771-7740

Liquid Transport Corp.
26 Dixie Highway
Fairfield, Ohio
Phone: (513) 874-3882 or 863-4296

Mason Dixon Truck Line
2803 Cincinnati-Dayton Road
Middletown, Ohio 45402
Phone: (513) 381-6516

Georgia Pacific
Eastern Avenue
Cincinnati, Ohio
Phone: (513) 321-5381

McKesson Chemical Co.
3025 Exon Avenue
Cincinnati, Ohio
Phone: (513) 563-2440

Mead
P.O. Box 2500
Chillicothe, Ohio 45601
Phone: (614) 772-3342

Ohio Waste (oil)
260 W. North Bend Road
Cincinnati, Ohio
Phone: (513) 821-7877

Pipeline Oil Co.
233 Northland Blvd.
Cincinnati, Ohio
Phone: (513) 771-3261

Propane Transport
1734 State Route 131
Milford, Ohio 45140
Phone: (513) 575-2500

River Bend Transport
Sunset Avenue
North Bend, Ohio
Phone: (513) 941-1200

Rockwood Corp.
3400 Reading Road
Cincinnati, Ohio
Phone: (513) 631-4325

Schneider Tank Lines
PO Box 117-4321 W. College Ave
Appleton, Wisconsin 54912
Phone: (1-800-558-3440

Strothman Express
4963 Provident Drive
Cincinnati, Ohio 45246
Phone: (513) 874-3440

Matlack Inc.
430 W. Seymore Avenue
Cincinnati, Ohio
Phone: (513) 761-3713

Union Carbide
Cincinnati, Ohio
Phone: (513) 272-0206

Maxwell Trucking Co.
1300 Evendale Drive
Cincinnati, Ohio
Phone: (513) 563-6633

EXHIBIT 5
AGENCIES AND COMPANIES
CONTACTED REGARDING THE
TRANSPORT OF TOXIC CHEMICALS
(1 Page)

AGENCIES AND COMPANIES CONTACTED REGARDING
THE TRANSPORT OF TOXIC CHEMICALS

Ohio Department of Transportation - Columbus & District 8
Ohio Department of Transportation - Bureau of Traffic Control
Ohio Environmental Protection Agency
Ohio EPA Emergency Response Unit
Ohio EPA Disaster Services Agency
Public Utilities Commission of Ohio
Ohio-Kentucky-Indiana (OKI) Regional Planning Authority
City of Cincinnati Traffic Engineers Office
Cincinnati Gas & Electric Company Insurance Department
Sargent & Lundy Engineers
CER CECOS Company/Clermont Environmental Reclamation, Inc.
(Hazardous waste disposal company)
Federal Department of Transportation
Chemical Transportation Emergency Center (Chemtrec)

See attached list of trucking companies observed by survey
(Exhibit 4)

EXHIBIT 6
TELEPHONE SURVEY CHECKLIST
(1 Page)

Company
Name _____

Address _____

Telephone No. () _____

Spokesman _____

Does the above company transport Toxic Chemicals?

Yes No (Circle One)

If Yes:

1. On U.S. 52 near Zimmer Nuclear Power Station @
Moscow, Ohio?

Yes No

2. What type of Toxic Chemical are transported in
this area?

3. What is the frequency of shipment of Toxic Chemicals?

4. Are tankers marked with Toxic warnings?

Yes No

5. Any limiting circumstances (e.g. single axle trucks,
reduced loading or re-routing due to low capacity
bridges, etc.)

6. Remarks: _____

If No:

1. What type materials are hauled on U.S. 52 near Zimmer
Nuclear Power Station @ Moscow, Ohio.

Date: _____ Signature _____

EXHIBIT 7
COMPANY CLASSIFICATIONS
AND TALLY SHEETS
(14 Pages)

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 1 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
07/23/81	1	SOHIO GAS			4	MACK LACK
	1	LIQUID AIR CO.			1	L. A. DEMOCRATE
	1	TRESSLER OIL				
	1	FULLER TRANSPORT				
	1	GEORGIA PACIFIC				
		SUBTOTAL: 5				SUBTOTAL: 5
07/24/81	1	COASTAL TANK LINES				
	1	OHIO WASTE OIL				
	1	PIPELINE				
	4	ASHLAND OIL				
	1	TRESSLER OIL				
	1	SOHIO GAS				
	1	MAXWELL				
	1	ALLIED CHEMICAL CO.				
	1	LUBRICATE CO.				
	1	D&A LUBRICANT				
		SUBTOTAL: 13				
07/25/81	1	COASTAL TANK LINES			1	OIAH
	2	GULF OIL			3	UNMARKED
	1	CLARK OIL				
	2	MARATHON OIL				
	1	KOCH-FUELS				
		SUBTOTAL: 7				SUBTOTAL: 4

INDICATES TOXIC SUBSTANCES WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 2 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
07/26/81	1 1	HIGHWAY TRANSPORT (HT) UNMARKED				
		SUBTOTAL: 2				
07/27/81	3 1 2 6 1 1 1 1	MAXWELL LUBRICATE CO. HALZIT TRESSLER OIL D&A LUBRICANT KOCH-FUELS DOUBLE XX UNION CARBIDE	1 1	D&L TRANSPORT * GRACE *	2 5	ATS UNMARKED
		SUBTOTAL: 16		SUBTOTAL: 2		SUBTOTAL: 7
07/28/81	1 2 2 1 2 1 3 1 2 1 1 1 2 3 5	MAYSVILLE READY MIX GULF OIL HALZIT KOCH-FUELS PIPELINE AMD FORD BROS. TRESSLER OIL SOHIO GAS HIGHWAY TRANSPORT (HT) SPNOCO ASHLAND OIL D&L LUBRICANT BULK TRANSIT DOUBLE XX	1 1 2	M. J. DALEY CO. * D&L TRANSPORT * ACE LIQUID WASTE	1 2 12	MACK LACK U. S. ROCKWOOD UNMARKED
		SUBTOTAL: 28		SUBTOTAL: 4		SUBTOTAL: 15

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 3 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
07/29/81	1 2 2 2 3 2 6 1 1 2 2 2 1	HILL & GRIFFITH PROPANE GAS ADM KOCH-FUELS SOHIO GAS ASHLAND OIL HALZIT BORON FORD BROS. PIPELINE TRESSLER OIL DOUBLE XX MAYSVILLE READY MIX	1	ACE LIQUID WASTE	1 13	MACK LACK UNMARKED
		SUBTOTAL: 27		SUBTOTAL: 1		SUBTOTAL: 14
07/30/81	2 1 1 2 1 2 2 1 3 1 5	COLGAN FORD BROS. HILL & GRIFFITH KOCH-FUELS MAXWELL PIPELINE SOHIO GAS STROTHMAN TRESSLER OIL D&A LUBRICANT DOUBLE XX	2 2 1 1	CHEMETRON CARDOX * HVC INDUSTRIES JACKS CARBON DIOXIDE * ASHLAND CHEMICAL CO. *	1 7	MACK LACK UNMARKED
		SUBTOTAL: 21		SUBTOTAL: 6		SUBTOTAL: 8

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 4 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
07/31/83	1	ADM	1	ACE LIQUID WASTE	1	AIS
	1	COLGAN	1	CARBON DIOXIDE *	2	MACK LACK
	1	BULK TRANSIT	2	HVC CHEMICAL	8	UNMARKED
	7	DOUBLE XX				
	2	TRESSLER OIL				
	2	GULF OIL				
	4	HALZIT				
	2	MARATHON OIL				
	1	MATLACK				
	2	MAYSVILLE READY MIX				
	2	MAXWELL				
	1	PROPANE				
	1	PROPAL GAS				
	1	RIPLEY GAS				
	2	SOHIO GAS				
	1	STROTHMAN				
	1	LUBRICATE CO.				
	4	UNMARKED				
		SUBTOTAL: 36		SUBTOTAL: 4		SUBTOTAL: 11
08/03/81	1	BULK TRANSIT			1	MACK LACK
	2	MAXWELL			1	U.S. ROCKWOOD
	1	D&L LUBRICANT			2	UNMARKED
	2	TRESSLER OIL				
	1	SOHIO GAS				
	2	PIPELINE				
	1	HALZIT				
	2	ADM				
	1	FORD BROS.				
	1	DOUBLE XX				
	1	GRACE				
		SUBTOTAL: 15				SUBTOTAL: 4

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 5 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/04/81	2	PIPELINE			1	HRD
	1	MAXWELL			1	MACKLACK
	1	ADM			1	UNMARKED
	1	RIPLEY OIL				
	2	TRESSLER OIL				
	1	MARATHON OIL				
	2	LEASEWAY TRANSPORT				
	1	KOCH FUELS, INC.				
	2	DOUBLE XX				
	1	HIGHWAY TRANSPORT (HT)				
		SUBTOTAL: 14				SUBTOTAL: 3
08/05/81	1	MOLASSES	1	ACE LIQUID WASTE		
	2	PROPANE				
	2	FORD BROS.				
	1	MEAD CHEMICAL CO.				
	1	SUBURBAN PROPANE				
	1	ADM				
	1	HALZIT				
	1	TRESSLER OIL				
	1	DOUBLE XX				
		SUBTOTAL: 11		SUBTOTAL: 1		

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 6 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/06/81	1 1 1 1 1 2 2 1 2	COLGAN FORD BROS. CHEMICAL INC. PICK-UP GAS PROPANE ADM ASHLAND OIL LEASEWAY TRANSPORT TRESSLER OIL DOUBLE XX	1	CHEMETRON CARDOX *	1	MACK LACK
		SUBTOTAL: 12		SUBTOTAL: 1		SUBTOTAL: 1
08/07/81	1 1 2 1 5 1 2 1 1 2 1	D&A LUBRICANT BULK TRANSIT GULF OIL PIPELINE HALZIT FORD BROS. MAXWELL HILL & GRIFFITH ADM LEASEWAY TRANSPORT TRESSLER OIL			1	UNMARKED
		SUBTOTAL: 18				SUBTOTAL: 1

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 7 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/10/81	1 2 1 1	LIQUID TRANSPORT PIPELINE TRESSLER OIL ADM				
		SUBTOTAL: 5				
08/11/81	2 1 2 2 1 3	TRESSLER OIL ADM AIR PRODUCTS FORD BROS. PIPELINE DOUBLE XX	1	M. J. Daley Co. *	1 1 1	NEASE CARTER MACK LACK
		SUBTOTAL: 11		SUBTOTAL: 1		SUBTOTAL: 3
08/12/81	3 1 1 2 1	TRESSLER OIL SOHIO GAS MAXWELL FORD BROS. DOUBLE XX			2	MACK LACK
		SUBTOTAL: 8				SUBTOTAL: 2

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 8 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/13/81	2	MATLACK	1	CHEMETRON CARDOX *		
	1	FORD BROS.				
	2	McKESSON CHEMICALS				
	1	TRESSLER OIL				
	1	ASHLAND OIL				
	1	BERRY OIL				
	2	PIPELINE				
	2	HALZIT				
	1	HILL & GRIFFITH				
	1	ADM				
	1	GULF OIL				
	2	SOHIO GAS				
	3	DOUBLE XX				
		SUBTOTAL: 20		SUBTOTAL: 1		
08/14/81	5	MATLACK	1	HVC M. J. Daley *		
	2	TRESSLER OIL				
	2	COLGAN				
	2	FORD BROS.				
	2	HALZIT				
	1	RIPLY OIL				
	1	SOHIO GAS				
	2	DOUBLE XX				
	1	GEORGIA PACIFIC				
		SUBTOTAL: 18		SUBTOTAL: 2		

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 9 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/17/81	1	GRACE				
	2	PIPELINE				
	1	ADM				
	1	SOHIO GAS				
	3	HALZIT				
	3	FORD BROS.				
	1	RIVER BEND TRANSPORT				
	1	AGA BURDOX				
	1	ASHLAND OIL				
	1	TRESSLER OIL				
	3	DOUBLE XX				
		SUBTOTAL: 18				
08/18/81	5	HALZIT	1	M. J. DALEY CO. *	2	UNMARKED
	2	FORD BROS.				
	1	HILL & GRIFFITH				
	1	BRIGHTON MILLS				
	2	INDIAN RIVER TRANSPORT				
	2	TRESSLER OIL				
	1	SOHIO GAS				
	1	ADM				
	2	DOUBLE XX				
		SUBTOTAL: 17		SUBTOTAL: 1		SUBTOTAL: 2

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 10 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/19/81	1 2 2 1 1 1 1 2	MATLACK HALZIT MAYSVILLE READY MIX ADM SOHIO GAS ASHLAND OIL MAXWELL DOUBLE XX	1	SCHNEIDER *	6	UNMARKED
		SUBTOTAL: 11		SUBTOTAL: 1		SUBTOTAL: 6
08/20/81	1 2 1 1 2 1 2 2 2 2	FORD BROS. PIPELINE RIPLEY OIL STROTHMAN MAYSVILLE READY MIX PYROFAX BLUE FLAME DOUBLE XX UNMARKED GRACE	2	CHEMETRON CARDOX *	1 3	GANTZ UNMARKED
		SUBTOTAL: 16		SUBTOTAL: 2		SUBTOTAL: 4

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 11 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
8/21/81	4 1 1 1 1 3 1 1 1 1 1 3 1	MAYSVILLE READY MIX FORD BROS. FRANKFORT HALZIT HILL & GRIFFITH ADM LEASEWAY TRANSPORT BRIGHTON MILLS MILK MARKETING BELL SANITATION SOHIO GAS DOUBLE XX BUCKEYE GAS			9	UNMARKED
		SUBTOTAL: 20				SUBTOTAL: 9
8/24/81	1 2 1 6 3 1 1 1 1 3 1 1 1 1	HIGHWAY TRANSPORT (HT) SHELLY OIL CHEMICALS INC. MAYSVILLE READY MIX RIPLEY OIL McKESSON CHEMICALS SOHIO GAS STROTHMAN ADM PIPELINE FORD BROS. MAXWELL UNMARKED			1 3	HERTZ UNMARKED
		SUBTOTAL: 23				SUBTOTAL: 4

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

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DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/25/81	1	HIGHWAY TRANSPORT (HT)	1	M. J. DALEY CO. *	3	UNMARKED
	1	UNION CARBIDE	1	ASHLAND CHEMICALS *	1	ROGERS
	2	ADM			1	U.S. ROCKWOOD
	1	BRIGHTON MILLS				
	1	BORON				
	3	MAYSVILLE READY MIX				
	2	TRESSLER OIL				
	2	PORT-O-LET				
	2	PROPANE TRANSPORT				
	1	RIPLEY OIL				
	1	SATELITE				
	1	HILL & GRIFFITH				
		SUBTOTAL: 18		SUBTOTAL: 2		SUBTOTAL: 5
08/26/81	3	MAYSVILLE READY MIX	1	HIGHWAY TRANSPORT (HT) *	8	UNMARKED
	1	HILL & GRIFFITH				
	2	ADM				
	1	FORD BROS.				
	1	MAXWELL				
	1	LEASEWAY TRANSPORT				
	1	BRIGHTON MILLS				
	2	BLUE FLAME				
	1	UNMARKED				
		SUBTOTAL: 13		SUBTOTAL: 1		SUBTOTAL: 8

INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/27/81	1 1 3 1 1 1 1 2 2 2 2 1	ASHLAND OIL ALLIED CHEMICAL BULK TRANSIT COMMONWEALTH GULF OIL HILL & GRIFFITH HALZIT LEASEWAY TRANSPORT PIPELINE SOHIO GAS TRESSLER OIL RIPLEY OIL	1	CHEMCENTRAL *	1 1 1	NAPPIN-MOSSLER TRANSO UNMARKED
		SUBTOTAL: 18		SUBTOTAL: 1		SUBTOTAL: 3

* INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

TRUCK CLASSIFICATION
(NON-TOXIC/TOXIC/INDETERMINATE)

Page 14 of 14

DATE	NON-TOXIC		TOXIC		INDETERMINATE	
	QTY.	NAME	QTY.	NAME	QTY.	NAME
08/28/81	2	ADM	1	HVC	1	U.S. ROCKWOOD C.P.
	1	BRIGHTON MILLS			1	
	2	BULK TRANSIT				
	1	COLGAN				
	1	FORD BROS.				
	1	HILL & GRIFFITH				
	1	INDIAN RIVER				
	1	LEASEWAY TRANSPORT				
	1	LIQUID AIR				
	1	PIPELINE				
	1	SQUENZEC INDUSTRIES				
	1	TRESSLER OIL				
	1	DOUBLE XX				
		SUBTOTAL: 15		SUBTOTAL: 1		SUBTOTAL: 2
		TOTAL: 456		TOTAL 32		TOTAL: 121

* INDICATES TOXIC CHEMICALS WHICH DO NOT REQUIRE EVACUATION UPON SPILLAGE

EXHIBIT 8
COMPLETED COMPANY CHECKLISTS
(SEE SUPPLEMENTAL FOLDER #1)

EXHIBIT 9
TRAFFIC ACCIDENT LISTING -
RURAL STATE HIGHWAY
SYSTEM (ODOT)
(28 Pages)

Lebanon Office

P.O. Box 272

Lebanon, Ohio 45036

District #8 Lebanon
Traffic Engineer for Safety
Mr. GNEY KEFEN
513/932-3030

1980

TRAFFIC ACCIDENT LISTING

Rural State Highway System

Prepared by:

Ohio Department of Transportation

Bureau of Traffic Control

GLOSSARY

Accident Listing

The column headings and numerical codes used in the Accident Listing for the State Highway System are described below as they appear from left to right on a typical printout sheet.

SOURCE - Source of Accident Report

- 0 - Not Stated or Unknown
- 2 - Highway Patrol
- 3 - City Police Department
- 4 - Sheriff's Department
- 5 - Report prepared from newspaper clipping
- 6 - Death Certificate
- 7 - Township Police Department
- 8 - Other (Park P.D., Village P.D., University P.D., etc.)

CASE NUMBER - Accident Case Number

COUNTY - County of Accident Occurrence

ROUTE - Route of Accident Occurrence

RAMP - A two-column field indicating the location of an accident on a ramp in an interchange. The first column contains an alphabetic code indicating the location of the ramp in the interchange (Table 1) and the second column contains a numeric code indicating the location of the accident on the ramp (Table 2).

LOG - Log Point of Accident Occurrence (a blank field indicates that the log point is unknown)

DESCRIPTION - The location description is a seven part field designed to pinpoint the location of the accident. A diagram and description of each part follows which may assist you in understanding its setup.

DIR ¹	STREET	DISTANCE	FRM	D ²	REFERENCE	RT
------------------	--------	----------	-----	----------------	-----------	----

TABLE 1
(First Column)

<u>Letter Code</u>	<u>Mainline Direction of Travel</u>	<u>Ramp Type</u>	<u>Ramp Usage</u>
H	NB, EB	Diamond	Exit
J	NB, EB	Diamond	Entrance
K	NB, EB	Loop	Exit
L	NB, EB	Loop	Entrance
M	SB, WB	Diamond	Exit
P	SB, WB	Diamond	Entrance
Q	SB, WB	Loop	Exit
R	SB, WB	Loop	Entrance
Y	NB, EB	Collector/Distributor	
Z	SB, WB	Collector/Distributor	

Extra Codes for Irregular Interchanges

<u>Letter Code</u>	<u>Mainline Direction of Travel</u>	<u>Ramp Usage</u>
T	NB, EB	Exit
U	NB, EB	Entrance
V	SB, WB	Exit
X	SB, WB	Entrance

The following letters are excluded from the code:
A, B, C, D, E, F, G, I, N, O, S, and W.

TABLE 2
(Second Column)

1. Ramp beginning (ramp nose or deceleration lane)
2. On the ramp (between the ends)
3. Ramp end (ramp terminal or acceleration lane)
4. At intersection of two ramps

Under ramp type, a loop ramp is defined as any ramp which replaces a left turn movement.

Codes for irregular interchanges are assigned following the above procedure as far as possible and then they are assigned randomly.

DIR¹: Refers to the "direction" of street. It does not refer to vehicle or direction of travel.

STREET: Refers to the name of the street on which the accident occurred. If state route number see Route Suffix Table.

DISTANCE: Refers to the distance the "locator" is from "street" and is in tenths of miles.

FRM: Refers to the "direction from" which the distance was taken.

D²: Is identical in purpose to "DIR¹" if the locator is a street, otherwise "DIR²" is not applicable.

REFERENCE: Is the reference point of the accident listed in "street." The locator can be a street name, a house number, a block number, a bridge or light post number, a mile post marker number, or a city name.

RT: Refers to the type of locator used in the description. See table below.

TYPE LOCATOR

- P - Place name or single street name with no other reference given.
- I - Intersection.
- R - Place name or single street name with reference point given.
- H - House number and single street name.
- S - State Route designations.

CZ - Construction zone involvement. If the accident occurred within a construction zone this column will contain an asterisk (*).

MON - Month of Accident (coded 01 thru 12 for January thru December respectively).

DATE - Day of Month

DAY - Day of Week (coded 1 thru 7 for Monday thru Sunday respectively).

HOURL - Hour of Day of Accident (coded 01 thru 24 with 01 and 24 representing 12:00 Midnight thru 1:00 and 11:00 PM thru Midnight respectively).

LIGHT - Light Condition

- 0 - Not Stated
- 1 - Daylight
- 2 - Dawn or Dusk
- 3 - Dark - no Lights
- 4 - Dark but Lighted
- 5 - Other

CONT - Contour of Roadway

- 0 - Not Stated
- 1 - Straight, Level
- 2 - Straight, Grade
- 3 - Straight, Hillcrest
- 4 - Curve, Level
- 5 - Curve, Grade
- 6 - Curve, Hillcrest

WEAT - Weather Condition

- 0 - Not Stated
- 1 - No adverse weather condition
- 2 - Rain
- 3 - Snow
- 4 - Fog (smog - smoke)
- 5 - Heavy wind
- 6 - Other

COND - Roadway Condition

- 0 - Not Stated
- 1 - Dry
- 2 - Wet
- 3 - Snow or Ice
- 4 - Mud or Sand
- 5 - Other

PAVE - Pavement Type

- 0 - Not Stated
- 1 - Asphalt (macadam or blacktop)
- 2 - Concrete
- 3 - Gravel
- 4 - Other (Includes dirt and cinders)

LOC - Location of Accident

- 0 - Not Stated
- 1 - Street or Highway Intersection (Within confines only)
- 2 - Intersection related (Includes crosswalk area)
- 3 - Driveway Access
- 4 - Railroad Crossing
- 5 - Bridge (over 20' span)
- 6 - Subway (underpass)
- 7 - Bridge or Culvert (Span 20' and under)
- 8 - Interchange
- 9 - Non-intersection

ACC TYPE - Type of Accident

Collision between two or more moving vehicles:

- 00 - Not Stated
- 01 - Head-on
- 02 - Rear-end/Backing
- 03 - Sideswipe
- 04 - Angle
- 05 - Turning

Collision between one moving vehicle and:

- 06 - Parked motor vehicle
- 07 - Pedestrian
- 08 - Animal
- 09 - Train
- 10 - Pedalcycles
- 11 - Other non-motor vehicle
- 12 - Fixed object
- 13 - Other object
- 14 - Overturning

Non-collision involving one motor vehicle only:

- 15 - Non-collision

SIDE - Side of Road

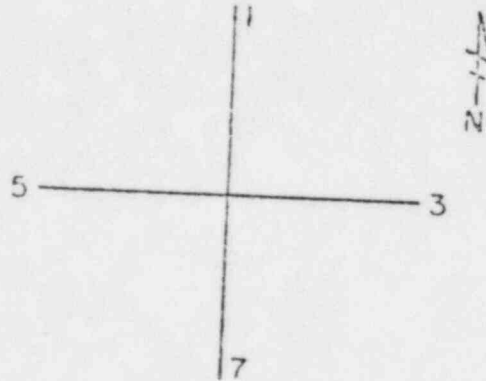
- 0 - Not Stated
- 1 - On Roadway
- 2 - Off Roadway (Includes off roadway at top of 'T' intersection)
- 3 - Off left side
- 4 - Off right side

5 - On other roadway (divided highway)

NO. PED - Number of Pedestrians involved in the accident

NO. VEH - Number of Vehicles involved in the accident

DIR ALIGN - Indicates the "From - To" direction of the preferred route at an intersection based on the following diagram:



When the preferred route dead-ends at the intersection, a zero will be coded in the "To" field.

SPD - Stated Speed of Vehicle

- 0 - Not Stated
 - 1 - Under 20 miles per hour
 - 2 - 21-25 MPH
 - 3 - 26-35 MPH
 - 4 - 36-45 MPH
 - 5 - 46-55 MPH
 - 6 - 56-65 MPH
 - 7 - 66-75 MPH
 - 8 - Over 75 MPH
 - 9 - Stopped or standing still
- (Use only when "driver action" is "06" or "11")

PSPD - Posted Speed Limit

- 0 - Not Stated
- 1 - Under 20 MPH
- 2 - 25 MPH
- 3 - 30 MPH
- 4 - 35 MPH
- 5 - 40 MPH
- 6 - 45 MPH
- 7 - 50 MPH
- 8 - 55 MPH

DIR Direction of Travel for the vehicles involved. The directions are coded on a "From" and "To" basis according to the diagram shown under DIR ALIGN.

TYPE UNIT - Type of Unit

- 00 - Not Stated
- 01 - Passenger Car
- 02 - Single Body Truck
- 03 - Pickup Truck
- 04 - Van
- 05 - Truck Tractor
- 06 - Tractor/Semi-Trailer
- 07 - Tractor/Double Trailer
- 08 - Fire Truck
- 09 - Police Vehicle
- 10 - Emergency Vehicle
- 11 - Public Bus
- 12 - School Bus
- 13 - Church Bus
- 14 - Taxi
- 15 - Train
- 16 - Motorcycle
- 17 - Motor Scooter
- 18 - Motor Home
- 19 - Bicycle
- 20 - Motorized Bicycle
- 21 - Animal w/rider
- 22 - Animal w/buggy
- 23 - Farm Vehicle Unlicensed (Tractor, Wagon, Combine or other machine)
- 24 - Other

DRIV ACTN - Driver or Pedestrian Action

Intended Driver Action:

- 00 - Not Stated
- 01 - Going Straight
- 02 - Changing Lanes
- 03 - Passing
- 04 - Turning Right
- 05 - Turning Left
- 06 - Stopped to Turn
- 07 - Parking
- 08 - Unparking
- 09 - Parked
- 10 - Backing
- 11 - Stopped in traffic
- 12 - Making U-turn
- 13 - Merging onto Freeway
- 14 - Exiting from Freeway
- 15 - Swerving to avoid another vehicle or object
- 16 - Other

Pedestrian Action:

- 00 - Not Stated
- 01 - In crosswalk
- 02 - Crossing other than crosswalk
- 03 - Walking with traffic
- 04 - Walking against traffic
- 05 - Working or playing in roadway
- 06 - Entering or leaving vehicle
- 07 - On highway but not in roadway
- 08 - Off highway
- 09 - Other
- 10 - Working on car

DRIV AGE - Age of Driver or Pedestrian

DRIV COND - Physical Condition of the Driver or Pedestrian

- 0 - Not Stated
- 1 - Apparently normal
- 2 - Sick
- 3 - Fatigued
- 4 - Apparently asleep
- 5 - Body Defect
- 6 - Had been drinking
- 7 - OMVI
- 8 - Apparent drug usage

OBJ STRK - Object Struck

- 00 - Not Stated
- 01 - Light or utility pole
- 02 - Bridge or culvert
- 03 - Sign, signal, or support
- 04 - Guardrail
- 05 - Fence
- 06 - Tree
- 07 - Ditch or embankment
- 08 - Curb
- 09 - Construction barricade or materials
- 10 - None
- 11 - Other fixed objects
- 12 - Deer
- 13 - Farm Animals
- 14 - Other animals or not stated animal

CONT FACT - First Two Columns are the Contributing Factors:

- 00 - Not Stated
- 01 - Failure to yield
- 02 - Ran stop sign
- 03 - Driving wrong way
- 04 - Improper passing

- 05 - Improper turning
- 06 - OMVI
- 07 - Driving too slowly
- 08 - Traffic signal violation
- 09 - Left of center
- 10 - Stopped or parked illegally
- 11 - Excessive speed
- 12 - following too closely (assured clear distance)
- 13 - Driver inattention (includes loss of control)
- 14 - View obstruction (includes glare of sun, snow or light)
- 15 - None
- 16 - Vehicle defects
- 17 - Road defects
- 18 - Pedestrian action
- 19 - Other

The Third Column is Traffic Control:

- 0 - Not Stated
- 1 - Traffic Officer
- 2 - Stop sign
- 3 - Yield sign
- 4 - Railroad signal
- 5 - Traffic signal
- 6 - Barricade & Barrels placed for official purpose
- 7 - Other traffic control (pavement markings, control signs, etc.)
- 8 - None

The Fourth Column is Vehicle Owner:

- 0 - Not Stated
- 1 - City Owned
- 2 - County Owned (includes mass transit buses)
- 3 - State Owned
- 4 - Federal Owned
- 5 - Private Owner
- 6 - Military Vehicle
- 7 - Other Public Owned (includes school buses)

INJURIES - Number of Injuries of Each Type

- TYP 0 - Not Stated
- TYP 1 - Fatal
- TYP 2 - Incapacitating Injury
- TYP 3 - Visible Signs of Injury
- TYP 4 - Claimed Injury
- TYP 5 - No Claimed Injury

ACC FREQ - Accident Frequency (number of accidents occurring at the given log point.)

mT4C

1-31

015706 PAGE

OHIO RURAL STATE HIGHWAY SYSTEM
TRAFFIC ACCIDENT LISTING
JANUARY - DECEMBER 1978

RI-31

S	CASE	C	R	R	LOG	DESCRIPTION	TIME	L	ROADWAY	AT	S	N	N	D	A	VEHICLES INVOLVED	INJURIES																							
7	NUMBER	U	U	M			M	D	D	H	G	C	W	C	P	L	C	P	D	R	I	S	P	D	T	U	D	A	D	C	S	C	CONT	T	T	T	T	T	T	
2		N	T	P			O	A	A	C	H	O	E	O	A	D	E	E	P	V	G	P	S	I	Y	N	R	C	R	G	R	O	B	Y	Y	Y	Y	Y	Y	
F		T	E				N	T	Y	U	T	N	A	N	V	C	E	E	N	D	P	R	P	I	I	T	I	F	I	N	J	R	FACT	P	P	P	P	P	P	
F		Y					E	P			T	T	O	E																										
2	8594-0421	CLF	0522		0750	052R	05E	MP7	S	09	13	3	21	3	1	1	1	1	9	08	1	0	1	00	4	8	73	01	01	31	1	12	1585	0	0	0	0	0	1	
2	8513-0032	CLF	0522		0760	052R	04W	MP8	S	11	09	4	19	3	1	1	1	1	9	08	1	0	1	00	5	8	37	01	01	46	1	12	1575	0	0	0	0	0	1	
		CLF	0522		0763	FRANK WILLIS MEMO RD (L)																																		
2	8774-0239	CLF	0522		0780	052R	02W	MP9	S	03	10	5	17	1	1	1	1	1	3	03	1	0	2	00	1	8	37	01	01	31	1	10	1575	0	0	0	0	0	2	
2	8713-0114	CLF	0522		0790	052R	01W	MP8	S	05	25	4	03	1	1	4	1	1	9	03	1	0	2	00	0	8	37	01	01	19	1	10	1675	0	0	0	0	0	2	
2	8713-0701	CLF	0522		0810	052R	01E	MP8	S	05	16	2	07	2	1	1	2	1	9	08	1	0	1	00	5	8	37	01	01	39	1	12	1575	0	0	0	0	0	1	
2	8457-0911	CLF	0522		0810	052R	01E	MP8	S	12	19	2	24	3	3	2	2	1	9	12	4	0	1	00	0	8	73	01	01	17	1	07	1975	0	0	0	0	0	1	
2	8677-0674	CLF	0522		0820	052R	02E	MP8	S	06	18	7	03	3	1	1	1	1	3	05	1	0	2	00	0	8	57	01	05	21	6	10	0175	0	0	2	1	0	0	
2	8713-0713	CLF	0522		0850	052R	05E	MP8	S	05	20	6	21	1	4	1	0	1	9	12	0	0	1	00	0	8	37	01	01	31	7	07	0685	0	0	0	0	1	0	
		CLF	0522		0854	CR31 CLERMONTVILLE-LAUREL RD (L)																																		
2	8456-0399	CLF	0522		0854	052R	01W	CLERMONT	S	07	02	7	20	1	2	2	2	1	2	05	1	0	3	73	1	8	17	01	04	19	1	10	1625	1	0	6	2	0	1	
2	8454-0309	CLF	0522		0854	052R	04E	MP8	S	09	14	4	17	1	1	1	1	2	1	9	02	1	0	2	00	0	8	73	01	11	47	1	10	1595	0	0	0	0	0	2
4	8621-0442	CLF	0522		0855	052R	01E	CLERMONT	S	06	17	6	15	1	1	1	1	1	9	12	1	0	2	00	0	0	37	01	00	10	1	11	1585	1	0	0	1	0	0	
2	8410-0377	CLF	0522		0860	052R	04W	MP9	S	09	17	4	14	1	1	1	1	1	9	03	1	0	2	00	5	8	37	01	01	65	1	10	1175	0	0	0	1	0	1	
2	8454-0307	CLF	0522		0870	052R	07E	MP8	S	06	20	2	05	3	1	1	1	1	9	12	2	0	1	00	4	8	37	01	01	21	4	01	1975	0	0	0	0	0	1	
*	8444-0520	CLF	0522		0870	052R	02W	MP9	S	07	18	2	21	1	1	1	1	1	9	12	1	0	1	00	0	8	37	06	01	38	1	07	1175	0	0	0	0	1	0	
2	8713-0669	CLF	0522		0880	052R	08E	MP8	S	05	25	4	07	1	4	4	1	1	9	01	1	0	2	00	4	8	37	06	15	48	1	10	0975	0	0	1	0	0	1	
*																																								
2	8713-0660	CLF	0522		0890	052R	01W	MP9	S	05	28	7	03	2	1	1	1	1	9	02	1	0	3	00	0	8	73	16	01	23	6	10	0175	1	0	1	1	0	1	
2	8552-0237	CLF	0522		0910	052R	01E	MP9	S	01	20	5	17	1	1	1	3	1	9	03	1	0	3	00	3	8	37	01	01	25	1	10	1175	0	0	0	0	0	3	
2	8614-0492	CLF	0522		0910	052R	01E	MP9	S	02	14	2	06	3	1	1	3	1	9	02	1	0	2	00	9	8	37	01	06	22	1	10	1575	0	0	0	0	2	1	
2	8456-0344	CLF	0522		0910	052R	01E	MP9	S	07	02	7	21	1	1	1	1	0	9	02	1	0	2	00	3	8	37	01	01	53	1	10	1575	0	0	0	1	0	1	
2	8513-0030	CLF	0522		0930	052R	03E	MP9	S	11	13	3	15	1	1	2	2	1	3	05	1	0	2	00	0	8	35	04	05	29	1	10	1575	0	0	0	0	0	2	
2	8454-0531	CLF	0522		0930	052R	03E	MP9	S	12	06	3	24	3	1	1	1	1	9	12	4	0	1	00	5	8	37	03	01	23	1	11	1575	0	0	0	1	0	0	
2	8760-0312	CLF	0522		0940	052R	04E	MP9	S	03	30	4	02	3	1	1	1	1	9	03	1	0	1	00	5	8	73	01	01	57	4	12	1575	0	0	0	0	0	1	
2	8465-0300	CLF	0522		0950	052R	05E	MP9	S	12	23	6	05	3	4	1	1	1	9	15	1	0	1	00	3	4	37	06	01	32	1	10	1985	0	0	0	0	0	1	
*		CLF	0522		0975	ALTMAN RD																																		
2	8402-0207	CLF	0522		0990	052R	01W	MP10	S	08	27	7	18	1	2	1	1	1	9	02	1	0	3	00	2	8	37	13	16	49	1	10	1175	0	0	0	0	0	0	

R1-31

[illegible]

R 1-31

LIST OF PLANTS

RI-31

CASE	C	R	R	LOG	DESCRIPTION	TIME	L	ROADWAY	AT S N N DA	VEHICLES INVOLVED	INJURIES																			
NUMBER	H	H	M			M D DH G C W C P L CP D . RI S P D TH DA DA DC DS CONT T T I T T I																								
	N	T	P			O A A O H O E O A C E E P V G P S I YN RC RG RD AT Y Y Y Y Y Y																								
	Y					N T Y U T N A N V C E E N D R P I T I F IN JR FACT P P P P P P																								
						E R T D E OH D EF VM V VD K					0 1 2 3 4 5																			
CLE 052-	2380	SP 133																												
2 8791-0446 CLE 052:	2400	052R	00 MP24	S	06 15 4 02 3 1 1 1 1 9 03 1 0 3 00 6 8 73 01 01 45 1 13 1575	0 0 0 0 1 2																								
* 2 8514-0414 FLE 0522	2400	052R	00 MP24	S	10 27 5 20 3 1 1 1 1 9 09 1 0 1 00 5 8 73 01 01 41 1 13 1575	0 0 0 0 1 2																								
2 8772-0393 CLE 0522	2410	052R	01E MP24	S	03 21 2 21 3 1 1 1 1 3 05 1 0 2 00 3 8 73 01 01 19 1 12 1475	0 0 0 0 0 1																								
2 8513-0317 CLE 052R	2430	052R	03F MP24	S	11 11 6 18 2 1 1 0 1 9 08 1 0 1 00 5 8 73 01 01 22 1 13 1605	0 0 0 0 0 2																								
2 8714-0347 CLE 052R	2470	052R	03W MP25	S	04 16 7 21 3 1 1 1 1 9 08 1 0 1 00 4 9 37 03 01 45 1 12 1575	0 0 0 0 0 1																								
2 8574-0344 CLE 052R	2470	052R	03W MP25	S	09 15 5 24 3 1 1 1 1 9 08 1 0 1 00 5 8 73 01 01 52 6 12 1575	0 0 0 0 0 1																								
2 8513-0316 CLE 052R	2500	052R	00 MP25	S	11 16 4 24 3 1 2 2 1 9 09 1 0 1 00 5 8 73 05 01 37 1 12 1575	0 0 0 0 0 1																								
CLE 052R	2557	CR7 BARTLOW RD																												
2 8524-0171 CLE 052R	2557	052R	01W BARTLOW	S	10 28 6 17 1 1 1 1 1 2 02 1 0 2 73 1 9 73 01 05 19 1 13 1575	0 0 0 4 1 1																								
2 8556-0402 CLE 052R	2567	052R	02W BROWN COS		07 05 3 01 3 1 1 1 1 9 08 1 0 1 00 5 9 73 01 01 52 1 13 1175																									
2 8513-0315 CLE 052R	2577	052R	01W BROWN	S	11 15 3 06 3 1 2 2 1 9 09 1 0 1 00 4 3 37 03 01 31 1 12 1575	0 0 0 0 0 1																								
CLE 052R	2597	BROWN COUNTY																												
ROUTE SUMMARY																														
FATAL ACC=						1	INJURY ACC= 35						TOTAL ACC= 117						INJURIES= 70						DEATHS= 1					
2 8814-0489 CLE 125R	125R	00	S	02 07 2 09 1 1 1 1 1 3 05 1 0 2 00 3 8 57 01 05 46 1 13 0175	0 0 0 0 0 2																									
2 8814-0512 CLE 125R	125R	00	S	02 01 2 20 4 1 1 3 1 9 12 2 0 1 00 4 2 37 01 01 17 1 07 1175	0 0 0 0 0 1																									
2 8741-0102 CLE 125R	125R	00	S	02 16 4 23 4 1 1 1 1 3 02 1 0 2 00 2 4 73 01 01 52 7 13 0675	0 0 0 1 1 1																									
2 8602-0213 CLE 125R	125R	00	S	08 27 7 19 1 2 1 2 1 9 03 1 0 2 00 4 6 73 01 01 30 1 10 1575	0 0 0 0 0 2																									
4 8513-0500 CLE 125R	125R	00 747	S	07 11 2 23 4 1 1 1 1 3 12 2 0 1 00 0 0 53 01 04 16 1 03 1395	0 0 0 0 0 1																									
4 8514-0569 CLE 125R	125R	00	S	05 10 2 17 1 1 1 1 1 3 02 1 0 2 00 3 0 51 01 10 19 1 13 1395	0 0 0 0 0 2																									
7 8515-0451 CLE 125R	125R	00	S	11 26 7 02 4 1 2 2 1 9 03 1 0 2 00 0 0 37 01 01 00 0 09 0001	2 0 0 0 0 0																									
4 8477-0559 CLE 125R	125R	00	S	11 15 3 19 3 3 2 2 1 3 05 1 0 2 00 0 0 37 01 01 32 1 13 1395	0 0 0 0 0 2																									
4 8477-0560 CLE 125R	125R	00	S	11 22 3 21 3 1 1 1 1 9 02 1 0 2 00 0 0 35 03 05 19 1 13 1595																										
4 8477-0347 CLE 125R	125R	01W FOOTIZER	S	12 09 6 12 1 3 3 3 2 9 12 1 0 1 00 5 8 73 01 15 32 1 04 1775	0 0 0 0 0 1																									
2 8477-0699 CLE 125R	125R	00	S	12 22 5 16 1 1 1 1 1 3 06 1 0 2 00 3 0 07 01 00 00 1 03 1590	0 0 0 0 0 2																									
9 8044-0446 CLE 125R	0000	125R	NONCHARITY I	02 09 4 22 4 1 1 2 1 2 06 1 0 2 00 0 0 51 01 01 33 1 03 1395																										
2 8772-0374 CLE 125R	0000	125R	00 MPO	S	03 24 5 12 1 1 1 1 1 3 05 1 0 2 00 3 5 37 01 01 28 1 13 1575	0 0 0 0 0 2																								
2 8721-0329 CLE 125R	0000	125R	00 MPO	S	05 06 6 02 3 1 1 1 1 9 12 4 0 1 00 3 9 73 01 01 17 4 05 1675	0 0 1 2 0 0																								
4 8567-0744 CLE 125R	0000	125R	00S 133R	I	07 26 3 21 1 2 1 1 1 2 05 1 0 2 00 3 1 53 03 04 23 1 03 0555	0 0 0 0 0 2																								

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DIST 08 PAGE 92

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3

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DIST 94 PAGE 95

DATE	TIME	LOCATION	TYPE	VEHICLES INVOLVED	INJURIES
1950-01-01	08:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	08:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	09:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	09:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	10:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	10:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	11:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	11:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	12:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	12:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	13:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	13:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	14:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	14:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	15:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	15:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	16:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	16:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	17:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	17:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	18:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	18:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	19:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	19:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	20:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	20:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	21:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	21:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	22:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	22:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	23:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	23:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	00:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	00:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	01:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	01:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	02:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	02:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	03:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	03:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	04:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	04:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	05:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	05:30	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	06:00	1443	03	10005	10 1071 0 0 0 0 0 2
1950-01-01	06:30	1443	03	10005	10

TOPIC: FUGAL STATE
TOPIC: ACCIDENT
TOPIC: LISTING
TOPIC: FUGAL STATE
TOPIC: ACCIDENT
TOPIC: LISTING

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CLASS	C	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU
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CHILD RURAL CTR HIGHWAY SYSTEM

14-311

TABLE C: CATALOG

WATZKY - MC-VAR, 1993

S. C. No.	C. No.	R. No.	A. No.	Description	1. 1940-41										2. 1941-42										3. 1942-43										4. 1943-44										5. 1944-45										6. 1945-46										7. 1946-47										8. 1947-48										9. 1948-49										10. 1949-50										11. 1950-51										12. 1951-52										13. 1952-53										14. 1953-54										15. 1954-55										16. 1955-56										17. 1956-57										18. 1957-58										19. 1958-59										20. 1959-60										21. 1960-61										22. 1961-62										23. 1962-63										24. 1963-64										25. 1964-65										26. 1965-66										27. 1966-67										28. 1967-68										29. 1968-69										30. 1969-70										31. 1970-71										32. 1971-72										33. 1972-73										34. 1973-74										35. 1974-75										36. 1975-76										37. 1976-77										38. 1977-78										39. 1978-79										40. 1979-80										41. 1980-81										42. 1981-82										43. 1982-83										44. 1983-84										45. 1984-85										46. 1985-86										47. 1986-87										48. 1987-88										49. 1988-89										50. 1989-90										51. 1990-91										52. 1991-92										53. 1992-93										54. 1993-94										55. 1994-95										56. 1995-96										57. 1996-97										58. 1997-98										59. 1998-99										60. 2000-01										61. 2001-02										62. 2002-03										63. 2003-04										64. 2004-05										65. 2005-06										66. 2006-07										67. 2007-08										68. 2008-09										69. 2009-10										70. 2010-11										71. 2011-12										72. 2012-13										73. 2013-14										74. 2014-15										75. 2015-16										76. 2016-17										77. 2017-18										78. 2018-19										79. 2019-20										80. 2020-21										81. 2021-22										82. 2022-23										83. 2023-24										84. 2024-25										85. 2025-26										86. 2026-27										87. 2027-28										88. 2028-29										89. 2029-30										90. 2030-31										91. 2031-32										92. 2032-33										93. 2033-34										94. 2034-35										95. 2035-36										96. 2036-37										97. 2037-38										98. 2038-39										99. 2039-40										100. 2040-41										101. 2041-42										102. 2042-43										103. 2043-44										104. 2044-45										105. 2045-46										106. 2046-47										107. 2047-48										108. 2048-49										109. 2049-50										110. 2050-51										111. 2051-52										112. 2052-53										113. 2053-54										114. 2054-55										115. 2055-56										116. 2056-57										117. 2057-58										118. 2058-59										119. 2059-60										120. 2060-61										121. 2061-62										122. 2062-63										123. 2063-64										124. 2064-65										125. 2065-66										126. 2066-67										127. 2067-68										128. 2068-69										129. 2069-70										130. 2070-71										131. 2071-72										132. 2072-73										133. 2073-74										134. 2074-75										135. 2075-76										136. 2076-77										137. 2077-78										138. 2078-79										139. 2079-80										140. 2080-81										141. 2081-82										142. 2082-83										143. 2083-84										144. 2084-85										145. 2085-86										146. 2086-87										147. 2087-88										148. 2088-89										149. 2089-90										150. 2090-91										151. 2091-92										152. 2092-93										153. 2093-94										154. 2094-95										155. 2095-96										156. 2096-97										157. 2097-98										158. 2098-99										159. 2099-00										160. 2100-01										161. 2101-02										162. 2102-03										163. 2103-04										164. 2104-05										165. 2105-06										166. 2106-07										167. 2107-08										168. 2108-09										169. 2109-10										170. 2110-11										171. 2111-12										172. 2112-13										173. 2113-14										174. 2114-15										175. 2115-16										176. 2116-17										177. 2117-18										178. 2118-19										179. 2119-20										180. 2120-21										181. 2121-22										182. 2122-23										183. 2123-24										184. 2124-25										185. 2125-26										186. 2126-27										187. 2127-28										188. 2128-29										189. 2129-30										190. 2130-31										191. 2131-32										192. 2132-33										193. 2133-34										194. 2134-35										195. 2135-36										196. 2136-37										197. 2137-38										198. 2138-39										199. 2139-40										200. 2140-41										201. 2141-42										202. 2142-43										203. 2143-44										204. 2144-45										205. 2145-46										206. 2146-47										207. 2147-48										208. 2148-49										209. 2149-50										210. 2150-51										211. 2151-52										212. 2152-53										213. 2153-54										214. 2154-55										215. 2155-56										216. 2156-57										217. 2157-58										218. 2158-59										219. 2159-60										220. 2160-61										221. 2161-62										222. 2162-63										223. 2163-64										224. 2164-65										225. 2165-66										226. 2166-67										227. 2167-68										228. 2168-69										229. 2169-70										230. 2170-71										231. 2171-72										232. 2172-73										233. 2173-74										234. 2174-75										235. 2175-76										236. 2176-77										237. 2177-78										238. 2178-79										239. 2179-80										240. 2180-81										241. 2181-82										242. 2182-83										243. 2183-84										244. 2184-85										245. 2185-86										246. 2186-87										247. 2187-88										248. 2188-89										249. 2189-90										250. 2190-91										251. 2191-92										252. 2192-93										253. 2193-94										254. 2194-95										255. 2195-96										256. 2196-97										257. 2197-98										258. 2198-99										259. 2199-00										260. 2200-01										261. 2201-02										262. 2202-03										263. 2203-04										264. 2204-05										265. 2205-06										266. 2206-07										267. 2207-08										268. 2208-09										269. 2209-10										270. 2210-11										271. 2211-12										272. 2212-13										273. 2213-14										274. 2214-15										275. 2215-16										276. 2216-17										277. 2217-18										278. 2218-19										279. 2219-20										280. 2220-21										281. 2221-22										282. 2222-23										283. 2223-24										284. 2224-25										285. 2225-26										286. 2226-27										287. 2227-28										288. 2228-29										289. 2229-30										290. 2230-31										291. 2231-32										292. 2232-33										293. 2233-34										294. 2234-35										295. 2235-36										296. 2236-37										297. 2237-38										298. 2238-39										299. 2239-40										300. 2240-41										301. 2241-42										302. 2242-43										303. 2243-44										304. 2244-45										305. 2245-46										306. 2246-47										307. 2247-48										308. 2248-49										309. 2249-50										310. 2250-51										311. 2251-52										312. 2252-53										313. 2253-54										314. 2254-55										315. 2255-56										316. 2256-57										317. 2257-58										318. 2258-59										319. 2259-60										320. 2260-61										321. 2261-62										322. 2262-63										323. 2263-64										324. 2264-65										325. 2265-66										326. 2266-67										327. 2267-68										328. 2268-69										329. 2269-70										330. 2270-71										331. 2271-72										332. 2272-73										333. 2273-74										334. 2274-75										335. 2275-76										336. 2276-77										337. 2277-78										338. 2278-79										339. 2279-80										340. 2280-81										341. 2281-82										342. 2282-83										343. 2283-84										344. 2284-85										345. 2285-86										346. 2286-87										347. 2287-88										348. 2288-89										349. 2289-90										350. 2290-91										351. 2291-92										352. 2292-93										353. 2293-94										354. 2294-95										355. 2295-96										356. 2296-97										357. 2297-98										358. 2298-99										359. 2299-00										360. 2300-01										361. 2301-02										362. 2302-03										363. 2303-04										364. 2304-05										365. 2305-06										366. 2306-07										367. 2307-08										368. 2308-09										369. 2309-10										370. 2310-11										371. 2311-12										372. 2312-13										373. 2313-14										374. 2314-15										375. 2315-16										376. 2316-17										377. 2317-18										378. 2318-19										379. 2319-20										380. 2320-21										381. 2321-22										382. 2322-23										383. 2323-24										384. 2324-25										385. 2325-26										386. 2326-27										387. 2327-28										388. 2328-29										389. 2329-30										390. 2330-31										391. 2331-32										392. 2332-33										393. 2333-34										394. 2334-35										395. 2335-36										396. 2336-37										397. 2337-38										398. 2338-39										399. 2339-40										400. 2340-41										401. 2341-42										402. 2342-43										403. 2343-44										404. 2344-45										405. 2345-46										406. 2346-47										407. 2347-48										408. 2348-49										409. 2349-50										410. 2350-51										411. 2351-52										412. 2352-53										413. 2353-54										414. 2354-55										415. 2355-56										416. 2356-57										417. 2357-58										418. 2358-59										419. 2359-60										420. 2360-61										421. 2361-62										422. 2362-63										423. 2363-64										424. 2364-65										425. 2365-66										426. 2366-67										427. 2367-68										428. 2368-69										429. 2369-70										430. 2370-71										431. 2371-72										432. 2372-73										433. 2373-74										434. 2374-75										435. 2375-76										436. 2376-77										437. 2377-78										438. 2378-79										439. 2379-80										440. 2380-81										441. 2381-82										442. 2382-83										443. 2383-84										444. 2384-85										445. 2385-86										446. 2386-87										447. 2387-88										448. 2388-89										449. 2389-90										450. 2390-91										451. 2391-92										452. 2392-93										453. 2393-94										454. 2394-95										455. 2395-96										456. 2396-97										457. 2397-98										458. 2398-99										459. 2399-00										460. 2400-01										461. 2401-02										462. 2402-03										463. 2403-04										464. 2404-05										465. 2405-06										466. 2406-07										467. 2407-08										468. 2408-09										469. 2409-10										470. 2410-11										471. 2411-12										472. 2412-13										473. 2413-14										474. 2414-15										475. 2415-16										476. 2416-17										477. 2417-18										478. 2418-19										479. 2419-20										480. 2420-21										481. 2421-22										482. 2422-23										483. 2423-24										484. 2424-25										485. 2425-26										486. 2426-27										487. 2427-28										488. 2428-29										489. 2429-30										490. 2430-31										491. 2431-32										492. 2432-33										493. 2433-34										494. 2434-35										495. 2435-36										496. 2436-37										497. 2437-38										498. 2438-39										499. 2439-40										500. 2440-41										501. 2441-42										502. 2442-43										503. 2443-44										504. 2444-45										505. 2445-46										506. 2446-47										507. 2447-48										508. 2448-49										509. 2449-50										510. 2450-51										511. 2451-52										512. 2452-53										513. 2453-54										514. 2454-55										515. 2455-56										516. 2456-57										517. 2457-58										518. 2458-59										519. 2459-60										520. 2460-61										521. 2461-62										522. 2462-63										523. 2463-64										524. 2464-65										525. 2465-66										526. 2466-67										527. 2467-68										528. 2468-69										529. 2469-70										530. 2470-71										531. 2471-72										532. 2472-73										533. 2473-74										534. 2474-75										535. 2475-76										536. 2476-77										537. 2477-78										538. 2478-79										539. 2479-80										540. 2480-81										541. 2481-82										542. 2482-83										543. 2483-84										544. 2484-85										545. 2485-86										546. 2486-87										547. 2487-88										548. 2488-89										549. 2489-90										550. 2490-91										551. 2491-92										552. 2492-93										553. 2493-94										554. 2494-95										555. 2495-96										556. 2496-97										557. 2497-98										558. 2498-99										559. 2499-00										560. 2500-01										561. 2501-02										562. 2502-03										563. 2503-04										564. 2504-05										565. 2505-06										566. 2506-07										567. 2507-08										568. 2508-09										569. 2509-10										570. 2510-11										571. 2511-12										572. 2512-13										573. 2513-14										574. 2514-15										575. 2515-16										576. 2516-17										577. 2517-18										578. 2518-19										579. 2519-20										580. 2520-21										581. 2521-22										582. 2522-23										583. 2523-24										584. 2524-25										585. 2525-26										586. 2526-27										587. 2527-28										588. 2528-29										589. 2529-30										590. 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S	CASE	C	R	A	LOG	DESCRIPTION	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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VEHICLE-MILES OF TRAVEL - 1979¹

CLASSIFIED BY HIGHWAY CATEGORY, VEHICLE TYPE, AND RELATED DATA

SOURCE: HIGHWAY STATISTICS DIVISION
OFFICE OF HIGHWAY PLANNING, FHWA

TABLE VM-1
PRELIMINARY OCTOBER 1980

ITEM	PASSENGER VEHICLES							TRUCKS			ALL MOTOR VEHICLES
	PERSONAL PASSENGER VEHICLES			BUSES			ALL PASSENGER VEHICLES	SINGLE- UNIT	COMBI- NATIONS	ALL TRUCKS	
	PASSENGER CARS 2/	MOTOR- CYCLES 2/	ALL PERSONAL PASSENGER VEHICLES	COMMERCIAL	SCHOOL AND OTHER NONREVENUE	ALL BUSES					
MOTOR-VEHICLE TRAVEL: 3/ (MILLIONS OF VEHICLE-MILES)											
INTERSTATE RURAL	-	-	89,410	320	167	487	89,897	21,500	22,200	43,700	133,597
OTHER MAIN RURAL	-	-	316,294	780	1,244	2,024	318,318	103,050	30,000	133,050	451,368
LOCAL RURAL	-	-	72,428	90	546	736	73,164	10,950	1,000	11,950	85,114
ALL RURAL	-	-	478,132	1,190	2,057	3,247	481,379	135,500	53,200	188,700	670,079
INTERSTATE URBAN	-	-	134,967	326	209	535	135,502	17,550	6,400	23,950	159,452
OTHER URBAN	-	-	549,429	1,609	714	2,323	551,752	140,950	6,900	147,850	699,602
ALL URBAN 4/	-	-	684,396	1,935	923	2,858	687,254	158,500	13,300	171,800	859,054
TOTAL RURAL AND URBAN	1,140,518	22,010	1,162,528	3,125	2,980	6,105	1,168,633	294,000	66,500	360,500	1,529,133
NUMBER OF MOTORIZED VEHICLES REGISTERED	120,247,990	5,502,450	125,750,440	105,250	415,117	520,367	126,270,807	32,010,742	1,339,000	33,349,742	159,620,549
AVERAGE MILES TRAVEL PER VEHICLE	9,485	4,000	9,245	29,691	7,179	11,732	9,255	9,184	49,664	10,810	9,580
FUEL CONSUMED (THOUSAND GALLONS)	79,792,737	440,200	80,232,937	618,000	405,000	1,023,000	81,255,937	28,543,995	12,315,000	40,858,995	122,114,932
AVERAGE FUEL CONSUMPTION PER VEHICLE (GALLONS)	664	80	638	5,872	976	1,966	644	892	9,197	1,225	765
AVERAGE MILES TRAVELED PER GALLON OF FUEL CONSUMED	14.29	50.00	14.49	5.06	7.36	5.97	14.38	10.30	5.40	8.82	12.52

1/ THE 50 STATES AND THE DISTRICT OF COLUMBIA REPORT TRAVEL BY HIGHWAY CATEGORY, NUMBER OF MOTORIZED VEHICLES REGISTERED BY VEHICLE TYPE, AND TOTAL FUEL CONSUMED. THE TRAVEL AND FUEL DATA BY VEHICLE TYPE AS WELL AS RELATED DATA ARE CALCULATED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2/ SEPARATE ESTIMATES OF PASSENGER CAR AND MOTORCYCLE TRAVEL ARE NOT AVAILABLE BY HIGHWAY CATEGORY.

3/ HIGHWAY CATEGORIES ARE BASED ON FUNCTIONAL CLASSIFICATION IN ACCORDANCE WITH 23 U.S.C. 103 (B)(2), (C)(2), (D)(2) ESTABLISHED FOR 1976 AND DIFFER FROM EARLIER YEARS.

4/ URBAN CONSIST OF TRAVEL ON ALL ROADS AND STREETS IN URBAN PLACES OF 5,000 OR GREATER POPULATION.

VEHICLE-MILES OF TRAVEL - 1979

CLASSIFIED BY FEDERAL-AID SYSTEM AND FUNCTIONAL CLASSIFICATION

Roadway Extent, Characteristics, and Performance

139

TABLE NO. 2
SEPTEMBER 1980

ROUNDED TO NEAREST MILLION VEHICLE-MILES OF TRAVEL

STATE	FEDERAL-AID HIGHWAYS										NON-FEDERAL-AID HIGHWAYS										ALL HIGHWAY CLASSES		
	INTERSTATE					PRIMARY					ARTERIAL					COLLECTOR					LOCAL		
	ARTERIAL					ARTERIAL					ARTERIAL					COLLECTOR					LOCAL		
	RURAL	URBAN	TOTAL	RURAL	URBAN	RURAL	URBAN	TOTAL	COLLECTOR	TOTAL	RURAL	URBAN	TOTAL	RURAL	URBAN	RURAL	URBAN	TOTAL	TOTAL	TOTAL	RURAL	URBAN	TOTAL
ALABAMA	2,434	1,662	4,096	6,229	2,639	8,868	4,445	945	5,393	3,478	21,558	598	958	1,556	2,718	3,103	5,826	7,789	19,744	13,847	29,591		
ALASKA	3,171	1,138	4,309	2,899	948	3,847	6,312	138	451	1,854	1,854	443	443	443	443	443	443	443	1,554	973	2,527		
ARIZONA	2,052	882	2,934	4,512	1,633	6,145	1,221	586	7,032	2,211	17,735	111	111	111	240	1,092	1,573	1,483	10,406	19,584	30,990		
ARKANSAS	8,832	28,437	37,269	16,749	21,597	38,446	42,656	5,219	45,875	6,274	128,912	734	1,024	1,758	1,233	765	1,998	2,853	10,976	9,413	18,389		
CALIFORNIA	2,697	4,176	6,873	1,749	2,598	4,347	5,442	3,697	1,111	15,337	15,337	15,337	15,337	15,337	15,337	15,337	15,337	15,337	48,644	115,102	159,746		
COLORADO	1,274	498	1,772	1,125	584	1,709	1,552	584	1,552	1,552	15,726	129	811	940	822	1,315	2,137	3,25	4,996	14,439	19,435		
CONNECTICUT	335	335	670	1,028	1,028	2,098	1,028	322	1,326	2,359	3,451	2	45	47	47	12	57	62	2,014	2,079	4,093		
DELAWARE	6,374	5,603	11,977	10,477	10,477	20,954	10,477	322	1,326	2,359	3,451	2	45	47	47	12	57	62	2,014	2,079	4,093		
FLORIDA	6,542	4,482	11,024	9,379	5,913	15,292	2,302	3,793	6,085	9,878	18,112	2,079	1,494	3,573	3,451	724	1,256	2,180	25,062	49,389	74,451		
GEORGIA	1,238	876	2,114	1,076	1,076	2,152	1,076	322	1,326	2,359	3,451	2	45	47	47	12	57	62	2,014	2,079	4,093		
HAWAII	3,053	3,053	6,106	2,899	948	3,847	6,312	138	451	1,854	1,854	443	443	443	443	443	443	443	1,554	973	2,527		
IDaho	2,183	766	2,949	6,493	2,172	8,665	1,987	570	2,557	2,791	15,936	23	666	689	255	756	1,079	1,878	1,864	4,740	6,614	11,354	
ILLINOIS	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
INDIANA	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
IOWA	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
KANSAS	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
KENTUCKY	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
LOUISIANA	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
MAINE	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
MARYLAND	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
MASSACHUSETTS	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
MICHIGAN	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
MINNESOTA	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
MISSISSIPPI	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
MISSOURI	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
MONTANA	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
NEBRASKA	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
NEVADA	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
NEW HAMPSHIRE	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
NEW JERSEY	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
NEW MEXICO	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
NEW YORK	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
NORTH CAROLINA	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
NORTH DAKOTA	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
OHIO	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
OKLAHOMA	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
OREGON	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
PENNSYLVANIA	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
RHODE ISLAND	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
SOUTH CAROLINA	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
SOUTH DAKOTA	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
TENNESSEE	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
TEXAS	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
UTAH	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
VERMONT	2,918	1,768	4,686	4,256	4,410	8,666	4,410	1,052	5,468	6,520	15,936	129	632	761	1,458	1,632	2,890	3,245	18,089	11,311	27,400		
VIRGINIA	1,727	1,124	2,851	1,245	6,105	2,126	2,126	267	2,393	2,559	13,757	54	658	712	1,232	2,432	2,745	3,245	10,273	7,174	17,447		
WASHINGTON	2,772	1,665	4,437	4,918	5,376	10,294	5,376	1,173	6,549	7,722	18,371	107	632	739	1,458	1,632	2,890	3,245	1				

TRUCKS IN ACCIDENTS

YEAR AND TYPE OF VEHICLE	% OF ALL VEH. IN ACCIDENTS	V E H I C L E S			I N J U R I E S	
		IN FATAL ACCIDENTS	IN INJURY ACCIDENTS	IN PROPERTY - DMG. ACCIDENTS	FATAL	NON-FATAL
<u>1976</u>						
Single Body Truck	4.16%	109	6,594	23,293	29	3,525
Pickup	3.14%	132	6,268	16,289	78	4,810
Van	2.37%	64	4,027	13,022	21	3,073
Tractor-trailer Truck	1.56%	149	2,826	8,315	34	1,293
Fire Truck	0.03%	1	51	185	0	41
<u>1977</u>						
Single Body Truck	3.20%	104	5,306	19,475	31	2,608
Pickup	4.95%	177	9,884	28,447	87	7,211
Van	2.91%	65	5,232	17,297	36	3,936
Truck Tractor	0.19%	4	305	1,174	0	139
Tractor-trailer Truck	1.95%	193	3,664	11,286	31	1,648
Fire Truck	0.04%	0	47	258	0	41
<u>1978</u>						
Single Body Truck	2.53%	89	4,209	16,014	22	2,030
Pickup	6.32%	222	12,177	38,358	29	8,721
Van	3.14%	85	5,728	19,444	49	4,461
Truck Tractor	0.18%	8	246	1,155	2	91
Tractor-trailer Truck	2.10%	204	3,979	12,684	36	1,830
Fire Truck	0.04%	0	33	260	0	22
<u>1979</u>						
Single Body Truck	2.76%	46	2,091	7,993	9	1,007
Pickup	6.79%	119	6,016	19,357	64	4,232
Van	3.26%	43	2,750	9,348	19	2,009
Truck Tractor	0.19%	6	141	610	3	57
Tractor-trailer Truck	2.00%	120	1,956	5,870	21	868
Fire Truck	0.03%	0	18	106	0	15
<u>1980</u>						
Single Body Truck	2.51%	73	3,684	13,109	11	1,796
Pickup	6.90%	237	12,180	33,888	133	9,254
Van	3.29%	87	5,423	16,574	37	4,144
Truck Tractor	0.17%	2	262	856	0	95
Tractor-trailer Truck	1.79%	158	3,025	8,836	25	1,332
Fire Truck	0.03%	3	39	187	1	34

Source: Ohio Traffic Accident Facts
1981 Edition
by Ohio Dept of Hwy Safety

EXHIBIT 10
FIGURE 2.3 FROM THE
ZIMMER ENVIRONMENTAL
REPORT - THE ZIMMER
SITE WIND ROSE
(2 Pages)

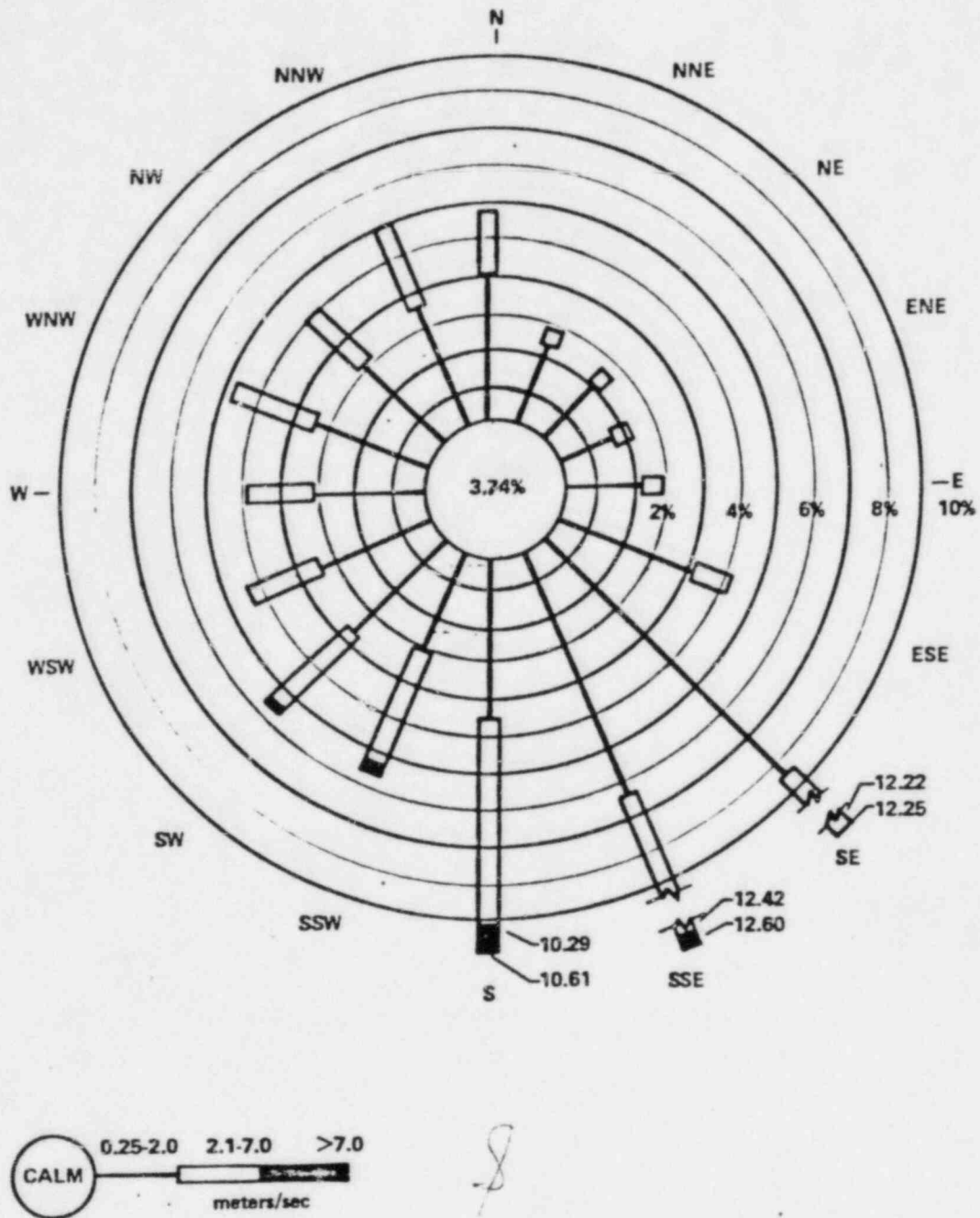


Figure 2.3 Zimmer site wind rose, 30-ft. level, entire period, March 1972 through February 1974
 Ref: Fig. 2.6-3, Zimmer ER-OL

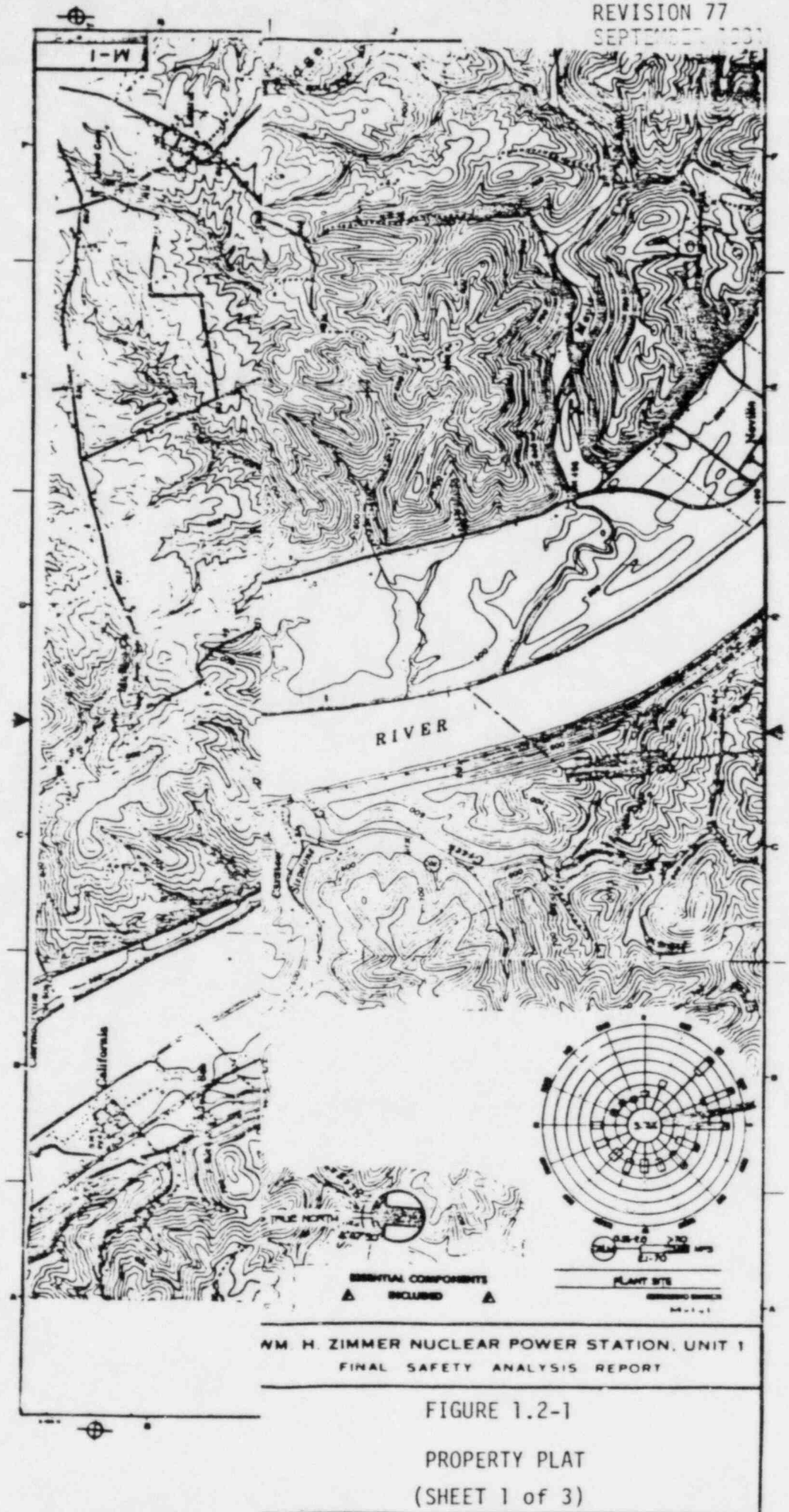


EXHIBIT 11
TOXIC CHEMICALS SURVEY
CONDUCTED BY SARGENT & LUNDY
FOR ORIGINAL TOXIC
CHEMICAL RESPONSE
(6 Pages)

TOXIC CHEMICALS
SURVEY

Subtable 1
Page 1

COMPANY NAME AND ADDRESS	SHIPS OR PRODUCES TOXIC CHEMICALS	TRANSPORTS BY SITE (U.S. 52)	NO RESPONSE (or means of response)	COMMENTS	SURVEY REFERENCE NUMBER
Air Products & Chem., Inc.	Yes	No	Telephone	Fluorine shipments use turnpike	42
Air Products & Chem., Inc.	Yes	U	Telephone	Fluorine only	43
Air Products & Chem., Inc.	No	No	Telephone		49
Allied Chemical Corp. Specialty Chem. Div. P.O. Box 1087R Morristown, NJ 07960	Yes	No	Letter	Liquid fluorine	144a
Allied Chem. Corp. Special Chemical	Yes	U	Telephone	Fluorine & Benzene please send letter	41
Allied Tech. Inc., Corp.	Yes	U	Telephone	Benzene, from local distributor	46
American Cyanamid Co.	No	No	Telephone	Doesn't handle chem. listed	50
Ansol Co.	Yes	No	Telephone	SO ₂ , by rail or truck on U.S. 64	16
ARC Chemical Corp.	Yes	U	Telephone	Ethylene Oxide only	19
Aristo Laboratories, Inc. 11319 Deerfield Rd. Cincinnati, OH 45242	Yes	No	Survey	Benzene & SO ₂ brought from local distributor	136a
Ashland Chemical Co. Petrochem. Div. 5200 Paul G. Blazer Mem. Pkwy. Dublin, Ohio 43017	Yes	No	Telephone	Benzene	114
Ashland Chemical Co. Shipping Dept. (Cinn.)	Yes	No	Telephone	Ethylene Dichloride, but not on U.S. 52	33
Ashland Chemical Co.	Yes	No	Telephone	Doesn't transport any of the chemicals	92
Atomergic Chemetals Corp.	Yes	No	Telephone	Sodium Monoxide, but none shipped through Ohio	24
Balar, J.T. Chemical Co.	Yes	U	Telephone	Benzene, don't know truck route	115
BASF - Wyandotte Corp. Intermediate Chem. Dept.	Yes	No	Telephone	Ethylene Oxide, but not to Cinn. area	31
BASF - Wyandotte Corp. Organic Chem.	U	U	Telephone		32
Biosystems, Inc.	No	No	Telephone		51
Black R. Mining Co. Route 1 Butler, KY 41006	U	U	Telephone	Would not respond by phone, must send survey	2
Black River Mining Co.	Yes	No	Survey	"No" given for each - "chemical transported"	142a
Brook Mfg. Co.	No	No	Telephone		52
Buckeye Molding Co.	No	No	Telephone		53
Bureau of Permits	N/A	N/A	Telephone	Call Public Util. Comm.	130
Burley Belt Chem. Co. Lex. Cynthiana	No	No	Telephone		4

U = Unknown.

N/A = Not Applicable.

TOXIC CHEMICALS
SURVEY

September 15, 1981
Page 2

COMPANY NAME AND ADDRESS	SHIPS OR PRODUCES TOXIC CHEMICALS	TRANSPORTS BY SITE (U.S. 52)	NO RESPONSE (or means of response)	COMMENTS	SURVEY REFERENCE NUMBER
Cambell Inds. Corp.	No	No	Telephone		55
Cambridge Tile Mfg. Co.	No	No	Telephone		54
Capsulated Sup. Inc.	No	No	Telephone		56
Celanese Chemical Co. Cleveland	U	No	Telephone	Nothing shipped to Cinn. area	34
Celanese Chemical Co. Dallas	Yes	U	Telephone	Manufacture Ethylene Oxide only	35
Charter International Oil Co. Charter Chemical Division	Yes	No	Telephone		120
Chemed Corp./Admin. (Dubois Chemical)	Yes	No	Telephone	Ethylene Dichloride	47
Chemical Leaman Richard Littlepage	Yes	U	Telephone	Will send info.	106
Chem. Leaman Tank Lines, Inc. Downtown, Penn. 19335 Richard C. Littlepage, V.P.	No	No	Letter & Survey	"No" for each chem.	132a,b
Chem. Leaman Tank Lines, Inc.	Yes	No	Telephone	Possibly handle Benzene & SO ₂ call home office (#127)	128
Chem. Leaman Tank Lines, Inc. Safety Department P.O. Box 200 Downtown, PA 19335 ATTN: Herman Horn	Yes	U	Telephone	Routes up to driver, please send letter	127
Chem-Pack, Inc.	No	No	Telephone		57
Chester Laboratories	No	No	Telephone	Do not handle named chemicals	5
Cincinnati - Milacan Chem.	No	No	Telephone		58
Cincinnati Plastics	No	No	Telephone		59
Cities Service Coastal States Mktg., Inc. Petrochem. Mktg. P.O. Box 50360 Atlanta, GA 30302	Yes	U	Telephone	Do not regularly ship to Cinn. area	118
Cities Service	Yes	U	Telephone	SO ₂ ; call truckers for routes	15
Clark Oil Co., Inc.	Yes	U	Telephone	Benzene 55-gal. drums	48
Clopay Corp.	No	No	Telephone	No usage	6
Commercial Chemical	No	No	Telephone		60
Continental Oil Co.	Yes	No	Telephone	Ships by rail to Chicago	119
Crystal Water Co.	No	No	Telephone		61
DAP, Inc.	No	No	Telephone		62
Dayton Coatings & Chem. Div.	No	No	Telephone		63
Degussa Corp., Chem. Div. Teterboro, NJ	Yes	No	Telephone	Hydrogen Cyanide by rail	20

U = Unknown.

TOXIC CHEMICALS
SURVEY

September 15, 1981
Page 3

COMPANY NAME AND ADDRESS	SHIPS OR PRODUCES TOXIC CHEMICALS	TRANSPORTS BY SITE (U.S. 52)	NO RESPONSE (or means of response)	COMMENTS	SURVEY REFERENCE NUMBER
Diamond Shamrock Corp.	Yes	No	Telephone	Ethylene Dichloride, but not through Ohio	33
Dixie Compound Works	No	No	Telephone	No company anymore	64
Djinni(?) Industries	No	No	Telephone		65
Dome Chemical Corp.	No	No	Telephone		66
Dow Chemical Midland Michigan	Yes	U	Telephone	Manufactures Benzene. Ethylene Oxide, Ethylene Dichloride, SO ₂ - see #97	98
Dow Chemical	Yes	No	Telephone	Ethylene Oxide by rail only	97
Dow Chemical	Yes	No	Telephone	No Benzene or Ethylene Dichloride by truck on U.S. 52	96
Dow Corning	Yes	U	Telephone	Silicones - Dow Chem. manufact. Benzene, Ethylene Oxide, Hydrogen Cyanide	99
DuPont (Cin. Office)	Yes	U	Telephone	Sulfur Trioxide	37
E.I. DuPont deNemours & Co. 11215 Brower Road North Bend, Ohio 45052	Yes	No	Survey	"No" under each "chemical transported"	139a
DuPont (Wilmington)	U	U	Telephone	Please send letter	36
E.I. DuPont deNemours & Co. Mr. William Stees 1007 Market Street Wilmington, DE 19898	Yes	No	Letter & Survey	No shipments	140a,b
Eagle Chemicals, Inc.	No	No	Telephone		67
Emery Industries, Inc.	No	No	Telephone		68
Essex Chemical Corp., sales	Yes	No	Telephone	SO ₂ only & by rail	29
Exciton Chemical Co., Inc.	No	No	Telephone		69
Exxon Chemical Co.	Yes	No	Telephone	Benzene	116
Faulconer Manufacturing Co.	No	No	Telephone		?
Fibre Glast Development Corp.	No	No	Telephone		70
Florence Co.					
Farm Bureau Coop. Assn., Inc.	No	No	Telephone		3
Fluid Kinetics (?) Inc.	No	No	Telephone		71
General Polymers Corp.	No	No	Telephone		72
Gro Green Paynes, Inc. Lexington	No	No	Telephone		8
Hela Chicago Chem. Co.	Yes?	No?	Telephone	"Don't handle at Chicago office - try Houston"	122
Herbert-Verkamp - Calvert Chem. 300 Murry Road Cincinnati, OH 45217	Yes	Yes	Survey	SO ₂ ; 2000 lb. in 2000 lb. container, 4/yr., 2000 lb./shipment via U.S. 52	134a

N/A = Not Applicable.

U = Unknown.

TOXIC CHEMICALS
SURVEY

September 15, 1981
Page 4

<u>COMPANY NAME AND ADDRESS</u>	<u>SHIPS OR PRODUCES TOXIC CHEMICALS</u>	<u>TRANSPORTS BY SITE (U.S. 52)</u>	<u>NO RESPONSE (or means of response)</u>	<u>COMMENTS</u>	<u>SURVEY REFERENCE NUMBER</u>
Hilton - Davis Division 2235 Langdon Farm Road Cincinnati, Ohio 45237 ATTN: R.K. Johnson, Direct. of Regulatory Affairs	U	U	No	Letter sent 4/4/79	137
Hilton Davis Co.	Yes	U	Telephone	Ethylene Oxide by truck but does not know route (see #17)	18
Horn Enterprises, Inc.	No	No	Telephone		73
ICN Pharmaceuticals	No	No	Telephone		74
Industrial Chem. Proj., Inc.	U	U	Telephone	Would not give info. over phone & would not give address for survey	75
International Spike, Inc.	U	U	Telephone	"Do not participate in surveys and would not listen"	9
Jones Chemical, Inc.	Yes	No	Telephone	SO ₂ & Chlorine gas, neither over U.S. 52	25
Jones Chemical, Inc.	U	No	Telephone		124
Kaiser Agricultural Chem.	No	No	Telephone		76
Kentucky Dept. of Transport.	N/A	N/A	Telephone	Background info.	113
Ky. Paint Mfg. Division Color (?) and Supply Co.	No	No	Telephone		10
Linde Division Union Carbide (see U #91)	No	No	Telephone		77
Liquid Carbonic	Yes	U	Telephone	Ethylene Oxide & SO ₂ please send survey	102
Liquid Carbonic	U	U	No	Letter sent about 5/22/79	145
Manufacturing Chemists Assoc.	N/A	N/A	Telephone	Gave references to check	104
Manufacturing Chemists Assoc.	N/A	N/A	Telephone	Do not track chemicals only accidents	103
Marlyn Chemical Corp.	No	No	Telephone		78
The Maxwell Company 10380 Evendale Drive Cincinnati, Ohio 45215	No?	No	Survey	"No" given for each "chemical transported"	133a
Maxwell Trucking Co.	U	U	Telephone	Mr. Maxwell does not know, send letter	125
MCB Manufacturing Chemists, Inc. 2909 Highland Avenue Cincinnati, Ohio 45237	Yes	No?	Letter	Probably nothing goes through Moscow, but does not know routes of trucks	138a
MC&B Manufact. Chemists, Inc. 2909 Highland Ave. Norwood, Ohio 45212	Yes	Possibly	Telephone	Benzene, Ethylene Dichloride, Sodium Oxide, 45 please send survey	
McKesson Chemical Co.	Yes	No	Telephone	None along U.S. 52	117
Miami Prod. & Chemical Co.	No	No	Telephone		79

U = Unknown.

N/A = Not Applicable.

TOXIC CHEMICALS
SURVEY

September 15, 1981
Page 5

<u>COMPANY NAME AND ADDRESS</u>	<u>SHIPS OR PRODUCES TOXIC CHEMICALS</u>	<u>TRANSPORTS BY SITE (U.S. 52)</u>	<u>NO RESPONSE (or means of response)</u>	<u>COMMENTS</u>	<u>SURVEY REFERENCE NUMBER</u>
Micro - Well, Inc. #1 Kohnle Drive Miamisburg (?), OH 45342	U	U	Telephone	"Does not know"	80
Mobil Chemical Corp.	Yes	No	Telephone		121
National Trans. Safety Brd. Chief of Hazardous Mat'l Div.	N/A	N/A	Telephone	No data	105
Nationwide Chem. & Prods.	U	U	Telephone	Disconnected	89
Nease Chemical Co., Inc.	No	No	Telephone		81
Northern Petrochemical Desplaines	Yes	No	Telephone	Ethylene Oxides only by rail	38
Ohio Valley Fertilizer, Inc. Maysville	No	No	Telephone		11
PB&S Chemical Company 1038 Brentwood Ct. Lexington, KY 40570	Yes	U	Telephone	Sulfur Dioxide	1
PB&S Chemical Company P.O. Box 11307 1038A Brentwood Lexington, KY 40511	Yes	No	Letter	Not transporting any near Moscow, Ohio	141a
Phillip Brothers Chem., Inc.	Yes	No	Telephone	Sodium Monoxide but only in Pennsylvania	22
Pioneer Salt & Chem. Co.	Yes	No	Telephone	SO ₂ & Ethylene Dichlo- ride but only on east coast	30
Public Utilities Comm.	N/A	N/A	Telephone	Background information (e.g. U.S. 52 has 1/2 the traffic of Ken. 64)	107
Public Utilities Comm. Assist. Direct. of Trans.	N/A	N/A	Telephone	Chemical Laeman; Maxwell Co., Strothman Express Co. certified to truck chem. in Hamilton Co.	129
Rogers Cartage Co.	Yes	No	Telephone	SO ₂ , Benzene, Ethylene Dichloride, on interstate not U.S. 52	26
Shawnee Chemicals	Yes	U	Telephone	None in large quantities	82
Southern Sts. Georgetown Coop. Georgetown	No	No	Telephone		13
Southern Sts. Coop., Inc. Winchester	No	No	Telephone		12
Spray - Dyne Corp.	No	No	Telephone	Only Ethylene Glycol	83
State Farm Marshall's Off.	N/A	N/A	Telephone	Background inform.	108-111
Stauffer Chem. Co. Industrial Chem. Div.	Yes	No	Telephone	SO ₂ shipped from Hammond IN S. to Cinn. OH	27
✓ Strothman Express, Inc.	U	U	Telephone	Cell tank division	126
Strothman Express, Inc. Tank Division 4963 Provident Drive Cinn., OH ATTN: Ken Firley	No	No	Telephone	Wants survey to check	112

U = Unknown.

N/A = Not Applicable.

TOXIC CHEMICALS
SURVEY

September 15, 1981
Page 6

COMPANY NAME AND ADDRESS	SHIPS OR PRODUCES TOXIC CHEMICALS	TRANSPORTS BY SITE (U.S. 52)	NO RESPONSE (or means of response)	COMMENTS	SURVEY REFERENCE NUMBER
Strothman Express, Inc. 4963 Provident Drive Cincinnati, OH ATTN: Mr. K. Finley	U	U	No	Letter sent 4/4/79	131
Sun Chemical Corp.	No	No	Telephone		84
Sunolin Chemical Co.	Yes	No	Telephone	Ethylene Oxide, but do not ship that far west	39
Tedia Company, Inc.	U	U	Telephone	Disconnected	90
Tenneco Chemicals, Inc.	U	No	Telephone		85
Tenneco Chemicals	U	No	Telephone		123
Terminix Intl., Inc.	No	No	Telephone		86
Thompson - Hayward Chem. Co.	U	U	Telephone	Ohio out of normal trade area; wants letter	40
Thompson - Hayward Chem. Co. 5200 Speaker Rd., P.O. Box 2382 Kansas City, Kansas 66110	Yes	No	Letter	Out of trade area	143a
Tobacco States Chem. Co., Inc. Lexington	No	No	Telephone		14
Union Carbide Corp.	Yes	U	Telephone	See #100	101
Union Carbide Corp. Dept. of Transportation	Yes	No	Telephone	Benzene, Ethylene Dichloride, Ethylene Oxide, not transported by truck - first 2 used internally, last shipped by rail	100
Union Carbide Corp. Linde Div. (see #77)	Yes	No	Telephone	Benzene only used inter- nally; Ethylene Oxide & Ethylene Dichloride usually shipped by rail	91
U.S. Industrial Chem. Co.	No	No	Telephone		87
Var - Lac - OID Chem. Co.	Yes	U	Telephone	Imports small amounts of Sodium Monoxide (1 lb. package)	21
Ventron Corp. ALFA Div. Chemical Division	No	No	Telephone		23
Virginia Chemicals, Inc.	Yes	No	Telephone	SO ₂ but not in Cinn. area	28
Vistron Corp.	Yes	No	Telephone	Not on U.S. 52	94
Vistron Corp.	U	U	Telephone	See #94	95
Warren Chemical Co.	Yes	U	Telephone	Ethylene Oxide (for shipping info. see #18)	17
Warren Chemical Co.	N/A	N/A	Pamphlet on drummed Ethylene Oxide		146
Wieler Welding Co., Inc.	Yes	U	Telephone	SO ₂ only	44
Wilmar Company 3410 Court Cincinnati, OH 45202 ATTN: William Nicholson	U	U	No	Letter sent 4/4/79	135
Winn Oil Company	No	No	Telephone		88

U = Unknown.

N/A = Not Applicable.

EXHIBIT 12
U.S. 52 TRUCK SURVEY
DAILY SURVEY SHEETS

(SEE SUPPLEMENTAL FOLDER #2)

EXHIBIT 13
U.S. 52 TRUCK SURVEY
PHASE 3 QUESTIONNAIRE AND INSTRUCTIONS
(3 Pages)

THE CINCINNATI GAS & ELECTRIC COMPANY



TRUCK SAFETY SURVEY

We are conducting a safety survey for The Cincinnati Gas & Electric Company, regarding materials transported on U.S. 52. May we ask what is on your bill of lading?

Cargo _____

If no, may we contact your company?

Company Name and Location:

Telephone #:

Truck Description:

License #:

Remarks:

INSTRUCTIONS

1. The survey concerned with tank trucks only.
2. Do not stop or delay traffic.
3. If driver is not cooperative, do not harass; move on to next truck.
4. Be courteous.
5. Remain on roadside until traffic is stopped.
6. Offer a minimum amount of information to drivers.
7. Follow instructions given by ODOT Personnel and Contractor.
8. Wear hard hats and vests.
9. In case of several trucks backed up, look for the companies on the attached list.
10. When flag person restarts traffic, return to roadside until next stoppage.

NOTE: This survey has been approved by ODOT, Brewer Asphalt Company, and Ohio State Highway Patrol.

Contact Paul Bogen regarding questions (553-2081).

TRUCK SAFETY STUDY

(TRUCKING COMPANIES TO BE GIVEN PRIORITY)

1. Ace Liquid Waste
2. AIS
3. Ashland Chemicals
4. Carter
5. Chemcentral
6. Chemetron/Cardox
7. C.P.
8. M. J. Daly Company
9. L. A. Democrate
10. D&L Transport
11. Gantz
12. Georgia Pacific
13. Grace
14. Hertz
15. Highway
16. HRD
17. HVAC Industries
18. Kich-Fields
- *19. Mack Lack
20. Nappin Mossler
21. Nease
22. OIAH
23. U.S. Rockwood
24. Rogers
25. Schneider
26. Transco
27. Union Carbide

EXHIBIT 14

DRIVER QUESTIONNAIRES

TANK TRUCKS

PHASE 3

(SEE SUPPLEMENTAL FOLDER #3)

EXHIBIT 15
DRIVER QUESTIONNAIRES
MISCELLANEOUS TRACTOR TRAILERS
PHASE 3
(SEE SUPPLEMENTAL FOLDER #4)

EXHIBIT 16
COMPLETED COMPANY CHECKLISTS
PHASE #3
(SEE SUPPLEMENTAL FOLDER #5)

EXHIBIT 17
U.S. 52 TRUCK SURVEY
TOXIC CHEMICALS POSSIBLY
REQUIRING EVACUATION UNDER
ACCIDENT CONDITIONS
(1 Page)

THESE HAZARDOUS MATERIALS
LISTED COULD CAUSE A PLANT
EVACUATION

ACROLEIN, inhibited
ACRYLONITRILE, inhibited
AMMONIA ANHYDROUS, liquified
AMMONIA SOLUTION, with not less than 44% ammonia
BORON TRIFLUORIDE
BROMINE
CARBON BISULFIDE
CARBON DISULFIDE
CHLORINE
DIMETHYLAMINE, anhydrous
DIMETHYL SULFATE
EPICHLOROHYDRIN
ETHYLENE IMINE, inhibited
ETHYLENE OXIDE
FLUORINE, cryogenic liquid
HYDROCHLORIC ACID, anhydrous
HYDROCYANIC ACID
HYDROFLUORIC ACID, anhydrous
HYDROGEN CHLORIDE, anhydrous
HYDROGEN CHLORIDE, refrigerated liquid
HYDROGEN CYANIDE, anhydrous, stabilized
HYDROGEN FLUORIDE, anhydrous
HYDROGEN SULFIDE
METHYLAMINE, anhydrous
METHYL BROMIDE
METHYL CHLORIDE
METHYL MERCAPTAN
METHYL SULFATE
MONOMETHYLAMINE, anhydrous
NITRIC ACID, fuming & red fuming
NITRIC OXIDE
NITRIC OXIDE & NITROGEN TETROXIDE MIXTURE
NITROGEN DIOXIDE
NITROGEN TETROXIDE
OLEUM
PERCHLOROMETHYL MERCAPTAN
PHOSGENE
PHOSPHORUS TRICHLORIDE
PYROSULFURIC ACID
SULFUR DIOXIDE
SULFURIC ACID, fuming
SULFURIC ANHYDRIDE
SULFUR TRIOXIDE, stabilized
TITANIUM TETRACHLORIDE
TRIMETHYLAMINE, anhydrous

EXHIBIT 18
DOCUMENTATION OF
ADVANCE WARNING
AGREEMENTS
(3 Pages)

THE CINCINNATI GAS & ELECTRIC COMPANY

September 13, 1982

Ohio State Highway Patrol
1000 Hospital Drive
Batavia, Ohio 45103

ATTN: Lt. Henson

RE: WM. H. ZIMMER NUCLEAR POWER STATION - UNIT 1
U.S. 52 TRUCK SURVEY
W.O. 57300, JOB E-5590, FILE #956

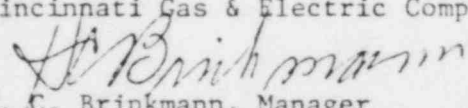
Dear Lt. Henson:

The purpose of this memo is to document your telephone conversation with Mr. P. E. Bogen on August 24, 1982. In this conversation, it was requested that Cincinnati Gas & Electric Company personnel be allowed to conduct a lading survey of trucks stopped at lane closures for the U.S. 52 repaving project. You were assured by Mr. Bogen that all survey personnel would wear proper safety attire and the study would cause no additional delays to traffic. Based upon these factors and prior approval from ODOT and the involved contractors, your approval was received and logged into your Zimmer file.

It was further requested that the Zimmer control room be placed on the list of agencies to be contacted in case of a chemical spill on U.S. 52. This request was also approved and Zimmer was immediately added to the list. The New Richmond and Moscow Police Departments will be contacted in the future for similar action.

The purpose of the truck survey and the need for advance notice of chemical spills is to satisfy requirements of a continuing safety program at Zimmer Nuclear Power Station. Your cooperation in this matter has been greatly appreciated.

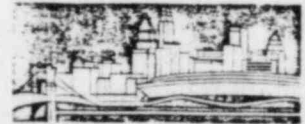
Very truly yours,
Cincinnati Gas & Electric Company


H. C. Brinkmann, Manager
Nuclear Engineering Department

PEB/gj

cc: J. R. Schott
J. D. Flynn
J. E. Conant
B. R. Sylvia (pink)
ATTN: General File

THE CINCINNATI GAS & ELECTRIC COMPANY



CINCINNATI, OH 45202-4003

April 26, 1983
SP-0316

Moscow Police Department
P.O. Box 37
Moscow, Ohio 45153

ATTN: Officer Dennis Skeene, Police Chief

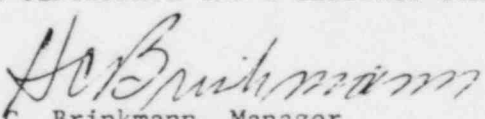
RE: WM. H. ZIMMER NUCLEAR POWER STATION - UNIT 1
REQUEST FOR NOTIFICATION OF CHEMICAL SPILLS
ON U.S. 52
W. O. 57300, JOB E-5590, FILE 956

Gentlemen:

The purpose of this memo is to document the telephone conversation between Police Chief Dennis Skeene and Mr. P. E. Bogen on April 25, 1983. In the referenced conversation, it was requested by Mr. Bogen that the Zimmer Nuclear Power Station Control Room be placed on the list of agencies to be contacted in the event of a chemical spill on U.S. 52. The telephone number for the Control Room is 553-2021 (Ext. 234). Officer Skeene agreed that the requested provision would be made.

The purpose of this request is to satisfy requirements of a continuing safety program at the Zimmer Nuclear Power Station. CG&E has made a similar request of the Ohio State Highway Patrol and the New Richmond Police Department. Your cooperation in implementing this program has been greatly appreciated.

Yours very truly,
THE CINCINNATI GAS & ELECTRIC COMPANY


H. C. Brinkmann, Manager
NUCLEAR ENGINEERING DEPARTMENT

PEB/lag
cc: J. R. Schott
J. D. Flynn
D. J. Frederick
Mr. Joe Williams, Jr. (pink)
ATTN: H. G. Gadd
General File

THE CINCINNATI GAS & ELECTRIC COMPANY



CINCINNATI, OH 45202-4003

April 27, 1983
SP-0319

New Richmond Police Department
102 Willow Street
New Richmond, Ohio 45157

ATTN: Officer Harold Kennedy, Police Chief

RE: WM. H. ZIMMER NUCLEAR POWER STATION - UNIT 1
REQUEST FOR NOTIFICATION OF CHEMICAL SPILLS ON
U. S. 52
W. O. 57300, JOB E-5590, FILE 956

Gentlemen:

The purpose of this memo is to document the telephone conversation between Police Chief Harold Kennedy and Mr. P. E. Bogen on April 26, 1983. In the referenced conversation, it was requested by Mr. Bogen that the Zimmer Nuclear Power Station Control Room be placed on the list of agencies to be contacted in the event of a chemical spill on U. S. 52. The telephone number for the Control Room is 553-2021 (EXT. 234). Officer Kennedy agreed that the requested provision would be made.

The purpose of this request is to satisfy requirements of a continuing safety program at the Zimmer Nuclear Power Station. CG&E has made a similar request of the Ohio State Highway Patrol and the Moscow Police Department. Your cooperation in implementing this program has been greatly appreciated.

Yours very truly,
THE CINCINNATI GAS & ELECTRIC COMPANY

H. C. Brinkmann
H. C. Brinkmann, Manager
NUCLEAR ENGINEERING DEPARTMENT

PEB/lag

cc: J. R. Schott
J. D. Flynn
D. J. Frederick
Mr. Joe Williams, Jr. (pink)
ATTN: H. G. Cadd
General File

SUPPLEMENTAL FOLDER #1

COMPLETED COMPANY CHECKLISTS
(PHASES 1 AND 2)

SUPPLEMENTAL FOLDER #2

U.S. 521 - TRUCK SURVEY
DAILY SURVEY SHEETS
(PHASES 1 AND 2)

SUPPLEMENTAL FOLDER #3

DRIVER QUESTIONNAIRES
TANK TRUCKS
(PHASE 3)

SUPPLEMENTAL FOLDER #4

DRIVER QUESTIONNAIRES
MISCELLANEOUS TRACTOR
TRAILERS
(PHASE 3)

SUPPLEMENTAL FOLDER #5

COMPLETED COMPANY CHECKLISTS
(PHASE 3)