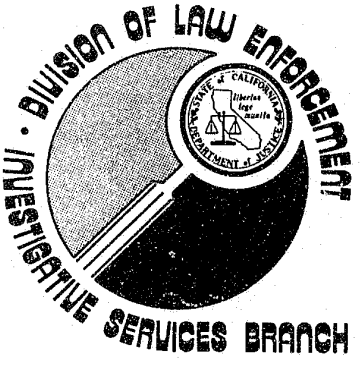
INCIDENCE OF MARIJUANA IN A CALIFORNIA IMPAIRED DRIVER POPULATION

State of California · Department of Justice

EORGE DEUKMEJIAN Attorney General



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FINAL REPORT

Study of the Incidence of Delta 9-Tetrahydrocannabinol (THC) in Forensic Blood Samples from a California Impaired Driving Population.

Prepared for the Office of Traffic Safety, National Highway Traffic Safety Administration under Contract OTS #087705.

Project Director:	Robert W. Drake, Assistant Director
Principal Investigator:	Victor C. Reeve, Manager, Technical Support Unit
Co-workers:	Stanley Gross, M.D., Director, White Memorial Radioimmunoassay Laboratory, Los Angeles.
	Leo Hollister, M.D., Director, Research, Veterans Administration Hospital, Palo Alto.
Author:	Victor C. Reeve, Managing Criminalist V

Rm. 237, Technical Support Unit, Investigative Services Branch, Division of Law Enforcement, California State Department of Justice, P. O. Box 13337, 3301 C Street, Sacramento, California 95813.

EXECUTIVE SUMMARY

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CALIFORNIA STATE DEPARTMENT OF JUSTICE (DOJ)

MARIJUANA INCIDENCE IN THE CALIFORNIA IMPAIRED DRIVING POPULATION

The following summarizes information arising from an Office of Traffic Safety (OTS) funded project which examined a randomly selected California impaired driving population whose forensic blood samples were analyzed for the presence of marijuana. This impaired driving population consisted of 1,792 subjects whose blood samples were submitted to the thirteen DOJ criminalistics laboratories by the California Highway Patrol. In order to complete this project, it was necessary to identify a specific, sensitive and inexpensive test capable of analyzing a large population of hemolyzed blood samples for delta 9- tetrahydracannabinol (delta 9-THC) which is the only drug in marijuana which correlates strongly with behavioral effects. Once the test had been identified as radioimmunoassay (RIA), a study of the incidence of marijuana use while driving became feasible. Correlation of a number of variables such as age, sex, and geography with use of marijuana while driving could then be examined.

The research yielded significant information regarding the use of marijuana by California impaired drivers. There was a 16 percent overall incidence of delta 9-THC in the blood of the sampled impaired driving population. Where no alcohol was present in the blood samples, (185 of the total 1,792 samples) the incidence of delta 9-THC rose to 24 percent in that particular subpopulation. It was found that marijuana use widely crosses age brackets. It was confirmed by controlled delta 9-THC administration to volunteer subjects that the detectable presence of delta 9-THC is associated with significant driving impairment.

OBJECTIVES

The major goal in the Marijuana Incidence Study was to determine the incidence of marijuana in a California impaired driving population. Secondary objectives of the project were to:

(1) Confirm the analytical results developed by RIA with results developed from gas chromatography/mass spectrometry (GC/MS).

(2) Perform a retrospective associative analysis on such variables as age, sex, ethnic origin, employment status, county of incidence, county of

residence, time and date of incidence, whether an accident was involved, type of automobile, time lapse to sampling alcohol level, presence of other drugs, evidence of marijuana use, and time lapse to analysis.

(3) Attempt to determine delta 9-THC impairment levels.

(4) Provide the National Highway Traffic Safety Administration with information useful for the development of control standards and countermeasures that will reduce marijuana related traffic accidents.

BACKGROUND

Historically, analytical techniques in criminalistics laboratories have not been sensitive or selective enough to detect delta 9-THC (which is the most impairing drug substance in marijuana). The lack of a testing procedure has allowed the marijuana user freedom to drive while under the influence of marijuana, thereby creating a potential traffic safety problem. The California DOJ recently became aware of an appropriate test developed by UCLA scientists (RIA) which was capable of analyzing blood samples for delta 9-THC. The DOJ approached OTS for funding of an experimental program to assess the magnitude of the impact of marijuana use while driving on traffic safety. This project represents an initial attempt to define the limits of the problem, and to provide statistical information for the enlightenment of criminal justice, traffic safety, and legislative officials.

SCOPE

California's licensed drivers represent 10 percent of the licensed drivers in the United States. Approximately 886,700 impaired drivers were arrested in the United States in 1976; 266,000 were arrested in California. The California arrests represented 30 percent of the total impaired driving arrests in the United States.

Driving under the influence of marijuana in California by a broad population base may be encouraged by decriminalization of marijuana possession and use, the unavailability of a usable testing procedure, and by the absence of documentable long-term drug effects. The development of technology allowing reliable testing for marijuana use, and the significant incidence of marijuana use in a driving population demonstrated by this study should prompt legislative activity leading to a formal traffic safety program for marijuana as it has for alcohol and other impairing drugs.

PREVIOUS STUDIES

There is a limited survey by Teale and co-workers (1977) that has chemical validation; but this was of a non-representative group of 66 fatally injured motorists in Great Britain. In that particular population, the English discovered a 10 percent incidence of delta 9-THC. Other studies have been conducted, but most have been geared toward fatalities. The DOJ study examined the spectrum of drivers arrested for impaired performance including fatalities, accidents and non-accident situations.

An interesting study, conducted by Dr. Klonoff, published in the journal Science in 1974 demonstrates that "smoking marijuana and driving is an extremely hazardous thing to do." The conclusions reached in this study were that there was demonstrated impairment on the test driving course but when the impaired person was allowed to drive on city streets, the impairment demonstrated was even more pronounced.

In another study, Dr. Herbert Moskowitz at UCLA devised an ingenious driving simulator on which he demonstrated that perception, tracking, attention, central vision, reaction time, memory, information storage, judgment, manipulation and coordination skills are increasingly impaired by incremental doses of marijuana (delta 9-THC).

This incidence study is a basic step in addressing the traffic safety-marijuana situation. There are no other studies in the world today where a large number of impaired drivers have been chemically surveyed for the incidence of delta 9-THC. Other studies have proven that marijuana impairment while driving does occur and is dangerous. This study attempts to define the limits of the problem in California by using a statistically valid methodology.

EXPERIMENTAL DESIGN-DOJ PROJECT

RIA Validation: The RIA technique was successfully validated with respect to hemolyzed blood by GC/MS by Dr. James Valentine of University of Missouri, Bruce Hidy of Batelle, NIDA, and Tom Keener of DOJ. The statistical analyses of the data are outlined in detail in the body of the report.

Impairment Levels: The first step toward establishment of marijuana impairment levels was an experimental protocol developed by Leo Hollister of the Veterans Administration Hospital in Palo Alto. The protocol included administering standard National Institute of Drug Abuse (NIDA) delta 9-THC cigarettes to 60 human subjects. A blood sample was taken prior to smoking; the subjects smoked NIDA cigarettes and in five minutes, another blood sample was drawn. The subjects were then presented to uniformed Highway Patrol officers and they submitted to roadside sobriety tests. Their performance on these tests was documented and this procedure was repeated after one-half hour, 1½ hours, and 2½ hours. The performance profile was correlated with delta 9-THC serum and blood levels. Two and one-half hours after smoking, 59 percent of the subjects failed the roadside sobriety tests. The data from this phase of the study represents the first step towards establishing marijuana impairment levels. This information is presented in more detail in the main body of the final report.

Sampling & Analysis: The DOJ Law Enforcement Consolidated Data Center and the Bureau of Criminal Statistics provided information defining what constituted a representative sampling of the impaired driving population in the DOJ criminalistics laboratory service areas. The sampling process consisted of having our laboratory personnel involved in blood alcohol analysis pick out blood samples, remove a small amount of blood and forward it to our Sacramento project center for distribution to the RIA laboratory in Los Angeles.*

For each subsample taken, the laboratory obtained a copy of the respective arrest sheet, or accident report from the CHP. The information from the CHP arrest sheet, the blood alcohol results received from the DOJ laboratory, any additional drug analyses performed on the blood sample at DOJ, and the RIA delta 9-THC results were encoded anonymously onto a data sheet. The data was then submitted to the DOJ Law Enforcement Consolidated Data Center for analysis by computer methods. The computer analysis examined pertinent elements and cross-tabulated

*The Office of the Attorney General of the State of California researched the legality of subsampling such evidence. Their opinion was that as long as the original evidence was not jeopardized in the subsampling process, and as long as the process was of an anonymous nature which would not be utilized in any way in the courtrooms of California, it would be permissible to use the blood for delta 9-THC assays.

those elements. The listing generated from the analyses allowed conclusions with respect to the statistical significance of the data. This data was prepared anonymously in order that the Criminal Justice System and the public might benefit from trends and statistical information without jeopardizing the rights of the accused.

DISCUSSION OF RESULTS

The DOJ Law Enforcement Consolidated Data Center, the Bureau of Criminal Statistics, and the Health Sciences Facility at UCLA have conducted statistical analysis of the incidence data.

The most significant statistic that developed in this study was the 16 percent overall incidence of delta 9-THC in the California impaired driving population. However, statistical information indicated a higher incidence of delta 9-THC in drivers that do not have any evidence of alcohol or other drugs in their blood. Also, those licensed drivers between 30 and 60 years demonstrated a slightly higher incidence of delta 9-THC (19%). Drivers between 14 and 29 years manifested an incidence of 13 percent to 15 percent delta 9-THC.

Variations related to geographical location were found. With respect to the county where the arrest occurred, there was a wide variation of incidence of delta 9-THC, from 6.7 percent in Butte County to 38 percent in Calaveras County. The range of the incidence of delta 9-THC versus the county of residence of the arrested driver was as low as 4 percent in Butte County to as high as 31 percent in Alameda County.

All persons in the impaired driving population whose blood samples contained delta 9-THC failed the roadside sobriety test. The blood levels of delta 9-THC in these impaired drivers was not particularly high (median of 9 ng/ml). Delta 9-THC disappears very rapidly from the blood (in two to four hours), and there is a delay from the time of arrest to the time the officer is able to get a blood sample taken at a hospital or clinical laboratory. (74 percent of all blood samples were drawn within 75 minutes of the roadside stop). This may explain the consistently low level of delta 9-THC in the blood samples.

Furthermore, it is very possible that delta 9-THC blood levels had dropped below detectable limits in the arrested person before the blood sample was drawn. This was demonstrated by the controlled roadside sobriety testing and blood correlations

conducted at the Veterans Administration Hospital in Palo Alto. Quite frequently, the human subjects showed signs of impairment at 2½ hours after smoking, yet their blood levels would be below the detectable limits of the RIA technique (5 ng/ml).

The possession or admission of the use of marijuana just prior to arrest did not seem to show any correlation with positive delta 9-THC assay of the blood if there was no alcohol present. However, with the two drugs in combination, there was a strong correlation between admission of marijuana use and positive assay of delta 9-THC. Past studies have relied heavily upon the person surveyed voluntarily admitting and providing information with respect to his use and ingestion of marijuana.

CONCLUSION

In California it is definitely established that there is at least a 16 percent incidence of delta 9-THC in the blood of a surveyed impaired driving population. However, it is quite possible that the 16 percent incidence of delta 9-THC in the impaired driving population is a conservative figure. This is because delta 9-THC rapidly drops below detectable limits in the blood. Consequently, only high dosage impaired drivers were detected in the incidence study.

There is a need for the establishment of forensic programs for the detection and analysis of marijuana. Subjective evaluation of arresting officers generally does not result in driving under the influence of drugs convictions by the courts. On the other hand, blood alcohol laboratory analysis corroborating the testimony of the arresting officer results in 90 percent conviction rates of alcohol impaired drivers. A forensic program for marijuana detection could be expected to yield similar results for convictions of marijuana impaired drivers.

RECOMMENDATIONS

To obtain the corroborating evidence of marijuana impairment necessary for convictions, we recommend legislation giving the arresting officer authority to give the suspect a breath test. When no alcohol is present, or with low legal levels of alcohol, the arrested person should be required to provide a blood sample.

It has been clearly established by Klonoff, Moskowitz, and others, that marijuana impairs a wide variety of functions that are important to safe driving, and this impairment occurs at low delta 9-THC levels. An important objective of a traffic safety program is to develop programs of control, standards, and countermeasures that will reduce the incidence of driving impairment. There is very little applicable marijuana research available at this time. DOJ will continue to research and study the issue. Hopefully, we will be able to provide a reasonable testing procedure necessary for a viable traffic safety program regarding marijuana use.

TABLES AND FIGURES

TABLES AND FIGURES (continued)

FINAL REPORT

I. Introduction

This study was sponsored by the U.S. Department of Transportation through the Office of Traffic Safety to determine if there is an incidence of tetrahydracannabinol (delta 9-THC) in a California impaired driving population.

Although California licensed drivers represent 10% of the nation's total, the number of impaired driving arrests in California is almost 30% of the U.S. total. This places California in a national prominence with respect to traffic safety and impaired driving. The recent decriminalization of marijuana in California can be expected to result in an increasing incidence of its usage and toxicological contact in the driving situation.

Driving under the influence (DUI) of alcohol and drugs in the state of California is a multimillion dollar problem. In 1976, 1.9% of the fourteen million persons who drive were arrested for DUI offenses. 0.15% of this total was involved in accidents and fatalities which resulted in 20,000 injuries and 1,500 deaths.

Societal[1] losses were estimated at 641 million dollars for the year. Marijuana and driving offenses played a part in this tragedy, certainly not as large a part as alcohol, but definitely a substantial role in DUI situations.

Marijuana is a complex mixture of several drugs, four of which are known to be psychotropic. In addition, the vegetable material or the plant extracts (hash, etc.) can be ingested in a wide variety of concentrations. Therefore, until delta 9-THC was established as the most impairing and potent drug substance in marijuana, little could be done to establish a reference point with respect to driving impairment levels. There is little data available relative to how delta 9-THC interacts in the body to produce driving impairment. The presence of the drug in the blood correlates closely with impairment of skills associated with driving.

Analytical techniques available in criminalistics laboratories have not been sensitive or selective enough to detect delta 9-THC in body fluids. Thus, the situation permits the marijuana user freedom to drive while intoxicated, thereby creating a serious traffic safety problem; the magnitude of which must be identified and ultimately controlled. Hence this program represents an initial attempt to define the limits of this problem and to provide statistical information for the enlightenment of criminal justice, traffic safety, and legislative officials.

Delta 9-THC is a high potency drug which manifests impairment blood levels at the nanogram/milliliter range. Its concentration drops below radioimmunoassay limits of detection within two to six hours depending on the ingested dosage. Generally, metabolic products from delta 9-THC and other chemicals associated with marijuana ingestion do not correlate with measurable impairment effects. Saliva [2] levels of delta 9-THC do not appear to correlate with blood levels, and urine [3] is not a suitable media for the drug. However, breath levels [4] are still under investigation. Consequently, blood was chosen as the media by which the incidence of driving impairment and delta 9-THC could be determined.

Gas chromatography/mass spectrometry (GC/MS) and RIA are the most common analytical methods utilized for delta 9-THC serum assays. These techniques were evaluated with respect to serum and hemolyzed blood. GC/MS did not appear suitable for routine high volume assays of forensic blood. However, Betty Yeager of White Memorial RIA Laboratory [5] was able to assay forensic blood by RIA techniques. The RIA limit of detectibility is around 5 ng/ml.

This proved to be a critical factor in the incidence study as the median concentration of delta 9-THC in the impaired driving population surveyed was around 9 ng/ml. Consequently, RIA was designed as the main analytical procedure for chemical validation of body fluids of impaired drivers in the California population.

Annually, approximately three hundred blood and urine samples from suspect impaired motorists were received at Investigative Services Branch laboratories for drug analysis. These samples contain concentrations of alcohol below the impairment level (0.10%) and represent only a fractional input from 46 of California's 58 counties. At least fifty percent of these samples produced negative results when analyzed for a variety of controlled substances. This represents but a small fraction of drivers who are stopped because of erratic driving patterns and subsequently released because they manifest ethyl alcohol levels below 0.10%.

Annually, thirteen California State DOJ Criminalistics Laboratories analyze sixty-five thousand blood, breath, and urine samples. This represents approximately 25% of the 266,000 DUI (1976) arrests in the state of California and approximately 160 million dollar societal loss to California. Approximately 25,000 blood samples are submitted to DOJ laboratories. The CHP is responsible

for submitting 75% of these cases or approximately 19,000 blood samples per year. These 19,000 blood samples were randomly sampled for the incidence study. Forty-two counties are represented in the counties where the arrests occurred and fifty-two counties are represented in terms of residence of the arrested subjects.

The California Highway Patrol uses a standard format in their Traffic Collision Report forms #555, Investigation Report form #202, and in their Intoxication Report form #218 (see attachments, pages 86 - 93). The data available on the California Highway Patrol forms #555, #202, and #218, tabulated with blood alcohol, delta 9-THC, and other drug assays, comprise the substance of this report.

The major contribution of this study is the design of a prototype marijuana program which analyses forensic blood. The important element in this approach is the analytical validation of the incidence of delta 9-THC in an impaired driving population. The establishment of a high incidence of the drug in an impaired driving population leads to other concerns, most of which are beyond the scope of this study. Some of these must be addressed by further work before a traffic safety program can be undertaken. Such things are:

(a) Stability of delta 9-THC in hemolyzed blood and optimum storage conditions.
(b) The development and use of screening tests in roadside situations.
(c) Legislative changes with respect to arrest and sampling procedures.
(d) Additional studies of the effects of marijuana on driving skills correlated with delta 9-THC blood levels.
(e) The education of a variety of governmental agencies, the criminal justice system, and the general public with respect to the hazards of marijuana impairment and driving.

II. Objectives

The major goal in the Marijuana Incidence Study was to address the question: What is the incidence of marijuana in a California impaired driving population? In addressing this question, the approach involved chemical validation of blood samples received from the suspected impaired drivers studied.

The prime objective of this study was to determine the incidence of marijuana use in a highly suspect stratified population of motorists subjectively judged

to be intoxicated upon arrest. Specifically, the incidence of marijuana was determined in sampled populations consisting of those:

1. Drivers who manifest signs of impairment yet have no detectable blood/ethyl alcohol.
2. Drivers who manifest signs of impairment and have detectable blood/ethyl alcohol levels.

Secondary objectives of the project were:

1. To confirm the findings developed in the initial research through the use of currently available GC/MS techniques.
2. To perform retrospective associative analysis on such variables as age, sex, and urban vs, rural arrests from CHP arrest reports.
3. To attempt to determine delta 9-THC impairment levels.

Thus a more detailed examination, conducted by Dr. Hollister and co-workers, of the CHP roadside sobriety testing procedure with respect to delta 9-THC was initiated. The objective of this test sequence was to examine sixty people under the influence of delta 9-THC and to correlate their delta 9-THC blood levels with their performance on the roadside tests. This testing was initiated by the discovery that most individuals with positive delta 9-THC levels had failed the given roadside tests.

Another important secondary objective of the study was to provide the National Highway Traffic Safety Administration with information that may be useful in developing programs of control, standards, and countermeasures that will reduce marijuana-related traffic accidents.

III. Background

California, the fourth state to do so, decriminalized marijuana in 1976. In the six months following decriminalization, arrests for driving under the influence of drugs increased by about 46% for adults and by 71% for juveniles[5].

Dr. Stanley Gross's RIA technique for delta 9-THC in blood[6] made possible the routine analysis of random sampled forensic blood samples from a California impaired driving population.

A limited population study of fatally injured drivers conducted by Teale et al[7] in England and Wales revealed that of the sixty-six blood samples submitted, six samples demonstrated a correlation with marijuana intoxication and driving

impairment. This 9.1% incidence demonstrates that delta 9-THC may have a much broader involvement in all accidents.

Studies of a survey nature which did not have the chemical validation indicated a much higher percentage of delta 9-THC involvement in impaired driving and traffic safety situations.

The survey of traffic deaths[8] conducted by the Boston University Traffic Accident Research Team lead by Dr. Robert S. Sterling Smith was completed in 1975. Two hundred and sixty-seven drivers from the Boston area who were considered most responsible for traffic fatalities were examined. This comprehensive study indicated that 16% of the motorists had smoked marijuana prior to their fatality. These motorists were over-represented with respect to marijuana incidence when contrasted with a control group of randomly selected drivers from the same epidemiology. Smaller scale accident fatality studies were conducted in Oklahoma, Albuquerque and Baltimore with comparable survey results.

The final report entitled "Incidence of Drugs in Fatally Injured Drivers" by E. J. Woodhouse, Midwest Research Institute (1974)[9] outlined as an adjunct evidence of contact by the motorist with marijuana. This data was of a presumptive nature but there was a 38% indication of contact with the drug mixture. An article entitled Marijuana and Driving in Real Life Situations[10] published by H. Klonoff in Science in 1974 presented the scientific community and the general public with insight into the effect of unknown levels of delta 9-THC on the driving ability of impaired motorists in real life situations. Attempts were made to determine the effects of low and high dosages of marijuana on driving performance in restricted and "open" driving on the streets of Vancouver, British Columbia, Canada. Marijuana did have a detrimental effect on driving skills in the restricted driving area; however, the impairment was even more manifest under normal driving conditions on city streets.

These and a variety of other studies (all without validated delta 9-THC blood levels) demonstrate that mixing marijuana and driving is a very hazardous thing to do.

The most significant factor that is responsible for advances in marijuana research has been the development of the standard delta 9-THC cigarette by the National Institute of Drug Abuse (N.I.D.A.). The standard NIDA cigarette became available in 1970 and has played an extremely important part in research since

that time. Without its availability, the roadside sobriety tests conducted in the California DOJ Marijuana Incidence Study would not have been possible. These studies were performed under the direction of Dr. Hollister and co-workers at the Veterans Administration Hospital in Palo Alto. The observations of impairment of sixty human subjects under the influence of delta 9-THC and the correlation of the blood levels with their performance on the roadside sobriety tests was instrumental in the initial development of impairment levels of delta 9-THC with respect to driving.

Studies of this nature in conjunction with work of research psychologists like Dr. Herbert Moskowitz should close the circle on the issue of marijuana and traffic safety. Work to date indicates that marijuana impairs skills, performance, perceptual processes, tracking behavior and attention. Impairment of central vision detection time, reaction and time perception, night driving abilities, short term memory, information storage, manipulative and coordination skills, and instantaneous judgment abilities are some of the skills that are adversely impaired with the ingestion of delta 9-THC.

IV. Methods and Procedures

The overall approach was to adapt survey techniques utilized in blood alcohol studies (Borkenstein, et al[11]) and in DUID surveys (Finkel[12], Lundberg, et al[13]) in the extraction of epidemiological information from CHP Arrest/Accident Reports (see pp. 86-93). This information, with blood alcohol information from California State Department of Justice Criminalistics Laboratories' blood alcohol cards (ISB-60, see attachments p.94) and analytical results from the RIA Laboratory, White Memorial Hospital, were entered into the California State DOJ computer system via the departmental Data Center.

A pilot study of 590 records were subjected to a trial run on the California DOJ Data Center's SYNTAX program and a preliminary report was produced. This program allowed the generation of cross tabulations of the data by the data elements and logical conditions specified. The approach was to take "interesting" elements and to cross-tabulate those with elements that may be related. The generated listing allowed conclusions to be reached after an analysis of variance.

In each case, the SYNTAX tables consist of a spread of 12 columns. The first is the total population, the next six are blood alcohol-delta 9-THC (BA THC) subdivided into ZN, ZP, LN, LP, HN, and HP; ZN means zero BA level, negative delta 9-THC; P is positive delta 9-THC level; L is .1% and below BA level; H is above .1% BA level. The next three columns are subdivided into 0% BA, above 0 to 0.1% (low BA, and above 0.10% alcohol levels (high BA), and the last two columns are negative/positive delta 9-THC readings (see pp. 40-80, Tables 1 through 19).

These computer analyses of the data and the interpretation of that data allowed the completion of the retrospective associative analyses. Midterm review of the data and the analysis of the pilot population of 590 subjects resulted in additional project revisions.

The Health Sciences Computing Facility at UCLA performed an analysis of variance on the pilot population. This initial computer analysis facilitated the final data analysis of the full population of 1792 subjects.

The high significance of failure of the roadside sobriety test initially pointed out by Dr. Stanley Gross and confirmed in the preliminary computer analysis, initiated the roadside sobriety test phase of the incidence study. An experimental protocol as proposed by Dr. Leo Hollister (see attachments, pp. 95-97) of the Veterans Administration Hospital was utilized. Members of the CHP were dispatched from the Redwood City Substation to conduct roadside sobriety tests. Dr. Hamp Gillespie arranged for the subjects, administered the NIDA delta 9-THC cigarettes, and drew blood samples for analysis. Sixty subjects were processed with their performances documented on videotape, data sheets (see attachments, p. 98) and by tape recorder. The performances were scored objectively and subjectively. The scoring system is outlined on attachments, p. 99. The data associated with each subject was tabulated per Smoking Study - Outline for Data Entry (attachments, p. 99). The raw data was presented to the California State DOJ Data Center for a SYNTAX computer correlation along with serum and blood delta 9-THC results received from the RIA White Memorial. The videotapes of the human subjects proved invaluable in reviewing the data and allowed independent scoring of the subjects by more than one observer. Also, information not documented on the first pass was retrievable and reviewed by the observers.

V. Discussion of Results

The impaired driving population was initially divided into two sub-populations. The first population consisted of those motorists with blood alcohol levels determined to be above the legal limit, 0.1%. Since greater than 90% of the 19,000 blood samples received by our laboratories were in this category, the population was randomly sampled. The second population is the driving population with a 0.1% and below blood alcohol level. This sub-population consisted of less than 1500 impaired drivers per year. Therefore, every one of the 0.1% and below blood alcohol samples received from the CHP that could be recovered from our laboratories was analyzed for delta 9-THC content. Initially, this sub-population was to be considered as a population with a higher incidence potential for delta 9-THC. In retrospect, with one exception, this group was comparable with the overall blood alcohol population.

Since some of the .1% and below blood alcohol samples were also routed through our Driving with Drugs program for "other drug" analysis, the results of these assays were tabulated and constitute a portion of the epidemiological data. The epidemiology information compiled from California Highway Patrol arrest and/or accident reports combined with drug, alcohol, and delta 9-THC assay results constitute this report. All data is prepared anonymously as the study is experimental.

The exact number of subjects in this epidemiology is 1792; the sub-populations consisting of 765 in the above legal limit, 0.1%, and 1027 in the 0.1% or leas alcohol levels (see Figure 1). The data entry information (see attachments pp. 40-81, Tables 1-20 used in the computer study is divided into major categories. The first category, the driver with associated factors, was correlated with delta 9-THC incidence (see Figure 2).

Figure #1

Delta 9-THC in 1792 subjects arrested by CHP for impaired driving:

Sub-population:	-	765 -	greater than .1% BA level (randomly sampled from population of approx. nineteen thousand)
Sub-population:	-	1027 -	.1% or less BA level (every sample that could be obtained was analyzed)

Figure #2 - The Driver

1. Sex
2. Age
3. Ethnic origin
4. Employment status
5. County of residence

The second major category, the impaired driving incident with associated variables consisting of the county where the incident occurred, the date, the time of day, day of week, and the month, whether there was an associated accident-fatality, the subject's passing or failing the standard field sobriety test, and the year of the vehicle involved (see Figure 3), was correlated with the incidence of delta 9-THC.

Figure #3 - The Incident

1. County
2. Date/time of day/day of week/month
3. Accident/fatality
4. Field sobriety test
5. Vehicle year

The third major category examined in the study was the blood sample received from the subject. The time lapse between incident and taking of sample was correlated with delta 9-THC because the concentration of delta 9-THC in the blood peaks within a half hour after smoking and drops rapidly, tailing to below detectability in six hours. The correlation of delta 9-THC with blood alcohol level, other drugs, observed evidence of use by the arresting officer, range of assay levels, and the time lapse in weeks from sampling to the delta 9-THC assay (see Figure 4) are the variables examined in this category. Associated quality control results are also outlined.

Figure #4 - The Blood Sample

1. Time lapse: Incident - sampling
2. Blood alcohol level
3. Other drugs
4. Observed evidence of use (possession/admission)
5. Delta 9-THC levels (nanograms/milliliter)
6. Time lapse (in weeks) from sampling to detla 9-THC assay
7. Qaality control

Figure #5 illustrates a correlation summary of Table #1, Sex by Delta 9-THC (p.41). The ratio of males to females in the arrested population is 86.9% to 13.1%, a ratio which is comparable to general misdemeanor arrest statistic ratios. An area of interest in Figure #5 is the delta 9-THC incidence in the 0% blood alcohol male population which is significantly above the overall

population ratio (27.5% to 15.9%, p_o = *0.04). This is a strong indication that the positive delta 9-THC impaired person may have a preference to driving under the influence of delta 9-THC without alcohol (see Figure #5).

Figure #5

Distribution of blood alcohol level by sex contrasted with the distribution of delta 9-THC by sex:

Population	0% BA Level	0.1% & Below	Above 0.1% BA	Overall Population
Ethyl Alcohol				
Males	9.6	57.4	42.6	90.4
Females	15.3	57.0	43.0	84.7
Combined	10.3	57.3	42.7	89.7
Delta 9-THC				
Males	27.5	16.8	14.9	16.0
Females	11.1	17.9	11.9	15.3
Combined	24.3	16.9	14.5	15.9

Ratio of males (1557) 86.9% to females (234) 13.1% in arrested population. The percentages in Figure #5 were calculated accordingly:

(1) $$\frac{\text{Number of + for drug for the gender}}{\text{Total number in the gender population}} \times 100\%$$

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* P_O = "P" value for sub-population where there is no detectable blood alcohol level present.

P_{BA} = "P" value for sub-population where there is a measurable blood alcohol level present.

The P value is calculated by the Pearson chi squared statistical technique. This is a test of significance of two variables to determine if they are dependent or independent. The "P" value represents the confidence level of zero blood alcohol level and delta 9-THC being dependent. In other words, with P=0.04, then in 96 of 100 measurements the blood alcohol level and the presence of delta 9-THC will correlate.

Where (1) applies to male and female populations with respect to ethyl alcohol and delta 9-THC:

$$(2) \qquad \frac{\text{Number of positive males and females}}{\text{Total population}} \times 100\%$$

Where (2) applies to combined male and female populations with respect to alcohol and delta 9-THC.

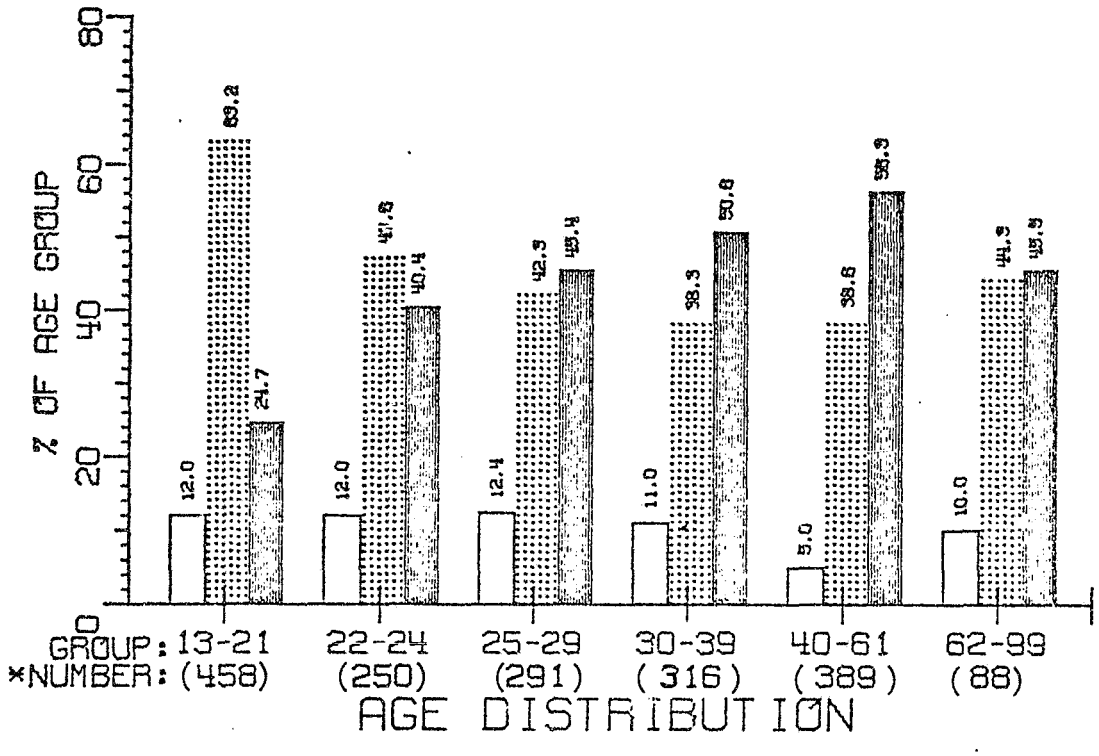
Individuals ranging from fourteen to eighty-eight years of age with a mean of thirty-two years were involved in the overall incidence study. The incidence of delta 9-THC by age with some alcohol present (see Table, #2, Age by Delta 9-THC p. 42-43) appears to have higher incidences in the age groups below 22 years and above 29 years with the highest incidence occurring in the forty to sixty-one category. The confidence level ($P_{BA} = 0.056$) is close to a definite trend in this category and the figures are reported as they do not follow the age profiles of other studies (see ref. # 14). A much higher incidence of delta 9-THC was anticipated in the below 21 age group but was not verified.

Examination of Table #2, Age by Distribution (pp. 42-43) reveals some indication of trends. Figures #6 and #7 (p. 21-22) graphically illustrate these trends. One can summarize upon examination of Figure #6 (Distribution of BA Levels by Age) that the age group from 13-21 demonstrates a relatively smaller percentage of high blood alcohol levels, and a greater percentage of low blood alcohol leve s. Whereas, the age group from 40-61 demonstrates a relatively smaller percentage of low blood alcohol levels and a larger percentage of high blood alcohol levels. This is consistent with drinking habits and developed tolerance to ethyl alcohol.

Examination of Figure #7 (Distribution of Delta 9-THC by Age) reveals a greater percentage of delta 9-THC occurring in the 40-61 age category. This may be a tolerance effect which merits further examination.

The impaired driving population statistics did not demonstrate any significant variations with respect to ethnic origin and delta 9-THC incidence with the exception of the no blood alcohol and positive delta 9-THC (NP) distribution for Caucasians (see Table #3, p. 44-45). It is possible that there is a slightly higher incidence of delta 9-THC for Caucasians who do not show evidence of ethyl alcohol in conjunction with marijuana but this is not supported by statistical analysis.

FIG.6: BLOOD ALCOHOL LEVELS BY AGE



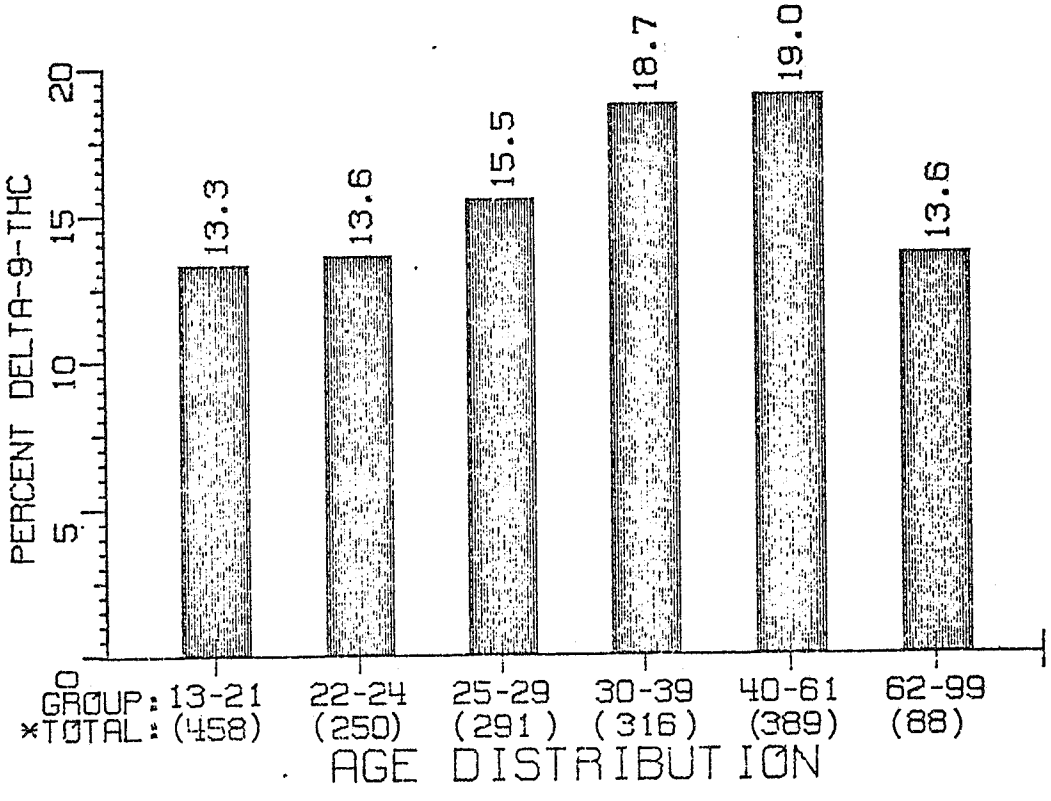
Percent of Age Group in B.A. Category

Zero B.A. Above zero to .10% Above .10% B.A.

The percentage of B.A. levels distributed by age. The highest distribution of low B.A. level occurs in the 13-21 year category The largest percentage of greater than .10% B.A. level (high) occurs in the 40-61 year category.

* The number in parenthesis indicates the total number of subjects in the particular age group population.

FIG. 7: PERCENT DELTA-9-THC BY AGE



The percentage of Delta 9-THC levels distributed by age. The lowest distribution of Delta 9-THC occurs in the 13-21 year category. The highest percentage of Delta 9-THC occurs in the 40-61 year category.

* The number in parenthesis indicates the total number of subjects in the particular age group population.

See Table #4 - Employment vs. Delta 9-THC on pp. 46-47. The unemployment category demonstrates a 19.4% incidence of delta 9-THC which is slightly higher than the student (15.9%) and the employed (17.4%) categories (P_O = 0.06; P_{BA} = 0.05).

Of the blood samples received from over 41 counties, 26 counties submitted ten or more samples. Table #5, County of Incident by Delta 9-THC, pp. 48-52, outlines the incidences where highway patrol officers arrested impaired drivers. The top five counties with ten or more submissions which demonstrated the highest delta 9-THC occurrences were Calaveras (38.1%), Marin (24.7%), Shasta (23.9%), Merced (22.2%), and San Luis Obispo (20.5%). Other distributions ranged from Solano County (20.4%) to Butte and Fresno Counties with 6.7% incidence.

Rural[a] (22.9%) and urban[a] (19.0%) counties manifest the highest incidence delta 9-THC (see Table #6, p. 53). However, P values demonstrate that these statistics are below reliable levels (P_O = .54 and P_{BA} = .18) with respect to significance. Table #7, pp. 54-58, outlines the incidence of delta 9-THC by county or residence of the arrested person.

Fifty-one counties are represented along with fifty-eight subjects whose residences are out of state. The number of residential counties with ten or more submissions consisted of 34 counties. Of these, the drivers who demonstrated the top five highest incidence of delta 9-THC resided in the counties of Alameda (31.8%), Santa Cruz (31.7%), Marin (28.8%), San Diego (27.3%), and Contra Costa (26.7%). The remaining distributions ranged from El Dorado County (23.1%) to Butte County (4.1%).

Table #8, pp. 59-60), outlines the residential driver distribution by type of county compared to incidence of delta 9-THC. Urban[a] and semi-rural types both demonstrate a poor correlation of 18.5% delta 9-THC incidence as the highest county type by residence of the arrested driver (P_O = .14 and P_{BA} = .29).

Table #9, Time of Incidence (hour of day), pp. 61-62, #10, Day of Week, pp. 63-64, and #11, Month of Incident, p. 65, indicate that the highest incidence of impaired arrests occurs between 6:00 p.m. and 3:00 a.m. Tuesday (21.6%) appears to be a highest incidence day with respect to positive delta 9-THC with Saturday (17.4%) being the next highest and with Thursday (12.4%) being the lowest.

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[a] Definitions of urban and rural populations were derived from the U.S. Department of Commerce, Bureau of the Census Publications PC (1)-46 entitled, "Number of Inhabitants, California" and from the Population Research Unit, Department of Finance, State of California.

April (20.2%) through July (24.4%) appear to be higher incidence months with November, December, and January being the lowest. None of these variables have reliable "P" values but the figures are being reported as they are of general interest.

With the exception of the accident and fatality-associated subjects, only four of 1385 persons whose blood was taken and analyzed for delta 9-THC passed the CHP roadside sobriety tests. Accident victims, who constitute 80.6% of the unknown category in Table #12 were not generally required to submit to roadside tests by the CHP. Injuries sustained in the accident frequently forced the official to eliminate the use of roadside sobriety testing. Field Sobriety Test, Table #13, p 67, documents that in the category labeled Unknown (324 accident non-fatal and fatal situations) only one-half of the subjects were tested at the roadside.

The officer approaches accident situations with limited factual information. The CHP officer has not had the advantage of observing driving behavior. The parties involved in the accident have generally moved away from their positions in the automobiles. Hence, the CHP officer, unaware of who was driving, who was at fault and the knowledge that these types of situations are likely to become a criminal and/or civil matter, may initiate the collection of samples for drug testing from as many involved parties as possible. This practice introduces test samples that have a higher likelihood of drugs being absent.

Another factor that skews the accident population is that innocent parties involved in accidents want to demonstrate that they are free of impairing substances. Insurance companies are released of liability if alcohol and/or drug impairment is involved. Consequently, innocent drivers want to validate their sobriety. The incidence of delta 9-THC in this category was generally lower (12.5%).

Blood samples from fatalities are not routinely submitted to DOJ laboratories but become coroner's cases which are generally analyzed in other facilities. The data tabulated in Table #12, p. 66 did not show a positive correlation between accidents and incidence of delta 9-THC, probably for the above reasons.

Table #12, Accident by Delta 9-THC ($P_0 = 0.004$), shows a strong negative correlation. This "P value" tends to verify that the accident situation is sampled differently from the impaired driving stop and that the observations of roadside testing and driving behavior are extremely important in screening the impaired from the non-impaired driver.

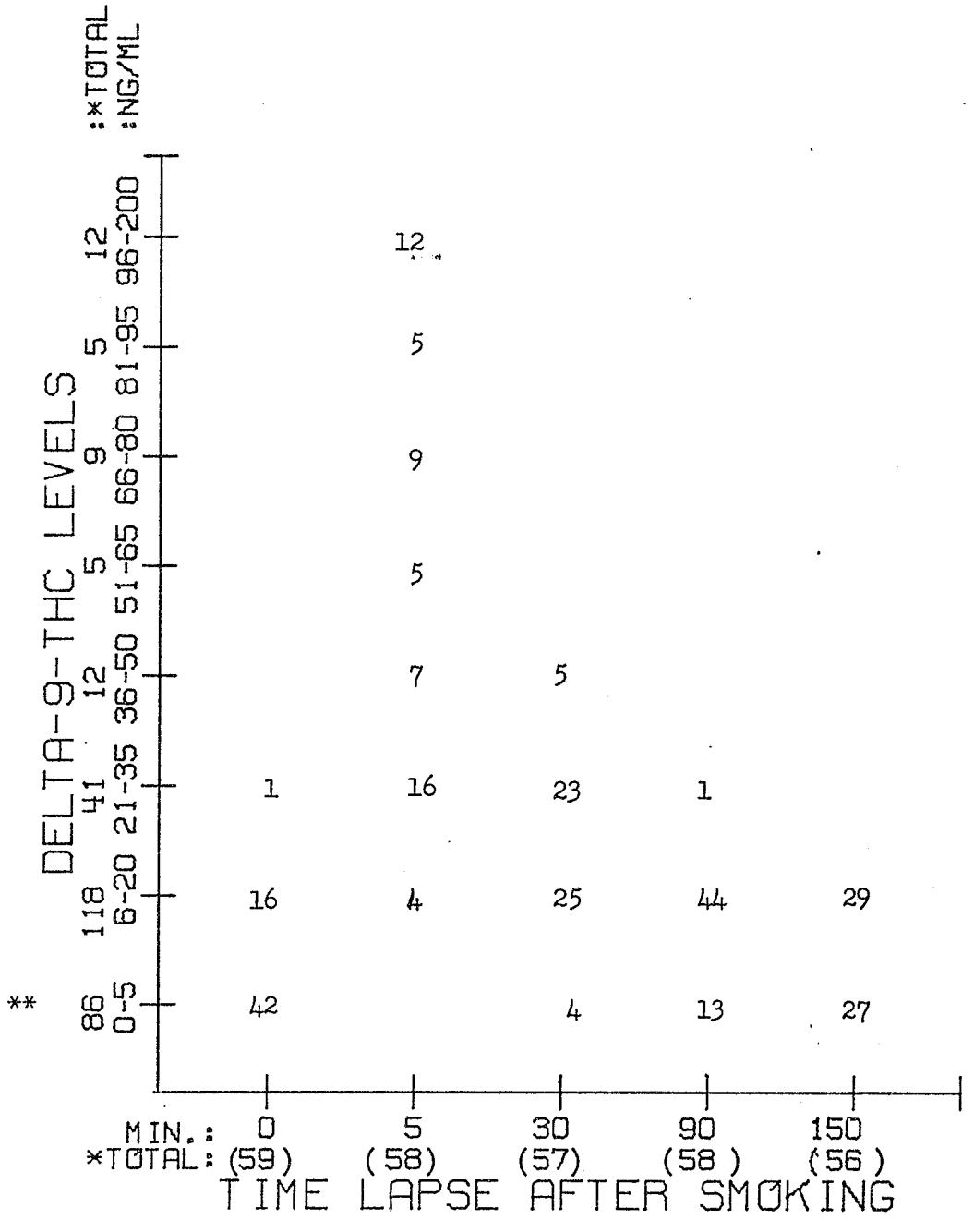
Examples of arresting officer comments in accident reports bear this out. For instance, in one situation, the officer wrote, "All available physical evidence indicates that Vehicle #1 was not driven by _____ as I originally thought". Another statement, "Driver #2 had an odor of an alcoholic beverage about him and I believe he was under the influence. I did not place him under arrest due to his injuries but I had a blood alcohol taken by _____. Also, I had a BA taken from Driver #1 because he stated he had one beer earlier. Driver #1 did not appear to be under the influence". Hence, illustration that blood samples were submitted for analysis even though the officer had every indication that the driver was not impaired.

The roadside testing impairment that developed in conjunction with the incidence survey as outlined on Page 7 of Methods and Procedures is summarized in the following figures. Figure #8, p.26 outlines the distribution of serum levels of delta 9-THC at specific time intervals after smoking of NIDA cigarettes by sixty human subjects. The mean and standard deviation curve for delta 9-THC serum levels are outlined in Figure #9 p. 27. Similarly, Figure #10, p 28 demonstrates the delta 9-THC blood levels for the same population as does Figure #11, p.29 which portrays the mean and standard deviation curve for delta 9-THC in blood. It is apparent from the examination of the serum and blood counterpart curves that the delta 9-THC level in blood is approximately a factor of two lower than in serum.

The sixty human subjects were asked to evaluate themselves on a scale of 0 to 9 level of impairment with 0 being "unimpaired" and 9 being "an all time high". At the same time, the subjects were evaluated on a similar scale by observers. The evaluation of impairment by the persons under the influence of delta 9-THC is displayed in Figure #12, p. 30. Self-impairment ratings were considered to be four or above. By two and one-half hours after smoking, most subjects considered themselves unimpaired (95%). However, the evaluation of the subjects by their performance on the roadside sobriety tests as scored by observers was quite different. Figure 13, p. 31 demonstrates the differences with respect to rated impairment. According to the observers, the human volunteers were considered impaired in their performance as low as a rating of two. At two and one-half hours after smoking, the observers evaluated 59% of the subjects to be sufficiently impaired that they would be a hazard while driving an automobile. In other words, they failed the roadside sobriety tests.

Correlation of the performance rating and delta 9-THC serum and blood levels indicated that most persons with detectable delta 9-THC levels (5 ng/ml) failed the roadside sobriety tests.

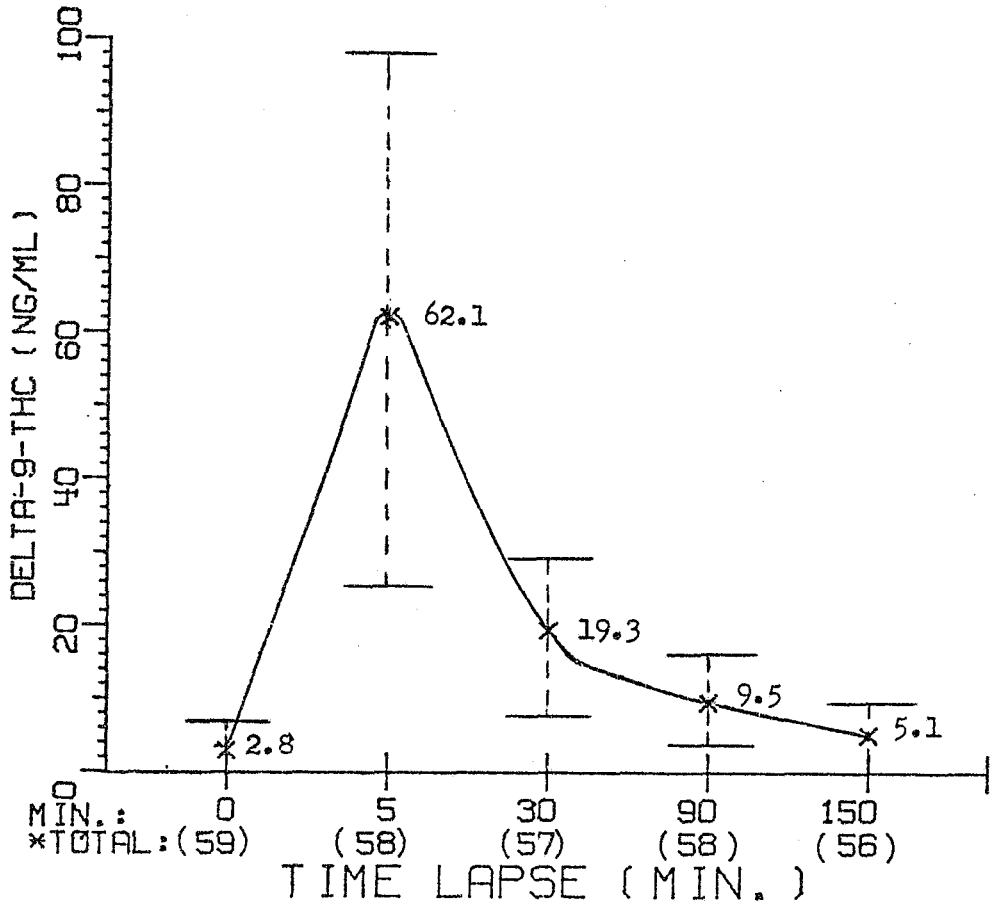
FIG.8: DELTA-9-THC SERUM LEVELS AT SPECIFIC TIME INTERVALS



* The number in parenthesis indicates the total number of subjects for each time lapse category.

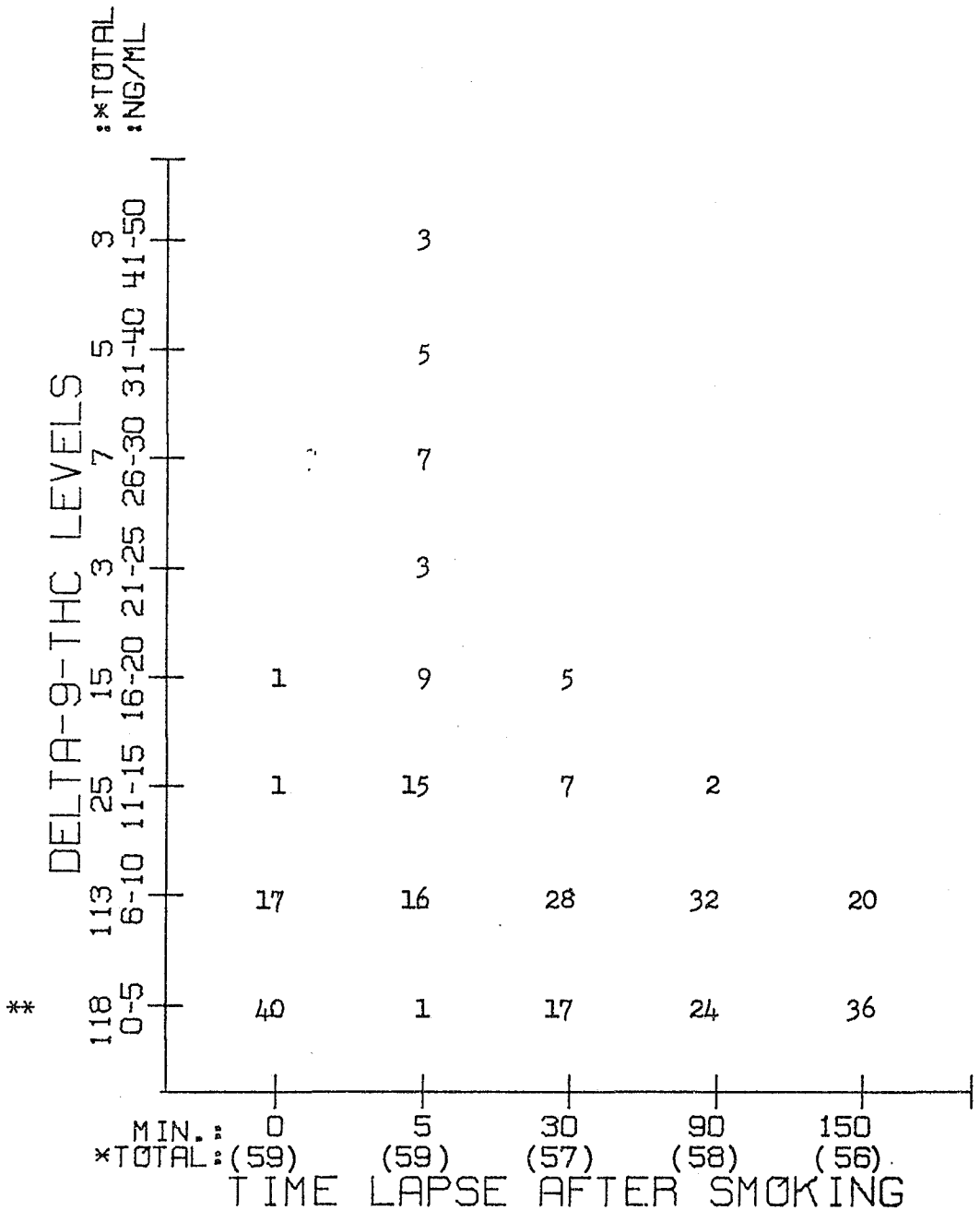
** The Radio Immuno Assays have a lower limit of 5 ng/ml of delta 9-THC because of a finite affinity with respect to the antisera.

FIG.9: MEAN AND STAND. DEVIATION FOR DELTA-9-THC SERUM LEVELS



* The number in parenthesis indicates the total number of subjects for each time lapse category.

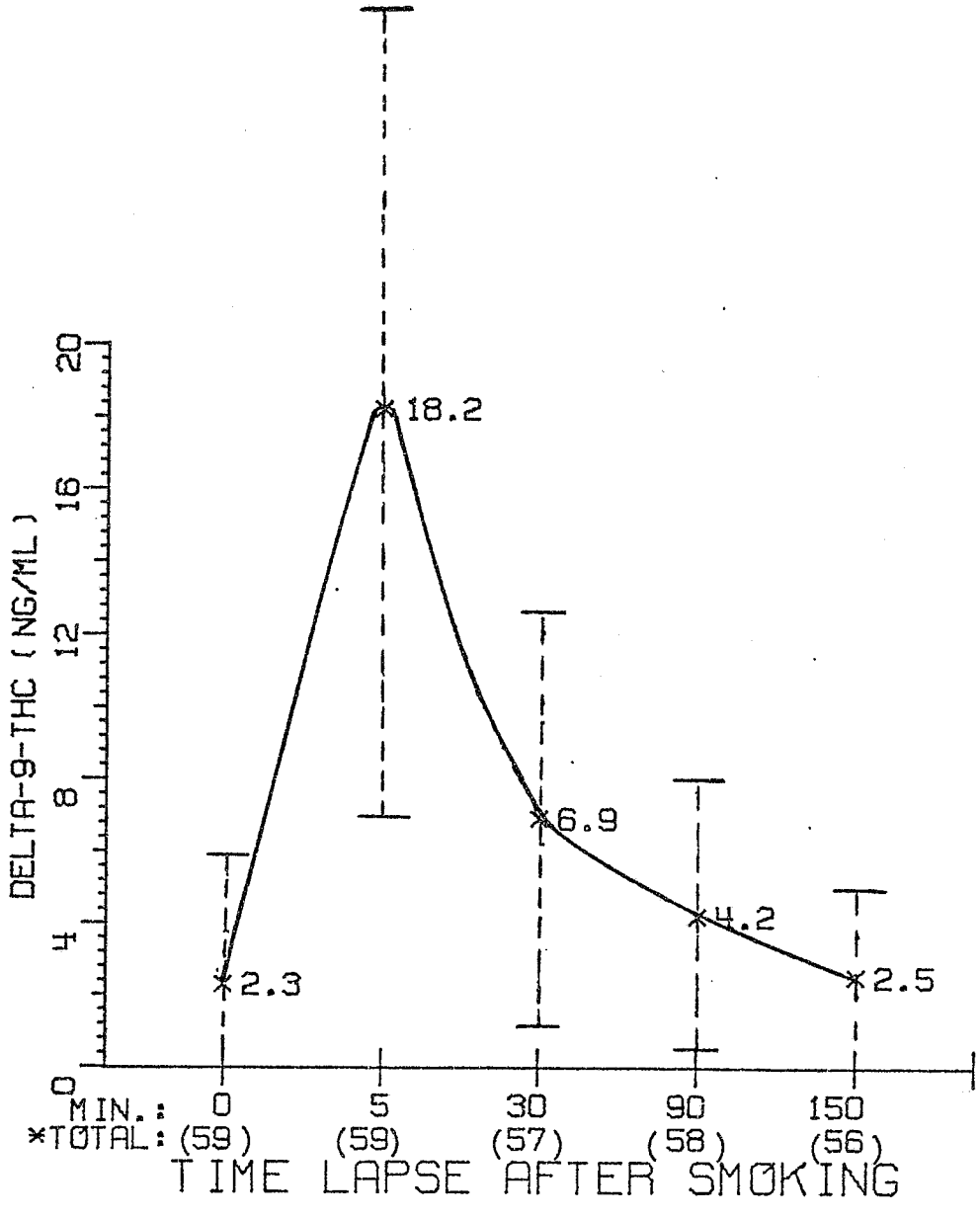
FIG. 10: DELTA-9-THC HEMOLYZED BLOOD LEVELS BY TIME INTERVALS



* The number in parenthesis indicates the total number of subjects for each time lapse category.

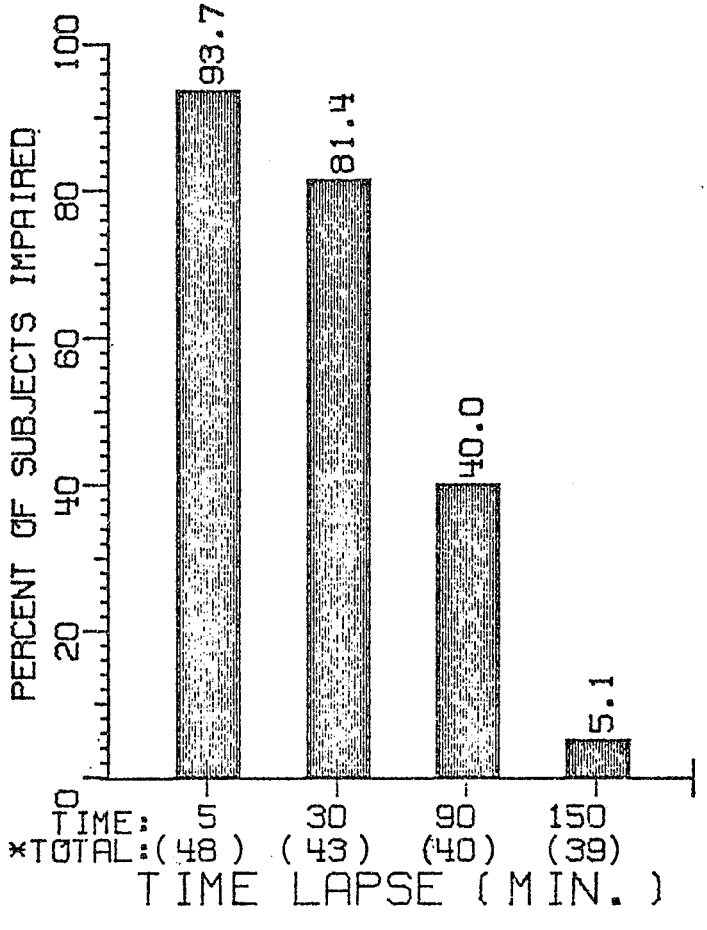
** The Radio Immuno Assays have a lower limit of 5 ng/ml of delta 9-THC because of finite affinity with respect to the antisera.

FIG. 11: MEAN AND STAND. DEVIATION FOR DELTA-9-THC HEMOLYZED BLOOD



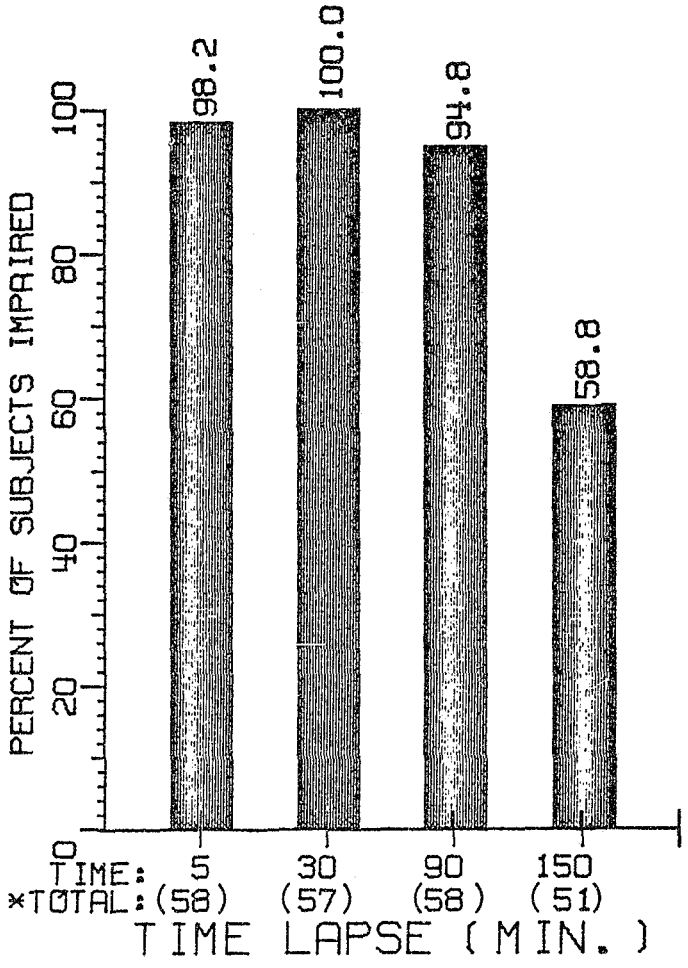
* The number in parenthesis indicates the total number of subjects for each time lapse category.

FIG. 12: PERCENTAGE OF SUBJECTS IMPAIRED (SELF-EVALUATION)



* The number in parenthesis indicates the total number of subjects for each time lapse category.

FIG. 13: PERCENTAGE OF SUBJECTS IMPAIRED (OBSERVED)

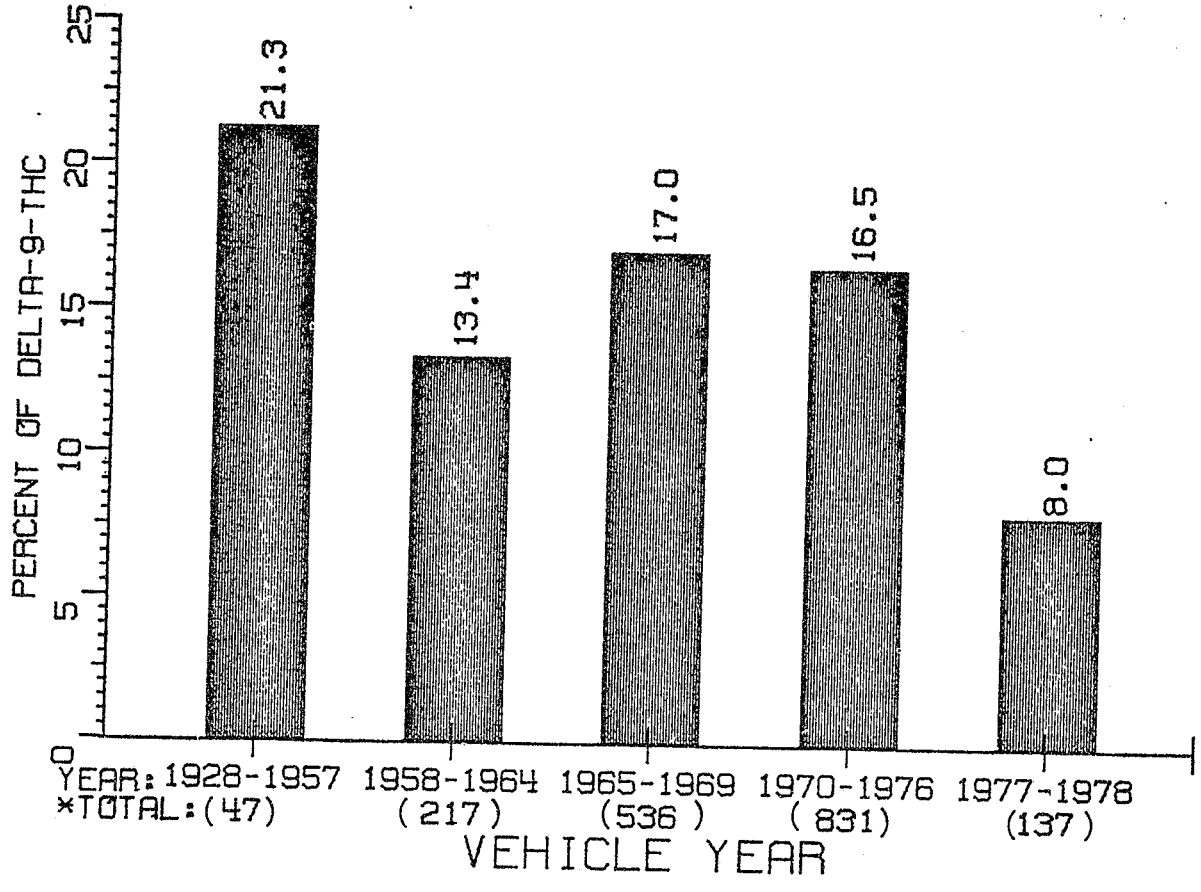


* The number in parenthesis indicates the total number of subjects in each time lapse category.

Additional statistics from the incidence relating to vehicle year are reported. Table #14 (pp. 68-69), Vehicle Year by Delta 9-THC, demonstrates a higher incidence of the drug in impaired drivers in pre-1958 model automobiles (21.3%) compared to incidences ranging from 17.0% in 1965-69 model year to 8.9% 1977-78 model automobiles (see Figure #14, p. 33). There is no correlation of automobile and incidence of delta 9-THC in the zero blood alcohol population but a strong correlation is demonstrated when the two drugs are in combination. The pre-'58 model year population is a very small population (47); therefore, caution should be exercised in drawing any conclusions with respect to this statistic. Table #14A, p.70 demonstrates the distribution of type of vehicle in relation to the incidence of delta 9-THC. Pickups and motorcycles appear to be vehicles associated with a slightly higher delta 9-THC incidence than other vehicular types in this impaired driving population. Table #15, pp. 71-72, Time Lapse-Minutes from the Incidence to the Taking of the Blood Sample, does manifest some correlation with incidence of delta 9-THC. 74.1 % of all blood samples were drawn within 75 minutes of a traffic stop or arrest as indicated on the CHP report, and greater than 45.6% were drawn within 45 minutes (see Figure #15, p. 34). The relationship between blood alcohol and delta 9-THC is illustrated in Table #16, pp. 73-74. There is a higher occurrence of delta 9-THC in non-alcohol blood samples (24.3% as compared to 17.0% in the .11% to .17% blood alcohol to 12.1% in the .18% to .23% blood alcohol levels.

Table #17, Other Drugs by Delta 9-THC, pp. 75-76, examines other drug categories. The categories of drugs considered were grouped as no other drugs besides ethyl alcohol (None), barbiturates (Barbs), hypnotics and sedatives (H&S), tranquilizers (Tran), other drugs (Other) such as phencyclidine and cocaine and combinations of the above categories (Combination). The Unknown category consists of the greater than .1% blood alcohol samples (753) which were not analyzed for any other drugs (other than delta 9-THC) and the remaining drugs in the 0 to .1% blood alcohol level group which were not analyzed for other drugs (791). A total of 242 blood samples was analyzed for other drugs; the results of these analyses illustrate that there might be some preference with respect to the use of drugs other than alcohol in combination with marijuana ($P_{BA} = 0.009$). The number of samples in this subpopulation is small in comparison to the total population so considerable caution should be exercised in coming to any conclusion.

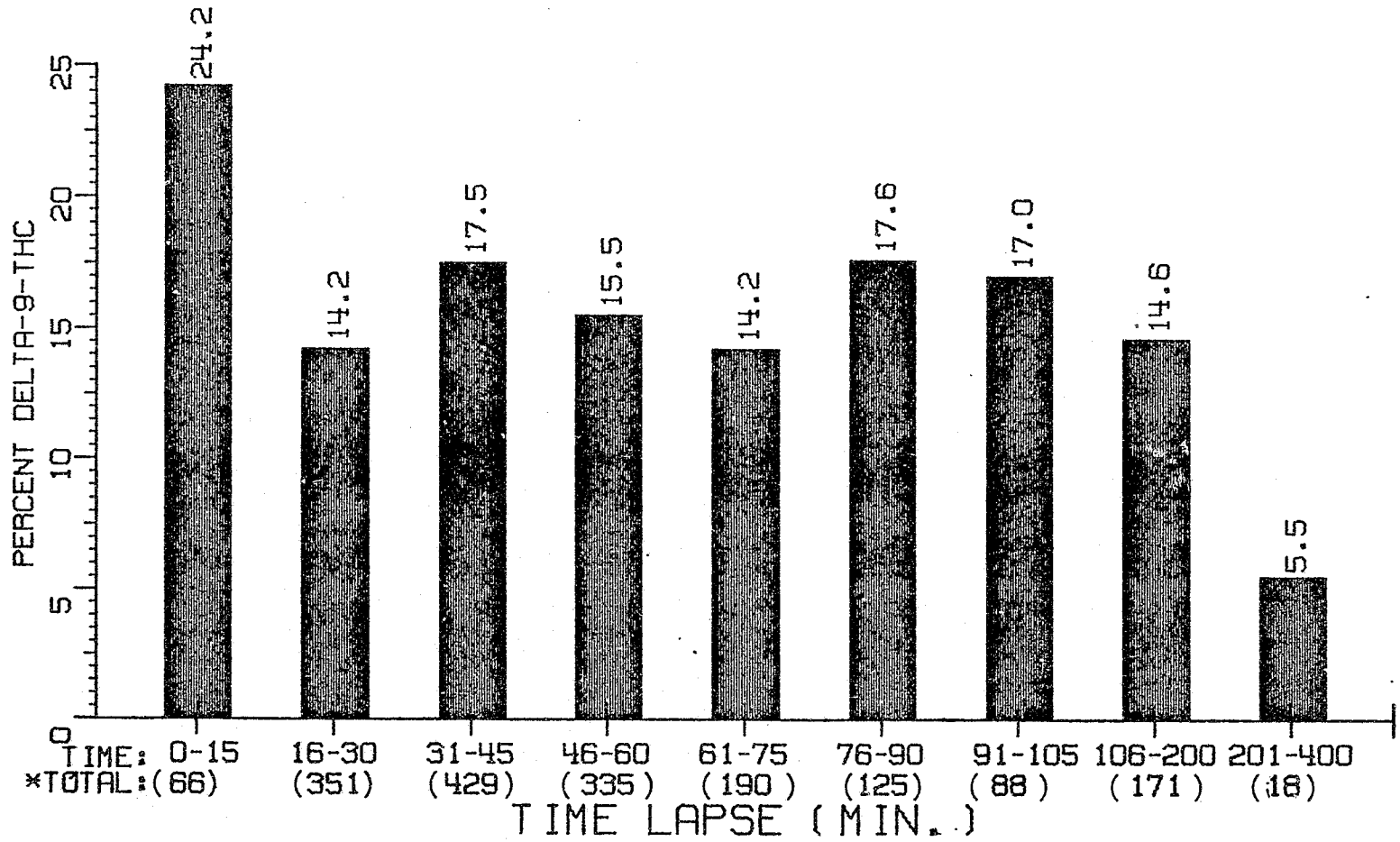
FIG. 14: INCIDENCE OF DELTA-9-THC VS. VEHICLE YEAR



* The number in parenthesis indicated on this graph refers to the total number of vehicles in that particular vehicle year population.

24 subjects rejected because of the lack of information on the CHP report.

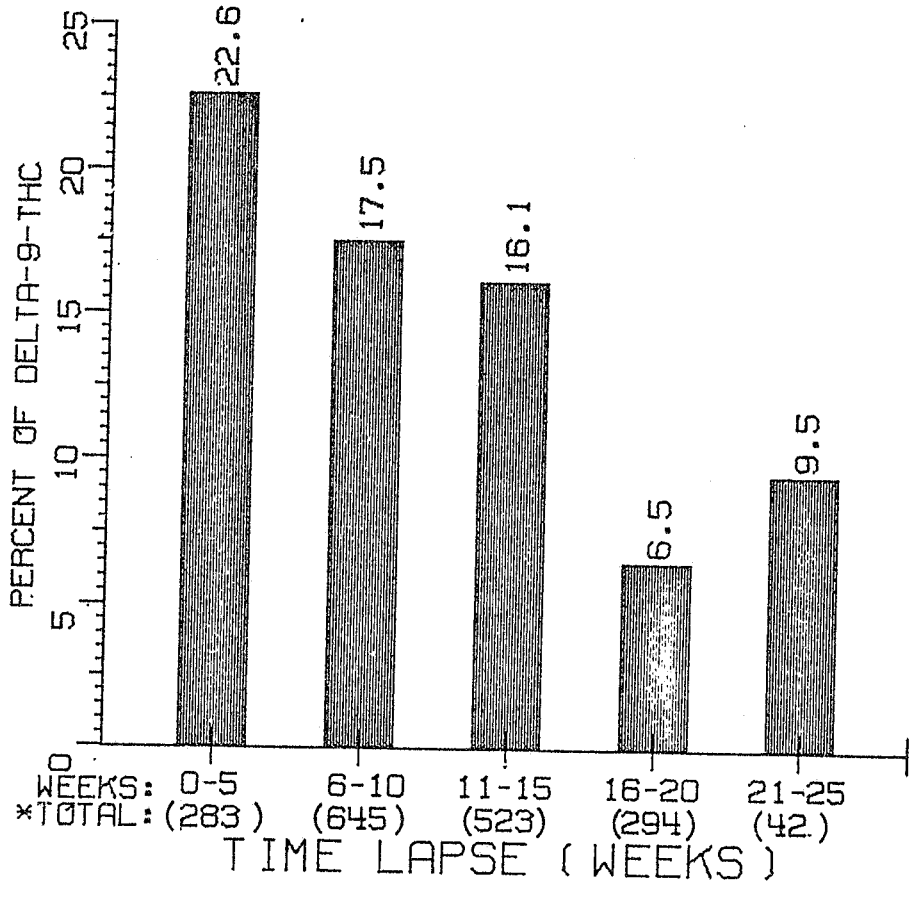
FIG. 15: DELTA-9-THC VS TIME LAPSE FROM STOP TO TAKING BLOOD SAMPLE



* The number in parenthesis indicated on this graph refers to the total number of subjects within that particular time lapse category.

19 subjects rejected because of the lack of information on the CHP reports.

FIG. 16: INCIDENCE OF DELTA-9-THC VS TIME FROM RECEIPT TO ANALYSIS



* The number in parenthesis indicated on this graph refers to the total number of subjects within a specific time in weeks for that particular category.

5 subjects not included because of the lack of information on the CHP reports.

With respect to evidence of marijuana use as indicated by the Highway Patrol report an incidence of delta 9-THC, the possession and admission categories show a higher delta 9-THC incidence, 26.9% and 29.4%, which is somewhat above the 15.2% baseline in the "none" category outlined in Table #18, Evidence of Marijuana Use, pp. 77-78. The only factors considered in this category were actual possession of paraphernalia, possession of marijuana and/or admission by the subject but the trend in the positive delta 9-THC subjects with some blood alcohol level is pronounced (P_{BA} = .009); however, the number of subjects in these categories is small. This indicates that those motorists who were under the influence of delta 9-THC had a tendency to more reliably demonstrate evidence of marijuana use by possession and admission.

The time lapse in weeks from sampling to analysis is outlined in Table #19, pp. 79-80, and in Figure #16, p. 35. The samples kept well under refrigeration but over a period beyond fifteen weeks there appears to be a significant drop in the delta 9-THC level in hemolyzed blood samples used for quality control (P = 0.003).

Figure #17 summarizes quality control results. Quality control samples consisted of four categories: negative control (blanks), positive samples determined to be positive by RIA at the White Memorial (splits), blood samples withdrawn from human subjects who had smoked NIDA 19 mg. delta 9-THC cigarettes (known splits), and blood samples to which known levels of delta 9-THC had been added (spikes).

Figure #17: Quality Control Samples

RIA assays have a lower limit of 5 ng/ml of delta 9-THC because of finite affinity with respect to the anti-sera.

Category	Total #	Results
(a) Known negative blanks prepared by DOJ	86	80 negative; 6 reported with low (around 5 ng/ml levels) of delta 9-THC
(b) Identified repeats (splits) prepared by DOJ	74	74 reported initially by RIA Laboratory-White Memorial. Resubmissions and reanalysis demonstrated that the samples tended to drop with respect to their delta 9-THC levels.

Category	Total #	Results
(c) Controls supplied by RIA Laboratory, White Memorial (1) 3 negative samples (2) 11 positive (spikes)	36	The negative and positive samples were split into four negative and 32 positive samples. The negative samples were all reported as zero by the RIA Laboratory, White Memorial Hospital. The positive split samples ranging from 5 ng/ml to 20 ng/ml delta 9-THC concentration were reported three positive, 29 as zero by the RIA Laboratory, White Memorial.
(d) Splits from delta 9-THC smokers in Southern California Research Institute studies.	15	Nine samples, validated by independent GC/MS assays performed by Dr. Valentine and by the White Memorial Hospital, RIA Lab were used to prepare 15 quality control samples for analyses at the White Memorial RIA Laboratory. All of the quality control samples were reported correctly within an acceptable analytical range. (See Table III in Attachment #9, p. 111)
(e) Identified repeats from delta 9-THC smoking experiments at the VA Hospital, Palo Alto, negative and prepared positive samples	60	Two hundred eighty-eight serum and 288 corresponding blood samples were analyzed for delta 9-THC. Nine quality control samples were reported incorrectly; however, this consisted of one sample that had been submitted nine times.
(f) Splits from the delta 9-THC smoking experiments at the VA Hospital, Palo Alto, analyzed by RIA (Gross) and by GC/MS-CI (Hidy, Batelle)	3 blanks & 15 split hemolyzed blood samples	Gross report all blanks correctly. Hidy reported below 5 ng/ml levels of delta 9-THC in two of the samples and 6 ng/ml in the third. The 15 split samples correlated well with Gross' results. (See Table #20, p. 81).

The delta 9-THC levels in nanograms/ml that were measured in the driving population are low, varying from five nanograms/ml to 20 nanograms/ml with the median around 9 nanograms/ml. The overall impaired driving population demonstrates a 16% positive delta 9-THC incidence.

CONCLUSIONS AND RECOMMENDATIONS

This is the final data correlated in the California State Department of Justice's Marijuana Incidence Study. The cannabinoids are representative of a number of drugs for which analytical knowledge has been, and is being, accumulated. There is not one method that has been amply tested and evaluated, leaving this area only partially explored. Where existing reports are available, there is a need for

greater investigation of strengths and weaknesses. Also, where methods have not been examined, research and development should be initiated. Many methods are hampered by lack of basic science regarding the pharmacology of marijuana in humans. However, two methods have thus far exhibited the greatest promise: gas chromatography/mass spectrometry, and radioimmunoassay. Considering the usage and popularity of marijuana, it is frustrating that positive evidence of recent marijuana usage is available with extensive analytical efforts only in a handful of laboratories.

The Marijuana Incidence Study has definitively developed the foundation for a variety of experiments directed at delta 9-THC and traffic safety. This should focus attention on further validated studies and will hopefully accelerate the development of delta 9-THC assay techniques. Roadside screening tests, legislative changes and public education programs should be aimed at the development of forensic programs for the Criminal Justice System. The arresting officer should also have the right to require no or low level breath alcohol subjects to provide a blood sample for delta 9-THC assay.

There were approximately 270,000 driving under the influence of alcohol and drugs arrests in the categories of 23101 through 23106 of the Criminal Code in California in 1976. A U.S. Department of Transportations publication[15] demonstrated that this represents about a 640 million dollar annual societal cost to the state. Assuming that the incidence of delta 9-THC in impaired driving population throughout all areas of the state is 16%; this would mean that there are at least 40,000 driving under the influence of marijuana arrests per year in the state of California that have very little likelihood of successful prosecution in the courts. This 40,000 per year delta 9-THC situation translates to a potential 100 million dollars annual cost to the people of California.

The impact of an effective traffic safety impairment program on the incidence of impaired driving is, to a large extent, a preventative one. A good example of this impact was demonstrated in Ireland in 1978. The Irish had an effective roadside alcohol impairment testing program which, for political reasons, was discontinued. For four years prior to the closure of this program, the incidence of driving under the influence of alcohol had shown a small but consistent decline. With the cessation of the alcohol impairment program, a 40% increase in impaired drivers occurred. Now, if the parallel situation applies to marijuana and driving, then probably 40% more offenses are occurring in California with respect to marijuana impairment than there should be.

It's been very clearly established that marijuana impairs a wide variety of functions that are important with respect to safe driving and this impairment occurs at low delta 9-THC levels. If there is no reliable enforcement with respect to marijuana impairment in driving, then the practise will continue and probably increase as the drug becomes more widespread in its use. If there are no education programs with respect to the hazards of the drug and driving, then we can anticipate the amount of driving while under the influence of marijuana will continue to increase.

A limited study conducted by the Department of Motor Vehicles and the Bureau of Criminalist Statistics in May-June, 1977 indicated that the approximately seven thousand annual California reckless driving arrests increased by over 900%. A high percentage of these convictions probably originated with persons who manifested bizarre driving behavior, were stopped and arrested by law enforcement but did not demonstrate evidence of alcohol or drugs in their breath, blood, or urine. This lack of corroborating laboratory evidence was probably instrumental in the tendency of the Criminal Justice system to "reduce to the lesser offense".

It has been established that there is a high incidence of delta 9-THC in randomly selected blood samples of an impaired driving population. Subjective evaluation of impairment by arresting officers generally does not result in DUID convictions. All of these factors make a strong argument for the establishment of a marijuana and driving program with laboratory services.

A laboratory-determined blood alcohol level corroborating testimony of the arresting officer results in a high conviction rate of alcohol impaired drivers for driving offenses 23101 through 23106 of the California Vehicle Code. This is not the case with respect to other drugs, particularly with respect to marijuana. At this juncture, there are no crime laboratory programs for marijuana impairment in traffic safety. The ultimate objective of any law enforcement program should be to develop measures of control, standards, and countermeasures that will reduce marijuana-related traffic accidents. There is very little available at this time. Hopefully, over the next three years the Department of Justice will be able to develop just such countermeasures and programs necessary to provide this type of service to the citizens of California.

Tables 1-20

Organization of Tables 1-12, 14, 15-19

Title: Class correlated with concentration of Delta 9-THC "Variable by Delta 9-THC (nanograms per milliliter)"

(1) A.	(2) Class	(4) Totals				(5) BA/THC			(12) Blood Alcohol			(16) Delta 9-THC	
	(3) Subpopulation		(6) ZN	(7) ZP	(8) LN	(9) LP	(10) HN	(11) HP	(13) No-BA	(14) Lo-BA	(15) Hi-BA	(17) (-)THC	(18) (+) THC

Section A (1) of each table outlines the total (4) number and percent in each major subpopulation within the main class (2). Table A lists the subclasses (3) by additional distributions. Subcategories (6) through (11) displays the class by blood alcohol level and by absence or presence of delta 9-THC (5).

(6) ZN = zero blood alcohol level - negative delta 9-THC level.
(7) ZP = zero blood alcohol level - positive delta 9-THC level.
(8) LN = above 0% up to and including 0.1% blood alcohol level - negative delta 9-THC level.
(9) LP = above 0% up to and including 0.1% blood alcohol level - positive delta 9-THC level.
(10) HN = above .1% blood alcohol level - negative delta 9-THC level.
(11) HP = above .1% blood alcohol level - positive delta 9-THC level.

The class is also listed by blood alcohol (12) distribution displaying the subcategories (13) through (15):

(13) No-BA = zero blood alcohol level
(14) Low-BA = above zero up to and including .1% blood alcohol level.
(15) Hi BA = above 0.1% blood alcohol level.

The class is displayed by delta 9-THC (16) as:

(17) (-) THC - 0 to 5 ng/ml delta 9-THC concentration
(18) (+) THC - Above 5 ng/ml delta 9-THC concentration.

Section B of the Table displays the Class (2) by (5) categorized by (6) through (11) showing percentage distribution within each subpopulation (3) only.

Section C of the Table displays the Class (2) by (12) categorized by (13) through (15) showing percentage distribution within each subpopulation (3) only.

Section D of the Table displays the Class (2) by (16) categorized by (17) through (18) showing percentage distribution within each subpopulation (3) only.

Table 13, p 64 does not contain a distribution by sections B through D. Instead, a listing of the unknown subcategory (3) is displayed.

Table 14A, p 68 demonstrates a distribution by Vehicle Type and Delta 9-THC correlated by low BA (0 to and including .1% Blood Alcohol Level) and by high BA (above .1% blood alcohol level).

Table 20, p 78 demonstrates comparative analytical results by RIA (Gross) and GC/MS-CI (Hidy and Valentine).

TABLE 1.

Sex by Delta 9-THC (Ng/Ml)

A.

Sex	Totals	BA/THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC(Ng/Ml) (-) THC	(+) THC
Male	1557	108	41	635	109	565	99	149	744	664	1308	249
	86.89%	77.14	91.11	89.06	84.50	86.39	89.19	80.54	88.36	86.80	86.79	87.37
Female	235	32	4	78	20	89	12	36	98	101	199	36
	13.11%	22.86	8.89	10.94	15.50	13.61	10.81	19.46	11.64	13.20	13.21	12.63
Total	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Sex by Delta 9-THC (Ng/Ml)

B.

Sex	Totals	BA THC ZN	ZP	LN	LP	HN	HP
Male	100.00%	6.94	2.63	40.78	7.00	36.29	6.36
Female	100.00%	13.62	1.70	33.19	8.51	37.87	5.11
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

Sex by Delta 9-THC(Ng/Ml)

C.

Sex	Totals	Blood Alcohol No-BA	Low-BA	High-BA
Male	100.00%	9.57	47.78	42.65
Female	100.00%	15.32	41.70	42.98
Averages	100.00%	10.32	46.99	42.69

Sex by Delta 9-THC (Ng/Ml)

D.

Sex	Totals	Delta 9-THC(Ng/Ml) Negative THC	Positive THC
Male	100.00%	84.01	15.99
Female	100.00%	84.68	15.32
Averages	100.00%	84.10	15.90

TABLE 2.

Age by Delta 9-THC(Ng/Ml)

A.

Age		BA THC						BLOOD ALCOHOL			DELTA 9-THC(NG/ML)	
	TOTALS	ZN	ZP	LN	LP	HN	HP	NO-BA	LOW-BA	HIGH-BA	NEGATIVE	POSITIVE
13-21	458	40	15	260	30	97	16	55	290	113	397	61
13-21	25.56%	28.57	33.33	36.47	23.26	14.83	14.41	29.73	34.44	14.77	26.34	21.40
22-24	250	26	4	101	18	89	12	30	119	101	216	34
22-24	13.95	18.57	8.89	14.17	13.95	13.61	10.81	16.22	14.13	13.20	14.33	11.93
25-29	291	26	10	104	19	116	16	36	123	132	246	45
25-29	16.24	18.57	22.22	14.59	14.73	17.74	14.41	19.46	14.61	17.25	16.32	15.79
30-39	316	26	9	93	28	138	22	35	121	160	257	59
30-39	17.63	18.57	20.00	13.04	21.71	21.10	19.82	18.92	14.37	20.92	17.05	20.70
40-61	389	15	5	122	28	178	41	20	150	219	315	74
40-61	21.71	10.71	11.11	17.11	21.71	27.22	36.94	10.81	17.81	28.63	20.90	25.96
62-99	88	7	2	33	6	36	4	9	39	40	76	12
62-99	4.91	5.00	4.44	4.63	4.65	5.50	3.60	4.86	4.63	5.23	5.04	4.21
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

B.

Age	TOTALS	BA THC ZN	ZP	LN	LP	HN	HP
13-21	100%	8.73	3.28	56.77	6.55	21.18	3.49
22-24	100	10.40	1.60	40.40	7.20	35.60	4.80
25-29	100	8.93	3.44	35.74	6.53	39.86	5.50
30-39	100	8.23	2.85	29.43	8.86	43.67	6.96
40-61	100	3.86	1.29	31.36	7.20	45.76	10.54
62-99	100	7.95	2.27	37.50	6.82	40.91	4.55
Averages	100%	7.81	2.51	39.79	7.20	36.50	6.19

C.

Age	Totals	BLOOD ALCOHOL No-BA	Low-BA	High-BA
13-21	100%	12.01	63.32	24.67
22-24	100	12.00	47.60	40.40
25-29	100	12.37	42.27	45.36
30-39	100	11.08	38.29	50.63
40-61	100	5.14	38.56	56.30
62-99	100	10.23	44.32	45.45
Averages	100%	10.32	46.99	42.69

TABLE 2. (contd)

D. Age by Delta 9-THC(Ng/Ml)

Age	TOTALS	DELTA 9-THC(NG/ML) NEGATIVE THC	POSITIVE THC
13-21	100%	86.68	13.32
22-24	100	86.40	13.60
25-29	100	84.54	15.46
30-39	100	81.33	18.67
40-61	100	80.98	19.02
62-99	100	86.36	13.64
Averages	100%	84.10	15.90

TABLE 3.

Ethnic Origin by Delta 9-THC(Ng/Ml)

A.

Ethnic Origin	Totals	BA/THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC(Ng/Ml) (-) THC	(+) THC
Other	6	0	0	1	0	5	0	0	1	5	6	0
Other	.33%	.00	.00	.14	.00	.76	.00	.00	.12	.65	.40	.00
Am Ind	11	1	0	2	0	7	1	1	2	8	10	1
Am Ind	.61	.71	.00	.28	.00	1.07	.90	.54	.24	1.05	.66	.35
Negro	54	8	0	27	5	11	3	8	32	14	46	8
Negro	3.01	5.71	.00	3.79	3.88	1.68	2.70	4.32	3.80	1.83	3.05	2.81
Mex-Am	225	9	3	79	17	101	16	12	96	117	189	36
Mex-Am	12.56	6.43	6.67	11.08	13.18	15.44	14.41	6.49	11.40	15.29	12.54	12.63
White	1170	86	34	455	82	436	77	120	537	513	977	193
White	65.29	61.43	75.56	63.81	63.57	66.67	69.37	64.86	63.78	67.06	64.83	67.72
Unknown	326	36	8	149	25	94	14	44	174	108	279	47
Unknown	18.19	25.71	17.78	20.90	19.38	14.37	12.61	23.78	20.67	14.12	18.51	16.49
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100%	100	100	100	100	100	100	100	100	100	100	100

B.

Ethnic Origin	TOTALS	BA THC ZN	ZP	LN	LP	HN	HP
Other	100.00%	.00	.00	16.67	.00	83.33	.00
Am Ind	100.00%	9.09	.00	18.18	.00	63.64	9.09
Negro	100.00%	14.81	.00	50.00	9.26	20.37	5.56
Mex-Am	100.00%	4.00	1.33	35.11	7.56	44.89	7.11
White	100.00%	7.35	2.91	38.89	7.01	37.26	6.58
Unknown	100.00%	11.04	2.45	45.71	7.67	28.83	4.29
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

C.

Ethnic Origin	Totals	Blood Alcohol No-BA	Low-BA	High-BA
Other	100.00%	.00	16.67	83.33
Am Ind	100.00%	9.09	18.18	72.73
Negro	100.00%	14.81	59.26	25.93
Mex-Am	100.00%	5.33	42.67	52.00
White	100.00%	10.26	45.90	43.85
Uknown	100.00%	13.50	53.37	33.13
Averages	100.00%	10.32	46.99	42.69

Table 3. (cont'd)

Ethnic Origin by Delta 9-THC(Ng/Ml)

D. Ethnic Origin	Totals	Delta 9-THC(Ng/Ml) Negative THC	Positive THC
Other	100.00%	100.00	.00
Am Ind	100.00%	90.91	9.09
Negro	100.00%	85.19	14.81
Mex-Am	100.00%	84.00	16.00
White	100.00%	83.50	16.50
Unknown	100.00%	85.58	14.42
Averages	100.00%	84.10	15.90

Table 4.

Employment by Delta 9-THC(Ng/Ml)

A	Employment Status	Totals	BA THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC(Ng/Ml) (-) THC	(+) THC
	Empl	872	42	22	323	63	355	67	64	386	422	720	152
	Empl	48.66%	30.00	48.89	45.30	48.84	54.28	60.36	34.59	45.84	55.16	47.78	53.33
	Retired	44	3	1	12	2	22	4	4	14	26	37	7
	Retired	2.46	2.14	2.22	1.68	1.55	3 36	3.60	2.16	1.66	3.40	2.46	2.46
	Emp Stu	1	0	0	0	0	1	0	0	0	1	1	0
	Emp Stu	.06	.00	.00	.00	.00	.15	.00	.00	.00	.13	.07	.00
	Stdnt	51	3	2	27	3	14	2	5	30	16	44	7
	Stdnt	2.85	2.14	4.44	3.79	2.33	2.14	1.80	2.70	3.56	2.09	2.92	2.46
	Unempl	216	23	5	70	24	81	13	28	94	94	174	42
	Unempl	12.05	16.43	11.11	9.82	18.60	12.39	11.71	15.14	11.16	12.29	11.55	14.74
	Unknown	608	69	15	281	37	181	25	84	318	206	531	77
	Unknown	33.93	49.29	33.33	39.41	28.68	27.68	22.52	45.41	37.77	26.93	35.24	27.02
	Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

B.	Empl. Status	Totals	BA THC ZN	ZP	LN	LP	HN	HP
	Employed	100.00%	4.82	2.52	37.04	7.22	40.71	7.68
	Retired	100.00	6.82	2.27	27.27	4.55	50.00	9.09
	Emp Student	100.00	.00	.00	.00	.00	100.00	.00
	Student	100.00	5.88	3.92	52.94	5.88	27.45	3.92
	Unemployed	100.00	10.65	2.31	32.41	11.11	37.50	6.02
	Unknown	100.00	11.35	2.47	46.22	6.09	29.77	4.11
	Averages	100.00	7.81	2.51	39.79	7.20	36.50	6.19

C.	Empl. Status	Totals	Blood Alcohol No-BA	Low-BA	High-BA
	Employed	100.00%	7.34	44.27	48.39
	Retired	100.00	9.09	31.82	59.09
	Empl. Student	100.00	.00	.00	100.00
	Student	100.00	9.80	58.82	31.37
	Unemployed	100.00	12.96	43.52	43.52
	Unknown	100.00	13.82	52.30	33.88
	Averages	100.00	10.32	46.99	42.69

Table 4. (Cont'd)

Employment by Delta 9-THC(Ng/Ml)

D.

Empl. Status	Totals	Delta 9-THC(Ng/Ml) Negative THC	Positive THC
Employed	100.00%	82.57	17.43
Retired	100.00	84.09	15.91
Empl Student	100.00	100.00	.00
Student	100.00	86.27	13.73
Unemployed	100.00	80.56	19.44
Unknown	100.00	87.34	12.66
Averages	100.00	84.10	15.90

TABLE 5 COUNTY OF INCIDENT BY Δ9 THC NG/ML

A. COUNTY OF INCIDENT	TOTALS	BATHC ZN	ZP	LN	LP	HN	HP	BLOOD ALCOHOL NO-BA	LOW-BA	HIGH-BA	Δ9 THC NG/ML NEGATIVE THC	POSITIVE THC
BUTTE	30	5	0	12	0	11	2	5	12	13	28	2
CALAV	21	0	1	3	0	10	7	1	3	17	13	8
COLUSA	5	0	0	3	1	0	1	0	4	1	3	2
DN	9	2	0	6	0	1	0	2	6	1	9	0
ED	18	2	1	9	2	4	0	3	11	4	15	3
FRESNO	60	7	1	27	2	22	1	8	29	23	56	4
GLENN	16	0	0	6	0	10	0	0	6	10	16	0
IMPERIAL	2	0	1	0	1	0	0	1	1	0	0	2
INYO	4	0	1	1	0	2	0	1	1	2	3	1
KERN	1	0	0	1	0	0	0	0	1	0	1	0
KINGS	49	1	0	20	3	21	4	1	23	25	42	7
LAKE	6	1	0	1	0	4	0	1	1	4	6	0
LA	1	0	1	0	0	0	0	1	0	0	0	1
MARIN	85	10	2	15	8	39	11	12	23	50	64	21
MARIPOSA	8	0	0	3	0	5	0	0	3	5	8	0
MENDO	12	0	0	5	1	6	0	0	6	6	11	1
MERCED	54	3	2	27	10	12	0	5	37	12	42	12
MONO	5	0	0	4	0	1	0	0	4	1	5	0
MONTEREY	99	7	2	55	5	23	7	9	60	30	85	14
NAPA	35	2	0	7	2	23	1	2	9	24	32	3
NEVADA	11	2	0	6	1	2	0	2	7	2	10	1
PLACER	26	3	1	8	2	10	2	4	10	12	21	5
RIVERSIDE	339	20	15	197	28	67	12	35	225	79	284	55
SAN BENITO	4	2	0	2	0	0	0	2	2	0	4	0
SAN BERN	5	1	0	2	1	1	0	1	3	1	4	1
SAN JOAQUIN	98	17	2	22	5	43	9	19	27	52	82	16
SLO	78	5	1	11	5	46	10	6	16	56	62	16
SANTA BARB	121	11	3	31	9	59	8	14	40	67	101	20
SANTA CLARA	1	0	1	0	0	0	0	1	0	0	0	1
SANTA CRUZ	143	15	4	78	15	29	2	19	93	31	122	21
SHASTA	46	0	0	2	1	33	10	0	3	43	35	11
SIERRA	1	0	0	0	0	1	0	0	0	1	1	0
SISK	5	1	1	2	1	0	0	2	3	0	3	2
SOLANO	103	4	2	57	9	21	10	6	66	31	82	21
SONOMA	52	2	0	14	2	32	2	2	16	34	48	4
STAN	111	8	2	32	7	55	7	10	39	62	95	16
SUTTER	21	2	0	7	0	11	1	2	7	12	20	1
TULARE	3	0	0	3	0	0	0	0	3	0	3	0
TUOLUMNE	13	1	0	5	2	5	0	1	7	5	11	2
YOLO	49	5	1	15	4	23	1	6	19	24	43	6
YUBA	42	1	0	14	2	22	3	1	16	25	37	5
TOTALS	1792	140	45	713	129	654	111	185	842	765	1507	285

TABLE 5 COUNTY OF INCIDENT BY Δ9 THC NG/ML (Con't)

A. COUNTY OF INCIDENT	TOTALS	ZN	ZP	BATHC LN	LP	HN	HP	BLOOD ALCOHOL NO-BA	LOW-BA	HIGH-BA	Δ9 THC NG/ML NEGATIVE THC	POSITIVE THC
BUTTE	1.67	3.57	.00	1.68	.00	1.68	1.80	2.70	1.43	1.70	1.86	.70
CALAV	1.17	.00	2.22	.42	.00	1.53	6.31	.54	.36	2.22	.86	2.81
COLUSA	.28	.00	.00	.42	.78	.00	.90	.00	.48	.13	.20	.70
DN	.50	1.43	.00	.84	.00	.15	.00	1.08	.71	.13	.60	.00
ED	1.00	1.43	2.22	1.26	1.55	.61	.00	1.62	1.31	.52	1.00	1.05
FRESNO	3.35	5.00	2.22	3.79	1.55	3.36	.90	4.32	3.44	3.01	3.72	1.40
GLENN	.89	.00	.00	.84	.00	1.53	.00	.00	.71	1.31	1.06	.00
IMPERIAL	.11	.00	2.22	.00	.78	.00	.00	.54	.12	.00	.00	.70
INYO	.22	.00	2.22	.14	.00	.31	.00	.54	.12	.26	.20	.35
KERN	.06	.00	.00	.14	.00	.00	.00	.00	.12	.00	.07	.00
KINGS	2.73	.71	.00	2.81	2.33	3.21	3.60	.54	2.73	3.27	2.79	2.46
LAKE	.33	.71	.00	.14	.00	.61	.00	.54	.12	.52	.40	.00
LA	.06	.00	2.22	.00	.00	.00	.00	.54	.00	.00	.00	.35
MARIN	4.74	7.14	4.44	2.10	6.20	5.96	9.91	6.49	2.73	6.54	4.25	7.37
MARIPOSA	.45	.00	.00	.42	.00	.76	.00	.00	.36	.65	.53	.00
MENDO	.67	.00	.00	.70	.78	.92	.00	.00	.71	.78	.73	.35
MERCED	3.01	2.14	4.44	3.79	7.75	1.83	.00	2.70	4.39	1.57	2.79	4.21
MONO	.28	.00	.00	.56	.00	.15	.00	.00	.48	.13	.33	.00
MONTEREY	5.52	5.00	4.44	7.71	3.88	3.52	6.31	4.86	7.13	3.92	5.64	4.91
NAPA	1.95	1.43	.00	.98	1.55	3.52	.90	1.08	1.07	3.14	2.12	1.05
NEVADA	.61	1.43	.00	.84	.78	.31	.00	1.08	.83	.26	.66	.35
PLACER	1.45	2.14	2.22	1.12	1.55	1.53	1.80	2.16	1.19	1.57	1.39	1.75
RIVERSIDE	18.92	14.29	33.33	27.63	21.71	10.24	10.81	18.92	26.72	10.33	18.85	19.30
SAN BENITO	.22	1.43	.00	.28	.00	.00	.00	1.08	.24	.00	.27	.00
SAN BERN	.28	.71	.00	.28	.78	.15	.00	.54	.36	.13	.27	.35
SAN JOAQUIN	5.47	12.14	4.44	3.09	3.88	6.57	8.11	10.27	3.21	6.80	5.44	5.61
SLO	4.35	3.57	2.22	1.54	3.88	7.03	9.01	3.24	1.90	7.32	4.11	5.61
SANTA BARB	6.75	7.86	6.67	4.35	6.98	9.02	7.21	7.57	4.75	8.76	6.70	7.02
SANTA CLARA	.06	.00	2.22	.00	.00	.00	.00	.54	.00	.00	.00	.35
SANTA CRUZ	7.98	10.71	8.89	10.94	11.63	4.43	1.80	10.27	11.05	4.05	8.10	7.37
SHASTA	2.57	.00	.00	.28	.78	5.05	9.01	.00	.36	5.62	2.32	3.86
SIERRA	.06	.00	.00	.00	.00	.15	.00	.00	.00	.13	.07	.00
SISK	.28	.71	2.22	.28	.78	.00	.00	1.08	.36	.00	.20	.70
SOLANO	5.75	2.86	4.44	7.99	6.98	3.21	9.01	3.24	7.84	4.05	5.44	7.37
SONOMA	2.90	1.43	.00	1.96	1.55	4.89	1.80	1.08	1.90	4.44	3.19	1.40
STAN	6.19	5.71	4.44	4.49	5.43	8.41	6.31	5.41	4.63	8.10	6.30	5.61
SUTTER	1.17	1.43	.00	.98	.00	1.68	.90	1.08	.83	1.57	1.33	.35
TULARE	.17	.00	.00	.42	.00	.00	.00	.00	.36	.00	.20	.00
TUOLUMNE	.73	.71	.00	.70	1.55	.76	.00	.54	.83	.65	.73	.70
YOLO	2.73	3.57	2.22	2.10	3.10	3.52	.90	3.24	2.26	3.14	2.85	2.11
YUBA	2.34	.71	.00	1.96	1.55	3.36	2.70	.54	1.90	3.27	2.46	1.75
TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 5 COUNTY OF INCIDENT BY 49 THC NG/ML (Con't)

B. COUNTY OF INCIDENT	TOTALS	ZN	ZP	BATHC LN	LP	HN	HP
BUTTE	100.00	16.67	.00	40.00	.00	36.67	6.67
CALAV	100.00	.00	4.76	14.29	.00	47.62	33.33
COLUSA	100.00	.00	.00	60.00	20.00	.00	20.00
DN	100.00	22.22	.00	66.67	.00	11.11	.00
ED	100.00	11.11	5.56	50.00	11.11	22.22	.00
FRESNO	100.00	11.67	1.67	45.00	3.33	36.67	1.67
GLENN	100.00	.00	.00	37.50	.00	62.50	.00
IMPERIAL	100.00	.00	50.00	.00	50.00	.00	.00
INYO	100.00	.00	25.00	25.00	.00	50.00	.00
KERN	100.00	.00	.00	100.00	.00	.00	.00
KINGS	100.00	2.04	.00	40.82	6.12	42.86	8.16
LAKE	100.00	16.67	.00	16.67	.00	66.67	.00
LA	100.00	.00	100.00	.00	.00	.00	.00
MARIN	100.00	11.76	2.35	17.65	9.41	45.88	12.94
MARIPOSA	100.00	.00	.00	37.50	.00	62.50	.00
MENDO	100.00	.00	.00	41.67	8.33	50.00	.00
MERCED	100.00	5.56	3.70	50.00	18.52	22.22	.00
MONO	100.00	.00	.00	80.00	.00	20.00	.00
MONTEREY	100.00	7.07	2.02	55.56	5.05	23.23	7.07
NAPA	100.00	5.71	.00	20.00	5.71	65.71	2.86
NEVADA	100.00	18.18	.00	54.55	9.09	18.18	.00
PLACER	100.00	11.54	3.85	30.77	7.69	38.46	7.69
RIVERSIDE	100.00	5.90	4.42	58.11	8.26	19.76	3.54
SAN BENITO	100.00	50.00	.00	50.00	.00	.00	.00
SAN BERN	100.00	20.00	.00	40.00	20.00	20.00	.00
SAN JOAQUIN	100.00	17.35	2.04	22.45	5.10	43.88	9.18
SLO	100.00	6.41	1.28	14.10	6.41	58.97	12.82
SANTA BARB	100.00	9.09	2.48	25.62	7.44	48.76	6.61
SANTA CLARA	100.00	.00	100.00	.00	.00	.00	.00
SANTA CRUZ	100.00	10.49	2.80	54.55	10.49	20.28	1.40
SHASTA	100.00	.00	.00	4.35	2.17	71.74	21.74
SIERRA	100.00	.00	.00	.00	.00	100.00	.00
SISK	100.00	20.00	20.00	40.00	20.00	.00	.00
SOLANO	100.00	3.86	1.94	55.34	8.74	20.39	9.71
SONOMA	100.00	3.85	.00	26.92	3.85	61.54	3.85
STAN	100.00	7.21	1.80	28.83	6.31	49.55	6.31
SUTTER	100.00	9.52	.00	33.33	.00	52.38	4.76
TULARE	100.00	.00	.00	100.00	.00	.00	.00
TUOLUMNE	100.00	7.69	.00	38.46	15.38	38.46	.00
YOLO	100.00	10.20	2.04	30.61	8.16	46.94	2.04
YUBA	100.00	2.38	.00	33.33	4.76	52.38	7.14
TOTALS	100.00	7.81	2.51	39.79	7.20	36.50	6.19

TABLE 5 COUNTY OF INCIDENT BY @9 THC NG/ML (Con't)

C. COUNTY OF INCIDENT	TOTALS	BLOOD ALCOHOL NO-BA	LOW-BA	HIGH-BA
BUTTE	100.00	16.67	40.00	43.33
CALAV	100.00	4.76	14.29	80.95
COLUSA	100.00	.00	80.00	20.00
CN	100.00	22.22	66.67	11.11
ED	100.00	16.67	61.11	22.22
FRESNO	100.00	13.33	48.33	38.33
GLENN	100.00	.00	37.50	62.50
IMPERIAL	100.00	50.00	50.00	.00
INYO	100.00	25.00	25.00	50.00
KERN	100.00	.00	100.00	.00
KINGS	100.00	2.04	46.94	51.02
LAKE	100.00	16.67	16.67	66.67
LA	100.00	100.00	.00	.00
MARIN	100.00	14.12	27.06	58.82
MARIPOSA	100.00	.00	37.50	62.50
MENDC	100.00	.00	50.00	50.00
MERCED	100.00	9.26	68.52	22.22
MONO	100.00	.00	80.00	20.00
MONTEREY	100.00	9.09	60.61	30.30
NAPA	100.00	5.71	25.71	68.57
NEVADA	100.00	18.18	63.64	18.18
PLACER	100.00	15.38	38.46	46.15
RIVERSIDE	100.00	10.32	66.37	23.30
SAN BENITO	100.00	50.00	50.00	.00
SAN BERN	100.00	20.00	60.00	20.00
SAN JOACUIN	100.00	19.39	27.55	53.06
SLO	100.00	7.69	20.51	71.79
SANTA BARB	100.00	11.57	33.06	55.37
SANTA CLARA	100.00	100.00	.00	.00
SANTA CRUZ	100.00	13.29	65.03	21.68
SHASTA	100.00	.00	6.52	93.48
SIERRA	100.00	.00	.00	100.00
SISK	100.00	40.00	60.00	.00
SOLANO	100.00	5.93	64.08	30.10
SONOMA	100.00	3.85	30.77	65.38
STAN	100.00	9.01	35.14	55.86
SUTTER	100.00	9.52	33.33	57.14
TULARE	100.00	.00	100.00	.00
TUOLUMNE	100.00	7.69	53.85	38.46
YOLO	100.00	12.24	38.78	48.98
YUBA	100.00	2.38	38.10	59.52
TOTALS	100.00	10.32	46.99	42.69

TABLE 5 COUNTY OF INCIDENT BY Δ9 THC NG/ML (Con't)

D. COUNTY OF INCIDENT	TOTALS	Δ9 THC NG/ML NEGATIVE THC	Δ9 THC NG/ML POSITIVE THC
BUTTE	100.00	93.33	6.67
CALAV	100.00	61.90	38.10
COLUSA	100.00	60.00	40.00
DN	100.00	100.00	.00
ED	100.00	83.33	16.67
FRESNO	100.00	93.33	6.67
GLENN	100.00	100.00	.00
IMPERIAL	100.00	.00	100.00
INYO	100.00	75.00	25.00
KERN	100.00	100.00	.00
KINGS	100.00	85.71	14.29
LAKE	100.00	100.00	.00
LA	100.00	.00	100.00
MARIN	100.00	75.29	24.71
MARIPOSA	100.00	100.00	.00
MENDO	100.00	91.67	8.33
MERCED	100.00	77.78	22.22
MONO	100.00	100.00	.00
MONTEREY	100.00	85.86	14.14
NAPA	100.00	91.43	8.57
NEVADA	100.00	90.91	9.09
PLACER	100.00	80.77	19.23
RIVERSIDE	100.00	83.78	16.22
SAN BENITO	100.00	100.00	.00
SAN BERN	100.00	80.00	20.00
SAN JOAQUIN	100.00	83.67	16.33
SLO	100.00	79.49	20.51
SANTA BARB	100.00	83.47	16.53
SANTA CLARA	100.00	.00	100.00
SANTA CRUZ	100.00	85.31	14.69
SHASTA	100.00	76.09	23.91
SIERRA	100.00	100.00	.00
SISK	100.00	60.00	40.00
SOLANO	100.00	79.61	20.39
SONOMA	100.00	92.31	7.69
STAN	100.00	85.59	14.41
SUTTER-	100.00	95.24	4.76
TULARE	100.00	100.00	.00
TUOLUMNE	100.00	84.62	15.38
YOLO	100.00	87.76	12.24
YUBA	100.00	88.10	11.90
TOTALS	100.00	84.10	15.90

Table 6.

County of Incident Type by Delta 9-THC (Ng/Ml)

A. County	Totals	BA THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC (Ng/Ml) (-) THC	(+) THC
Urban	231	16	7	90	19	81	18	23	109	99	187	44
Urban	12.89%	11.43	15.56	12.62	14.73	12.39	16.22	12.43	12.95	12.94	12.41	15.44
Semi-Urban	1297	108	31	530	88	467	73	139	618	540	1105	192
Semi-Urban	72.38	77.14	68.89	74.33	68.22	71.41	65.77	75.14	73.40	70.59	73.32	67.37
Semi-Rural	229	16	6	83	22	89	13	22	105	102	188	41
Semi-Rural	12.78	11.43	13.33	11.64	17.05	13.61	11.71	11.89	12.47	13.33	12.48	14.39
Rural	35	0	1	10	0	17	7	1	10	24	27	8
Rural	195	.00	2.22	1.40	.00	2.60	6.31	.54	1.19	3.14	1.79	2.81
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

B. County	Totals	BA THC ZN	ZP	LN	LP	HN	HP
Urban	100.00%	6.93	3.03	38.96	8.23	35.06	7.79
Semi-Urban	100.00	8.33	2.39	40.86	6.78	36.01	5.63
Semi-Rural	100.00	6.99	2.62	36.24	9.61	38.86	5.68
Rural	100.00	.00	2.86	28.57	.00	48.57	20.00
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

C. County	Totals	Blood Alcohol No-BA	Low-BA	Hi-BA
Urban	100.00%	9.96	47.19	42.86
Semi-Urban	100.00	10.72	47.65	41.63
Semi-Rural	100.00	9.61	45.85	44.54
Rural	100.00	2.86	28.57	68.57
Averages	100.00	10.32	46.99	42.69

D. County	Totals	Delta 9-THC (Ng/Ml) Negative THC	Positive THC
Urban	100.00%	80.95	19.05
Semi-Urban	100.00	85.20	14.80
Semi-Rural	100.00	82.10	17.90
Rural	100.00	77.14	22.86
Averages	100.00	84.10	15.90

TABLE 7 COUNTY OF RESIDENCE BY Δ9 THC (NG/ML)

A. COUNTY OF RESIDENCE	TOTALS	BATHC ZN	ZP	LN	LP	HN	BLOOD ALCOHOL HP	NO-BA	LOW-BA	HIGH-BA	Δ9 THC (NG/ML) NEGATIVE THC	POSITIVE THC
ALAMEDA	22	6	0	7	3	2	4	6	10	6	15	7
BUTTE	24	4	0	10	8	9	1	4	10	10	23	1
CALAVERAS	5	0	0	2	0	2	1	0	2	3	4	1
COLUSA	3	0	0	0	1	2	0	0	1	2	2	1
CONTRA COSTA	15	1	2	5	0	5	2	3	5	7	11	4
DN	6	1	0	4	0	1	0	1	4	1	6	0
ED	13	1	0	5	2	4	1	1	7	5	10	3
FRESNO	59	4	2	22	2	26	3	6	24	29	52	7
GLENN	7	0	0	2	0	5	0	0	2	5	7	0
HUMBOLDT	1	1	0	0	0	0	0	1	0	0	1	0
IMPERIAL	4	0	1	2	0	1	0	1	2	1	3	1
INYO	1	0	0	0	0	1	0	0	0	1	1	0
KERN	9	0	0	2	1	5	1	0	3	6	7	2
KINGS	35	0	0	17	2	14	2	0	19	16	31	4
LAKE	5	0	0	0	0	5	0	0	0	5	5	0
LOS ANGELES	76	10	6	39	5	13	3	16	44	16	62	14
MADERA	2	0	0	1	0	1	0	0	1	1	2	0
MARIN	52	6	1	9	7	22	7	7	16	29	37	15
MARIPOSA	4	0	0	1	0	3	0	0	1	3	4	0
MENDOCINO	12	0	0	3	2	7	0	0	5	7	10	2
MERCED	49	2	0	27	9	11	0	2	36	11	40	9
MONTEREY	89	3	1	53	6	19	7	4	59	26	75	14
NAPA	31	1	0	8	3	17	2	1	11	19	26	5
NEVADA	4	0	0	1	0	3	0	0	1	3	4	0
ORANGE	26	1	1	14	2	4	2	2	18	6	21	5
PLACER	19	4	1	7	2	4	1	5	9	5	15	4
PLUMAS	1	0	0	1	0	0	0	0	1	0	1	0
RIVERSIDE	218	9	9	126	18	50	6	18	144	56	185	33
SACRAMENTO	39	2	3	19	2	12	1	5	21	13	33	6
SAN BENITO	3	1	0	1	0	1	0	1	1	1	3	0
SAN BERNARDINO	23	3	0	11	2	5	2	3	13	7	19	4
SAN DIEGO	11	2	2	3	1	3	0	4	4	3	8	3
SAN FRANCISCO	28	6	1	7	2	9	3	7	9	12	22	6
SAN JOAQUIN	103	18	3	19	7	49	7	21	26	56	86	17
SAN LUIS OBISPO	46	3	0	4	3	32	4	3	7	36	39	7
SAN MATEO	26	1	0	13	2	10	0	1	15	10	24	2
SANTA BARBARA	100	6	2	23	8	53	8	8	31	61	82	18
SANTA CLARA	41	4	2	21	4	9	1	6	25	10	34	7
SANTA CRUZ	115	13	4	59	10	25	4	17	69	29	97	18
SHASTA	41	0	0	2	1	26	12	0	3	38	28	13
SISKIOU	2	0	0	1	1	0	0	0	2	0	1	1
SOLANO	67	3	1	31	5	22	5	4	36	27	56	11
SONOMA	59	2	0	15	1	38	3	2	16	41	55	4
STANISLAUS	101	9	2	29	6	47	8	11	35	55	85	16
SUTTER	17	1	0	3	1	11	1	1	4	12	15	2
TEHAMA	3	1	0	0	0	2	0	1	0	2	3	0
TRINITY	1	0	0	0	0	1	0	0	0	1	1	0
TULARE	10	1	0	6	1	2	0	1	7	2	9	1
TUOLUMNE	10	1	0	6	0	3	0	1	6	3	10	0
VENTURA	6	0	1	3	0	1	1	1	3	2	4	2
YOLO	31	2	0	12	2	13	2	2	14	15	27	4
YUBA	41	2	0	16	2	18	3	2	18	21	36	5
OUT OF STATE	58	5	0	29	3	21	0	5	32	21	55	3
NOT GIVEN	18	0	0	10	0	5	3	0	10	8	15	3
TOTALS	1792	140	45	713	129	654	111	185	842	765	1507	285

TABLE 7 COUNTY OF RESIDENCE BY Δ9 THC (NG/ML) (Con't)

A. COUNTY OF RESIDENCE	TOTALS	BATHC ZN	ZP	LN	LP	HN	HP	BLOOD ALCOHOL NO-BA	LOW-BA	HIGH-BA	Δ9 THC (NG/ML) NEGATIVE THC	POSITIVE THC
ALAMEDA	1.23	4.29	.00	.98	2.33	.31	3.60	3.24	1.19	.78	1.00	2.46
BUTTE	1.34	2.86	.00	1.40	.00	1.38	.90	2.16	1.19	1.31	1.53	.35
CALAVERAS	.28	.00	.00	.28	.00	.31	.90	.00	.24	.39	.27	.35
COLUSA	.17	.00	.00	.00	.78	.31	.00	.00	.12	.26	.13	.35
CONTRA COSTA	.84	.71	4.44	.70	.00	.76	1.80	1.62	.59	.92	.73	1.40
DN	.33	.71	.00	.56	.00	.15	.00	.54	.48	.13	.40	.00
ED	.73	.71	.00	.70	1.55	.61	.90	.54	.83	.65	.66	1.05
FRESNO	3.29	2.86	4.44	3.09	1.55	3.98	2.70	3.24	2.85	3.79	3.45	2.46
GLENN	.39	.00	.00	.28	.00	.76	.00	.00	.24	.65	.46	.00
HUMBOLDT	.06	.71	.00	.00	.00	.00	.00	.54	.00	.00	.07	.00
IMPERIAL	.22	.00	2.22	.28	.00	.15	.00	.54	.24	.13	.20	.35
INYO	.06	.00	.00	.00	.00	.15	.00	.00	.00	.13	.07	.00
KERN	.50	.00	.00	.28	.78	.76	.90	.00	.36	.78	.46	.70
KINGS	1.95	.00	.00	2.38	1.55	2.14	1.80	.00	2.26	2.09	2.06	1.40
LAKE	.28	.00	.00	.00	.00	.76	.00	.00	.00	.65	.33	.00
LOS ANGELES	4.24	7.14	13.33	5.47	3.88	1.99	2.70	8.65	5.23	2.09	4.11	4.91
MADERA	.11	.00	.00	.14	.00	.15	.00	.00	.12	.13	.13	.00
MARIN	2.90	4.29	2.22	1.26	5.43	3.36	6.31	3.78	1.90	3.79	2.46	5.26
MARIPOSA	.22	.00	.00	.14	.00	.46	.00	.00	.12	.39	.27	.00
MENDOCINO	.67	.00	.00	.42	1.55	1.07	.00	.00	.59	.92	.66	.70
MERCED	2.73	1.43	.00	3.79	6.98	1.68	.00	1.08	4.28	1.44	2.65	3.16
MONTEREY	4.97	2.14	2.22	7.43	4.65	2.91	6.31	2.16	7.01	3.40	4.98	4.91
NAPA	1.73	.71	.00	1.12	2.33	2.60	1.80	.54	1.31	2.48	1.73	1.75
NEVADA	.22	.00	.00	.14	.00	.46	.00	.00	.12	.39	.27	.00
ORANGE	1.45	.71	2.22	2.24	1.55	.61	1.80	1.08	2.14	.78	1.39	1.75
PLACER	1.06	2.86	2.22	.98	1.55	.61	.90	2.70	1.07	.65	1.00	1.40
PLUMAS	.06	.00	.00	.14	.00	.00	.00	.00	.12	.00	.07	.00
RIVERSIDE	12.17	6.43	20.00	17.67	13.95	7.65	5.41	9.73	17.10	7.32	12.28	11.58
SACRAMENTO	2.18	1.43	6.67	2.66	1.55	1.83	.90	2.70	2.49	1.70	2.19	2.11
SAN BENITO	.17	.71	.00	.14	.00	.15	.00	.54	.12	.13	.20	.00
SAN BERNARDINO	1.28	2.14	.00	1.54	1.55	.76	1.80	1.62	1.54	.92	1.26	1.40
SAN DIEGO	.61	1.43	4.44	.42	.78	.46	.00	2.16	.48	.39	.53	1.05
SAN FRANCISCO	1.56	4.29	2.22	.98	1.55	1.38	2.70	3.78	1.07	1.57	1.46	2.11
SAN JOAQUIN	5.75	12.86	6.67	2.66	5.43	7.49	6.31	11.35	3.09	7.32	5.71	5.96
SAN LUIS OBISPO	2.57	2.14	.00	.56	2.33	4.89	3.60	1.62	.83	4.71	2.59	2.46
SAN MATEO	1.45	.71	.00	1.82	1.55	1.53	.00	.54	1.78	1.31	1.59	.70
SANTA BARBARA	5.58	4.29	4.44	3.23	6.20	8.10	7.21	4.32	3.68	7.97	5.44	6.32
SANTA CLARA	2.29	2.86	4.44	2.95	3.10	1.38	.90	3.24	2.97	1.31	2.26	2.46
SANTA CRUZ	6.42	9.29	8.89	8.27	7.75	3.82	3.60	9.19	8.19	3.79	6.44	6.32
SHASTA	2.29	.00	.00	.28	.78	3.98	10.81	.00	.36	4.97	1.86	4.56
SISKIOU	.11	.00	.00	.14	.78	.00	.00	.00	.24	.00	.07	.35
SOLANO	3.74	2.14	2.22	4.35	3.88	3.36	4.50	2.16	4.28	3.53	3.72	3.86
SONOMA	3.29	1.43	.00	2.10	.78	5.81	2.70	1.08	1.90	5.36	3.65	1.40
STANISLAUS	5.64	6.43	4.44	4.07	4.65	7.19	7.21	5.95	4.16	7.19	5.64	5.61
SUTTER	.95	.71	.00	.42	.78	1.68	.90	.54	.48	1.57	1.90	.70
TEHAMA	.17	.71	.00	.00	.00	.31	.00	.54	.00	.26	.20	.00
TRINITY	.06	.00	.00	.00	.00	.15	.00	.00	.00	.13	.07	.00
TULARE	.56	.71	.00	.84	.78	.31	.00	.54	.83	.26	.60	.35
TUOLUMNE	.56	.71	.00	.84	.00	.46	.00	.54	.71	.39	.66	.00
VENTURA	.33	.00	2.22	.42	.00	.15	.90	.54	.36	.26	.27	.70
YOLO	1.73	1.43	.00	1.68	1.55	1.99	1.80	1.08	1.66	1.96	1.79	1.40
YUBA	2.29	1.43	.00	2.24	1.55	2.75	2.70	1.08	2.14	2.75	2.39	1.75
OUT OF STATE	3.24	3.57	.00	4.07	2.33	3.21	.00	2.70	3.80	2.75	3.65	1.05
NOT GIVEN	1.00	.00	.00	1.40	.00	.76	2.70	.00	1.19	1.05	1.00	1.05
TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 7 COUNTY OF RESIDENCE BY 89 THC(NG/ML) (Con't)

B. COUNTY OF RESIDENCE

	TOTALS	ZN	ZP	BATHC LN	LP	HN	HP
ALAMEDA	100.00	27.27	.00	31.82	13.64	9.09	18.18
BUTTE	100.00	16.67	.00	41.67	.00	37.50	4.17
CALAVERAS	100.00	.00	.00	40.00	.00	40.00	20.00
COLUSA	100.00	.00	.00	.00	33.33	66.67	.00
CONTRA COSTA	100.00	6.67	13.33	33.33	.00	33.33	13.33
DN	100.00	16.67	.00	66.67	.00	16.67	.00
ED	100.00	7.69	.00	38.46	15.38	30.77	7.69
FRESNO	100.00	6.78	3.39	37.29	3.39	44.07	5.08
GLENN	100.00	.00	.00	28.57	.00	71.43	.00
HUMBOLDT	100.00	100.00	.00	.00	.00	.00	.00
IMPERIAL	100.00	.00	25.00	50.00	.00	25.00	.00
INYO	100.00	.00	.00	.00	.00	100.00	.00
KERN	100.00	.00	.00	22.22	11.11	55.56	11.11
KINGS	100.00	.00	.00	48.57	5.71	40.00	5.71
LAKE	100.00	.00	.00	.00	.00	100.00	.00
LOS ANGELES	100.00	13.16	7.89	51.32	6.58	17.11	3.95
MADERA	100.00	.00	.00	50.00	.00	50.00	.00
MARIN	100.00	11.54	1.92	17.31	13.46	42.31	13.46
MARIPOSA	100.00	.00	.00	25.00	.00	75.00	.00
MENDOCINO	100.00	.00	.00	25.00	16.67	58.33	.00
MERCED	100.00	4.08	.00	55.10	18.37	22.45	.00
MONTEREY	100.00	3.37	1.12	59.55	6.74	21.35	7.87
NAPA	100.00	3.23	.00	25.81	9.68	54.84	6.45
NEVADA	100.00	.00	.00	25.00	.00	75.00	.00
ORANGE	100.00	3.85	3.85	61.54	7.69	15.38	7.69
PLACER	100.00	21.05	5.26	36.84	10.53	21.05	5.26
PLUMAS	100.00	.00	.00	100.00	.00	.00	.00
RIVERSIDE	100.00	4.13	4.13	57.80	8.26	22.94	2.75
SACRAMENTO	100.00	5.13	7.69	48.72	5.13	30.77	2.56
SAN BENITO	100.00	33.33	.00	33.33	.00	33.33	.00
SAN BERNARDINO	100.00	13.04	.00	47.83	8.70	21.74	8.70
SAN DIEGO	100.00	18.18	18.18	27.27	9.09	27.27	.00
SAN FRANCISCO	100.00	21.43	3.57	25.00	7.14	32.14	10.71
SAN JOAQUIN	100.00	17.48	2.91	18.45	6.80	47.57	6.80
SAN LUIS OBISPO	100.00	6.52	.00	8.70	6.52	69.57	8.70
SAN MATEO	100.00	3.85	.00	50.00	7.69	38.46	.00
SANTA BARBARA	100.00	6.00	2.00	23.00	3.00	53.00	8.00
SANTA CLARA	100.00	9.76	4.88	51.22	9.76	21.95	2.44
SANTA CRUZ	100.00	11.30	3.48	51.30	8.70	21.74	3.48
SHASTA	100.00	.00	.00	4.88	2.44	63.41	29.27
SISKIOU	100.00	.00	.00	50.00	50.00	.00	.00
SOLANO	100.00	4.48	1.49	46.27	7.46	32.84	7.46
SONOMA	100.00	3.39	.00	25.42	1.69	64.41	5.08
STANISLAUS	100.00	8.91	1.98	28.71	5.94	46.53	7.92
SUTTER	100.00	5.88	.00	17.65	5.88	64.71	5.88
TEHAMA	100.00	33.33	.00	.00	.00	66.67	.00
TRINITY	100.00	.00	.00	.00	.00	100.00	.00
TULARE	100.00	10.00	.00	60.00	10.00	20.00	.00
TUOLUMNE	100.00	10.00	.00	60.00	.00	30.00	.00
VENTURA	100.00	.00	16.67	50.00	.00	16.67	16.67
YOLO	100.00	6.45	.00	38.71	6.45	41.94	6.45
YUBA	100.00	4.88	.00	39.02	4.88	43.90	7.32
OUT OF STATE	100.00	8.67	.00	50.00	5.17	36.21	.00
NOT GIVEN	100.00	.00	.00	55.56	.00	27.78	16.67
TOTALS	100.00	7.81	2.51	39.79	7.20	36.50	6.19

TABLE 7 COUNTY OF RESIDENCE BY Δ9 THC (NG/ML) (Con't)

C. COUNTY OF RESIDENCE	TOTALS	BLOOD ALCOHOL NO-BA	LOW-BA	HIGH-BA
ALAMEDA	100.00	27.27	45.45	27.27
BUTTE	100.00	16.67	41.67	41.67
CALAVERAS	100.00	.00	40.00	60.00
COLUSA	100.00	.00	33.33	66.67
CONTRA COSTA	100.00	20.00	33.33	46.67
DN	100.00	16.67	66.67	16.67
ED	100.00	7.69	53.85	38.46
FRESNO	100.00	10.17	40.68	49.15
GLENN	100.00	.00	28.57	71.43
HUMBOLDT	100.00	100.00	.00	.00
IMPERIAL	100.00	25.00	50.00	25.00
INYO	100.00	.00	.00	100.00
KERN	100.00	.00	33.33	66.67
KINGS	100.00	.00	54.29	45.71
LAKE	100.00	.00	.00	100.00
LOS ANGELES	100.00	21.05	57.89	21.05
MADERA	100.00	.00	50.00	50.00
MARIN	100.00	13.46	30.77	55.77
MARIPOSA	100.00	.00	25.00	75.00
MENDOCINO	100.00	.00	41.67	58.33
MERCED	100.00	4.08	73.47	22.45
MONTEREY	100.00	4.49	66.29	29.21
NAPA	100.00	3.23	35.48	61.29
NEVADA	100.00	.00	25.00	75.00
ORANGE	100.00	7.69	69.23	23.08
PLACER	100.00	26.32	47.37	26.32
PLUMAS	100.00	.00	100.00	.00
RIVERSIDE	100.00	8.26	66.06	25.69
SACRAMENTO	100.00	12.82	53.85	33.33
SAN BENITO	100.00	33.33	33.33	33.33
SAN BERNARDINO	100.00	13.04	56.52	30.43
SAN DIEGO	100.00	36.36	36.36	27.27
SAN FRANCISCO	100.00	25.00	32.14	42.86
SAN JOAQUIN	100.00	20.39	25.24	54.37
SAN LUIS OBISPO	100.00	6.52	15.22	78.26
SAN MATEO	100.00	3.85	57.69	38.46
SANTA BARBARA	100.00	8.00	31.00	61.00
SANTA CLARA	100.00	14.63	60.98	24.39
SANTA CRUZ	100.00	14.78	60.00	25.22
SHASTA	100.00	.00	7.32	92.68
SISKIOU	100.00	.00	100.00	.00
SOLANO	100.00	5.97	53.73	40.30
SONOMA	100.00	3.39	27.12	69.49
STANISLAUS	100.00	10.89	34.65	54.46
SUTTER	100.00	5.88	23.53	70.59
TEHAMA	100.00	33.33	.00	66.67
TRINITY	100.00	.00	.00	100.00
TULARE	100.00	10.00	70.00	20.00
TUOLUMNE	100.00	10.00	60.00	30.00
VENTURA	100.00	16.67	50.00	33.33
YOLO	100.00	6.45	45.16	48.39
YUBA	100.00	4.88	43.90	51.22
OUT OF STATE	100.00	8.62	55.17	36.21
NOT GIVEN	100.00	.00	55.56	44.44
TOTALS	100.00	10.32	46.99	42.69

TABLE 7 COUNTY OF RESIDENCE BY 69 THC NG/ML (Con't)

D. COUNTY OF RESIDENCE	TOTALS	69 THC NG/ML NEGATIVE THC	POSITIVE THC
ALAMEDA	100.00	68.18	31.82
BUTTE	100.00	95.83	4.17
CALAVERAS	100.00	80.00	20.00
COLUSA	100.00	66.67	33.33
CONTRA COSTA	100.00	73.33	26.67
DN	100.00	100.00	.00
ED	100.00	76.92	23.08
FRESNO	100.00	88.14	11.86
GLENN	100.00	100.00	.00
HUMBOLDT	100.00	100.00	.00
IMPERIAL	100.00	75.00	25.00
INYO	100.00	100.00	.00
KERN	100.00	77.78	22.22
KINGS	100.00	88.57	11.43
LAKE	100.00	100.00	.00
LOS ANGELES	100.00	81.56	18.42
MADERA	100.00	100.00	.00
MARIN	100.00	71.15	28.85
MARIPOSA	100.00	100.00	.00
MENDOCINO	100.00	83.33	16.67
MERCED	100.00	81.63	18.37
MONTEREY	100.00	84.27	15.73
NAPA	100.00	83.87	16.13
NEVADA	100.00	100.00	.00
ORANGE	100.00	80.77	19.23
PLACER	100.00	78.95	21.05
PLUMAS	100.00	100.00	.00
RIVERSIDE	100.00	84.86	15.14
SACRAMENTO	100.00	84.62	15.38
SAN BENITO	100.00	100.00	.00
SAN BERNARDINO	100.00	82.61	17.39
SAN DIEGO	100.00	72.73	27.27
SAN FRANCISCO	100.00	78.57	21.43
SAN JOAQUIN	100.00	83.50	16.50
SAN LUIS OBISPO	100.00	84.78	15.22
SAN MATEO	100.00	92.31	7.69
SANTA BARBARA	100.00	82.00	18.00
SANTA CLARA	100.00	82.93	17.07
SANTA CRUZ	100.00	84.35	15.65
SHASTA	100.00	68.29	31.71
SISKIOU	100.00	50.00	50.00
SOLANO	100.00	83.58	16.42
SONOMA	100.00	93.22	6.78
STANISLAUS	100.00	84.16	15.84
SUTTER	100.00	88.24	11.76
TEHAMA	100.00	100.00	.00
TRINITY	100.00	100.00	.00
TULARE	100.00	90.00	10.00
TUOLUMNE	100.00	100.00	.00
VENTURA	100.00	66.67	33.33
YOLO	100.00	87.10	12.90
YUBA	100.00	87.80	12.20
OUT OF STATE	100.00	94.83	5.17
NOT GIVEN	100.00	83.33	16.67
TOTALS	100.00	84.10	15.90

Table 8.

Table of County of Residence Type by Delta 9-THC(Ng/Ml)

A.

County	Totals	BA THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC(Ng/Ml) (-) THC	(+) THC
Urban	481	45	21	199	36	148	32	66	235	180	392	89
Urban	26.84	32.14	46.67	27.91	27.91	22.63	28.83	35.68	27.91	23.53	26.01	31.23
Semi-urban	1040	78	23	409	71	398	61	101	480	459	885	155
Semi-urban	58.04	55.71	51.11	57.36	55.04	60.86	54.95	54.59	57.01	60.00	58.73	54.39
Semi-rural	183	12	1	61	19	76	14	13	80	90	149	34
Semi-rural	10.21	8.57	2.22	8.56	14.73	11.62	12.61	7.03	9.50	11.76	9.89	11.93
Rural	10	0	0	3	0	6	1	0	3	7	9	1
Rural	.56	.00	.00	.42	.00	.92	.90	.00	.36	.92	.60	.35
Out-of-state	59	5	0	31	2	21	0	5	33	21	57	2
Out-of-state	3.29	3.57	.00	4.35	1.55	3.21	.00	2.70	3.92	2.75	3.78	.70
Other	19	0	0	10	1	5	3	0	11	8	15	4
Other	1.06	.00	.00	1.40	.78	.76	2.70	.00	1.31	1.05	1.00	1.40
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

B.

County	Totals	BA THC ZN	ZP	LN	LP	HN	HP
Urban	100.00%	9.36	4.37	41.37	7.48	30.77	6.65
Semi-urban	100.00	7.50	2.21	39.33	6.83	38.27	5.87
Semi-rural	100.00	6.56	.55	33.33	10.38	41.53	7.65
Rural	100.00	.00	.00	30.00	.00	60.00	10.00
Out-of-state	100.00	8.47	.00	52.54	3.39	35.59	.00
Other	100.00	.00	.00	52.63	5.26	26.32	15.79
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

C.

County	Totals	BLOOD ALCOHOL NO-BA	LOW-BA	HIGH-BA
Urban	100.00	13.72	48.86	37.42
Semi-urban	100.00	9.71	46.15	44.13
Semi-rural	100.00	7.10	43.72	49.18
Rural	100.00	.00	30.00	70.00
Out-of-state	100.00	8.47	55.93	35.59
Other	100.00	.00	57.89	42.11
Averages	100.00%	10.32	46.99	42.69

Table 8. (cont'd)

Table of County of Residence Type by Delta 9-THC (Ng/Ml))

D. County	Totals	Delta 9-THC(Ng/Ml) Negative THC	Positive THC
Urban	100.00%	81.50	18.50
Semi-urban	100.00	85.10	14.90
Semi-rural	100.00	81.42	18.58
Rural	100.00	90.00	10.00
Out-of-state	100.00	96.61	3.39
Other	100.00	78.95	21.05
Averages	100.00%	84.10	15.90

Table 9.

Time of incident by Delta 9-THC(Ng/Ml)

A.

Time	Totals	BA THC ZN	ZP	LN	LP	HN	HP	BLOOD ALCOHOL No-BA	Low-BA	Hi-BA	DELTA 9-THC(Ng/Ml) (-) THC	(+) THC
0000-0300	782	35	20	334	54	288	51	55	388	399	657	125
0000-0300	43.64	25.00	44.44	46.84	41.86	44.04	45.95	29.73	46.08	44.31	43.60	43.86
0301-0600	104	7	2	51	10	32	2	9	61	34	90	14
0301-0600	5.80	5.00	4.44	7.15	7.75	4.89	1.80	4.86	7.24	4.44	5.97	4.91
0601-0900	27	6	1	11	3	6	0	7	14	6	23	4
0601-0900	1.51	4.29	2.22	1.54	2.33	.92	.00	3.78	1.66	.78	1.53	1.40
0901-1200	24	6	1	6	0	10	1	7	6	11	22	2
0901-1200	1.34	4.29	2.22	.84	.00	1.53	.90	3.78	.71	1.44	1.46	.70
1201-1500	61	17	1	21	3	18	1	18	24	19	56	5
1201-1500	3.40	12.14	2.22	2.95	2.33	2.75	.90	9.73	2.85	2.48	3.72	1.75
1501-1800	141	21	8	56	7	41	8	29	63	49	118	23
1501-1800	7.87	15.00	17.78	7.85	5.43	6.27	7.21	15.68	7.48	6.41	7.83	8.07
1801-2100	218	18	6	70	17	91	16	24	87	107	179	39
1801-2100	12.17	12.86	13.33	9.82	13.18	13.91	14.41	12.97	10.33	13.99	11.88	13.68
2101-2400	435	30	6	164	35	168	32	36	199	200	362	73
2101-2400	24.27	21.43	13.33	23.00	27.13	25.69	28.83	19.46	23.63	26.14	24.02	25.61
Totals	1792	140	45	713	129	654	111	185	842	765	1057	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

B.

Time	Totals	ZN	ZP	LN	BATHC LP	HN	HP
0000-0300	100.00%	4.48	2.56	42.71	6.91	36.83	6.52
0301-0600	100.00	6.73	1.92	49.04	9.62	30.77	1.92
0601-0900	100.00	22.22	3.70	40.74	11.11	22.22	.00
0901-1200	100.00	25.00	4.17	25.00	.00	41.67	4.17
1201-1500	100.00	27.87	1.64	34.43	4.92	29.51	1.64
1501-1800	100.00	14.89	5.67	39.72	4.96	29.08	5.67
1801-2100	100.00	8.26	2.75	32.11	7.80	41.74	7.34
2101-2400	100.00	6.90	1.38	37.70	8.05	38.62	7.36
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

Table 9. (cont'd)

C. Time	Totals	BLOOD ALCOHOL NO-BA	LOW-BA	HI-BA
0000-0300	100.00%	7.03	49.62	43.35
0301-0600	100.00	8.65	58.65	32.69
0601-0900	100.00	25.93	51.85	22.22
0901-1200	100.00	29.17	25.00	45.83
1201-1500	100.00	29.51	39.34	31.15
1501-1800	100.00	20.57	44.68	34.75
1801-2100	100.00	11.01	39.91	49.08
2101-2400	100.00	8.28	45.75	45.98
Averages	100.00%	10.32	46.99	42.69

D. Time	Totals	Delta 9-THC Ng/Ml Negative THC	Positive THC
0000-0300	100.00%	84.02	15.98
0301-0600	100.00	86.54	13.46
0601-0900	100.00	85.19	14.81
0901-1200	100.00	91.67	8.33
1201-1500	100.00	91.80	8.20
1501-1800	100.00	83.69	16.31
1801-2100	100.00	82.11	17.89
2101-2400	100.00	83.22	16.78
Averages	100.00	84.10	15.90

Table 10.

Day of week by Delta 9-THC(Ng/Ml)

A.

Day of week	Totals	BATHC ZN	ZP	LN	LP	HN	HP	BLOOD ALCOHOL NO-BA	LOW-BA	HI-BA	DELTA 9-THC(NG/ML) (-) THC	(+) THC
Sunday	355	28	9	147	22	131	18	37	169	149	306	49
Sunday	19.81	20.00	20.00	20.62	17.05	20.03	16.22	20.00	20.07	19.48	20.31	17.19
Monday	198	14	5	77	13	74	15	19	90	89	165	33
Monday	11.05	10.00	11.11	10.80	10.08	11.31	13.51	10.27	10.69	11.63	10.95	11.58
Tuesday	167	15	6	62	11	54	19	21	73	73	131	36
Tuesday	9.32	10.71	13.33	8.70	8.53	8.26	17.12	11.35	8.67	9.54	8.69	12.63
Wednesday	158	15	7	58	6	62	10	22	64	72	135	23
Wednesday	8.82	10.71	15.56	8.13	4.65	9.48	9.01	11.89	7.60	9.41	8.96	8.07
Thursday	210	18	4	81	11	85	11	22	92	96	184	26
Thursday	11.72	12.86	8.89	11.36	8.53	13.00	9.91	11.89	10.93	12.55	12.21	9.12
Friday	291	21	4	120	28	104	14	25	148	118	245	46
Friday	16.24	15.00	8.89	16.83	21.71	15.90	12.61	13.51	17.58	15.42	16.26	16.14
Saturday	413	29	10	168	38	144	24	39	206	168	341	72
Saturday	23.05	20.71	22.22	23.56	29.46	22.02	21.62	21.08	24.47	21.96	22.63	25.26
Totals	1792	140	45	713	129	654	111	185	842	765	1057	285
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

B.

Day of week	Totals	BA THC ZN	ZP	LN	LP	HN	HP
Sunday	100.00	7.89	2.54	41.41	6.20	36.90	5.07
Monday	100.00	7.07	2.53	38.89	6.57	37.37	7.58
Tuesday	100.00	8.98	3.59	37.13	6.59	32.34	11.38
Wednesday	100.00	9.49	4.43	36.71	3.80	39.24	6.33
Thursday	100.00	8.57	1.90	38.57	5.24	40.48	5.24
Friday	100.00	7.22	1.37	41.24	9.62	35.74	4.81
Saturday	100.00	7.02	2.42	40.68	9.20	34.87	5.81
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

C.

Day of week	Totals	Blood Alcohol No-BA	Low-BA	High-BA
Sunday	100.00	10.42	47.61	41.97
Monday	100.00	9.60	45.45	44.95
Tuesday	100.00	12.57	43.71	43.71
Wednesday	100.00	13.92	40.51	45.57
Thursday	100.00	10.48	43.81	45.71
Friday	100.00	8.59	50.86	40.55
Saturday	100.00	9.44	49.88	40.68
Averages	100.00%	10.32	46.99	42.69

Table 10. (cont'd)

Day of week by Delta 9-THC(Ng/Ml)

D. Day of week	Totals	Delta 9-THC(Ng/Ml) Negative THC	POSITIVE THC
Sunday	100.00%	86.20	13.80
Monday	100.00	83.33	16.67
Tuesday	100.00	78.44	21.56
Wednesday	100.00	85.44	14.56
Thursday	100.00	87.62	12.38
Friday	100.00	84.19	15.81
Saturday	100.00	82.57	17.43
Averages	100.00%	84.10	15.90

Table 11.

Month of Incident by Delta 9-THC(Ng/Ml)

Year/Mo. of Incident	Totals	BA THC ZN	BA THC ZP	BA THC LN	BA THC LP	BA THC HN	BA THC HP	Blood Alcohol No-BA	Blood Alcohol Low-BA	Blood Alcohol Hi-BA	Delta 9-THC(Ng/Ml) (-) THC	Delta 9-THC(Ng/Ml) (+) THC
76 December	1	0	0	0	1	0	0	0	1	0	0	1
	.06	.00	.00	.00	.78	.00	.00	.00	.12	.00	.00	.35
77 January	4	0	0	0	0	4	0	0	0	4	4	0
	.22	.00	.00	.00	.00	.61	.00	.00	.00	.52	.27	.00
77 February	2	2	0	0	0	0	0	2	0	0	2	0
	.11	1.43	.00	.00	.00	.00	.00	1.08	.00	.00	.13	.00
77 March	36	0	2	7	1	23	3	2	8	26	30	6
	2.01	.00	4.44	.98	.78	3.52	2.70	1.08	.95	3.40	1.99	2.11
77 April	168	10	6	51	17	69	15	16	68	84	130	38
	9.38	7.14	13.33	7.15	13.18	10.55	13.51	8.65	8.08	10.98	8.63	13.33
77 May	175	10	8	51	18	67	21	18	69	88	128	47
	9.77	7.14	17.78	7.15	13.95	10.24	18.92	9.73	8.19	11.50	8.49	16.49
77 June	173	10	7	47	22	72	15	17	69	87	129	44
	9.65	7.14	15.56	6.59	17.05	11.01	13.51	9.19	8.19	11.37	8.56	15.44
77 July	204	13	7	37	14	105	28	20	51	133	155	49
	11.38	9.29	15.56	5.19	10.85	16.06	25.23	10.81	6.06	17.39	10.29	17.19
77 August	166	10	6	56	10	77	7	16	66	84	143	23
	9.26	7.14	13.33	7.85	7.75	11.77	6.31	8.65	7.84	10.98	9.49	8.07
77 September	194	13	2	49	9	111	10	15	58	121	173	21
	10.83	9.29	4.44	6.87	6.98	16.97	9.01	8.11	6.89	15.82	11.48	7.37
77 October	155	11	4	57	8	68	7	15	65	75	136	19
	8.65	7.86	8.89	7.99	6.20	10.40	6.31	8.11	7.72	9.80	9.02	6.67
77 November	128	8	0	56	3	56	5	8	59	61	120	8
	7.14	5.71	.00	7.85	2.33	8.56	4.50	4.32	7.01	7.97	7.96	2.81
77 December	57	9	0	44	2	2	0	9	46	2	55	2
	3.18	6.43	.00	6.17	1.55	.31	.00	4.86	5.46	.26	3.65	.70
78 January	69	6	0	58	5	0	0	6	63	0	64	5
	3.85	4.29	.00	8.13	3.88	.00	.00	3.24	7.48	.00	4.25	1.75
78 February	53	6	0	43	4	0	0	6	47	0	49	4
	2.96	4.29	.00	6.03	3.10	.00	.00	3.24	5.58	.00	3.25	1.40
78 March	68	9	1	54	4	0	0	10	58	0	63	5
	3.79	6.43	2.22	7.57	3.10	.00	.00	5.41	6.89	.00	4.18	1.75
78 April	50	7	0	37	6	0	0	7	43	0	44	6
	2.79	5.00	.00	5.19	4.65	.00	.00	3.78	5.11	.00	2.92	2.11
78 May	61	9	2	45	5	0	0	11	50	0	54	7
	3.40	6.43	4.44	6.31	3.88	.00	.00	5.95	5.94	.00	3.58	2.46
78 June	26	7	0	19	0	0	0	7	19	0	26	0
	1.45	5.00	.00	2.66	.00	.00	.00	3.78	2.26	.00	1.73	.00
	2	0	0	2	0	0	0	0	2	0	2	0
	.11	.00	.00	.28	.00	.00	.00	.00	.24	.00	.13	.00
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 12

Accident by Delta 9-THC(Ng/Ml)

A.

Accident	Totals	BA THC ZN	ZP	LN	LP	HN	HP	BLOOD ALCOHOL No-BA	Low-BA	Hi-BA	DELTA 9-THC(Ng/Ml) (-) THC	(+) THC
None	1250	62	32	488	93	490	85	94	581	575	1040	210
	69.75	44.29	71.11	68.44	72.09	74.92	76.58	50.81	69.00	75.16	69.01	73.68
Yes-n/fat.	508	67	13	208	31	163	26	80	239	189	438	70
	28.35	47.86	28.89	29.17	24.03	24.92	23.42	43.24	28.38	24.71	29.06	24.56
Yes-fatal	32	11	0	16	4	1	0	11	20	1	28	4
	1.79	7.86	.00	2.24	3.10	.15	.00	5.95	2.38	.13	1.86	1.40
Other	2	0	0	1	1	0	0	0	2	0	1	1
	.11	.00	.00	.14	.78	.00	.00	.00	.24	.00	.07	.35
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

B.

Accident	Totals	ZN	ZP	BA THC LN	LP	HN	HP
None	100.00	4.96	2.56	39.04	7.44	39.20	6.80
Yes-non/fatal	100.00	13.19	2.56	40.94	6.10	32.09	5.12
Yes-fatal	100.00	34.38	.00	50.00	12.50	3.13	.00
Other	100.00	.00	.00	50.00	50.00	.00	.00
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

C.

Accident	TOTALS	BLOOD ALCOHOL No-BA	Low-BA	High-BA
None	100.00	7.52	46.48	46.00
Yes-non/fatal	100.00	15.75	47.05	37.20
Yes-fatal	100.00	34.38	62.50	3.13
Other	100.00	.00	100.00	.00
Averages	100.00%	10.32	46.99	42.69

D.

Accident	Totals	Delta 9-THC(Ng/Ml) Negative THC	Positive THC
None	100.00	83.20	16.80
Yes-non/fatal	100.00	86.22	13.78
Yes-fatal	100.00	87.50	12.50
Other	100.00	50.00	50.00
Averages	100.00%	84.10	15.90

TABLE 13.

FIELD SOBRIETY TEST

A. Field Sobriety Test	Totals	BA THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC (Ng/Ml) (-) THC	(+) THC
Passed	4	0	0	4	0	0	0	0	4	0	4	0
	.22	.00	.00	.56	.00	.00	.00	.00	.48	.00	.37	.00
Failed	1381	79	33	527	103	541	98	112	630	639	1149	234
	71.07	56.43	73.33	73.91	79.84	82.72	88.29	60.54	75.75	83.53	70.11	82.11
Unknown	407	61	12	182	26	113	13	73	208	126	356	51
	22.71	43.57	26.67	25.53	20.16	17.28	11.71	39.46	24.70	16.47	23.62	17.89
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Incidence of delta 9-THC in Unknown Category

Zero BA Levels & Low BA Levels				Hi-BA Levels			
- delta 9 THC No Acc.	Accid.	+ delta 9 THC No. Acc.	Accid.	- delta 9 THC No Acc.	Accid.	+ delta 9 THC No Acc.	Accid.
28	210	3	34	33	80	13	0

Table 14.

Vehicle Year by Delta 9-THC (Ng/Ml)

A.

Vehicle Year	Totals	BA THC ZN	ZP	LN	LP	HN	HP	BLOOD ALCOHOL No-BA	Low-BA	Hi-BA	DELTA 9 THC (Ng/Ml) (-) THC	(+) THC
0-57	47	5	1	15	3	17	6	6	18	23	37	10
	2.62	3.57	2.22	2.10	2.33	2.60	5.41	3.24	2.14	3.01	2.46	3.51
58-64	217	18	4	79	13	91	12	22	92	103	188	29
	12.11	12.86	8.89	11.08	10.08	13.91	10.81	11.89	10.93	13.46	12.48	10.18
65-69	536	51	10	195	46	199	35	61	241	234	445	91
	29.91	36.43	22.22	27.35	35.66	30.43	31.53	32.97	28.62	30.59	29.53	31.93
70-76	831	55	26	350	58	289	53	81	408	342	694	137
	46.37	39.29	57.78	49.09	44.96	44.19	47.75	43.78	48.46	44.71	46.05	48.07
77-78	137	8	2	64	7	54	2	10	71	56	126	11
	7.65	5.71	4.44	8.98	5.43	8.26	1.80	5.41	8.43	7.32	8.36	3.86
	24	3	2	10	2	4	3	5	12	7	17	7
	1.34	2.14	4.44	1.40	1.55	.61	2.70	2.70	1.43	.92	1.13	2.46
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

B.

Vehicle Year	Totals	BA THC ZN	ZP	LN	LP	HN	HP
0-57	100.00	10.64	2.13	31.91	6.38	36.17	12.77
58-64	100.00	8.29	1.84	36.41	5.99	41.94	5.53
65-69	100.00	9.51	1.87	36.38	8.58	37.13	6.53
70-76	100.00	6.62	3.13	42.12	6.98	34.78	6.38
77-78	100.00	5.84	1.46	46.72	5.11	39.42	1.46
	100.00	12.50	8.33	41.67	8.33	16.67	12.50
Averages	100.00	7.81	2.51	39.79	7.20	36.50	6.19

C.

Vehicle Year	Totals	BLOOD ALCOHOL No-BA	Low-BA	Hi-BA
0-57	100.00	12.77	38.30	48.94
58-64	100.00	10.14	42.40	47.47
65-69	100.00	11.38	44.96	43.66
70-76	100.00	9.75	49.10	41.16
77-78	100.00	7.30	51.82	40.88
	100.00	20.83	50.00	29.17
Averages	100.00	10.32	46.99	42.69

Table 14 (cont'd)

Vehicle Year by Delta 9-THC(Ng/Ml)

D. Vehicle Year	Totals	Delta 9-THC(Ng/Ml) Negative THC	Positive THC
0-57	100.00	78.72	21.28
58-64	100.00	86.64	13.36
65-69	100.00	83.02	16.98
70-76	100.00	83.51	16.49
77-78	100.00	91.97	8.03
	100.00	70.83	29.17
Averages	100.00	84.10	15.90

Table #14 A

Distribution of Vehicle Type by delta 9-THC

High BA

	Total #	Negative delta 9	Positive delta 9	
Automobile	568	490	78	13.7%
Pickups	151	126	25	16.6%
Vans	12	12	none	
Motor Cycles	21	18	3	14.3%
Semi-trucks	6	3	3	
Others/ Rec. Veh.	3	2	1	
Controls & Eliminations	50	-	-	
Total	811	651	110	

- - - - - - - - - - - - - - - -

Low BA

Automobile	797	669	128	16.1%
Pickups	130	109	21	16.2%
Vans	43	37	6	14.0%
Motor Cycles	36	29	7	19.4%
Semi-trucks	10	9	1	10.0%
Others/Rec. Veh.	12	8	4	
Controls & Eliminations	216			
Totals	1244	861	167	

TABLE 15.

Time lapse minutes inc-sample by Delta 9-THC (Ng/Ml)

A. Time Lapse Minutes

Time Lapse Minutes	Totals	BA/THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC(Ng/Ml) (-) THC	(+) THC
000-015	39	4	1	17	3	12	2	5	20	14	33	6
	2.18%	2.86	2.22	2.38	2.33	1.83	1.80	2.70	2.38	1.83	2.19	2.11
016-030	349	13	9	136	26	150	15	22	162	165	299	50
	19.48	9.29	20.00	19.07	20.16	22.94	13.51	11.89	19.24	21.57	19.84	17.54
031-045	429	23	8	165	36	166	31	31	201	197	354	75
	23.94	16.43	17.78	23.14	27.91	25.38	27.93	16.76	23.87	25.75	23.49	26.32
046-060	333	14	7	129	13	138	32	21	142	170	281	52
	18.58	10.00	15.56	18.09	10.08	21.10	28.83	11.35	16.86	22.22	18.65	18.25
061-075	189	19	6	73	15	71	5	25	88	76	163	26
	10.55	13.57	13.33	10.24	11.63	10.86	4.50	13.51	10.45	9.93	10.82	9.12
076-090	125	14	5	48	8	41	9	19	56	50	103	22
	6.98	10.00	11.11	6.73	6.20	6.27	8.11	10.27	6.65	6.54	6.83	7.72
091-105	86	10	4	49	8	12	3	14	57	15	71	15
	4.80	7.14	8.89	6.87	6.20	1.83	2.70	7.57	6.77	1.96	4.71	5.26
106-200	163	31	2	71	14	37	8	33	85	45	139	24
	9.10	22.14	4.44	9.96	10.85	5.66	7.21	17.84	10.10	5.88	9.22	8.42
201-400	18	6	1	7	0	4	0	7	7	4	17	1
	1.00	4.29	2.22	.98	.00	.61	.00	3.78	.83	.52	1.13	.35
Crosscheck*	61	6	2	18	6	23	6	8	24	29	47	14
	3.40	4.29	4.44	2.52	4.65	3.52	5.41	4.32	2.85	3.79	3.12	4.91
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

* Required collation and confirmation to incorporate into time lapse data (see figure 15)

Time lapse minutes inc-sample by Delta 9-THC (Ng/Ml)
BA THC

B. Time Lapse Minutes

Time Lapse Minutes	Totals	ZN	ZP	LN	LP	HN	HP
000-015	100.00%	10.26	2.56	43.59	7.69	30.77	5.13
016-030	100.00	3.72	2.58	38.97	7.45	42.98	4.30
031-045	100.00	5.36	1.86	38.46	8.39	38.69	7.23
046-060	100.00	4.20	2.10	38.74	3.90	41.44	9.61
061-075	100.00	10.05	3.17	38.62	7.94	37.57	2.65
076-090	100.00	11.20	4.00	38.40	6.40	32.80	7.20
091-105	100.00	11.63	4.65	56.98	9.30	13.95	3.49
106-200	100.00	19.02	1.23	43.56	8.59	22.70	4.91
201-400	100.00	33.33	5.56	38.89	.00	22.22	.00
	100.00	9.84	3.28	29.51	9.84	37.70	9.84
Averages	100.00	7.81	2.51	39.79	7.20	36.50	6.19

TABLE 15. (Cont'd)
Time lapse minutes inc-samp by Delta 9-THC (Ng/Ml)

C.

Time Lapse Minutes	Totals	Blood Alcohol No-BA	Low-BA	Hi-BA
000-015	100.00 %	12.82	51.28	35.90
016-030	100.00	6.30	46.42	47.28
031-045	100.00	7.23	46.85	45.92
046-060	100.00	6.31	42.64	51.05
061-075	100.00	13.23	46.56	40.21
076-090	100.00	15.20	44.80	40.00
091-105	100.00	16.28	66.28	17.44
106-200	100.00	20.25	52.15	27.61
201-400	100.00	38.89	38.89	22.22
	100.00	13.11	39.34	47.54
Averages	100.00	10.32	46.99	42.69

Time lapse minutes inc-samp by Delta 9-THC (Ng/Ml)

D.

Time Lapse Minutes	Totals	Delta 9-THC (Ng/Ml) Negative THC	Positive THC
000-015	100.00%	84.62	15.38
016-030	100.00	85.67	14.33
031-045	100.00	82.52	17.48
046-060	100.00	84.38	15.62
061-075	100.00	86.24	13.76
076-090	100.00	82.40	17.60
091-105	100.00	82.56	17.44
106-200	100.00	85.28	14.72
201-400	100.00	94.44	5.56
	100.00	77.05	22.95
Averages	100.00%	84.10	15.90

TABLE 16.

Blood Alcohol by Delta 9-THC (Ng/Ml)

A.

Blood Alcohol	Totals	ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC (Ng/Ml) (-) THC	(+) THC
00	185	140	45	0	0	0	0	185	0	0	140	45
	10.32%	100.00	100.00	.00	.00	.00	.00	100.00	.00	.00	9.29	15.79
01-05	222	0	0	187	35	0	0	0	222	0	187	35
	12.39	.00	.00	26.23	27.13	.00	.00	.00	26.37	.00	12.41	12.28
06-10	620	0	0	526	94	0	0	0	620	0	526	94
	34.60	.00	.00	73.77	72.87	.00	.00	.00	73.63	.00	34.90	32.98
11-17	312	0	0	0	0	259	53	0	0	312	259	53
	17.41	.00	.00	.00	.00	39.60	47.75	.00	.00	40.78	17.19	18.60
18-23	307	0	0	0	0	270	37	0	0	307	270	37
	17.13	.00	.00	.00	.00	41.28	33.33	.00	.00	40.13	17.92	12.98
24-50	146	0	0	0	0	125	21	0	0	146	125	21
	8.15	.00	.00	.00	.00	19.11	18.92	.00	.00	19.08	8.29	7.37
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285

Blood Alcohol by Delta 9-THC (Ng/Ml)

B.

Blood Alcohol	Totals	ZN	ZP	BA THC LN	LP	HN	HP
00	100.00%	75.68	24.32	.00	.00	.00	.00
01-05	100.00	.00	.00	84.23	15.77	.00	.00
06-10	100.00	.00	.00	84.84	15.16	.00	.00
11-17	100.00	.00	.00	.00	.00	83.01	16.99
18-23	100.00	.00	.00	.00	.00	87.95	12.05
24-50	100.00	.00	.00	.00	.00	85.62	14.38
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

Blood Alcohol by Delta 9-THC (Ng/Ml)

C.

Blood Alcohol	Totals	Blood Alcohol No-BA	Low-BA	Hi-BA
00	100.00%	100.00	.00	.00
01-05	100.00	.00	100.00	.00
06-10	100.00	.00	100.00	.00
11-17	100.00	.00	.00	100.00
18-23	100.00	.00	.00	100.00
24-50	100.00	.00	.00	100.00
Averages	100.00	10.32	46.99	42.69

TABLE 16. (Cont'd)

Blood Alcohol by Delta 9-THC (Ng/Ml)

D. Blood Alcohol	Totals	Delta 9-THC (Ng/Ml) Negative THC	Positive THC
00	100.00%	75.68	24.32
01-05	100.00	84.23	15.77
06-10	100.00	84.84	15.16
11-17	100.00	83.01	16.99
18-23	100.00	87.95	12.05
24-50	100.00	85.62	14.38
Averages	100.00%	84.10	15.90

TABLE 17.

Other Drugs by Delta 9-THC (Ng/Ml)

A.

Other Drugs	Totals	BA/THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC (Ng/Ml) (-) THC	(+) THC
None	150	30	13	86	15	5	1	43	101	6	121	29
	8.37	21.43	28.89	12.06	11.63	.76	.90	23.24	12.00	.78	8.03	10.18
Barb	27	8	4	10	5	0	0	12	15	0	18	9
	1.51	5.71	8.89	1.40	3.88	.00	.00	6.49	1.78	.00	1.19	3.16
H & S	17	6	5	2	4	0	0	11	6	0	8	9
	.95	4.29	11.11	.28	3.10	.00	.00	5.95	.71	.00	.53	3.16
Tran	28	12	4	10	2	0	0	16	12	0	22	6
	1.56	8.57	8.89	1.40	1.55	.00	.00	8.65	1.43	.00	1.46	2.11
Other	7	1	1	5	0	0	0	2	5	0	6	1
	.39	.71	2.22	.70	.00	.00	.00	1.08	.59	.00	.40	.35
Combination	13	7	2	1	3	0	0	9	4	0	8	5
	.73	5.00	4.44	.14	2.33	.00	.00	4.86	.48	.00	.53	1.75
Unknown	1550	76	16	599	100	649	110	92	699	759	1324	226
	86.50	54.29	35.56	84.01	77.52	99.24	99.10	49.73	83.02	99.22	87.86	79.30
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Other Drugs by Delta 9-THC (Ng/Ml)

B

Other Drugs	Totals	ZN	ZP	LN	BA THC LP	HN	HP
None	100.00%	20.00	8.67	57.33	10.00	3.33	.67
Barb	100.00	29.63	14.81	37.04	18.52	.00	.00
H & S	100.00	35.29	29.41	11.76	23.53	.00	.00
Tran	100.00	42.86	14.29	35.71	7.14	.00	.00
Other	100.00	14.29	14.29	71.43	.00	.00	.00
Combination	100.00	53.85	15.38	7.69	23.08	.00	.00
Unknown	100.00	4.90	1.03	38.65	6.45	41.87	7.10
Averages	100.00%	7.81	2.51	39.79	7.20	36.50	6.19

Table 17. (Cont'd)

Other Drugs by Delta 9-THC (Ng/Ml)

C. Other Drugs	Totals	Blood Alcohol No-BA	Low-BA	Hi-BA
None	100.00%	28.67	67.33	4.00
Barb	100.00	44.44	55.56	.00
H & S	100.00	64.71	35.29	.00
Tran	100.00	57.14	42.86	.00
Other	100.00	28.57	71.43	.00
Combination	100.00	69.23	30.77	.00
Unknown	100.00	5.94	45.10	48.97
Averages	100.00%	10.32	46.99	42.69

Other Drugs by Delta 9-THC (Ng/Ml)

D. Other Drugs	Totals	Delta 9-THC (Ng/Ml) Negative THC	Positive THC
None	100.00%	80.67	19.33
Barb	100.00	66.67	33.33
H & S	100.00	47.06	52.94
Tran	100.00	78.57	21.43
Other	100.00	85.71	14.29
Combination	100.00	61.54	38.46
Unknown	100.00	85.42	14.58
Averages	100.00	84.10	15.90

TABLE 18.
Evidence of MJ use by Delta 9-THC (Ng/Ml)

A.

Evidence of MJ Use	Totals	BA THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-BA	Low-BA	Hi-BA	Delta 9-THC (Ng/Ml) (-) THC	(+) THC
None	1690	125	38	672	112	636	107	163	784	743	1433	257
	94.31	89.29	84.44	94.25	86.82	97.25	96.40	88.11	93.11	97.12	95.09	90.18
Possession	67	10	5	28	10	11	3	15	38	14	49	18
	3.74	7.14	11.11	3.93	7.75	1.68	2.70	8.11	4.51	1.83	3.25	6.32
Admission	17	2	1	5	4	5	0	3	9	5	12	5
	.95	1.43	2.22	.70	3.10	.76	.00	1.62	1.07	.65	.80	1.75
Poss + Admis	13	3	1	7	1	0	1	4	8	1	10	3
	.73	2.14	2.22	.98	.78	.00	.90	2.16	.95	.13	.66	1.05
Other	5	0	0	1	2	2	0	0	3	2	3	2
	.28	.00	.00	.14	1.55	.31	.00	.00	.36	.26	.20	.70
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Evidence of MJ Use by Delta 9-THC (Ng/Ml)

B.

Evidence of MJ Use	Totals	BA THC ZN	ZP	LN	LP	HN	HP
None	100.00%	7.40	2.25	39.76	6.63	37.63	6.33
Possession	100.00	14.93	7.46	41.79	14.93	16.42	4.48
Admission	100.00	11.76	5.88	29.41	23.53	29.41	.00
Poss + Admis	100.00	23.08	7.69	53.85	7.69	.00	7.69
Other	100.00	.00	.00	20.00	40.00	40.00	.00
Averages	100.00	7.81	2.51	39.79	7.20	36.50	6.19

Evidence of MJ Use by Delta 9-THC (Ng/Ml)

C.

Evidence of MJ Use	Totals	Blood Alcohol No-BA	Low-BA	Hi-BA
None	100.00%	9.64	46.39	43.96
Possession	100.00	22.39	56.72	20.90
Admission	100.00	17.65	52.94	29.41
Poss + Admis	100.00	30.77	61.54	7.69
Other	100.00	.00	60.00	40.00
Averages	100.00%	10.32	46.99	42.69

TABLE 18. (Cont'd)

Evidence of MJ Use by Delta 9-THC (Ng/Ml)

D. Evidence of MJ Use	Totals	Delta 9-THC (Ng/Ml) Negative THC	Positive THC
None	100.00%	84.79	15.21
Possession	100.00	73.13	26.87
Admission	100.00	70.59	29.41
Poss + Admis	100.00	76.92	23.08
Other	100.00	60.00	40.00
Averages	100.00%	84.10	15.90

TABLE 19.

Time Lapse Weeks Samp-Analysis by delta 9-THC (Ng/Ml)

A. Time Lapse	Totals	BA THC ZN	ZP	LN	LP	HN	HP	Blood Alcohol No-Ba	Low-BA	Hi-BA	Delta 9-THC (Ng/Ml) (-) THC	(+) THC
000-005	283	19	14	117	33	83	17	33	150	100	219	64
	15.79%	13.57	31.11	16.41	25.58	12.69	15.32	17.84	17.81	13.07	14.53	22.46
006-010	645	52	22	258	52	222	39	74	310	261	532	113
	35.99	37.14	48.89	36.19	40.31	33.94	35.14	40.00	36.82	34.12	35.30	39.65
011-015	523	41	9	202	32	196	43	50	234	239	439	84
	29.19	29.29	20.00	28.33	24.81	29.97	38.74	27.03	27.79	31.24	29.13	29.47
016-020	294	24	0	119	10	132	9	24	129	141	275	19
	16.41	17.14	.00	16.69	7.75	20.18	8.11	12.97	15.32	18.43	18.25	6.67
021-025	42	3	0	15	1	20	3	3	16	23	38	4
	2.34	2.14	.00	2.10	.78	3.06	2.70	1.62	1.90	3.01	2.52	1.40
026-030	4	1	0	2	0	1	0	1	2	1	4	0
	.22	.71	.00	.28	.00	.15	.00	.54	.24	.13	.27	.00
031-035	1	0	0	0	1	0	0	0	1	0	0	1
	.06	.00	.00	.00	.78	.00	.00	.00	.12	.00	.00	.35
Totals	1792	140	45	713	129	654	111	185	842	765	1507	285
	100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Time Lapse Weeks Samp-Analysis by delta 9-THC (Ng/Ml)

B. Time Lapse	Totals	BA THC ZN	ZP	LN	LP	HN	HP
000-005	100.00	6.71	4.95	41.34	11.66	29.33	6.01
006-010	100.00	8.06	3.41	40.00	8.06	34.42	6.05
011-015	100.00	7.84	1.72	38.62	6.12	37.48	8.22
016-020	100.00	8.16	.00	40.48	3.40	44.90	3.06
021-025	100.00	7.14	.00	35.71	2.38	47.62	7.14
026-030	100.00	25.00	.00	50.00	.00	25.00	.00
031-035	100.00	.00	.00	.00	100.00	.00	.00
Averages	100.00	7.81	2.51	39.79	7.20	36.50	6.19

Table 19. (Cont'd)

Time Lapse Weeks Samp-Analysis by delta 9-THC (Ng/Ml)

C. Time Lapse	Totals	Blood Alcohol No-BA	Low-BA	Hi-BA
000-005	100.00	11.66	53.00	35.34
006-010	100.00	11.47	48.06	40.47
011-015	100.00	9.56	44.74	45.70
016-020	100.00	8.16	43.88	47.96
021-025	100.00	7.14	38.10	54.76
026-030	100.00	25.00	50.00	25.00
031-035	100.00	.00	100.00	.00
Averages	100.00	10.32	46.99	42.69

Time Lapse Weeks Samp-Analysis by delta 9-THC (Ng/Ml)

D. Time Lapse	Totals	Negative THC	Positive THC
000-005	100.00	77.39	22.61
006-010	100.00	82.48	17.52
011-015	100.00	83.94	16.06
016-020	100.00	93.54	6.46
021-025	100.00	90.48	9.52
026-030	100.00	100.00	.00
031-035	100.00	.00	100.00
Averages	100.00	84.10	15.90

TABLE #20

Sample Type is Hemolyzed Blood

	(RIA) White Memorial Hospital	(GC/MS) University of Missouri, Kansas City
delta 9-THC (ng/ml)	0	0
	32	22.26
	21	19.03
	13	12.58
	9.5	6.77
	7	9.03
	5	6.13
	0	3.55
	0	0
	0	4.84
	0	3.87
	0	0
	0	0
	0	*
	0	0

* Vial broken in transit

	(RIA) White Memorial Hospital	(GC/MS) Batelle Columbus Lab., Columbus, Ohio.
delta 9-THC (ng/ml)	0	7.6
	29	**
	18	14.9
	8	5.5
	6	6.6
	17	5.9
	16	31.7
	0	3.0
	0	5.4
	0	1.8
	0	0
	35	125.3
	14	23.6
	7	6.3
	0	7.8

** Clotted, no results reported

Control samples (blanks)	0	6.0
	0	1.4
	0	2.0

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Attachments

TRAFFIC COLLISION REPORT — DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

PAGE ___ OF ___

SPECIAL CONDITIONS	NO. INJURED	H & R FELONY ☐	CITY	JUDICIAL DISTRICT	NUMBER
	NO. KILLED	H & R MISD. ☐	COUNTY	REPORTING DISTRICT / BEAT	Attachment #1

LOCATION

COLLISION OCCURRED ON	MO. DAY YR.	TIME (2400)	NCIC NUMBER	OFFICER I.D.

☐ AT INTERSECTION WITH
☐ OR: FEET/MILES OF

INJURY, FATAL OR TOW AWAY: ☐ YES ☐ NO
STATE HWY RELATED: ☐ YES ☐ NO

PARTY 1

NAME (FIRST, MIDDLE, LAST)					STREET ADDRESS
DRIVER'S LICENSE NUMBER / STATE	BIRTHDATE MO. DAY YR.	SEX	RACE		CITY / STATE / PHONE
VEHICLE YR. / MAKE/MODEL	LICENSE NO. / STATE				OWNER'S NAME ☐ SAME AS DRIVER
DIRECTION OF TRAVEL / ON/ACROSS (STREET OR HIGHWAY)					OWNER'S ADDRESS ☐ SAME AS DRIVER
SPEED LIMIT / DISPOSITION OF VEHICLE ☐ BY DRIVER	ON ORDERS OF				VEHICLE DAMAGE EXTENT ☐ MINOR ☐ MOD. ☐ MAJOR ☐ TOTAL / LOCATION; VIOLATION CHARGED 1 2

☐ DRIVER ☐ PEDESTRIAN ☐ PARKED VEH. ☐ BICYCLIST ☐ OTHER

PARTY 2

NAME (FIRST, MIDDLE, LAST)					STREET ADDRESS
DRIVER'S LICENSE NUMBER / STATE	BIRTHDATE MO. DAY YR.	SEX	RACE		CITY / STATE / PHONE
VEHICLE YR. / MAKE/MODEL	LICENSE NO. / STATE				OWNER'S NAME ☐ SAME AS DRIVER
DIRECTION OF TRAVEL / ON/ACROSS (STREET OR HIGHWAY)					OWNER'S ADDRESS ☐ SAME AS DRIVER
SPEED LIMIT / DISPOSITION OF VEHICLE ☐ BY DRIVER	ON ORDERS OF				VEHICLE DAMAGE EXTENT ☐ MINOR ☐ MOD. ☐ MAJOR ☐ TOTAL / LOCATION; VIOLATION CHARGED 1 2

☐ DRIVER ☐ PEDESTRIAN ☐ PARKED VEH. ☐ BICYCLIST ☐ OTHER

PROPERTY

DESCRIPTION OF DAMAGE

OWNER'S NAME / ADDRESS / NOTIFIED ☐ YES ☐ NO

INJURED/WITNESS

WITNESS ONLY	AGE	SEX	EXTENT OF INJURY: FATAL INJURY	SEVERE WOUND DISTORTED MEMBER	OTHER VISIBLE INJURIES	COMPLAINT OF PAIN	INJURED WAS (Check one): DRIVER	PASS.	PED.	BICYCLIST	OTHER	IN VEHICLE NUMBER
☐			☐	☐	☐	☐	☐	☐	☐	☐	☐	

NAME / PHONE

ADDRESS / TAKEN TO (INJURED ONLY)

☐			☐	☐	☐	☐	☐	☐	☐	☐	☐	

NAME / PHONE

ADDRESS / TAKEN TO (INJURED ONLY)

☐			☐	☐	☐	☐	☐	☐	☐	☐	☐	

NAME / PHONE

ADDRESS / TAKEN TO (INJURED ONLY)

SKETCH

INDICATE NORTH

MISCELLANEOUS

VEHICLE TYPE	
PARTY 1	
PARTY 2	

ROAD TYPE

☐ A CONVENTIONAL, ONE WAY
☐ B CONVENTIONAL, TWO WAY
☐ C EXPRESSWAY
☐ D FREEWAY
☐ E OTHER (EXPLAIN IN NARRATIVE)

DATE OF COLLISION (MO. DAY YR.)	TIME (2400)	NCIC NUMBER	OFFICER I.D. NUMBER		PAGE

COLLISION NARRATIVE

PRIMARY COLLISION FACTOR	RIGHT OF WAY CONTROL	1	2	3	4	TYPE OF VEHICLE	1	2	3	4	MOVEMENT PRECEDING COLLISION
A VC SECTION VIOLATION:	A CONTROLS FUNCTIONING					A PASSENGER CAR (INCLUDES STATION WAGON)					A STOPPED
B OTHER IMPROPER DRIVING*	B CONTROLS NOT FUNCTIONING					B PASSENGER CAR W/TRAILER					B PROCEEDING STRAIGHT
C OTHER THAN DRIVER*	C CONTROLS OBSCURED					C MOTORCYCLE/SCOOTER					C RAN OFF ROAD
D UNKNOWN*	D NO CONTROLS PRESENT					D PICKUP OR PANEL TRUCK					D MAKING RIGHT TURN
WEATHER	**TYPE OF COLLISION**					E PICKUP OR PANEL TRUCK W/TRAILER					E MAKING LEFT TURN
A CLEAR	A HEAD-ON					F TRUCK OR TRUCK TRACTOR					F MAKING U TURN
B CLOUDY	B SIDESWIPE					G TRUCK OR TRUCK TRACTOR W/TRAILER(S)					G BACKING
C RAINING	C REAR END					H SCHOOL BUS					H SLOWING — STOPPING
D SNOWING	D BROADSIDE					I OTHER BUS					I PASSING OTHER VEHICLE
E FOG	E HIT OBJECT					J EMERGENCY VEHICLE					J CHANGING LANES
F OTHER:	F OVERTURNED					K HIGHWAY CONSTRUCTION EQUIPMENT					K PARKING MANEUVER
LIGHTING	G AUTO/PEDESTRIAN					L BICYCLE					L ENTERING TRAFFIC FROM SHOULDER, MEDIAN, PARKING STRIP OR PRIVATE DRIVE
A DAYLIGHT	H OTHER*:					M OTHER*:					M OTHER UNSAFE TURNING
B DUSK — DAWN	**MOTOR VEHICLE INVOLVED WITH**										N CROSSED INTO OPPOSING LANE
C DARK — STREET LIGHTS	A NON-COLLISION										O PARKED
D DARK — NO STREET LIGHTS	B PEDESTRIAN										P MERGING
E DARK — STREET LIGHTS NOT *FUNCTIONING*	C OTHER MOTOR VEHICLE										Q TRAVELING WRONG WAY*
ROADWAY SURFACE	D MOTOR VEHICLE ON OTHER ROADWAY	1	2	3	4	**OTHER ASSOCIATED FACTOR (/ 1 TO 3 ITEMS)**					R OTHER:
A DRY	E PARKED MOTOR VEHICLE					A VC SECTION VIOLATION:					
B WET	F TRAIN					B VC SECTION VIOLATION:					
C SNOWY — ICY	G BICYCLE					C VC SECTION VIOLATION:					**SOBRIETY - DRUG - PHYSICAL (/ 1 TO 3 ITEMS)**
D SLIPPERY (MUDDY, OILY, ETC.)	H ANIMAL:					D VC SECTION VIOLATION:					A HAD NOT BEEN DRINKING
ROADWAY CONDITIONS (/ 1 TO 3 ITEMS)	I FIXED OBJECT:					E VISION OBSCUREMENTS:					B HBD - UNDER INFLUENCE
A HOLES, DEEP RUTS*	J OTHER OBJECT:					F INATTENTION					C HBD - NOT UNDER INFLUENCE*
B LOOSE MATERIAL ON ROADWAY*	K OTHER:					G STOP & GO TRAFFIC					D HBD - IMPAIRMENT UNKNOWN*
C OBSTRUCTION ON ROADWAY*	**PEDESTRIAN'S ACTION**					H ENTERING/LEAVING RAMP					E UNDER DRUG INFLUENCE*
D CONSTRUCTION-REPAIR ZONE	A NO PEDESTRIAN INVOLVED					I PREVIOUS COLLISION					F OTHER PHYSICAL IMPAIRMENT*
E REDUCED ROADWAY WIDTH	B CROSSING IN CROSSWALK AT INTERSECTION					J UNFAMILIAR WITH ROAD					G IMPAIRMENT NOT KNOWN
F FLOODED*	C CROSSING IN CROSSWALK - NOT AT INTERSECTION					K DEFECTIVE VEHICLE EQUIPMENT:					H NOT APPLICABLE
G OTHER:	D CROSSING - NOT IN CROSSWALK					L UNINVOLVED VEHICLE					
H NO UNUSUAL CONDITIONS	E IN ROAD — INCLUDES SHOULDER					M OTHER*:					
	F NOT IN ROAD					N NONE APPARENT					
	G APPROACHING/LEAVING SCHOOL BUS										

INVESTIGATED BY	I.D. NUMBER	INVESTIGATED BY	I.D. NUMBER	REVIEWED BY

*EXPLAIN IN NARRATIVE

CSP

SUPPLEMENTAL/NARRATIVE

(Check one)

- ☐ NARRATIVE CONTINUATION TRAFFIC COLLISION REPORT (CHP 555 OR 555-01)
- ☐ SUPPLEMENTAL TRAFFIC COLLISION REPORT (CHP 555 OR 555-01)
- ☐ OTHER:

DATE OF ORIGINAL INCIDENT (MO. DAY YR.)	TIME (2400)	NCIC NUMBER	OFFICER I.D.	NUMBER	PAGE
				Attachment	#1

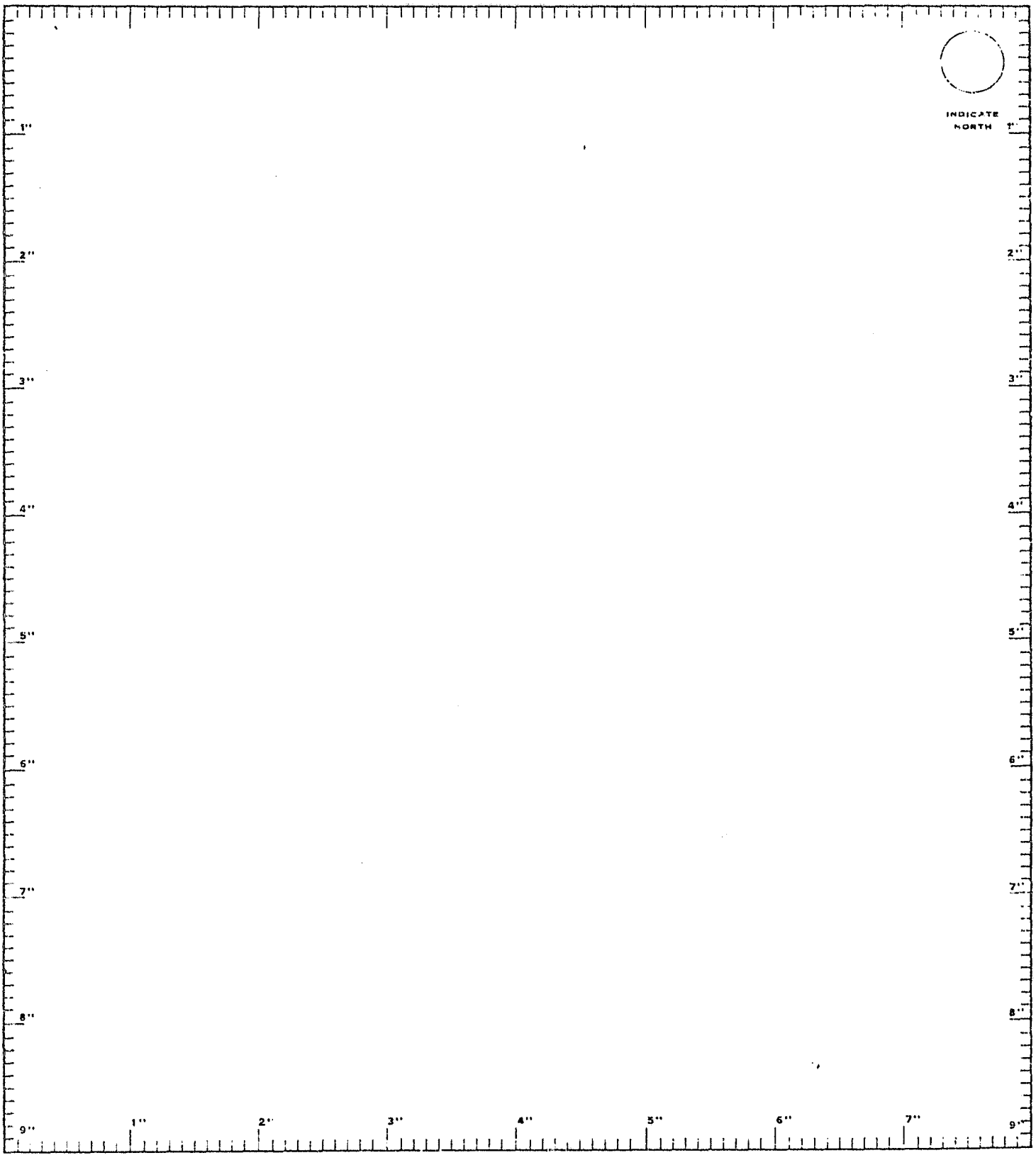
LOCATION/SUBJECT	CITATION NUMBER
	BEAT
CITY/COUNTY	REPORTING DISTRICT

PREPARED BY	I.D. NUMBER	PREPARED	REVIEWED APPROVED BY	I.D. NUMBER	APPROVED
NAME/RANK		MO. DAY YR.	NAME/RANK		MO. DAY YR.

FACTUAL DIAGRAM – NARRATIVE CONTINUATION Attachment #1

DATE OF COLLISION MO. DAY YR.	TIME (2400)	NCIC NUMBER	OFFICER I.D. NUMBER	PAGE

ALL MEASUREMENTS ARE APPROXIMATE AND NOT TO SCALE UNLESS STATED (SCALE =)



Attachment #2

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

ARREST – INVESTIGATION REPORT

COURT | FILE NUMBER | AREA | COLLISION REPORT NUMBER

SUBJ. NO. | DATE OF ☐ ARREST ☐ REPORT | TIME OF ARREST/INCIDENT | LOCATION OF ARREST/INCIDENT

CITATION NUMBER | OFFENSE(S) CHARGED OR INVESTIGATED

NAME (LAST, FIRST, MIDDLE) | RESIDENCE ADDRESS

RACE | SEX | BIRTHDATE | HAIR | EYES | HEIGHT | WEIGHT

DRIVER'S LICENSE NUMBER | STATE | SOCIAL SECURITY NUMBER | PLACE OF BIRTH (CITY, STATE, COUNTRY)

EMPLOYER | ADDRESS

BOOKING, CII, FBI, ETC. NUMBER(S) | WHERE BOOKED/CONFINED | DATE/TIME BOOKED OR TURNED OVER

JUVENILE NOTIFICATION (WHO, HOW, TIME)

NOTIFYING OFFICIAL | DDL STATUS | DATE/TIME DDL CHECK | METHOD OF CHECK ☐ TT ☐ MAIL ☐ PHONE

VEHICLE

LICENSE | STATE | YEAR | VIN/EN NUMBER | VEHICLE WAS ☐ STORED ☐ RECOVERED ☐ IMPOUNDED

YEAR OF VEHICLE | MAKE | BODY STYLE | COLOR | CHP 180 SUBMITTED ☐ YES ☐ NO

LOCATION OF VEHICLE/RELEASED TO | ADDRESS

NAME OF REGISTERED OWNER ☐ SAME AS DRIVER | ADDRESS ☐ SAME AS DRIVER

NAME OF LEGAL OWNER ☐ SAME AS R/O | ADDRESS

WITNESS

AGE	SEX	NAME	☐ PASSENGER	☐ VICTIM	ADDRESS	PHONE RES / BUS
			☐	☐		
			☐	☐		

ADMONITION OF RIGHTS

1. YOU HAVE THE RIGHT TO REMAIN SILENT.
2. ANYTHING YOU SAY CAN AND WILL BE USED AGAINST YOU IN A COURT OF LAW.
3. YOU HAVE THE RIGHT TO TALK TO A LAWYER AND HAVE HIM PRESENT WITH YOU WHILE YOU ARE BEING QUESTIONED.
4. IF YOU CANNOT AFFORD TO HIRE A LAWYER, ONE WILL BE APPOINTED TO REPRESENT YOU BEFORE QUESTIONING, IF YOU WISH ONE.

THE ABOVE STATEMENT WAS READ TO THE ARRESTEE BY: | I.D. | TIME

DO YOU UNDERSTAND EACH OF THESE RIGHTS I HAVE EXPLAINED TO YOU? ☐ YES ☐ NO | HAVING THESE RIGHTS IN MIND, DO YOU WISH TO TALK TO US NOW? ☐ YES ☐ NO | SUBJECT'S WAIVER STATEMENT

NARRATIVE

☐ ATTACH CHP 556 FOR ADDITIONAL NARRATIVE

ARRESTING OFFICER (NAME/RANK) | I.D. NO. | SUPERVISOR (NAME/RANK) | I.D. NO. | DATE

CHP 202 (REV 7-74)

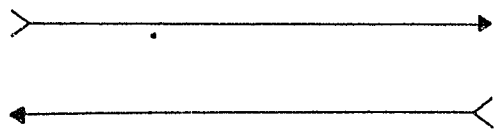
INTOXICATION INTERROGATION

Attachment #2

DO YOU KNOW OF ANYTHING MECHANICALLY WRONG WITH YOUR VEHICLE? DESCRIBE. ☐ YES ☐ NO			ARE YOU SICK OR INJURED? DESCRIBE. ☐ YES ☐ NO	
ARE YOU DIABETIC OR EPILEPTIC? ☐ YES ☐ NO	DO YOU TAKE INSULIN? (PILLS OR INJECTION) ☐ YES ☐ NO	DO YOU HAVE ANY PHYSICAL DEFECTS? DESCRIBE. (FEET, LEGS, ANKLES OR HIPS) ☐ YES ☐ NO		
WHEN DID YOU LAST SLEEP?	HOW LONG?	WHEN DID YOU LAST EAT?	DESCRIBE	
WERE YOU DRIVING THE VEHICLE? ☐ YES ☐ NO ☐ N/A	IF NO, WHO?	WHERE DID YOU START DRIVING?	WHERE WERE YOU GOING?	
WHERE ARE YOU NOW?	WHAT HAVE YOU BEEN DRINKING?	HOW MUCH?	TIME STARTED	TIME STOPPED
WHERE WERE YOU DRINKING?	DO YOU FEEL THE EFFECTS OF THE DRINKS? DESCRIBE. ☐ YES ☐ NO			
DID YOU BUMP YOUR HEAD? ☐ YES ☐ NO	HAVE YOU BEEN DRINKING SINCE THE ACCIDENT? ☐ YES ☐ NO ☐ N/A	WHAT?	HOW MUCH?	
ARE YOU UNDER CARE OF DOCTOR OR DENTIST? ☐ YES ☐ NO	IF YES, NAME AND ADDRESS			
HAVE YOU TAKEN ANY MEDICINE OR DRUGS? ☐ YES ☐ NO	IF YES, WHAT	HOW MUCH?	TIME OF LAST DOSAGE	
DO YOU FEEL THE EFFECTS OF THE DRUGS? DESCRIBE.				

FIELD SOBRIETY TEST – ALCOHOL/DRUGS

BREATH ODOR OF ALCOHOL ☐ STRONG ☐ MOD ☐ WEAK	GLASSES/LENSES ☐ YES ☐ NO	HEEL TO TOE/WALKING LINE TEST △ L. FOOT ○ R. FOOT
ATTITUDE		
EYES		
SPEECH		



CLOTHING WORN/CONDITION AND DESCRIPTION

DESCRIBE TEST LOCATION, SURFACE, WEATHER AND LIGHTING

IDENTIFY AND DESCRIBE EACH TEST GIVEN

IMPLIED CONSENT 13353 V.C.

YOU ARE REQUIRED BY STATE LAW TO SUBMIT TO A CHEMICAL TEST TO DETERMINE THE ALCOHOLIC CONTENT OF YOUR BLOOD. YOU HAVE A CHOICE OF WHETHER THE TEST IS TO BE OF YOUR BLOOD, BREATH OR URINE. IF YOU REFUSE TO SUBMIT TO A TEST OR FAIL TO COMPLETE A TEST YOUR DRIVING PRIVILEGE WILL BE SUSPENDED FOR A PERIOD OF SIX MONTHS. YOU DO NOT HAVE THE RIGHT TO TALK TO AN ATTORNEY OR TO HAVE AN ATTORNEY PRESENT BEFORE STATING WHETHER YOU WILL SUBMIT TO A TEST, BEFORE DECIDING WHICH TEST TO TAKE, OR DURING THE ADMINISTRATION OF THE TEST CHOSEN.

THE ABOVE STATEMENT WAS READ TO THE ARRESTEE BY: I.D. TIME

☐ BLOOD ☐ BREATH ☐ URINE ☐ DL 367 COMPLETED ☐ REFUSED	TIME 1. 2.	I.D. OF SAMPLE	RESULTS, IF AVAILABLE	DISPOSITION OF SAMPLE
LOCATION WHERE TEST CONDUCTED		NAME AND TITLE OF PERSON GIVING TEST OR TAKING SAMPLE		

Attachment #3 92.

INTOXICATION REPORT

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

CITATION NUMBER	CHARGE(S)	AREA CODE	DATE	TIME OF ARREST	FILE NUMBER

A. SUBJECT

NAME(LAST, FIRST, MIDDLE)	SEX	HAIR	EYES	HEIGHT	WEIGHT	BIRTHDATE

RESIDENCE ADDRESS	BUSINESS ADDRESS

LOCATION OF ARREST	WHERE BOOKED	DATE AND TIME BOOKED

DRIVER'S LICENSE NUMBER/SOC. SEC. NO.	STATE	LICENSE STATUS	DATE AND TIME DDL INFO REQUEST SENT	METHOD SENT
				☐ TT ☐ MAIL ☐ PHONE

B. VEHICLE INFORMATION

VEHICLE LICENSE NUMBER	STATE	YEAR OF VEH.	MAKE	BODY TYPE	COLOR

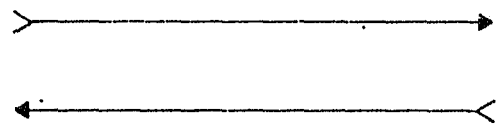
REGISTERED OWNER	☐ SAME AS DRIVER	R/O ADDRESS	☐ SAME AS DRIVER

PASSENGERS M	PASSENGERS F	CHP 180 COMPLETED	NAME OF GARAGE/RELEASED TO	ADDRESS
		☐ YES ☐ NO		

C. WITNESS

AGE	SEX	NAME	ADDRESS	TELEPHONE

D. FIELD SOBRIETY TEST

WAS SUBJECT'S VEH. INVOLVED IN ACCIDENT? ☐ YES ☐ NO	COLLISION REPORT NUMBER	HEEL TO TOE/WALKING LINE TEST △ L. FOOT ○ R. FOOT
ADMINISTERED? ☐ YES ☐ NO BY:	BREATH: ODOR OF ALCOHOLIC BEVERAGE ☐ STRONG ☐ MODERATE ☐ WEAK	
GLASSES/LENSES ☐ YES ☐ NO	EYES	
SPEECH		

CLOTHING WORN/CONDITION AND DESCRIPTION

FINGER TO NOSE:

BALANCE:

OTHER:

DESCRIBE TEST LOCATION, SURFACE, WEATHER AND LIGHTING

E. IMPLIED CONSENT 13353 V.C.

YOU ARE REQUIRED BY STATE LAW TO SUBMIT TO A CHEMICAL TEST TO DETERMINE THE ALCOHOLIC CONTENT OF YOUR BLOOD. YOU HAVE A CHOICE OF WHETHER THE TEST IS TO BE OF YOUR BLOOD, BREATH OR URINE. IF YOU REFUSE TO SUBMIT TO A TEST OR FAIL TO COMPLETE A TEST YOUR DRIVING PRIVILEGE WILL BE SUSPENDED FOR A PERIOD OF SIX MONTHS. YOU DO NOT HAVE THE RIGHT TO TALK TO AN ATTORNEY OR TO HAVE AN ATTORNEY PRESENT BEFORE STATING WHETHER YOU WILL SUBMIT TO A TEST, BEFORE DECIDING WHICH TEST TO TAKE, OR DURING THE ADMINISTRATION OF THE TEST CHOSEN.

THE ABOVE STATEMENT WAS READ TO THE ARRESTEE BY: _____ I.D. _____ TIME _____

☐ BLOOD ☐ BREATH ☐ URINE ☐ DL 367 COMPLETED ☐ REFUSED	TIME* 1. 2.	I.D. OF SAMPLE	RESULTS, IF AVAILABLE	DISPOSITION OF SAMPLE

LOCATION WHERE TEST CONDUCTED	NAME AND TITLE OF PERSON GIVING TEST OR TAKING SAMPLE

CHP FORM 218 (REV. 10-72) DESTROY PREVIOUS EDITION.

F. ADMONITION OF RIGHTS

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THE ABOVE STATEMENT WAS READ TO THE ARRESTEE BY: _____ I.D. _____ TIME _____

DO YOU UNDERSTAND EACH OF THESE RIGHTS I HAVE EXPLAINED TO YOU? ☐ YES ☐ NO	HAVING THESE RIGHTS IN MIND, DO YOU WISH TO TALK TO US NOW? ☐ YES ☐ NO	SUBJECT'S WAIVER STATEMENT

G. INTERROGATION

DO YOU KNOW OF ANYTHING MECHANICALLY WRONG WITH YOUR VEHICLE? DESCRIBE. ☐ YES ☐ NO			ARE YOU SICK OR INJURED? DESCRIBE. ☐ YES ☐ NO
ARE YOU DIABETIC OR EPILEPTIC? ☐ YES ☐ NO	DO YOU TAKE INSULIN? (PILLS OR INJECTION) ☐ YES ☐ NO	DO YOU HAVE ANY PHYSICAL DEFECTS? DESCRIBE. ☐ YES ☐ NO	
WHEN DID YOU LAST SLEEP?	HOW LONG?	WHEN DID YOU LAST EAT?	DESCRIBE
WERE YOU DRIVING THE VEHICLE? ☐ YES ☐ NO ☐ N/A	IF NO, WHO?	WHERE DID YOU START DRIVING?	WHERE WERE YOU GOING?
WHERE ARE YOU NOW?	WHAT HAVE YOU BEEN DRINKING?	HOW MUCH?	TIME STARTED / TIME STOPPED
WHERE WERE YOU DRINKING?	DO YOU FEEL THE EFFECTS OF THE DRINKS? DESCRIBE. ☐ YES ☐ NO		
ARE YOU UNDER CARE OF DOCTOR OR DENTIST? ☐ YES ☐ NO	IF YES, NAME & ADDRESS		
HAVE YOU TAKEN ANY MEDICINE OR DRUGS? ☐ YES ☐ NO	IF YES, WHAT	HOW MUCH?	TIME OF LAST DOSAGE
DO YOU FEEL THE EFFECTS OF THE DRUGS? DESCRIBE.			

H. CIRCUMSTANCES

ARRESTING OFFICER (NAME AND RANK)	I.D. NO.	SUPERVISOR (NAME AND RANK)	I.D. NO.	DATE

68214-456 11-72 250M

SUBJECT LIVING ☐ DEAD ☐ | LAB. CASE NO.

DETERMINATION OF BLOOD ALCOHOL: LAB RECORD

SUBMITTING AGENCY	LOCATION	AGENCY CASE NO.	VIOLATION

DATE AND TIME RECEIVED

METHOD RECEIVED
☐ MAIL ☐ DEPOSITORY ☐ OTHER (SPECIFY)

CONDITION OF EVIDENCE
☐ SEALED ☐ UNSEALED

SAMPLE TYPE
☐ BLOOD ☐ URINE ☐ BREATH

COMMENTS

ANALYSIS BY	DATE	RESULTS
		0. % W/V BLOOD ALCOHOL

ISB-60 (REV 9/76) DEPARTMENT OF JUSTICE—INVESTIGATIVE SERVICES BRANCH

Marihuana Effects on Roadside Sobriety Testing

The purposes of this study are a) to determine the effects of marihuana on performance or road sobriety tests as used by the California Highway Patrol for determining impairment of driving by alcohol and b) to define a range of plasma concentrations of the major active component, delta-9-tetrahydrocannabinol (THC) associated with such impairment. As there is little preliminary information on which to base the doses of drug required for such impairment, six to ten sequential trials are planned, with feedback of the laboratory tests after each series.

Subjects

Paid volunteer subjects will be recruited for the study. These will be persons who use marihuana to varying degrees, with particular emphasis on what might be called moderate users, that is, more than once weekly and less than once daily. Both men and women may be recruited.

Drug and Dose

Marihuana will be provided as a cigarette containing 19 mg of THC in each smoke. The cigarette will be smoked by the subject completely, at a rate and using a technique of his own device.

Clinical Testing

The usual battery of roadside sobriety tests will be administered by California Highway Patrol officers experienced in conducting such tests. A test report, similar to the ones used in the actual testing procedure, will be completed by the tester at each occasion.

Laboratory Testing

Plasma samples will be tested for THC content using a radioimmunoassay for THC developed by Dr. Stanley Gross. Dr. Gross has agreed to do the required

tests with a high priority so that the information from each trial will soon be available for planning of subsequent trials.

Trial #1

Three subjects will be recruited for testing on a Saturday, and three will be recruited for testing on a Sunday, with the times for their appearance staggered over successive 1½ hour periods. A total of six subjects will be tested per weekend. The schedule of operations will be as follows:

Time 0 - Subject will be tested on the sobriety test on two occasions, separated by a period of 5 minutes, to assure that he is familiar with the test and that he can satisfactorily perform it in his normal state.

+10 min - Subject will smoke one cigarette containing 19 mg THC. Smoking time for the cigarette will be approximately 5 minutes.

+ 25 min - Subject will be tested with the sobriety test; immediately upon completion of the test a blood sample will be drawn.

+35 min - The above procedure will be repeated.

+45 min - The above procedure will be repeated.

+55 min - The above procedure will be repeated.

+85 min - The above procedure will be repeated.

Should the subject fail to pass the last sobriety test, he will be re-tested at periods of 30 minutes until the test is passed. All subjects will be retained in the laboratory until it is evident on the basis of clinical signs that the effects of marihuana have disappeared. The protocol will be reviewed at this point and any changes necessary will be made before proceding further with additional trials.

Trial #2

After laboratory results from the previous trial have been made available, the second trial will be conducted in the same way as the first, with the exception

that ½ to 3 cigarettes will be smoked in succession. The time schedule will be advanced by 5 minutes to allow for the extra smoking time.

Trial #3

The third trial will follow the procedures in Trial #2 with the exception that the subjects will now smoke a to be designated number of cigarettes and the time schedule will be advanced accordingly.

Trials #4 through #10 to follow as identified on alternating weekends as outlined in Trial #1.

All information developed and conclusions reached by the consultant are subject to review by the State of California prior to any publication or public disclosure. Any liability or damages arising directly or indirectly from this protocol is the responsibility of the consultant. The undersigned recognizes this and agrees to these conditions by signature.

Signed by: Ronald E Wallace

Date: 24 April 1978

SEX _____

SUBJECT: #: NUMBER OF JOINTS SMOKED: DATE: HABIT _____

BODY WEIGHT: _____	5 minutes	½ hour	1 hour	1½ hour	2½ hours
Romberg body sway					
Finger to nose					
Heel to toe					
Standing on right foot					
Standing on left foot					
Finger Count					
Hand pat					
Counting backwards					
Alphabet					
Rate self on impairment					

Attachment #6

Oct. 2, 1978

SMOKING STUDY
Outline for Data Entry

(1) Subject #

01-56

(2) Sex

1 M
2 F

(3) Age

2 digits

(4) Weight in lb.

3 digits

(5) Habit

1 Experimental (~1-2 before)
2 Low (~1-2/month)
3 Medium (~1-2/week)
4 High (~1-2/day)

(6) # of Cig.

1 digit

(7) Time Lapse (smoking/sample)

1 = 0 min
2 = 5
3 = 30
4 = 90
5 = 150

(8) Serum Δ9 ng/ml

3 digits

(9) Blood Δ9 ng/ml

3 digits

(10) Romberg

1 Satisfactory
2 Slight sway
3 Pronounced sway
4 Failed

(11) Finger to Nose

1 Satisfactory
2 Missed
4 Failed

(12) Heel to Toe

1 Satisfactory
2 Slight sway
3 Pronounced sway
4 Failed

(13) Standing On One Foot

1 Satisfactory
2 Slight sway
3 Pronounced sway
5 Involuntary leg shake

(14) Finger Count

1 Satisfactory
2 Missed
4 Failed

(15) Hand Pat

1 Satisfactory
2 Missed
4 Failed

(16) Counting Backwards

1 Satisfactory
2 Missed
4 Failed

(17) Alphabet

1 Satisfactory
2 Missed
4 Failed

(18) Self Impairment Rating

0-9
Where 0= no affect of drug
9= Stoned

(19) Observer Rating

0-9
Where 0 = No affect of drug
9 = Stoned

Code #	Sex	Age	County of Incident	Ethnic Origin	Evidence of MJ Use	9 THC ng/ml	Acc.	Other Drugs	BA	Time of Incident	Time Lapse I/S	County of Residence	AY	Em	FST

Attachment 8.

GC/MS ANALYSIS OF Δ 9 TETRAHYDROCANNABINOL (Δ 9-THC) IN HUMAN SERUM

Nov. 1978

Thomas Keener
Lab Technician, Program
Support Unit, Sacramento
Final Report of an
Applications Project
I-01108

Final Report - Applications Project

SUBJECT: GC/MS Analysis of Δ 9 Tetrahydrocannabinol (Δ9-THC) in Human Serum.

A modified analytical procedure from the National Institute on Drug Abuse was employed to analyze human serum for unknown levels of Δ 9-THC. The procedure involved the addition of tri-deuterated Δ 9-THC internal standard to the serum, partitioning with hexane, separation and purification by gas chromatography, and observation of the relative abundance of electron impact fragmentation ions of Δ 9-THC and its deuterated analogue. Quantitation capabilities range from 4 ng to 200 ng Δ 9-THC per ml. of serum when mass fragmentography is used. Mass fragmentography is a technique by which a single positive ion, resulting from the fragmentation of a molecule, is monitored. The use of this method allows greater sensitivity and facilitates the interpretation of data.

Standards of Δ 9-THC in EtOH employed for analysis as received from NIDA required an assay of concentration and preparation at several concentration levels. For this purpose, a solid standard, androst-4-ene-3, 17-dione, was placed in solution at 0.1 mg/ml, 0.2 mg/ml, 0.4 mg/ml and injected on GC/FID. The peak areas were integrated on GC/FID and a standard curve derived. Δ 9-THC and Δ 9-THC-11-d_3 (deuterated) were made up at approximately 0.2 mg/ml levels. The peak areas for these were then compared with the standard curve and recorded. (Graph I)

Standard E = Δ 9-THC stock solution = 0.21 mg/ml
Standard H = Δ 9-THC-11-d_3 stock solution = 0.19 mg/ml

Standard solutions were made up in the following manner:

Δ 9-THC
Standard F = 240 ul standard E in 10 ml EtOH = 5.0 ng/ul
Standard G = 400 ul standard F in 10 ml EtOH = ng/ul

Δ 9-THC-11-d_3
Standard I = 263 ul standard H in 10 ml EtOH = 5.0 ng/ul

Standards F, G, and I were made up monthly from the original stock solutions E & H. Standards F and I were subject to mass spectral analysis to determine their isotopic purity. For standard F (5 ng/ul Δ 9-THC), 2 ul was injected into the mass spectrometer while monitoring m/e 258, 261 in the mass fragmentography mode. A response was observed at 258 with 1% response at 261, showing the Δ 9-THC to be adequately pure for this study.

Standard I was analyzed in a similar manner. A major response was observed at 261, with a corresponding response at 258 at 8% of m/e 261. (see Figure 1). The resultant impurity for the Δ 9-THC-11-d_3 was expected, due to deuteration of the Δ 9-THC being $<$ 100%. This causes little problem in sample analysis since a correction factor may be applied. A correction factor of 0.08 was therefore devised for sample analysis. (see Graph II)

Several groups of ions for mass frag monitoring were studied and the optimum group chosen. The NIDA procedure utilizes ions m/e 314 and 317 for Δ 9-THC-d-$_o$ and Δ 9-THC-d_3 respectively. These were determined unsuitable, as mass spectra generated during this study revealed 314, 317 were not major ions as the mass data for the NIDA procedure had indicated. (see Figures 32, 33) This can be a typical difference between mass spectrometers, due to hardware and equipment set-up parameters.

Ions with m/e values 258 and 261 were used for the following reasons:

1) adequate abundance for sensitivity requirements
2) specificity
3) lens interference from blood decomposition components carried over into extract
4) much easier resolution adjustment with FC-43 ion 264. (ms calibration standard)

Quantitation of the spiked serum samples appears reliable from the data, giving rise to the standard curve used to analyze unknown serum samples (Graph 2). The modified analytical procedure appears below.

Extraction -

1. 1-3 ml serum in 50 ml screw cap silylated centrifuge tube in ice bath.
2. Spike samples with 5, 10, 25, 50 and 100 ng Δ 9-THC-d-$_o$/ml serum and 50 ng Δ 9-THC-d_3/ml serum in ice bath, add 10 ml hexane.
3. Vortex capped tube in N_2 atmosphere for about 45-60 seconds until a white gelatinous emulsion forms.
4. Centrifuge capped tubes at 3000 RPM for 15 to 20 minutes. Hexane should be clear, with white translucent interface between serum and hexane layer.
5. Pipet off hexane layer and re-extract two more times.
6. Combine hexane extracts in silylated 200 mm x 12 mm culture tube and evaporate at room temperature under N_2 flow.

7. Take 0.25 ml remaining residue and transfer quantitatively to 0.3 ml silylated reactivials. (Pierce Chemical Co.)
8. Evaporate residue under N_2 flow, make up residue in 30 ul hexane and cap under N_2 atmosphere.
9. Store extracts at 0°C in dark.

Mass spectrometer parameters for plasma analysis of Δ 9-THC

GC

5 ft. x 2 mm ID glass column
2% SP2250 Chromosorb WHP 100/120 mesh
220°C - 270°C at 10°/min.
flow rate @ 20 ml/min.
injector @ 250°C
separator @ 260°C

MS

258, 261 m/e ions monitored
Preamp sensitivity 10^{-8}
emiss current 0.50 ma.
coll current 0.43 ma. (80-90%)
ion vol current 0.06 (10-20%)
electron energy 70 eV.
electron multiplier 2100V
lens volts)
extr volts)
ion energy) optimized for FC-43 m/e 264
resulution)
scan time 2 seconds

Δ 9-THC is observed at approximately 157th scan for both Δ9-THC-d_o and Δ 9-THC-d_3. Above conditions yielded an absolute detection limit of 0.1 - 0.2 ng Δ9-THC.

Peak areas utilized for quantitation are arrived at by the following means.

Situation 1. For example, see chart ss-1-1 (Figure 2). Where the background level is reasonably linear, regardless of slope, a span of 11 scans before and after the peak of interest are entered into GC area function. The center three scans are then entered for the peak representing d_o or d_3 and the peak area is obtained for quantitation.

Situation 2. For example, see chart ss-3A3 (Figure 14). Where background exhibits a peak prior to or after any of the 2 peaks of interest, a span of 4 to 6 scans immediately before and after are used to determine background. The peak area is entered in the usual manner (center 3 scans) to obtain the net peak areas. (peak area minus background).

Situation 3. For example, see chart ss-3A2 (Figure 13). Where the background is not linear, the left and right scans to determine background are entered immediately next to the peak. Four scans are used for the background. Peak area is entered in the usual manner, to obtain the net peak area.

A ratio of intensities for ions 258, 261 was taken to obtain an uncorrected value of d_o:d_3 Δ 9-THC. A minimum of two injections per sample should be performed to obtain average ratios. The 0.08 correction factor must be applied to the average ratios. As the abundance of 258 increases, due to increased concentration of the Δ 9-THC-d_o, the 8% abundance donated by the d_3 species exhibits less determinant error.

In Table I, 7 injections were conducted with sample ss-1. These were attempts to judge the accuracy of the spectrometer at the 5 ng/ml level. Accuracy was improved by conducting replicate 3 ul injections.

The corrected standard curve is linear over the range of analysis. Detection limits are adequately below the 5 ng/ml quantitated for Δ 9-THC-d_o in this series of analyses. (See Graph II)

Figures 1-17 display the data used to tabulate Graph 2, and Table I.

Following the successful analyses for the spiked serum samples, ten unknown samples were received for analysis of Δ 9-THC in serum and were analyzed by GC/MS in the manner previously discussed. Concurrently, three-blank serum samples were spiked at 5, 10, and 20 ng Δ 9-THC/ml serum to update the standard curve. One of the ten samples, 0070, was not analyzed due to insufficient quantity ($<$1 ml). Each sample was also spiked with 50 ng/ml Δ9-THC-11-d_3 (m/e 261). It is unknown why the internal standard did not extract as expected, as insufficient sample remained to conduct a re-extraction. Results of analysis appear in Table II and Figures 18-30.

The analytical procedure discussed in this presentation allows for the identification and quantitation of Δ 9-THC in human serum. The procedure is rather straightforward if certain criteria are strictly maintained.

1) The working standards should be made up monthly and stored under N_2 at $5^{\circ}C$ in the dark.
2) Samples should be maintained cold during extraction and also kept under nitrogen.
3) While concentrating the extracts, it is important to keep them under N_2 atmosphere and not allow them to go dry. Optimum absolute detection limits for the mass spectrometer are approximately 0.2 ng Δ 9-THC and Δ 9-THC-11-d_3.

The procedure is fairly rapid in its implementation. For the 9 unknown samples and the 3 standards: set-up required, 4 hours; extraction, 4.5; concentration of residues, 8; residue analysis/mass spectrometer set-up, 5; and data output and quantitation results, 5.

Use of more suitable equipment for the extraction and concentration steps would decrease the time involved in the analysis, especially during residue concentration.

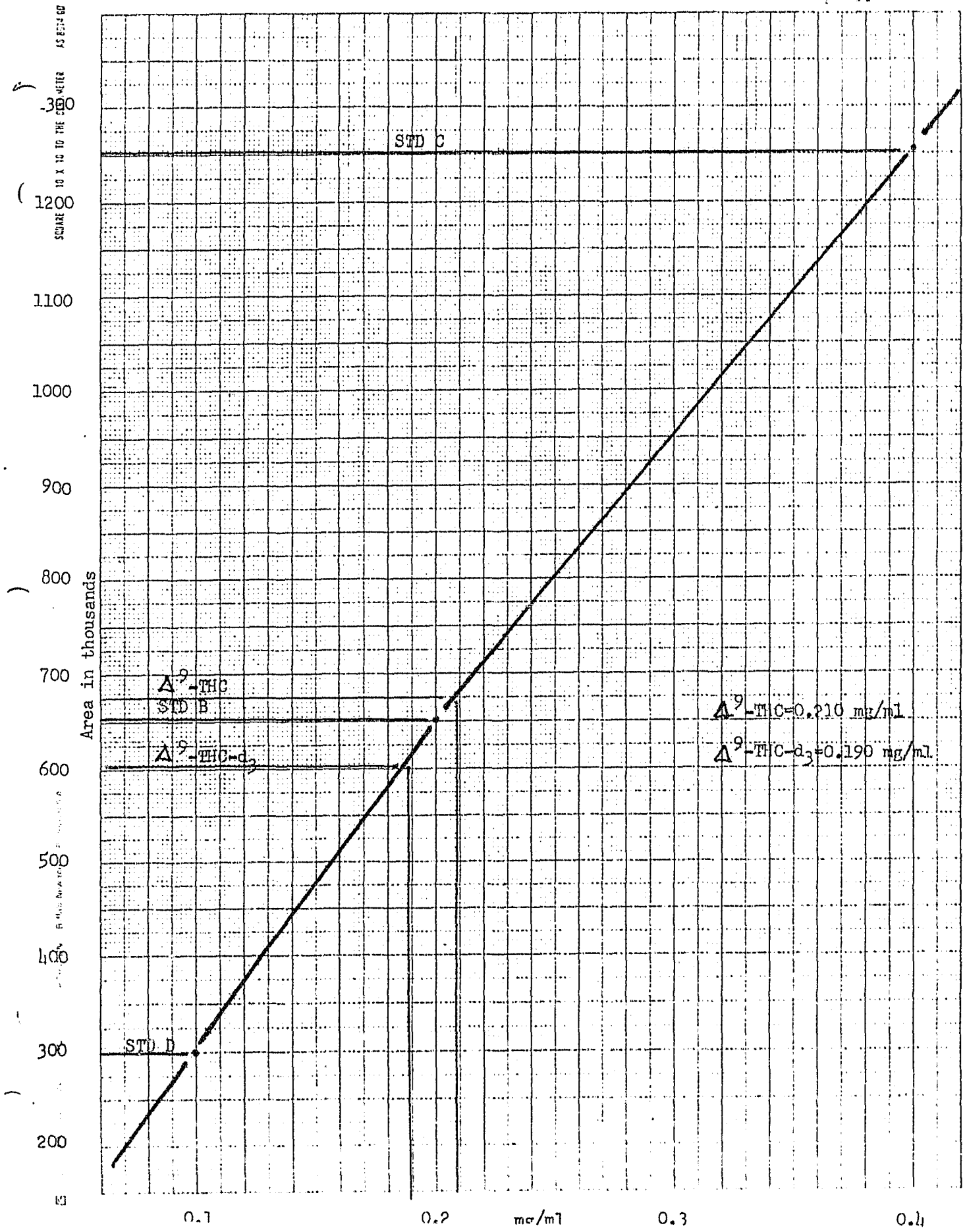
Initial analyses were conducted on hemolyzed human blood received by ISB laboratories for blood alcohol analysis. Limited results, due to interfering blood decomposition products, were obtained. Analysis of these samples below 20 ng/ml was not possible with the procedure utilized.

Possible cleanup procedures may allow reliable analysis below the 20 ng level. Initially, it was felt the Δ 9-THC was decomposing at some point during extraction. Efforts were focused on keeping the extractions under continuous N_2 atmosphere. Another area of concern dealt with the m/e values monitored by the mass spectrometer. As previously discussed, another group of ions were used that gave better enhancement of the signal.

Future work might include the use of a chromatography cleanup procedure by gel filtration. Selective removal of lipid and steroid components from the extracts might be accomplished.

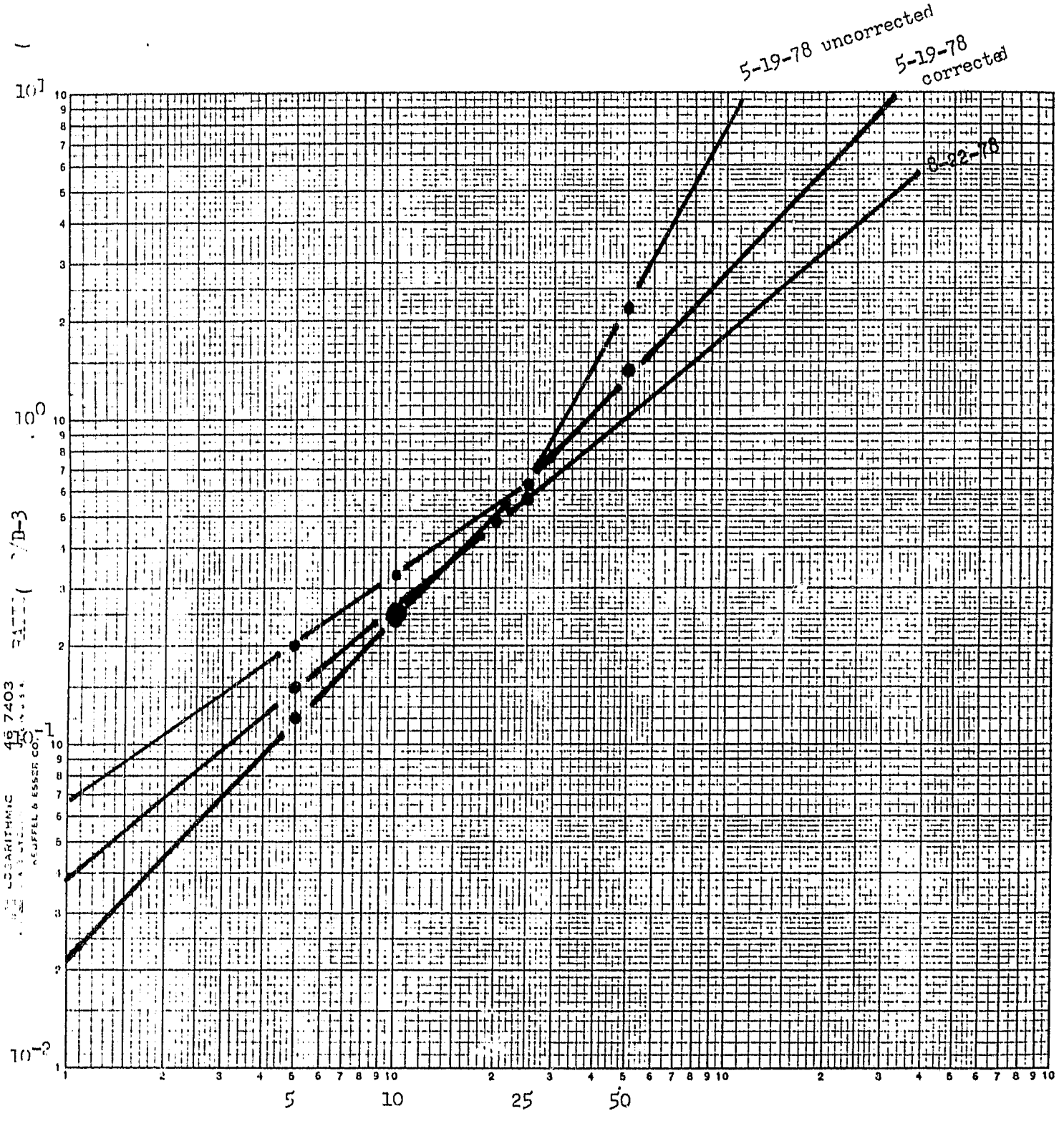
March 30, 1978

Graph I.



Graph II

Δ^9-THC STANDARD CURVE



5-19-78 SPIKED SERUM ANALYSIS Table I

5 ng/ml	File	d-0 area uncorrected	d-3 area	d-0/d-3 corrected	average ratio
1 ul inj	ss-1-1	261	1157	0.15	
"	ss-1-2	544	2935	0.11	0.14
"	ss-1-3	473	1968	0.16	
3 ul inj	ss-1-4	1437	7047	0.12	
"	ss-1-5	2127	10606	0.12	0.12
"	ss-1-6	2977	13977	0.13	
"	ss-1-7	4633	23782	0.11	
10 ng/ml					
1 ul inj	ss-2-1	437	1299	0.26	
"	ss-2-2	547	1650	0.25	0.25
"	ss-2-3	880	2659	0.25	
25 ng/ml					
1 ul inj	ss-3A1	3010	4657	0.57	
"	ss-3A2	4156	6281	0.58	0.56
"	ss-3A3	3747	6050	0.54	
50 ng/ml					
1 ul inj	ss-4-1	6823	5534	1.15	1.14
"	ss-4-2	6496	5391	1.13	
25 ng/ml					
1 ul inj	ss-301	2848	3548	0.72	

Table II

Serum Sample Analysis - 9-THC
Samples received July 13, 1978
Samples analyzed August 18, 1978

Spiked serum (known)	d_o/d_3 Corrected	ng/ml Δ 9-THC
S-1	0.12	5
S-2	0.22	10
S-2	0.48	20
Unknown serum		
0000	0.12	4
0001	0.31	12.5
0002	Not Determined *	
0012	0.23	9
0016	0.05	3
0070	Not Determined **	
0078	0.52	23
0080	0.07	3
0088	0.03	3
0197	Not Determined *	

* No response at m/e 258 or m/e 261

** Inadequate sample for extraction

Quality Control Validation Samples

The radioimmunoassay and the gas chromatography/mass spectrometry analyses were run separately. The serum samples were prepared independently of both programs and the analytical results from the respective techniques were released to personnel in both programs only after all results were received. There appears to be good correspondence between the two methods of analyses.

Sample Code	GC/MS Results	RIA Results
0000	4 ng/ml	0 ng/ml
0001	12.5	13
0002	Not Determined *	0
0012	9	15
0016	3	0
0070	Not Determined **	0
0078	23	26
0080	3	0
0088	3	0
0197	Not Determined *	30

* No response at m/e 258 or m/e 261

** Inadequate sample for extraction

Sample Treatment

Samples 0000 through 0016 were submitted to RIA on May 9, 1978; samples 0070 through 0088 were submitted on May 23, 1978; and sample 0197 was submitted on May 30, 1978. Results for all samples were reported from the RIA lab on July 10, 1978.

All samples were submitted to GC/MS on July 13, 1978, analyzed on August 18, 1978 and results reported on August 22, 1978.

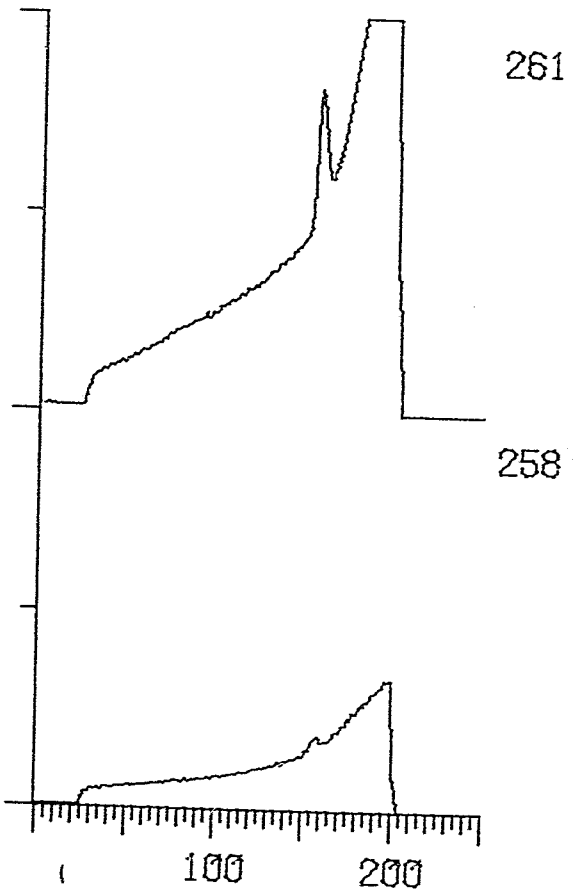
Samples submitted to GC/MS were kept frozen until being submitted. Samples 0000 through 0016 were sent frozen to the RIA lab and packed in blue ice. Samples 0070 through 0088 were sent to the RIA lab in blue ice but had not been previously frozen. Sample 0197 had been previously frozen but was sent to the RIA lab packed in blue ice after it had begun to defrost.

112.

5.0 NG D3 INJ, 052278

FILE THC-4, ATT 2

Fig. 1



FILE :THC-4
TITLE:5.0 NG D3 INJ, 052278
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E

AREA = 5275 BKG. = 27288 SIZE ?

AREA = 405 BKG. = 8024 SIZE ?

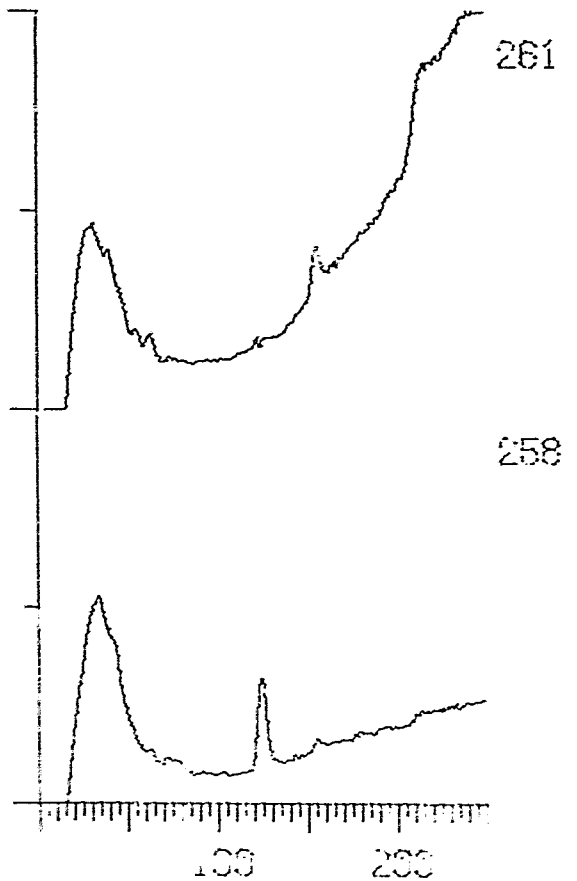
113.

Fig. 2

5 NG/ML, 1/30 INJ, 051978

FILE SS-1-1, ATT 2

FILE :SS-1-1
TITLE:5 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E

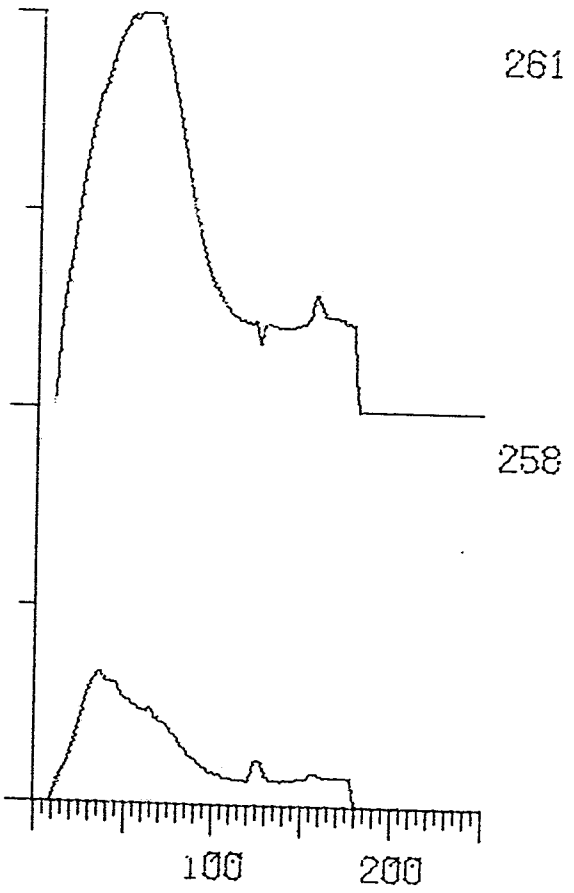


AREA =	1157	BKG. =	3804	SIZE =	.00
AREA =	261	BKG. =	1756	SIZE =	.00

Fig. 3

5 NG/ML, 1/30 INJ, 051978
FILE SS-1-2, PT 3

FILE :SS-1-2
TITLE:5 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



AREA = 2935 BKG. = 11229 SIZE = .00

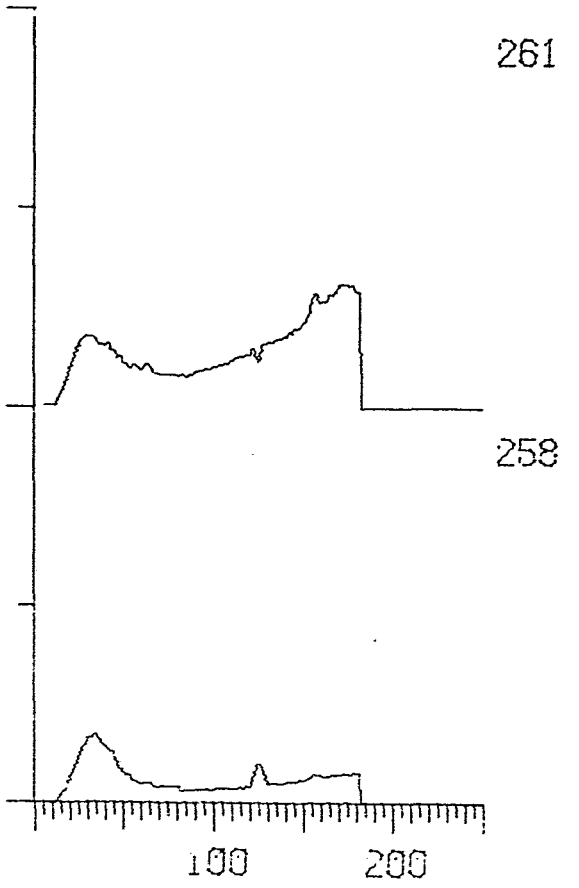
AREA = 544 BKG. = 3594 SIZE = .00

Fig. 4

5 NG/ML, 1/30 INJ, 051978

FILE SS-1-3, ATT 3

FILE :SS-1-3
TITLE:5 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



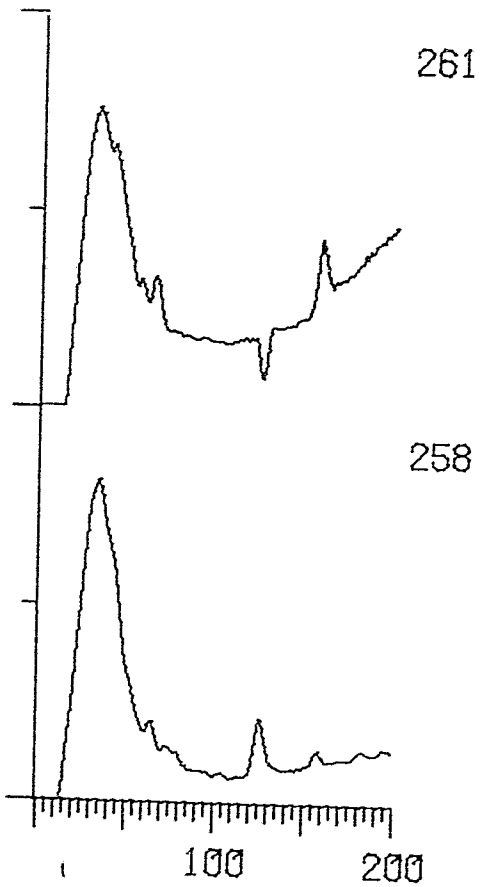
AREA = 1969 BKG. = 11997 SIZE = .00

AREA = 473 BKG. = 3259 SIZE = .00

Fig. 5

5 NG/ML, 3/30 INJ, 052278
FILE SS-1-4, ATT 3

FILE :SS-1-4
TITLE:5 NG/ML, 3/30 INJ, 052278
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



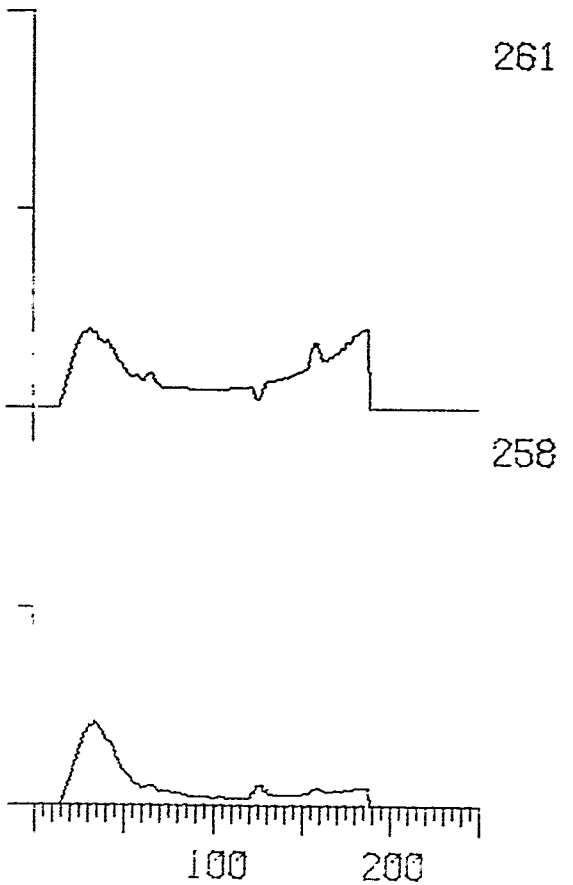
AREA =	7047	BKG. =	13985	SIZE =	.00
AREA =	1437	BKG. =	5130	SIZE =	.00

Fig. 6

5 NG/ML, 3/30 INJ, 052278

FILE SS-1-5, ATT 4

FILE :SS-1-5
TITLE:5 NG/ML, 3/30 INJ, 052278
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



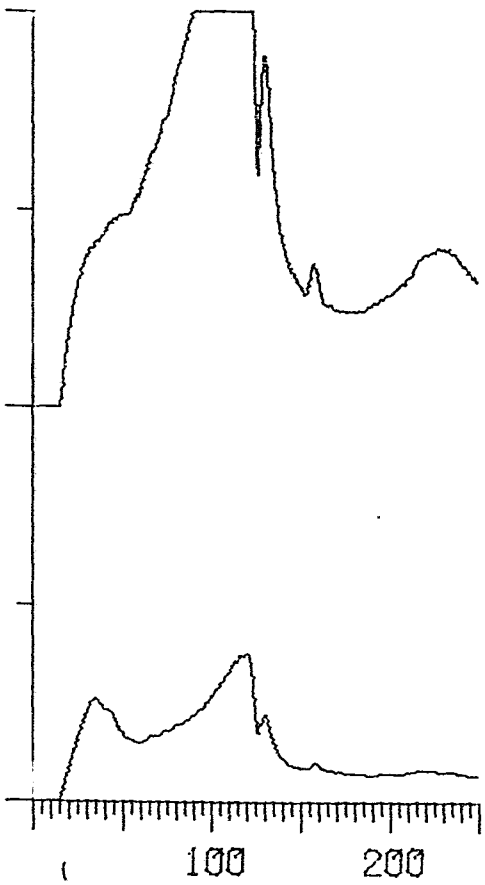
AREA = 10606 BKG. = 21906 SIZE = .00

AREA = 2127 BKG. = 7104 SIZE = .00

Fig. 7

5 NG/ML, 3/30 INJ, 052278
FILE SS-1-6, ATT 4

FILE :SS-1-6
TITLE:5 NG/ML, 3/30 INJ, 052278
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



AREA = 13977 BKG. = 56735 SIZE = .00

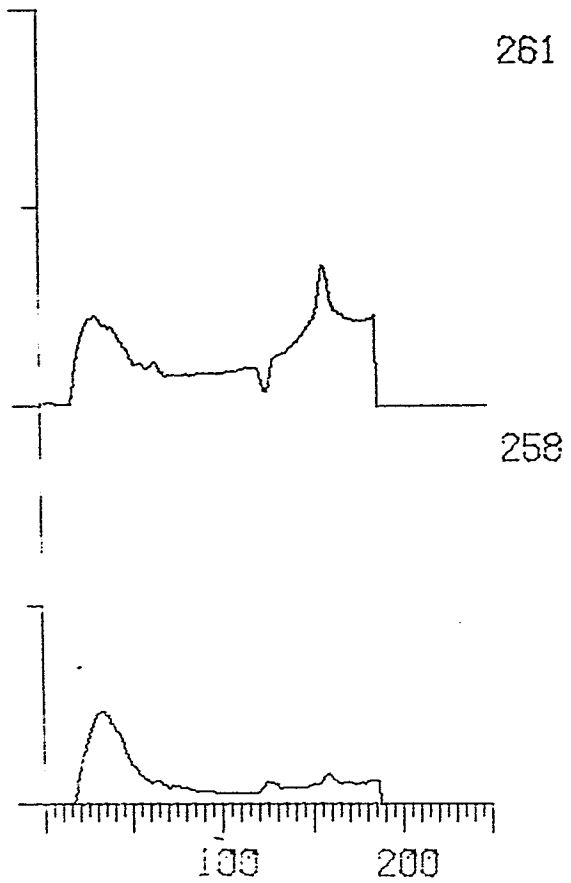
AREA = 2977 BKG. = 16825 SIZE = .00

Fig. 8

5 NG/ML, 3/30 INJ, 052278

FILE SS-1-7, ATT 4

FILE :SS-1-7
TITLE:5 NG/ML, 3/30 INJ, 052278
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



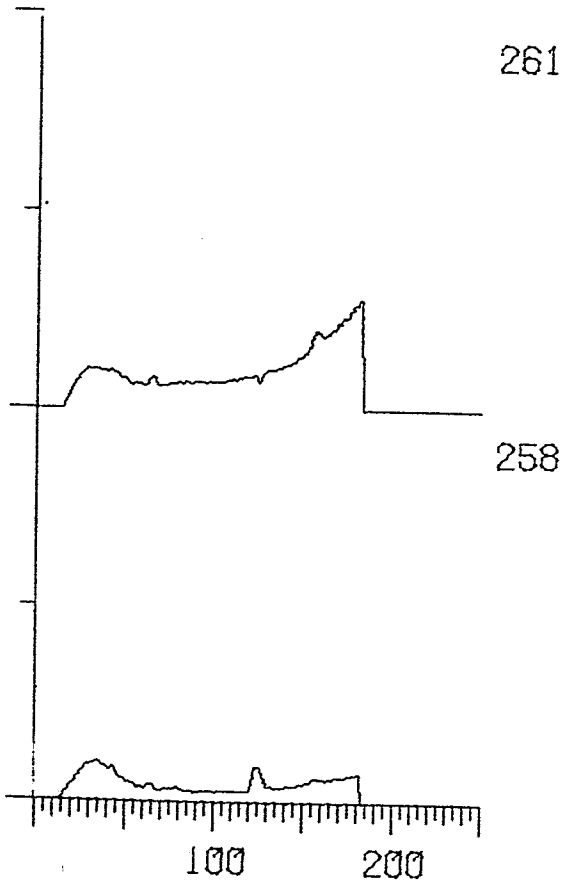
AREA = 23782 BKG. = 45218 SIZE = .00

AREA = 4633 BKG. = 10461 SIZE = .00

Fig. 9

10 NG/ML, 1/30 INJ, 051978
FILE SS-2-1, ATT 3

FILE :SS-2-1
TITLE:10 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



AREA = 1299 BKG. = 8413 SIZE ?

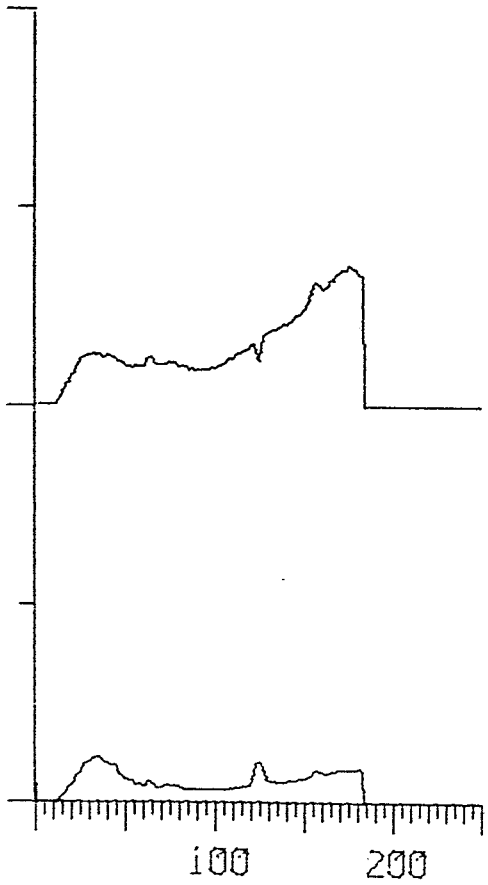
AREA = 437 BKG. = 2684 SIZE ?

Fig. 10

10 NG/ML, 1/30 INJ, 051978

FILE SS-2-2, ATT 3

FILE :SS-2-2
TITLE:10 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



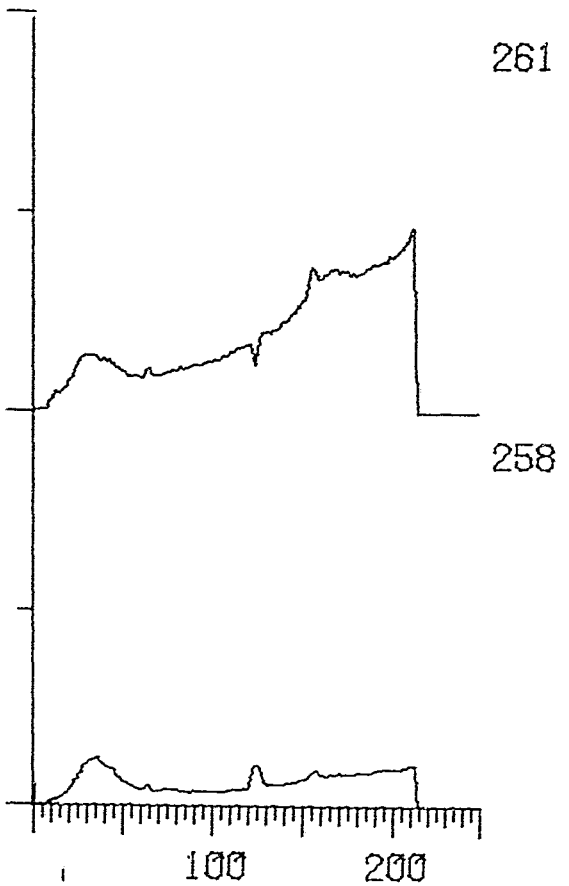
AREA = 1650 BKG. = 13438 SIZE = .00

AREA = 547 BKG. = 3447 SIZE = .00

Fig. 11

10 NG/ML, 1/30 INJ, 051978
FILE SS-2-3, ATT 3

FILE :SS-2-3
TITLE:10 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



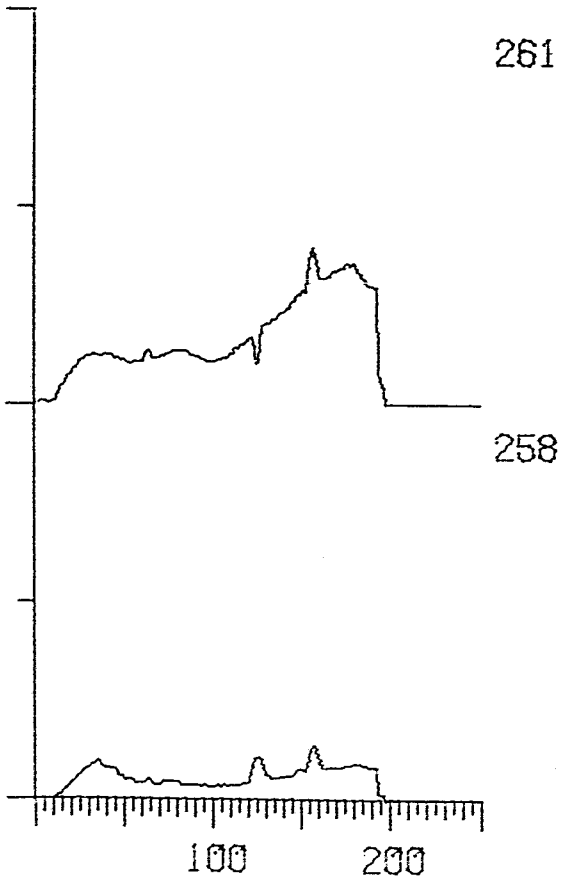
AREA =	2659	BKG. =	14813	SIZE =	.00
AREA =	880	BKG. =	3658	SIZE =	.00

Fig. 12

25 NG/ML, 1/30 INJ, 051978

FILE SS-3A1, ATT 3

FILE :SS-3A1
TITLE:25 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



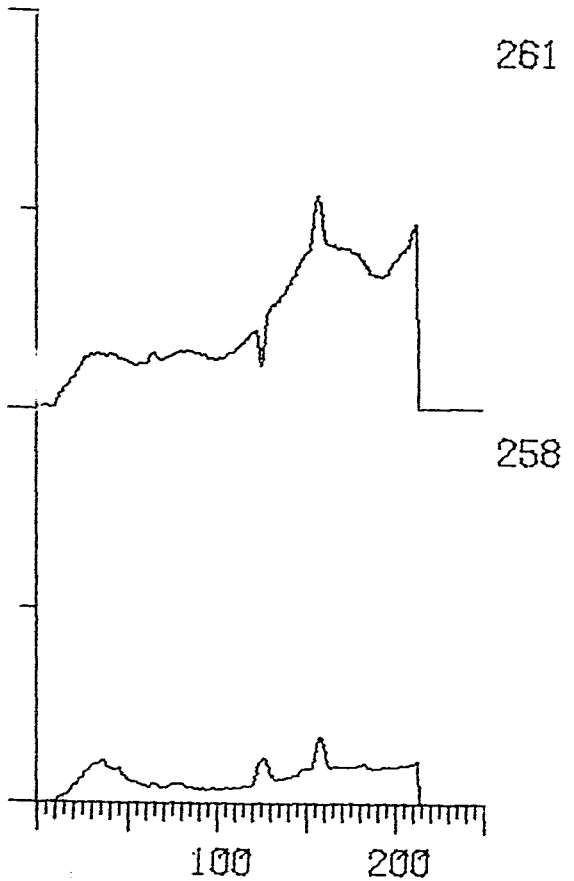
AREA = 4657 BKG. = 14535 SIZE = 00

AREA = 3010 BKG. = 3793 SIZE = 00

Fig. 13

25 NG/ML, 1/30 INJ, 051978
FILE SS-3A2, ATT 3

FILE :SS-3A2
TITLE:25 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



AREA = 6281 BKG. = 19795 SIZE = .00

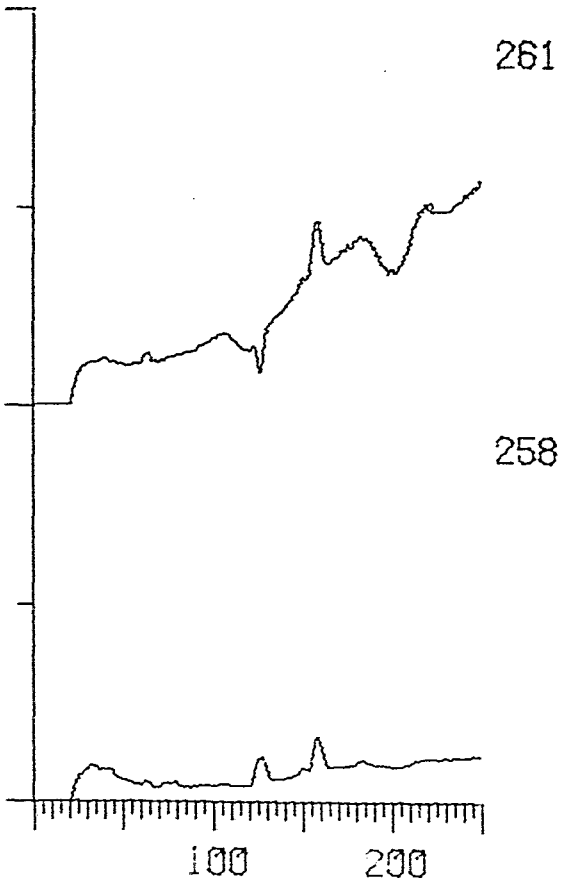
AREA = 4156 BKG. = 4229 SIZE = .00

Fig. 14

25 NG/ML, 1/30 INJ, 051978

FILE SS-3A3, ATT 3

FILE :SS-3A3
TITLE:25 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



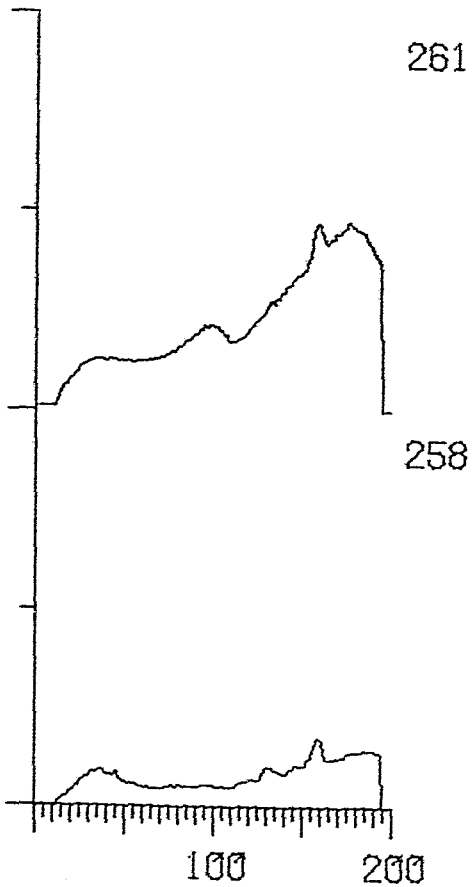
AREA = 6050 BKG. = 16992 SIZE = .00

AREA = 3747 BKG. = 4404 SIZE = .00

Fig. 15

25 NG/ML, 1/30 INJ, (CORVAC), 051978
FILE SS-3B1, ATT 3

FILE :SS-3B1
TITLE:25 NG/ML, 1/30 INJ, (CORVAC), 051978
MASS RANGE :(258,261)
INTEG. TIME:M.C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



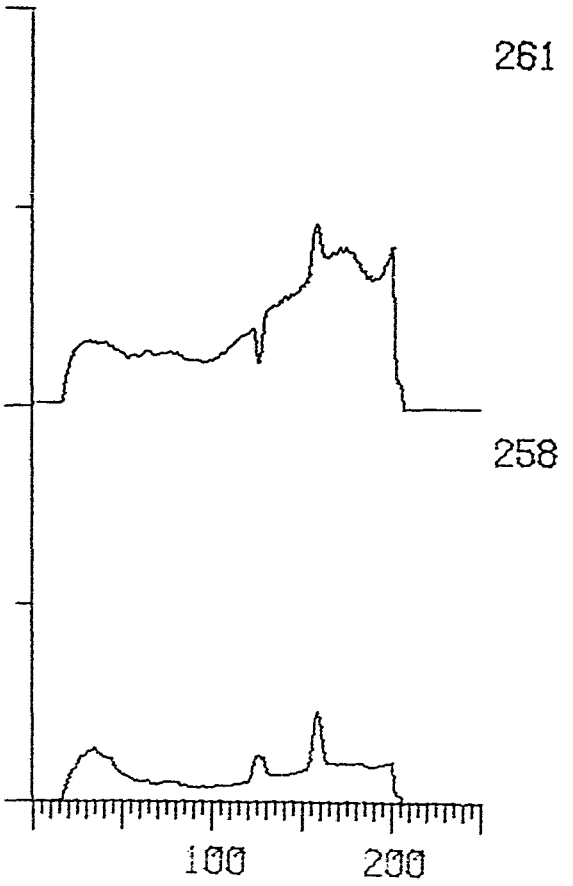
AREA = 3548 BKG. = 19330 SIZE = .00

AREA = 2848 BKG. = 5777 SIZE = .00

Fig. 16

50 NG/ML, 1/30 INJ, 051978
FILE SS-4-1, ATT 3

FILE :SS-4-1
TITLE:50 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



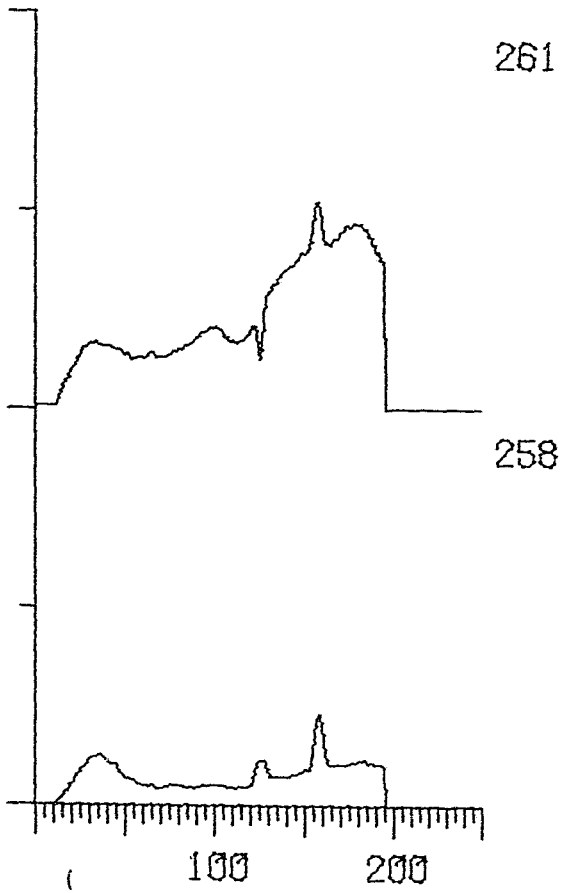
AREA = 5534 BKG. = 17072 SIZE = .00

AREA = 6823 BKG. = 4384 SIZE = .00

50 NG/ML, 1/30 INJ, 051978
FILE SS-4-2, ATT 3

Fig. 17

FILE :SS-4-2
TITLE:50 NG/ML, 1/30 INJ, 051978
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



AREA = 5391 BKG. = 20181 SIZE = .00

AREA = 6496 BKG. = 4659 SIZE = .00

D9-THC-D0, 10 NG, 082178

THC-1, ATT 1

129.

Fig. 18

FILE :THC-1
TITLE:D9-THC-D0, 10 NG, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E

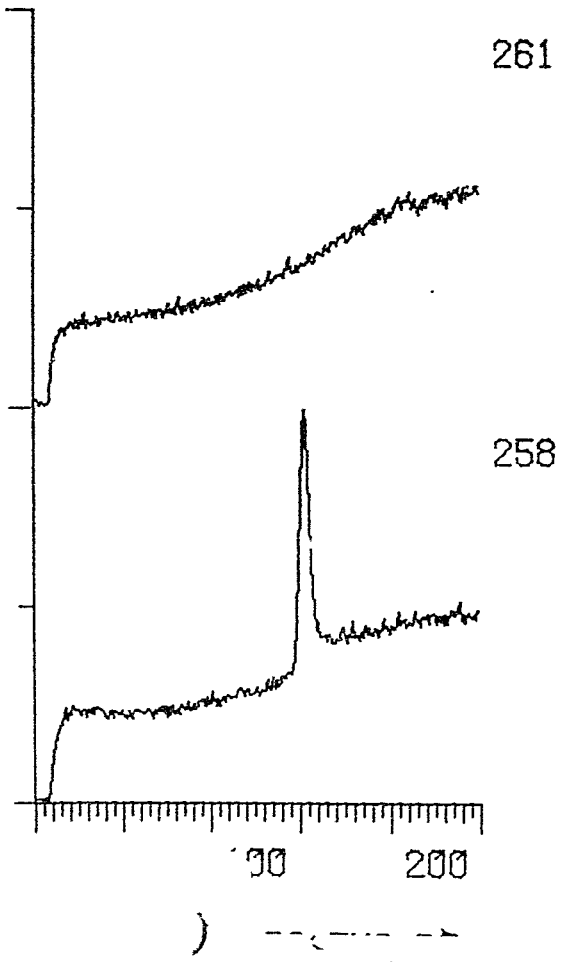
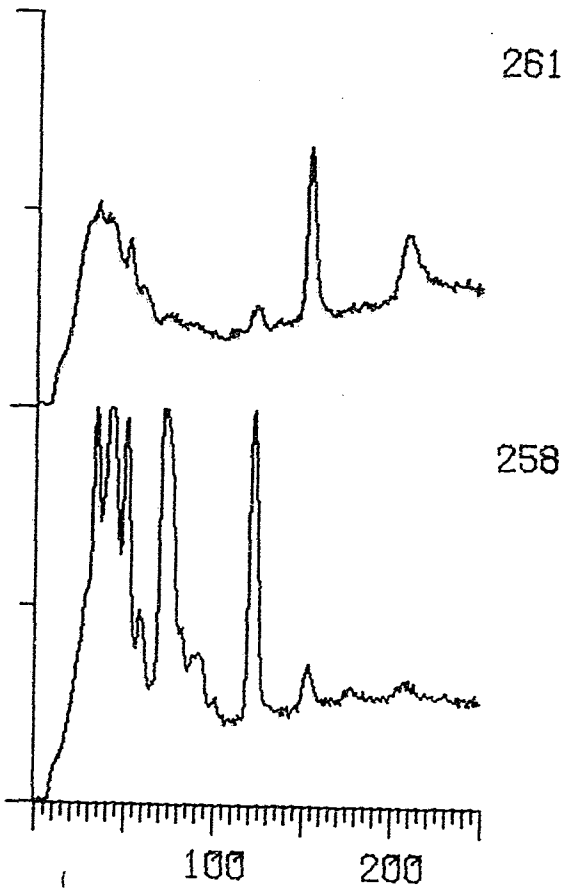


Fig. 19

5 NG/ML D0. 3 UL. 082178
ATT 1



FILE :S-1
TITLE:5 NG/ML D0, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:A,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E

S-1

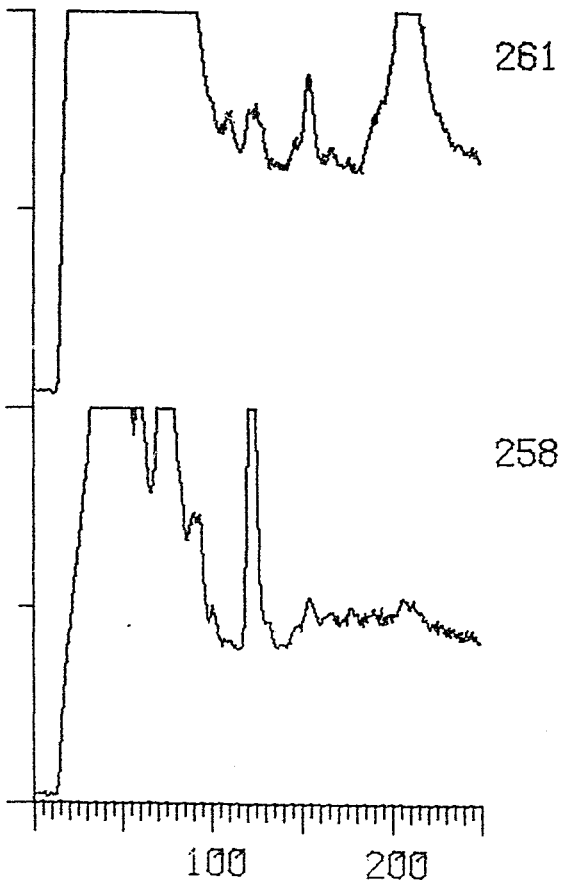
AREA = 1245 BKG. = 735 SIZE = .00

AREA = 282 BKG. = 789 SIZE = .00
S-1-1

Fig. 20

.10 NG/ML D0, 3 UL, 082178
ATT 1

FILE :S-2
TITLE:10 NG/ML D0, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



S-2

AREA = 561 BKG. = 2000 SIZE = .00

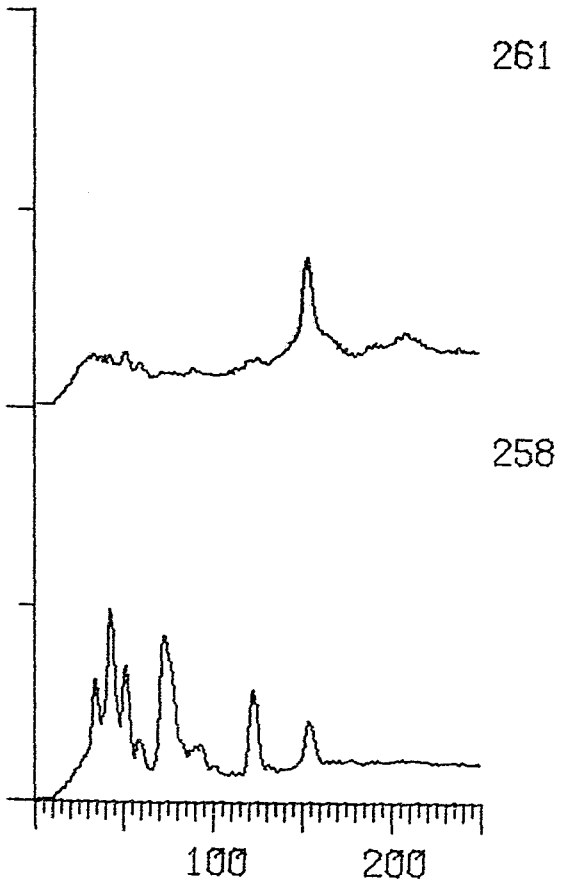
AREA = 174 BKG. = 1418 SIZE = .00

Fig. 21

20 NG/ML D0, 3 UL, 082178
ATT 2

FILE :S-3
TITLE:20 NG/ML D0, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E

AREA = 2349 BKG. = 2279 SIZE = .00



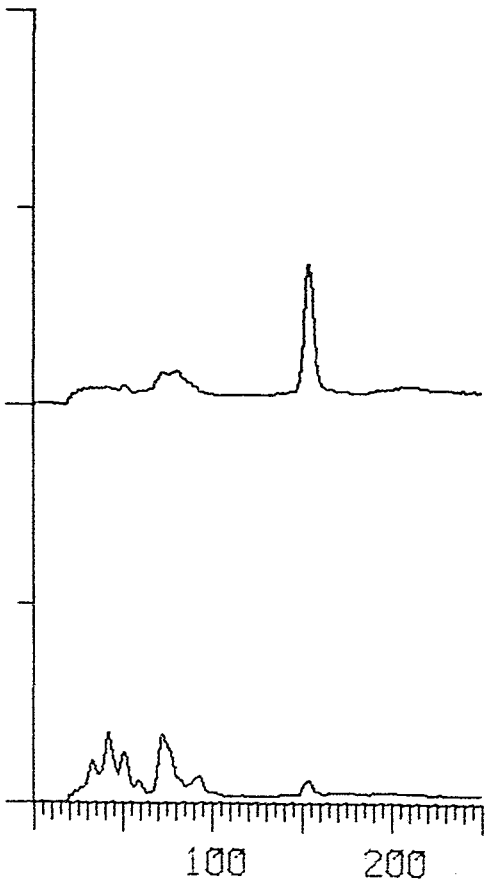
S-3

AREA = 1348 BKG. = 1220 SIZE = .00

UNKNOWN D0, 0000, 3 UL, 082178
ATT 3

133.
Fig. 22

FILE :U0000
TITLE:UNKNOWN D0, 0000, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



U0000

AREA = 15487 BKG. = 1725 SIZE = 13.00

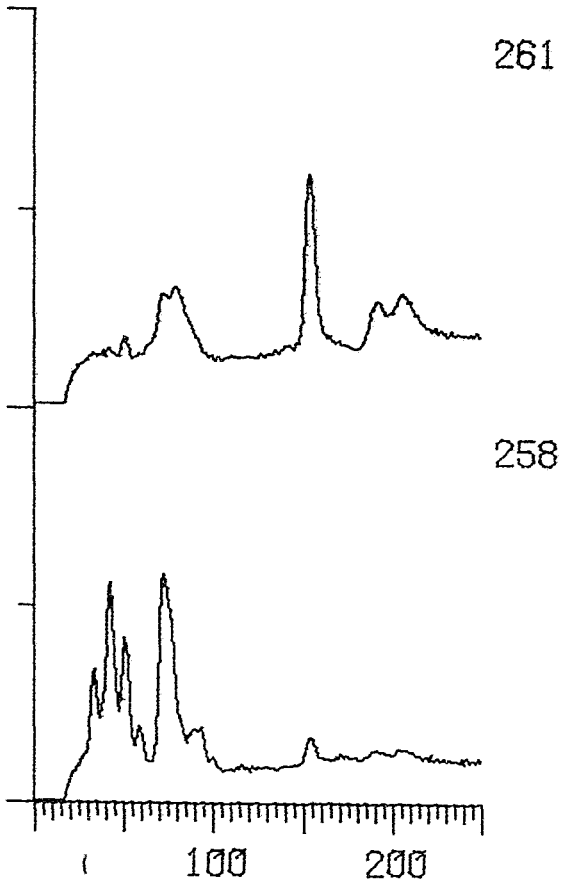
AREA = 1593 BKG. = 1272 SIZE = 00.00

Fig. 23

UNKNOWN D0, 0001, 3 UL, 082178

ATT 2

FILE :U0001
TITLE:UNKNOWN D0, 0001, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M.C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



AREA = 5124 BKG. = 2013 SIZE = 23 .00

U0001

AREA = 705 BKG. = 1327 SIZE = 10 .00

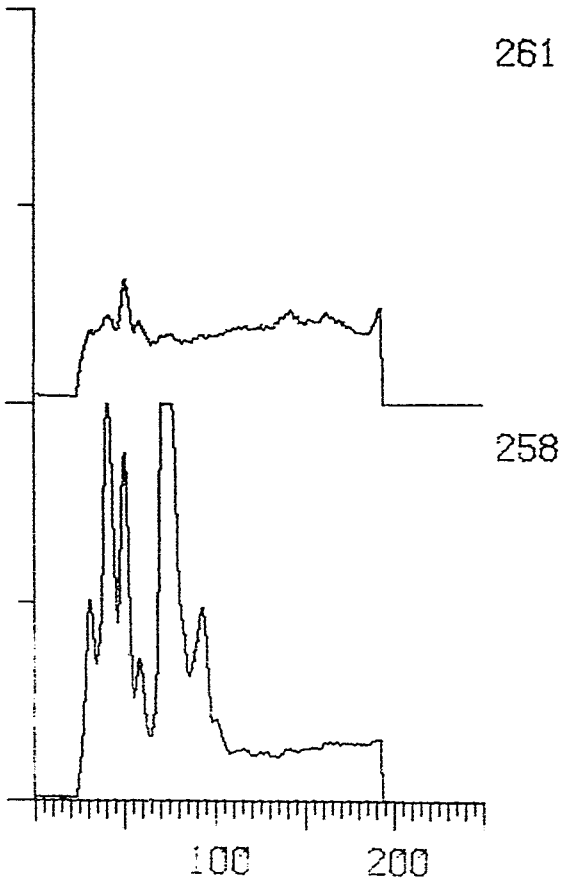
UNKNOWN D0, 0002, 3 UL, 082178

ATT 2

135.

Fig. 24

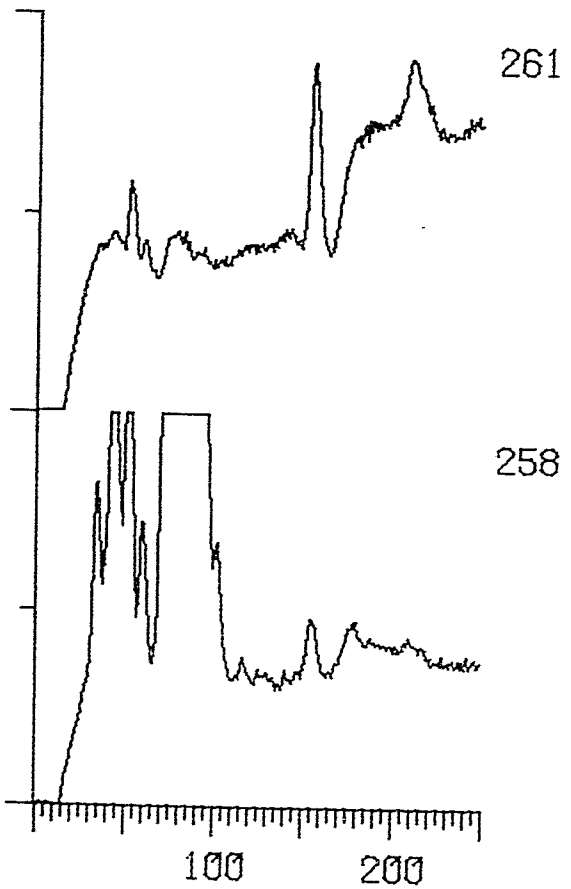
FILE :U0002
TITLE:UNKNOWN D0, 0002, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



UNKNOWN D0, 0012, 3 UL, 082178
ATT 1

136.
Fig. 25

FILE :U0012
TITLE:UNKNOWN D0, 0012, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



U0012

AREA = 1300 BKG. = 1318 SIZE = d_3.00

AREA = 430 BKG. = 1046 SIZE = d_1.00

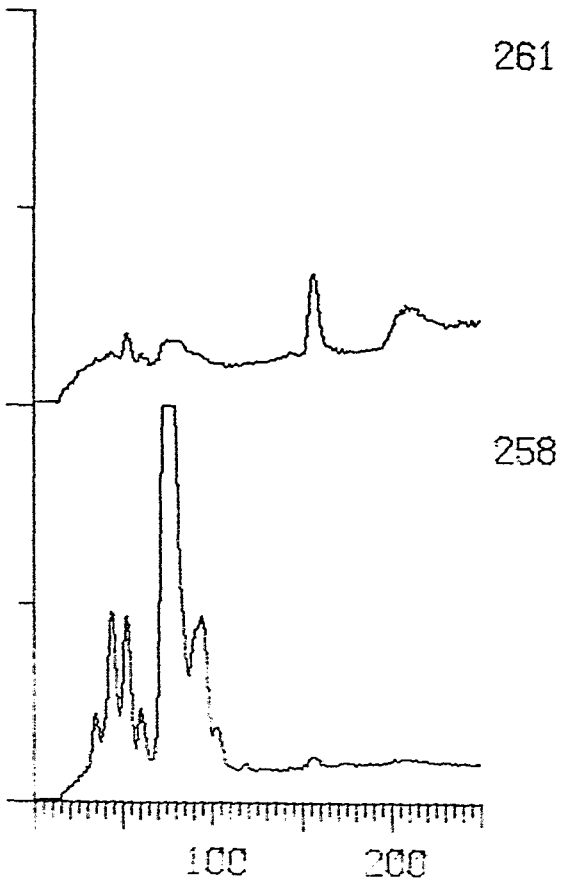
UNKNOWN D0, 0016, 3 UL, 082178

ATT 2

137.

Fig. 26

FILE :U0016
TITLE:UNKNOWN D0, 0016, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



U0016

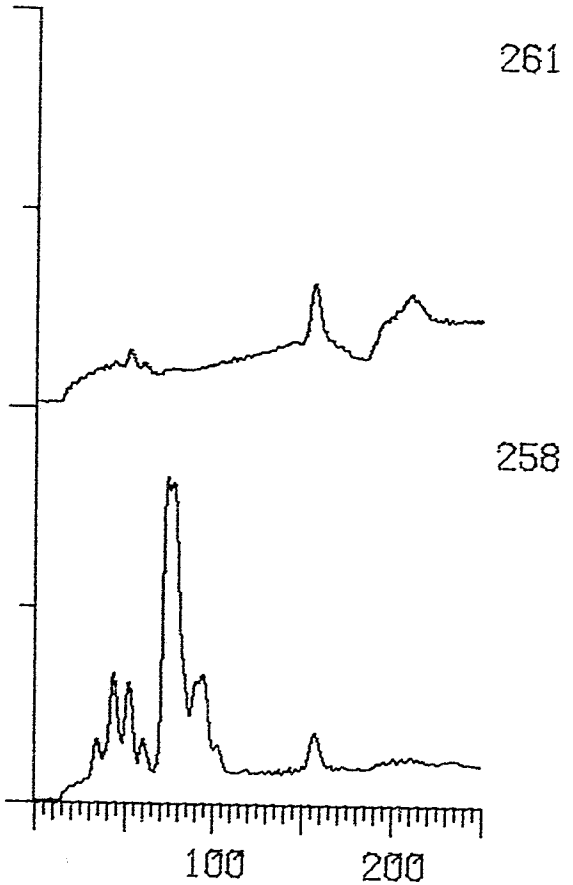
AREA = 2341 BKG. = 1712 SIZE = d_3 .00

AREA = 311 BKG. = 1165 SIZE = d_6 .00

Fig. 27

UNKNOWN D0, 0078, 3 UL, 082178
ATT 2

FILE :U0078
TITLE:UNKNOWN D0, 0078, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



U0078

AREA = 1786 BKG. = 2062 SIZE = 1.03 .00

AREA = 1076 BKG. = 1176 SIZE = 1.00 .00

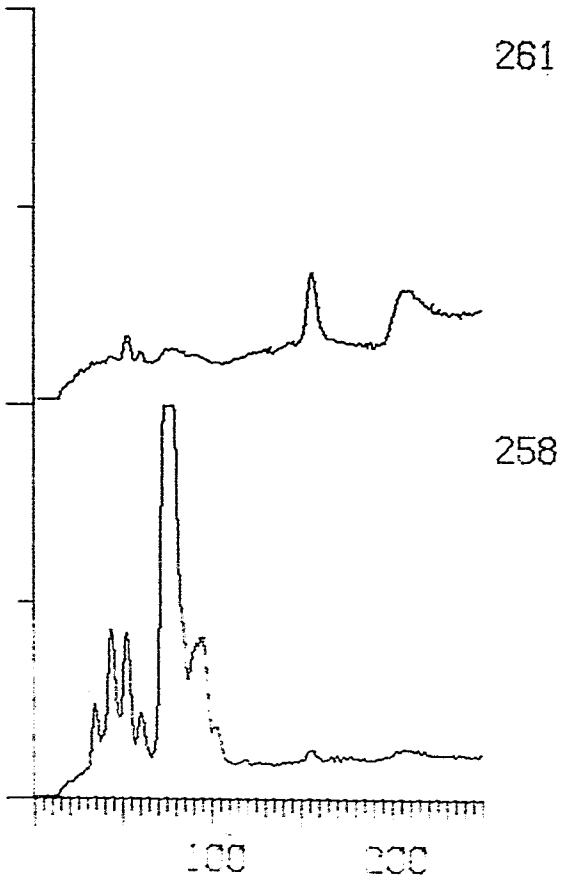
UNKNOWN D0, 0080, 3 UL, 082178

ATT 2

139.

Fig. 28

FILE :U0080
TITLE:UNKNOWN D0, 0080, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



U0080

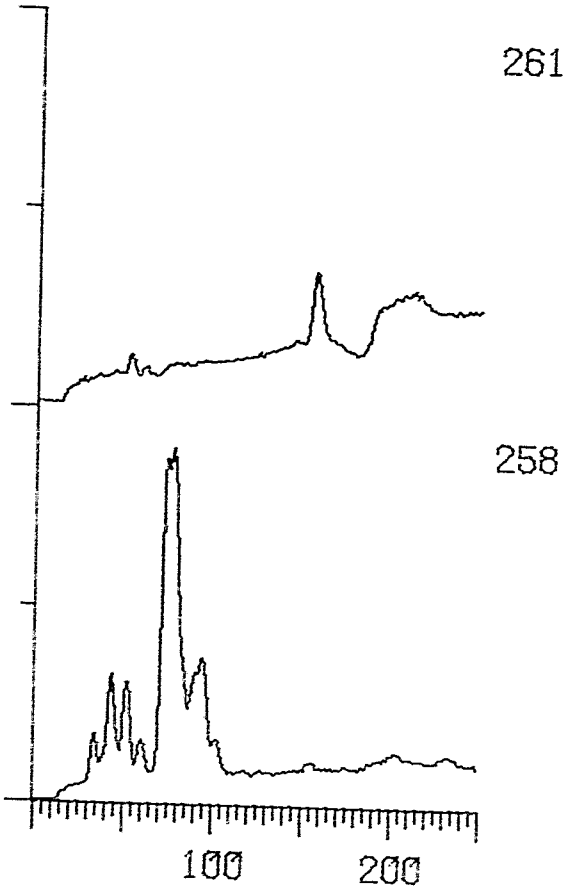
AREA = 2088 BKG. = 1979 SIZE = d_2 .00

AREA = 304 BKG. = 1243 SIZE = d_0 .00

Fig. 29

UNKNOWN D0, 0088, 3 UL, 082178
ATT 2

FILE :U0088
TITLE:UNKNOWN D0, 0088, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E



U0088

AREA = 2012 BKG. = 2081 SIZE = d_3 .00

AREA = 228 BKG. = 1189 SIZE = d_0 .00

Fig. 30

UNKNOWN D0, 0197, 3 UL, 082178

ATT 2

FILE :U0197
TITLE:UNKNOWN D0, 0197, 3 UL, 082178
MASS RANGE :(258,261)
INTEG. TIME:M,C1
SECONDS PER SCAN :2
THRESHOLD:1
MAX. RUN TIME:20
INST. RANGE SETTING:E

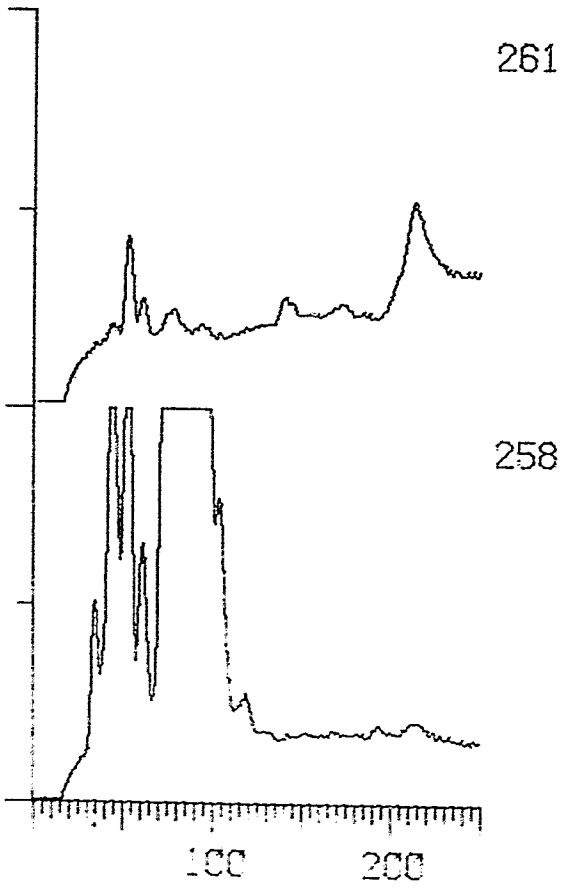


Fig. 31

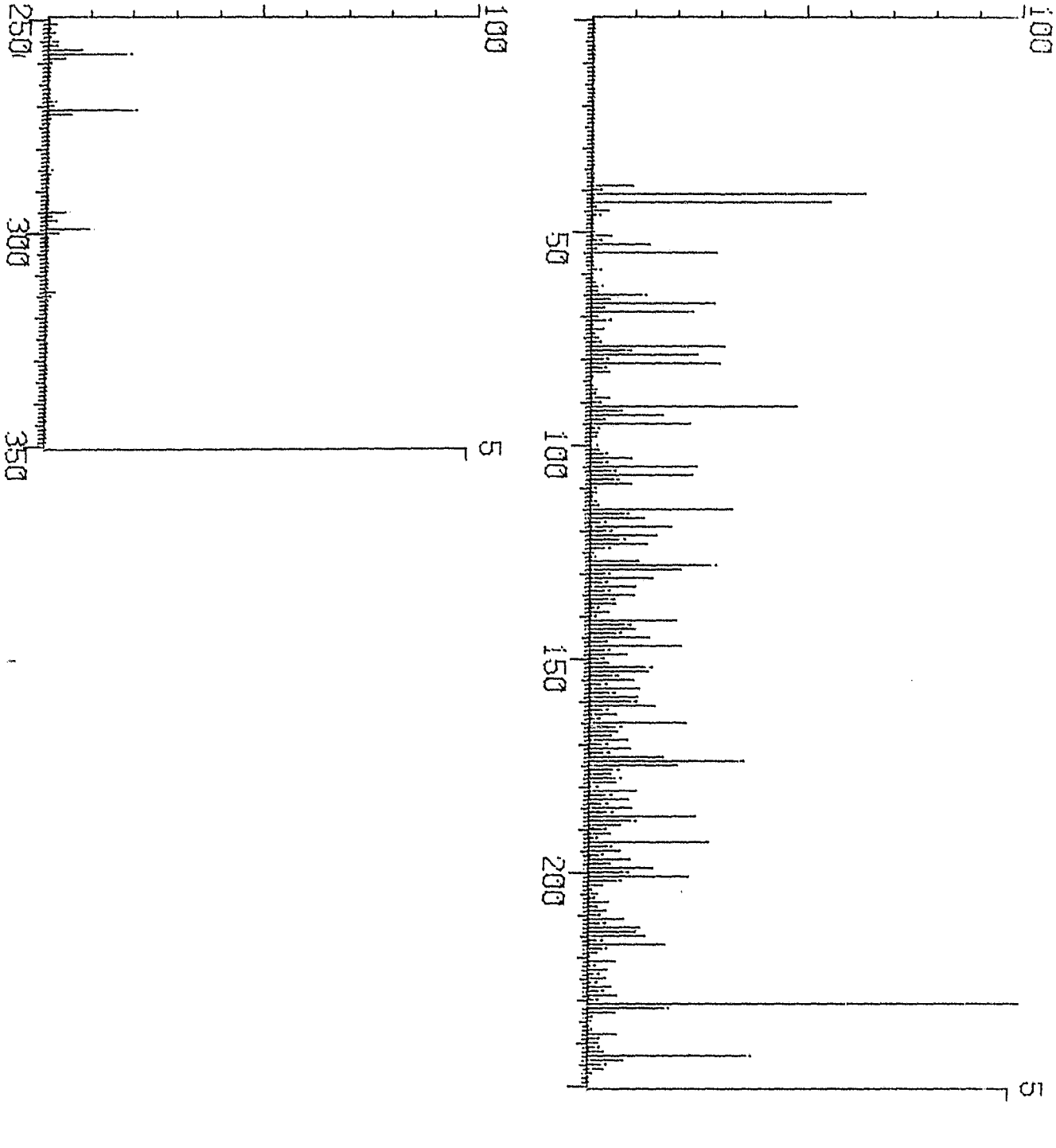
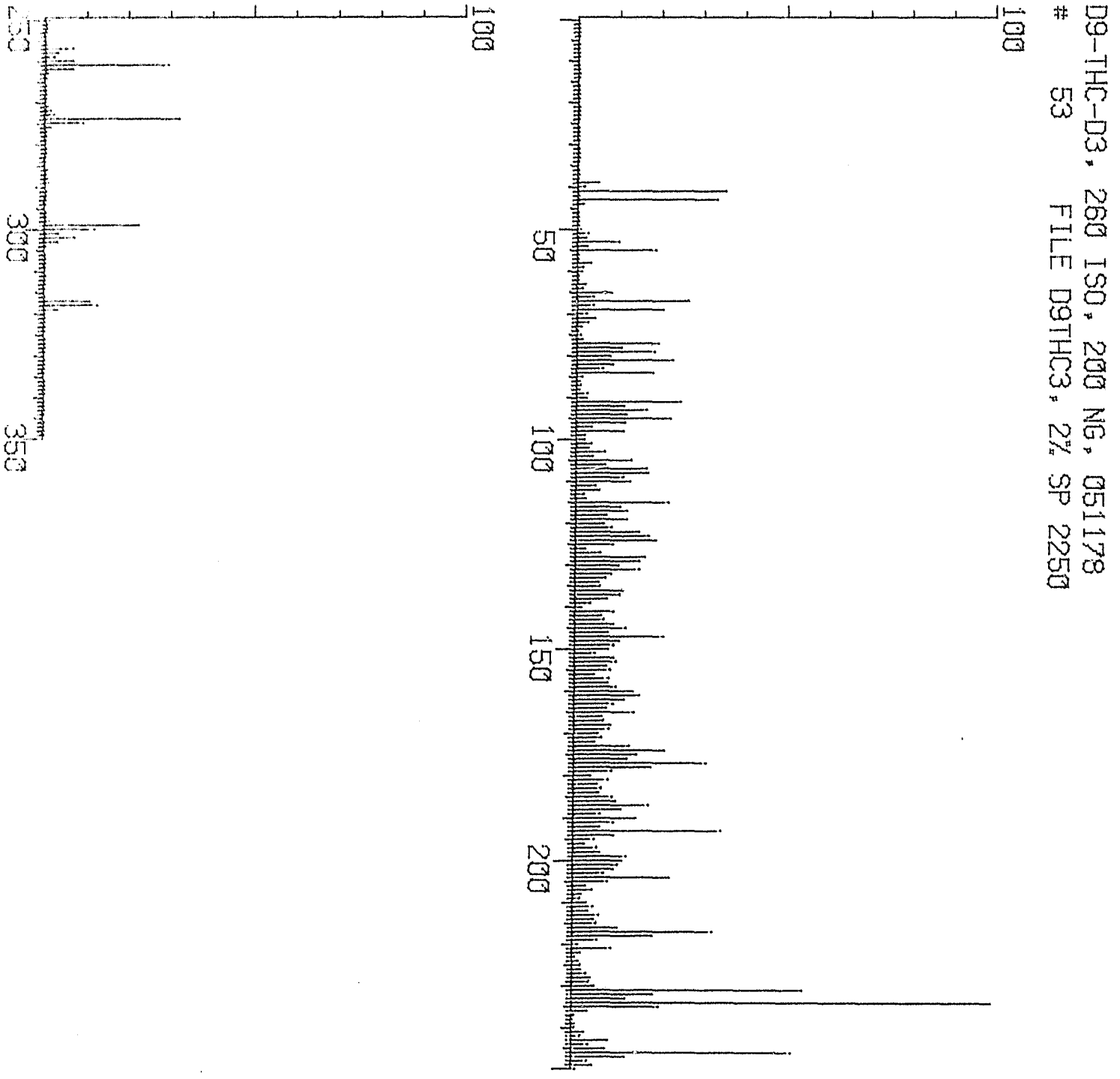

Δ9-THC-D8, 230 ISO, 200 NG, 050978
52 2% SP2250
100
50
100
150
200
5
100
250
300
350
5

Fig. 32


D9-THC-D3, 260 ISO, 200 NG, 051178
53 FILE D9THC3, 2% SP 2250
100
50
100
150
200
100
300
350