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# Field Evaluation of the Los Angeles Police Department Drug Detection Procedure

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16. Abstract

The Los Angeles Police Department (LAPD) has developed a drug recognition program designed to provide trained officers the ability to detect drug-impaired drivers and to identify the responsible drug class (e.g., stimulant, depressant, etc.). As part of a research effort designed to validate the LAPD drug recognition program, a field study in which police officers employed the drug recognition procedure with real suspects under field conditions was recently completed.

In the study, blood samples were obtained from 86% of the suspects believed to be under the influence of drugs. No blood samples were obtained from suspects judged by the police officers to not be under the influence of drugs.

The important results showed that:

- When the police officers claimed drugs other than alcohol were present they were almost always detected in the suspect's blood (94% of the time).
- The police officers were able to correctly identify at least one drug other than alcohol in 87% of the suspects evaluated in this study. Most of these suspects had used multiple drugs (other than alcohol).
- When the DREs identified a suspect as impaired by a specific drug, the drug was detected in the suspect's blood 79% of the time.

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## PREFACE

This study could not have been undertaken without the willing cooperation and assistance of the Los Angeles Police Department (LAPD). Special recognition is due to Commander James D. Jones, Sergeants Dan Watson, Richard Studdard and Jerry Powell who helped arrange and coordinate this field test. Officers Tom Paige and Jeff Siggers handled project logistics, personnel assignments, and essential communications and paperwork. The LAPD contributed personnel and equipment (absorbing much of the cost) that was necessary for the successful completion of this project.

The California Highway Patrol (Southern Divison) also participated in this study by transporting all DUI arrestees (taken into custody in the City of Los Angeles), who met the test criteria, to the two study sites for processing as part of this field evaluation. Their cooperation is gratefully appreciated.

Marcelline Burns, Ph.D., from the Southern California Research Institute, under contract with NHTSA, participated in project planning, officer training, developing procedures, and coordinating the collection of data. Dr. Burns was instrumental in the successful completion of this project.

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# INTRODUCTION

There is a growing concern among many law enforcement officials that drugs other than alcohol are serious highway safety problems. In comparison to the situation with alcohol, there has been little research conducted to determine the nature and extent of the drug and driving problem in this country. We are unfortunately in a position where it is not possible to document that specific drugs are in fact causally related to increased crash risk.

The situation facing law enforcement officers is quite difficult. They may stop a motorist for suspicion of impaired driving, become convinced the motorist is too impaired to drive safely, and discover the motorist is not intoxicated by alcohol. The logical conclusion often is that the motorist must be under the influence of some other drug. But, what drug? Police officers are armed with a wealth of information on the symptoms of alcohol intoxication, they have at their disposal simple behavioral tests they can perform to screen drivers for a high BAC level, and portable devices available to them to determine the driver's breath alcohol level. Until recently, none of these tools were available to the officer if he suspects a driver of drug impairment.

The Los Angeles Police Department (LAPD) has recently developed a drug recognition program designed to provide trained officers the ability to identify and differentiate between types of drug impairment. The subject-examination procedure focuses on detecting the use of drugs which are believed to impair driving performance. This program was developed in response to the perception that drug-impaired drivers create a significant traffic safety problem in metropolitan Los Angeles. An estimated 1 in 5 under-the-influence arrests by LAPD officers involves driving under the influence of drugs (DUID).

The LAPD drug recognition program involves training officers to detect the patterns of behavioral and physiological symptoms associated with major drug categories (e.g., stimulants, depressants, hallucinogens). Special attention is given to abused substances, such as cocaine, marijuana and phencyclidine (PCP), which appear to be used extensively. The Los Angeles Municipal Courts accept the expertise and court testimony of officers certified through the LAPD training program. The certified officers are known as Drug Recognition Experts (DREs).

Until a few years ago, no attempt had been made to validate the techniques used by the LAPD to detect the use of drugs by drivers and to differentiate between different drugs. NHTSA, in cooperation with the Los Angeles Police Department, has conducted a two-part evaluation of the drug recognition procedure. In the first step, NHTSA and the National Institute on Drug Abuse (NIDA) conducted a laboratory study at Johns Hopkins University of the LAPD procedure (Bigelow, et al, 1985). In the laboratory study, four LAPD drug recognition experts (DREs) independently rated dosed subjects in a double blind test procedure. Four different drugs (Secobarbital, Valium, Marijuana, and d-Amphetamine) at two dose levels and a no drug condition were used.

The results of the laboratory study indicated that (a) for certain drug-dose combinations most subjects were rated as intoxicated, but for other combinations most were not, (b) subjects rated as intoxicated had almost always received a drug and the officers were quite accurate in specifying which drug had been given to the subjects they rated as intoxicated, and (c) subjects who did not receive a drug were almost always rated as not intoxicated.

The results of the laboratory study were promising though limited because only four test drugs were used and the officers were evaluating the subjects under laboratory conditions. The second step of the evaluation was to conduct a field study to obtain data from a wider range of police officers looking for a larger number of drugs in real suspects under actual field conditions.

This report describes the field evaluation study conducted to determine the ability of trained police officers using the LAPD drug recognition procedure to determine the presence of drugs other than alcohol in the suspects, and to differentiate between different drugs (or drug classes).

Ideally, a field evaluation study of this type would determine the trained officer's ability to discriminate between drivers impaired by drugs and drivers not impaired by drugs. Accomplishing this would require obtaining blood samples from all suspects initially examined by the officers, an impossible task. Practical constraints limited our ability to obtain blood or urine samples to the group of suspects whom the officers felt were impaired by drugs other than alcohol.

Thus, the study could not determine the accuracy of officers judgment's that drivers <u>were not</u> under the influence of drugs. This means that we have no way of estimating, under actual operating conditions, how many drug-impaired drivers the officers might miss using this drug evaluation procedure. What the study could do however, is determine how accurate the officers were when they decided a suspect <u>was</u> under the influence of a drug or drugs.

This report focuses on the accuracy of the LAPD drug recognition procedure but does not go into detail about the specific components of the procedure. Extensive detailed data about the suspects, circumstances of their arrest, and the behavioral and physiological symptoms they exhibited were collected. These data and a detailed analysis of the relationship between the various specific elements of the rating procedure and the drug (or drugs) used by the suspects will be reported on later in a more technical report.

## METHOD

### Overview

The study ran for a period of approximately 3 months during the summer of 1985. Data were collected from June 26th through September 14, 1985. The study sample was designed to include adult suspects arrested for DUI within the city of Los Angeles who were suspected by the arresting officer of being under the influence of a drug or a combination of a drug and alcohol, and who were not involved in an accident. Only suspects arrested between the hours of 4:00PM and 3:00AM, Wednesday through Monday, were included in the study.

Initial arrests were made by regular traffic officers of the LAPD or the California Highway Patrol. The suspects were transported by the arresting officers to one of two central jail facilities for evaluation by a DRE (Drug Recognition Expert - a certified officer trained in the drug evaluation procedure). During the study, all drug evaluations were performed by selected senior DREs using the standard LAPD drug recognition procedure. The drug evaluations were only performed at these two locations to allow for better control and standardization of procedures than might have been possible otherwise.

If, after evaluating the suspect, the DRE concluded he was under the influence of a drug (or drugs), other than alcohol, the DRE specified which type of drug he felt the suspect was impaired by and recorded the cues that led him to that conclusion. The suspect was then given a Drug Admonition and was asked to consent to a blood test. If the suspect agreed to the blood test, he was taken to the jail dispensary where the blood was drawn by medical personnel. Suspects the DREs determined were not under the the influence of drugs were released (or possibly booked on other charges).

The blood samples collected were shipped to an independent laboratory for analysis and were screened for the presence of the following drugs or drug classes:

1) Amphetamines
2) Barbiturates (e.g., Secobarbital)
3) Cocaine/benzoylecognine
4) Cannabinoids (Marijuana)
5) Opiates (e.g., herion, morphene)
6) Phencyclidine (PCP)
7) Benzodiazepines (e.g., Valium)
8) Alcohol

All samples giving a positive result on the screening test were confirmed using a different assay technique and the blood levels quantified.

## Suspects

The study sample was designed to include all adults arrested within the city of Los Angeles by LAPD officers for DUI (CA 23152 VC) during the specified time period who were suspected of being under the influence of a drug or a combination of a drug and alcohol. In addition, part way through the study a decision was made to include suspects arrested within Los Angeles by the California Highway Patrol for suspicion of driving under the influence of drugs, who were booked at one of the two facilities being used in the study, and were evaluated by the LAPD DREs. Suspects who were involved in an accident or any aggravated situation were excluded from the study.

Both adult males and females were used in the study. Juveniles (under 18 years of age) were not included because of the difficulty in obtaining consent for the blood test.

## Arrest Procedure

Traffic enforcement in Los Angeles on city streets is handled by four Traffic Bureaus (each composed of 4-5 Divisions). Normal procedure is to process arrestees within these Bureaus; however, during the hours the study was in operation, all suspects meeting the study criteria were transported to the nearest of two central jail facilities for drug evaluation by selected DREs (Drug Recognition Experts). In addition, the California Highway Patrol (CHP) handles traffic enforcement on state roads within Los Angeles. Their officers typically book their arrestees at the LAPD facilities and by cooperative agreement use the LAPD DREs for drug evaluations. During most of the study period the CHP arrestees booked at the two jail facilities, who met the study criteria, were included in the study sample.

The traffic officers were instructed to identify eligible suspects for the study (a copy of the LAPD departmental order can be found in Appendix A). The arresting officer typically would administer a field sobriety test to the suspect at the roadside. If they believed the motorist was operating a vehicle under the influence of alcohol or other drugs they were to follow normal procedure and transport the suspect to the nearest breath test machine. If the suspect's BAC was not consistent with the arrestee's observed symptoms of intoxication, or the arresting officer suspected that the arrestee was driving under the influence of drugs, or of a combination of alcohol and drugs, the arrestee was to be taken to one of the two jail facilities for evaluation by a DRE.

DRE Participants

Twenty-five DREs were selected by a committee of supervisors to participate in the study (a roster showing the officers who participated and their years of experience is part of Appendix A). The DREs selected were generally the officers with the greatest seniority and skill, who were available for assignment to the study team and who agreed to the field study work schedule. They attended a day long training session to familiarize them with the study procedures, additional forms (beyond those required for a regular DUID arrest), and with interview techniques for obtaining a blood sample.

Two DREs were deployed each night during the test period at each jail. In addition to the four DREs, a DRE supervisor was also deployed each night to supervise the evaluations, ensure standard procedures were followed, and to be available to resolve any problems that might arise at either jail. A team of four DREs was assigned to the study each week, with a different set of four officers participating the next week, on a rotating basis. Officers rotated in to the study approximately every 5-6 weeks, for a week at a time.

DRE Evaluation

As each suspect was brought to one of the jail facilities by the arresting officer, a DRE assigned to that jail would confirm that the suspect conformed to the test criteria, and then conduct the DRE evaluation utilizing a "DRE Field Validation Test Checklist" as a guide (see Appendix A). The checklist was developed and used to ensure that the drug evaluations were performed by the DREs in a standardized fashion, using the same sequence of tests, and to obtain a complete set of documents for each suspect processed.

The drug evaluation procedure developed by the LAPD contains a number of components, described briefly below.

A. Interview - The DRE would conduct a brief interview with the suspect concerning the suspect's medical and drug use history, recent eating, sleep and alcohol/drug use. During this interrogation the officer could evaluate the suspect's alertness and responsiveness, speech characteristics, mood, attitude, cooperativeness, etc.

B. Physiological Symptoms - This includes measuring pulse rate (three times during the examination), blood pressure, oral temperature, pupil size, pupillary reaction to light and dark, nystagmus (horizontal and vertical), smoothness of visual pursuit, perspiration, condition of the tongue, and salivation. The officers also examined the suspects closely for skin signs of substance abuse (e.g., needle marks, skin rashes, perforation of the nasal septum).

C. Behavioral Tests - These tests were designed to assess psychomotor performance, the ability to follow and remember instructions, and divided attention. The tests used were:

1. Rhomberg balance test: a modified attention test in which the suspect is instructed to stand with his feet together, arms at his side and eyes closed for 30 seconds. The officer observes the amount of sway, loss of balance, and suspect's perception of elapsed time.

2. One-leg-stand: The suspect is instructed to stand on one foot, to lift the other foot six inches off the ground and to hold that position while counting out loud to 30; this is repeated for the other foot. Loss of balance is observed.

3. Finger-to-nose: The suspect stands erect with the feet together, eyes closed and arms to the side. Alternating with his right and left hands, the suspect is directed to touch the tip of his nose with the tip of his extended index finger. The location of the touches, balance, and ability to follow simple instructions are recorded.

4. Walk-and-Turn: The suspect is told to stand heel-to-toe on a line, hands at sides, while the officer gives instructions on how he is to walk the line. He is told to take nine steps down the line, told exactly how to turn, take nine steps back, counting the steps out loud. His ability to maintain his balance and to divide his attention are noted.

The results of this exam were carefully recorded on a drug influence evaluation form (shown in Appendix A). After completing the drug evaluation of the suspect, if the officer thought the suspect was impaired by drugs he administered the Drug Admonition (shown in Appendix A). The drug admonition advises the suspect that he/she must submit to a second chemical test in addition to the breath test (GCI). The DREs attempted, through persuasion and instruction, to get the suspects to submit to a blood test. When the suspect agreed to a blood test, the arresting officer took the suspect to the jail dispensary where medical personnel obtained two 10 cc vials of blood. The blood had to be drawn within two hours of the arrest.

If the suspect requested a urine test instead of a blood test, the arresting officer was responsible for obtaining the sample and booking it. The drug admonition made it clear to the suspects that refusing to take a blood (or urine) test would probably result in a six-month driving license suspension. For the purposes of this study only a blood sample was useful. Most drugs may be detected in urine long after they are ingested (when they can no longer be detected in the blood and when there is no longer a behavioral effect due to the drug).

Blood Analysis

The blood samples were tagged, sealed, and booked into the police property division and kept refrigerated until shipped to an independent laboratory under contract with NHTSA for analysis. All the blood samples were screened for the presence of the following drugs or drug classes:

1. Amphetamines
2. Barbiturates (e.g., Secobarbital)
3. Cocaine/benzoylecognine
4. Cannabinoids (marijuana)
5. Opiates (e.g., heroin, morphene, codeine)
6. Phencyclidine (PCP)
7. Benzodiazepines (e.g., Valium)
8. Alcohol

The samples were screened by radioimmunoassay for amphetamines, barbiturates, cocaine/benzoylecognine, cannabinoids, opiates and phencyclidine. A level of 10 ng/ml and above was used to identify presumptive positive samples. Positive samples were confirmed and quantified by gas chromatography/mass spectrometry using selective ion monitoring. Benzodiazepines were screened by enzyme immunoassay and confirmed and quantified by gas chromatography/mass spectrometry with a NP detector. Ethanol (alcohol) was quantified by gas chromatography.

If the DRE indicated that the suspect was under the influence of a drug not included in the screening test then the blood sample was tested for the specific drug. The only two drugs falling into this category were a hallucinogen and methaqualone. The hallucinogen (i.e., Mescaline) was quantified by gas chromatography/mass spectrometry. Methaqualone was likewise quantified by chromatography/mass spectrometry with a NP detector.

# RESULTS

This section of the report presents information on the suspects that were evaluated by the DREs during the study, the type and frequency of drugs detected in the blood of the suspects, and finally and most importantly the accuracy of the DRE judgements regarding which drugs the suspects were impaired by.

## Suspects

A total of 219 suspects were processed during the field study. More than 90% were men; only 16 women were evaluated. Eighteen arrestees were determined by the DREs preliminary examination not to be under the influence of drugs and as a result they were released from custody (or booked on other charges). Thus, 201 suspects met the study criteria and were evaluated by a DRE using the drug recognition procedure. As shown in Table 1, blood samples were obtained for 173 of these 201 suspects believed to be under the influence of drugs.

TABLE 1

NUMBER OF TEST REFUSALS,
BLOOD & URINE TESTS

| SUSPECT CHOICE | NUMBER # | % |
|---|---|---|
| REFUSALS | 22 | (11.0%) |
| URINE SAMPLES | 6 | (3.0%) |
| BLOOD SAMPLES | 173 | (86.0%) |
| TOTAL | 201 | (100.0%) |

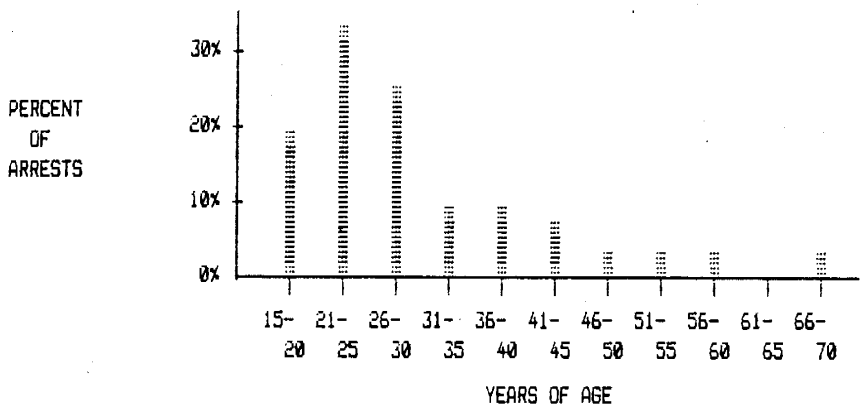
The suspects who did not provide a blood sample did not differ from the suspects who did in terms of age, sex, race, BAC level, day of week they were arrested, etc. No further information was available about these suspects.

The 173 suspects who agreed to take a blood test comprised 86% of the sample believed to be under the influence of drugs (only 3% of the drivers requested a urine test rather than a blood test). Approximately 11% of the suspects refused to take a second test. The remainder of the data reported on here concerns the 173 suspects who met the study criteria, were evaluated by a DRE, and took a blood test.

The average age of the suspects was slightly more than 27 years old, with the youngest being 18 years old and the oldest being 69 years old. Approximately 75% of the suspects arrested were below 30 years of age (Figure 1 shows the distribution of suspects by age).

FIGURE 1

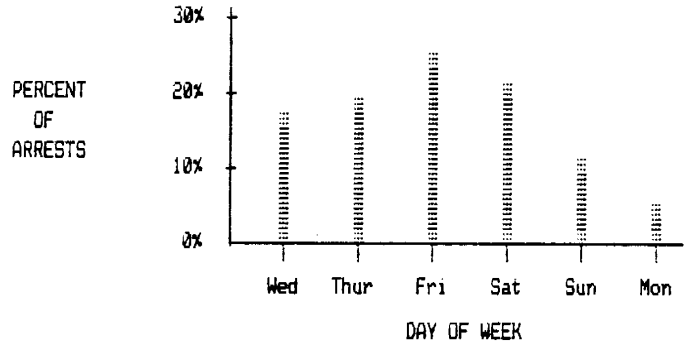
Age Distribution of the Suspects Arrested




More arrests (26%) were made on Friday than any other day, with the fewest occurring on Monday night (3%). The distribution of arrests by day of the week is shown in Figure 2.

FIGURE 2

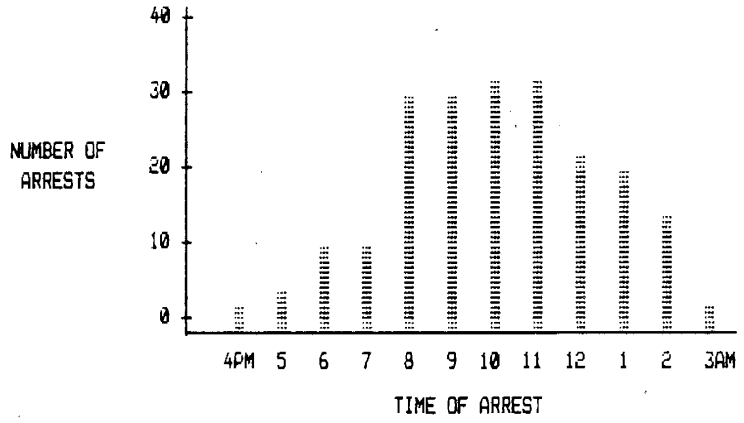
Arrests by Day of Week



The greatest number of arrests were made between 8:00 PM and 12:00 AM with approximately 70% of the arrests occurring during those hours (Figure 3).

FIGURE 3

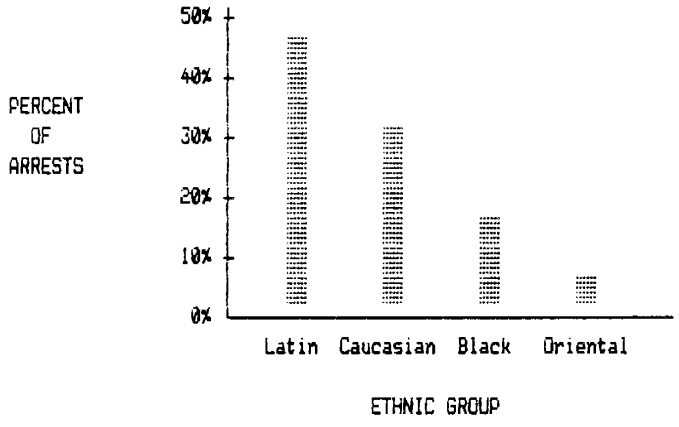
ARRESTS BY TIME OF DAY




The ethnic composition of the suspects arrested is shown in Figure 4. In general these numbers reflect the ethnic characteristics of the communities served by each jail.

FIGURE 4

ETHNIC COMPOSITION OF SUSPECTS



Drugs Detected In The Suspect's Blood

In this section the results of the blood assays are discussed. First the general findings regarding the frequency with which various drugs and drug combinations were detected is presented followed by a discussion of the individual drugs detected with some frequency.

The analysis of the 173 blood samples identified 13 different psychoactive substances (alcohol and 12 other drugs). Table 2 lists the drugs that were detected.

Phencyclidine (PCP) was the most frequently detected drug being found in 56% of the suspects. Alcohol was the next most frequently found drug (52.6% of the suspects), followed by marijuana (THC - in 44.5% of the suspects), morphine (14.4%), Cocaine (12%), Diazepam (7%), and Codeine (5.7%). The rest of the drugs detected were found in less than 2% of the suspects.

TABLE 2

Drugs Detected in the Blood of Suspects

| Drug | # of Samples |
|---|---|
| Phencyclidine (PCP) | 97 |
| Alcohol | 91 |
| Tetrahydracannabinol (THC) | 77 |
| Morphine | 25 |
| Cocaine | 21 |
| Diazepam | 12 |
| Codeine | 10 |
| Butabarbital | 3 |
| Phenobarbital | 2 |
| Alprazolam | 1 |
| Chlordiazepoxide | 1 |
| Mescaline | 1 |
| Methaqualone | 1 |

In only one of the 173 suspects from whom blood was obtained were no drugs or alcohol detected (i.e., in less than 1%). In 47 cases a single substance was detected, while in 125 suspects combinations of drugs (two or more) were found. Table 3 shows the incidence with which single and multiple substances (including alcohol) were detected. Multiple drug use was very common among the suspects arrested during this study with two or more drugs (including alcohol) detected in 72% of the suspects.

TABLE 3

Number of Drugs Detected

| # of Drugs | # of Samples | % |
|---|---|---|
| 0 | 1 | 1 |
| 1 | 47 | 27 |
| 2 | 82 | 47 |
| 3 | 40 | 23 |
| 4 | 3 | 2 |
| | Total = 173 | 100 |

If alcohol is excluded, the percentage of suspects using two or more drugs drops to approximately 45%. This multiple drug use by the suspects was similar to that found in a study by Williams, Peat, Crouch & Finkle (1985) of fatally injured young male drivers in southern California. Apparently, the drug users in this area more often than not take several drugs rather than just a single drug.

Table 4 shows the frequency with which various drugs (including alcohol) were detected alone or in combinations. As can be seen in the table there were 41 different drugs or drug combinations detected in the blood of the suspects.

TABLE 4

Frequency Of Drugs Detected Alone Or In Combinations

| DRUG COMBINATION | # OF SAMPLES |
|---|---|
| ONE SUBSTANCE: | |
| PCP | 26 |
| Alcohol | 10 |
| Morphine | 4 |
| Cocaine | 3 |
| THC | 2 |
| Diazepam | 1 |
| Mescaline | 1 |
| TWO SUBSTANCES: | |
| Alcohol and PCP | 23 |
| THC and PCP | 20 |
| Alcohol and THC | 19 |
| Codeine and Morphine | 4 |
| Alcohol and Diazepam | 3 |

- CONTINUED -

TABLE 4 CONTINUED

Frequency of Drugs Detected Alone Or In Combinations

| DRUG COMBINATION | # OF SAMPLES |
|---|---|
| TWO SUBSTANCES CON'T.: | |
| THC and Diazepam | 2 |
| THC and Morphine | 2 |
| Alcohol and Morphine | 1 |
| Alcohol and Aplrazolam | 1 |
| Cocaine and Butabarbital | 1 |
| Cocaine and Methaqualone | 1 |
| Cocaine and Morphine | 1 |
| Cocaine and PCP | 1 |
| Morphine and Diazepam | 1 |
| Morphine and PCP | 1 |
| Opiate and Benzodiazepine | 1 |
| THREE SUBSTANCES: | |
| Alcohol, THC, PCP | 18 |
| Alcohol, THC, Cocaine | 5 |
| Alcohol, PCP, Cocaine | 4 |
| Codeine, Morphine, Diazepam | 2 |
| Alcohol, THC, Diazepam | 1 |
| Alcohol, THC, Morphine | 1 |
| Alcohol, Butabarbital, Phenobarbital | 1 |
| Alcohol, Cocaine, Chlordiazepoxide | 1 |
| Codeine, Morphine, Cocaine | 1 |
| Codeine, Morphine, Phenobarbital | 1 |
| Morphine, Butabarbital, Cocaine | 1 |
| THC, PCP ,Cocaine | 1 |
| THC, PCP, Morphine | 1 |
| THC, Codeine, Morphine | 1 |
| THC, Morphine, Diazepam | 1 |
| FOUR SUBSTANCES: | |
| Alcohol, THC, Codeine, Morphine | 1 |
| Alcohol, PCP, THC, Cocaine | 1 |
| Alcohol, PCP, THC, Morphine | 1 |

Phencyclidine (PCP) - was the most frequently detected drug being found in 97 blood samples (56%). In 73% of the cases where PCP was detected, it was not the only drug found. PCP was found most frequently combined with alcohol (47% of the time) and with THC (42% of the time), and less frequently with cocaine (7%) and morphine (3%). The distribution of blood levels of PCP is shown in Figure B-1 (in Appendix B).

Alcohol - was detected in 91 (52.6%) of the suspects. The BAC's for the alcohol positive suspects ranged from .01% w/v to .18% w/v, with a mean BAC was .06% . The distribution of BACs is shown in Figure B-2 (Appendix B). There were only 6 cases were the BAC was .10% or higher and other drugs were found. It is likely that most (if not all) of the remaining suspects would have been released if the drug symptoms had not been recognized.

The BACs determined by the blood tests occasionally differed slightly from the breath test results (typically .01 - .02% BAC). These differences appeared to be due to nothing more than the time that elapsed between the breath test (conducted immediately upon arrival at the jail) and when the blood sample was collected (later during the drug evaluation).

Marijuana (THC) - tetrahydracannabinol (THC) was detected in the blood of 77 suspects (44%). It was the third most commonly found substance. In approximately one quarter of the cases that marijuana was detected, the blood level was reported as <1.0 ng/ml (an extremely small amount). The screening test used to identify presumptive positive samples was not specific for THC but measured the presence of cannabinoids (including the major metabolites of THC). Only samples positive for THC, rather than the metabolites, were considered as indicating the presence of marijuana. The range for THC was from <1.0 to 12.4 ng/ml (see Figure B-3 in Appendix B). The median level is 1.7 ng/ml, with three fourths of the samples below 3.0 ng/ml.

THC is known to be metabolized rapidly from the blood after smoking (Willette, 1985). Blood levels are typically below 10 ng/ml two hours after ingestion. The blood samples from the suspects in this study were drawn typically 1-2 hours after the suspect was arrested. There is no way to known how long prior to the arrest the suspects ingested the marijuana. Thus, one would expect to find relatively low blood levels of THC under these circumstances. It is not possible to meaningfully interpret the blood levels as inferring high or low doses without knowing the amount of time that had elapsed between taking marijuana and taking the blood sample.

Morphine/Codeine - these two opiates were found in the blood of 35 suspects (20%). Since morphine can be metabolized into codeine, the detection of codeine in the blood of a suspect does not necessarily mean the suspect ingested codeine, it may have been present as a metabolite of morphine. In every case codeine was detected, morphine was also found in the suspect's blood.

CNS Stimulants - the only stimulant detected in the blood samples was cocaine, no amphetamines were found. Cocaine was the fifth most frequently detected drug, found in the blood of 21 suspects (12%). The major metabolite of cocaine, benzoylecognine, was detected 22 times (13% of the suspects) in the absence of cocaine. Cocaine is metabolized rapidly from the blood, however benzoylecognine remains in the blood for a longer period of time (beyond the time a behavioral effect is measured). Because we did not know exactly when our suspects may have ingested the cocaine, the presence even in relatively large concentrations of bezoylecognine was treated as a case where no cocaine was detected.

CNS Depressants - the benzodiazepines (Diazepam - Valium(R), Chlordiazepoxide - Librium (R), Alprazolam - Xanax(R)) were detected in the blood of 14 suspects (8%). Diazepam was the sixth most frequently detected drug. The barbiturates (Butabarbital and Phenobarbital) were detected in just five samples (3%). The tranquilizer methaqualone (Quaalude(R)) was found in the blood of only one suspect. In total these CNS depressants (benzodiazepines, barbiturates, methaqualone) were detected in 19 suspects (11%).

Other Drugs - the only other type of drug detected in the blood of the suspects, was one case of a hallucinogen, mescaline.

## DRE DECISIONS

This section discusses the accuracy of the DREs decisions regarding which specific drugs the suspects were under the influence of. It is important to remember that the DREs in this study were examining the suspects for law enforcement purposes. The DREs indicated whether they felt the suspects were "impaired" by drugs (and hence "unable to operate a motor vehicle safely"), and if so, what specific drugs (or drug classes) the suspect was "impaired" by.

There is no way to determine objectively whether the suspects were actually too "impaired" to drive safely. The fact that drugs were found in a suspect's blood does not necessarily mean the suspect was too impaired to drive safely. Contrary to the case with alcohol, we do not know what quantity of a drug in blood implies impairment. Thus, this study can only determine whether a drug was present or absent from a suspect's blood when the DRE said the suspect was impaired by that drug.

The DREs judged the 173 suspects (from which a blood sample was obtained) as impaired by a drug other than alcohol. In just one case the blood analysis detected no drugs or alcohol, and in ten cases only alcohol was found. Thus, 94% of the time (162 suspects) a drug or drugs other than alcohol were found when the DREs judged that the suspect was impaired by drugs.

The accuracy of the DREs judgements regarding what specific drug or drug class the suspect had used, is complicated by the presence of multiple substances in so many of the suspects in this study. Over 70% of the suspects yielded detectable levels of more than one drug. Thus, to be entirely correct in the case of a suspect using multiple drugs, the DRE would have had to identify every drug detected in the blood sample.

It was possible for the DRE to correctly identify one or more of the drugs a suspect had used while at the same time missing other drugs, or incorrectly identifying drugs that were not found in the blood. In either of these cases the DRE would be partially correct. A third alternative was that the DRE may fail to correctly identify any of the drugs found in a suspects blood. In this case the DRE would be wrong.

Table 5 shows the number of times the DREs were entirely correct, partially correct (identified at least one drug and misidentified at least one drug found in the suspects blood), or wrong. The drug alcohol was not used in determining whether the DREs judgments were accurate since the DREs had available to them the results of the BAC breath test as part of the examination procedure.

TABLE 5

OVERALL ACCURACY OF DREs JUDGMENTS REGARDING WHICH DRUGS SUSPECTS HAD USED

PERCENT CORRECT

| JUDGMENT | % | (N) |
|---|---|---|
| Entirely Correct | 49% | (85) |
| Partially Correct | 38% | (65) |
| Wrong | 13% | (22) |
| Total | 100% | (172) |

Note: The total N equals 172 because one suspect in whom no drugs were detected was not included.

Overall, the DREs were fairly accurate in determining which drug or drug class the suspect had taken. They were totally correct in their judgements on 49% of the suspects, and partially correct (i.e., the DRE correctly identified at least one drug and incorrectly identified at least one drug) on 38% of the suspects. They identified one or more drugs correctly in 87% of the suspects. The DREs were wrong on only 23 suspects (13%). In ten of these suspects, no drugs other than alcohol were detected, and in one case no drug or alcohol was found. In the remaining 12 cases, drugs were detected in the suspects blood, though the DREs failed to correctly identify any of them.

In order to see whether the specific number of drugs present has an effect on the DREs accuracy, separate analyses were conducted for the suspects in whom one, two, three, or four drugs were detected. The results showed that the DREs were more likely to be entirely correct when the suspects had taken one or two drugs than when three or four drugs were detected in the suspect's blood (see Table 6). Thus, for example, the DREs correctly identified all three drugs in only 10 of the 40 suspects (25%) in whom three drugs were detected in the blood samples. This compares to 53% entirely correct for the suspects in whom one drug was detected.

Conversely, the DREs were more likely to be partially correct as the number of drugs detected increased (they needed to get only one drug right to be counted as partially correct). For example, in the case of the suspects in whom three drugs were detected, the DREs were partially correct for 70% of the suspects, compared to 19% of the suspects in whom just one drug was detected. A DRE could be partially correct when one drug was detected because the DRE may have identified a drug not found in the blood, in addition to correctly identifying the drug that was found.

As might be expected, the number of suspects the DREs were completely wrong on decreased as the number of drugs detected in the suspects blood increased. Thus, for example, they were completely wrong on only 5% of the suspects in whom three drugs were detected versus 28% of the suspects in whom one drug was detected.

TABLE 6

PERCENTAGE OF SUSPECTS IN WHICH THE DREs WERE ENTIRELY CORRECT, PARTIALLY CORRECT OR WRONG BY THE NUMBER OF DRUGS USED BY THE SUSPECTS

| | NUMBER OF DRUGS DETECTED IN THE SUSPECT'S BLOOD | | | | |
|---|---|---|---|---|---|
| JUDGMENT | 1<br>% (N) | 2<br>% (N) | 3<br>% (N) | 4<br>% (N) | OVERALL<br>% (N) |
| DRE ENTIRELY CORRECT | 53%<br>(25) | 61%<br>(50) | 25%<br>(10) | 0%<br>(0) | 48%<br>(83) |
| DRE PARTIALLY CORRECT | 19%<br>(9) | 30%<br>(25) | 70%<br>(28) | 100%<br>(3) | 38%<br>(65) |
| DRE WRONG | 28%<br>(13) | 9%<br>(7) | 5%<br>(2) | 0%<br>(0) | 13%<br>(22) |
| TOTALS | 100%<br>(47) | 100%<br>(82) | 100%<br>(40) | 100%<br>(3) | 100%<br>(172) |

An analysis of the types of errors the DREs made when "partially correct" or "wrong" is presented in Appendix B (see Table B-4). There are two types of errors the DREs could make, namely, they could fail to identify one or more drugs that were found in the blood sample, or they could incorrectly identify one or more drugs that were not detected in the blood sample.

The results presented so far have been concerned with individual suspects and the DREs ability to determine what drugs they had used. The following section deals with individual drugs and the DREs ability to identify them.

Table 7 shows how accurate the DREs judgments were for individual drugs or drug classes. In this table it is assumed that the DRE had 173 chances (one for each suspect evaluated) to identify a drug as present. Thus, for example, the DREs identified PCP as present in 96 of the suspects, THC in 59, opiates in 20, CNS stimulants (cocaine) in 12 and CNS depressants in 28 suspects. The rows in the table show how often these drugs were detected in the blood samples from the suspects.

PCP, which was detected in over half of the suspects, was detected in the blood 92% of the time that the DREs said that a suspect was impaired by it. This is not surprising given the marked and unique behavioral symptoms it produces. In only eight cases did the blood test fail to detect PCP when the DRE had indicated the suspect was impaired by PCP. PCP appears to be a popular substance in Los Angeles that can be readily recognized by trained officers.

Marijuana also appears to be widely used (by almost half the suspects), but is a little more difficult for the officers to detect. The blood tests detected marijuana 78% of the time that the DREs identified it as present, failing to find it 22% of the time. The DREs were a little more accurate when they claimed the two opiates, mescaline and codeine, were present, with the blood tests detecting these drugs 85% of the time. They were less likely to be correct when they said a suspect was impaired by CNS depressants, (e.g., the barbiturates, benzodiazepines, methaqualone). These drugs were found in the blood only 50% of the time that the DREs claimed they were present.

The DREs had the most trouble with CNS stimulants (cocaine). Cocaine was the only CNS stimulant detected, and at that only 33% of the time that they said a stimulant was present. There is some evidence that cocaine continues to metabolize in blood samples if not properly preserved, and it is possible this occurred in our study. If it did, then the blood assays might fail to detect the presence of cocaine even though it was present in the blood at the time the DRE was examining the suspect.

TABLE 7

DRE ACCURACY FOR SPECIFIC DRUGS (DRUG CLASSES)

DRE ACCURACY FOR PCP

| | | DRE SAID PRESENT Y | DRE SAID PRESENT N | |
|---|---|---|---|---|
| PCP DETECTED IN BLOOD | Y | 88 (92%) | 9 (12%) | 97 |
| | N | 8 (8%) | 68 (88%) | 76 |
| | | 96 (100%) | 77 (100%) | 173 |

DRE ACCURACY FOR CNS STIMULANTS/COCAINE

| | | DRE SAID PRESENT Y | DRE SAID PRESENT N | |
|---|---|---|---|---|
| COCAINE DETECTED IN BLOOD | Y | 4 (33%) | 17 (11%) | 21 |
| | N | 8 (67%) | 144 (89%) | 152 |
| | | 12 (100%) | 161 (100%) | 173 |

DRE ACCURACY FOR THC

| | | DRE SAID PRESENT Y | DRE SAID PRESENT N | |
|---|---|---|---|---|
| THC DETECTED IN BLOOD | Y | 46 (78%) | 31 (27%) | 77 |
| | N | 13 (22%) | 83 (73%) | 96 |
| | | 59 (100%) | 114 (100%) | 173 |

DRE ACCURACY FOR CNS DEPRESSANTS

| | | DRE SAID PRESENT Y | DRE SAID PRESENT N | |
|---|---|---|---|---|
| CNS DEPRESANTS DETECTED IN BLOOD | Y | 14 (50%) | 5 (3%) | 19 |
| | N | 14 (50%) | 140 (97%) | 154 |
| | | 28 (100%) | 145 (100%) | 173 |

DRE ACCURACY FOR OPIATES

| | | DRE SAID PRESENT Y | DRE SAID PRESENT N | |
|---|---|---|---|---|
| OPIATES DETECTED IN BLOOD | Y | 17 (85%) | 9 (1%) | 26 |
| | N | 3 (15%) | 144 (99%) | 147 |
| | | 20 (100%) | 153 (100%) | 173 |

Table 8 summarizes the information for the individual drug classes shown in Table 7. It represents the overall accuracy of the DRE judgments in terms of the percentage of time a drug was found, given that the DRE had identified that drug.

TABLE 8

OVERALL DRE ACCURACY (NUMBER OF TIMES DRUG DETECTED IN BLOOD WHEN DRE SAID SUSPECT WAS IMPAIRED BY DRUGS)

| | | DRE SAID DRUG PRESENT Y | DRE SAID DRUG PRESENT N | |
|---|---|---|---|---|
| DRUG DETECTED IN BLOOD | Y | 169 (79%) | 71 (11%) | 240 |
| | N | 46 (21%) | 579 (89%) | 625 |
| | | 215 (100%) | 650 (100%) | 865 |

Seventy-nine percent of the time when a DRE identified a specific drug, it was detected in the suspect's blood. Conversely, in 21% of the cases where a DRE identified a drug it was not found in the blood.

The DREs could make two general types of errors; namely, not detecting a drug that <u>was</u> found in the blood, and identifying a drug that <u>was not</u> found in the blood. The DREs were a little more likely to identify a drug that was not found in the blood (21%) than they were to miss detecting a drug (11%).

To see what effect the presence of other drugs had on the accuracy of the DREs judgments, the data were analyzed in terms of whether a specific drug was present alone, in comparison to those cases where other drugs were detected in the blood. Table 9 shows the percentage of cases in which the DREs were correct (in claiming a drug was present) for specific drugs based on whether they occurred alone or in combination with other drugs.

For example, there were 20 cases where the DREs claimed a suspect was impaired by THC and no other drugs were detected. In these cases THC was found in the blood 90% of the time. When other drugs were present (39 cases), THC was detected in the blood only 72% of the time.

When the opiates were present alone the blood tests confirmed the presence of these drugs 100% of the time that the DREs said it was present (versus 77% when other drugs were present).

In those cases that the CNS depressants were found alone, or in combination with alcohol, the DREs claim that it was present was more likely to be confirmed by the blood test (71% of the time) than when other drugs were present (43% of the time).

There were only two cases where no other drug (than alcohol) was found when the DREs said a CNS stimulant was present, and the blood test only confirmed the presence of cocaine in one of these cases (50%).

PCP was a little less likely to be confirmed by the blood test in those cases where it was the only drug found (88% of the time), in comparison to when other drugs were present (96% of the time).

TABLE 9

PERCENT OF TIME DRUG WAS DETECTED IN BLOOD WHEN DRE SAID SUSPECT WAS IMPAIRED FOR SPECIFIC DRUGS (DRUG CLASSES) BY WHETHER DRUG WAS USED ALONE OR WITH OTHER DRUGS

| DRUG | DETECTED ALONE | OTHER DRUGS DETECTED | OVERALL |
|---|---|---|---|
| PCP | 88% (N=51) | 96% (N=45) | 92% (N=96) |
| THC | 90% (N=20) | 72% (N=39) | 78% (N=59) |
| OPIATES | 100% (N= 7) | 77% (N=13) | 85% (N=20) |
| CNS STIMULANT/COCAINE | 50% (N= 2) | 30% (N=10) | 33% (N=12) |
| CNS DEPRESSANTS | 71% (N= 7) | 43% (N=21) | 50% (N=28) |
| ALL DRUGS | 87% (N=87) | 73% (N=128) | 79% (N=215) |

## DISCUSSION & CONCLUSIONS

This field evaluation of the LAPD drug recognition procedure was designed to determine whether trained officers could accurately judge the presence of drugs other than alcohol in impaired driving suspects, and whether the screening procedure allowed the officers to differentiate between different drugs (or drug classes).

The important findings were:

- When the DREs claimed drugs other than alcohol were present they were almost always detected in the blood (94% of the time). It was rare for the DREs to claim a suspect had used drugs and for no drugs to be found in the suspect's blood (this type of error occurring only 6% of the time).

- Multiple drug use was common among the suspects arrested in this study with 72% having used two or more drugs (including alcohol), complicating the task of identifying the specific drug or drug classes the suspects had used. Approximately 45% of the suspects had used two or more drugs other than alcohol.

- The DREs were entirely correct in identifying all of the drugs detected in the blood of almost 50% of the suspects. Most of these suspects had used multiple drugs (other than alcohol).

- The DREs were able to correctly identify at least one drug other than alcohol in 87% of the suspects evaluated in this study (i.e., they were partially correct).

- When the DREs identified a suspect as impaired by a specific drug, the drug was detected in the suspect's blood 79% of the time.

- The use of alcohol in conjunction with other drugs was pronounced with 50% of the suspects who had used drugs having also used alcohol.

- Only 6 of the suspects (3.7%) who had used drugs had BACs equal to or greater than 0.10% w/v. It is likely that most (if not all) of the remainder of the suspects would have been released if the drug symptoms had not been recognized by the DREs.

As a result of practical considerations, the study has a number of limitations that restrict the conclusions that can be drawn from it. These are mentioned briefly below.

This study was not designed to fully evaluate the DREs ability to discriminate between drivers under the influence of drugs and drug-free drivers. The study could not determine the accuracy of the DREs judgements that a suspect was not under the influence of drugs other than alcohol. No information was collected on whether there where suspects who were under the influence of drugs but were missed by the officers. Blood samples were obtained only from the suspects that the officers believed were under the influence of drugs and hence were arrested. Thus, of the 219 suspects brought to the DREs during the study, eighteen (8%) were determined not to be under the influence of drugs and as a result were released from the study. There is no way to determine whether any of these suspects were actually under the influence of drugs.

Not all the suspects the DREs believed were under the influence of drugs provided a blood sample. Twenty-eight suspects (14% of the total sample of suspects believed to be under the influence of drugs) refused to take a second test or took only a urine test. However, the suspects who did not take a blood test did not differ from those suspect who did in terms of age, sex, race, average BAC, or day of week or time of day arrested.

The blood samples were not screened for all possible drugs the suspects might have taken. For example, we tested the blood samples only for the most commonly used CNS depressants (barbiturates, benzodiazepines). Thus, if the DRE had indicated the presence of a CNS depressant and a suspect had used a CNS depressant that was not detected by the assay test, the DRE was considered as wrong (even though he may have been right).

In a similar vein, it was not possible to test for some substances with absolute confidence because the necessary toxicological tests are not available. For example, the LAPD narcotics division has identified over a hundred PCP analogs. These new compounds, created by illicit drug laboratories, differ only slightly in chemical structure from PCP but may not be detectable using existing tests (at least temporarily until the analytic technology catches up). Thus, it is possible that in some cases in which the DREs judged a suspect as under the influence of a drug but the blood tests failed to detect that drug, that the shortcoming was in the blood test rather than the DRE's judgment. Of the ten cases in this study in which the DRE believed the suspect was under the influence of drugs, but none were detected in the blood, six involved suspected use of PCP, two CNS depressants, one THC, and one a CNS stimulant.

Another potential problem is that some drugs are metabolized very rapidly (within a period of a few hours). Laboratory studies have shown that the behavioral effects of these drugs may persist for many hours beyond the point at which these drugs are detectable in the blood (e.g., marijuana and cocaine). Our study criteria called for the blood samples to be drawn within 2 hours of the suspect's arrest. However, depending upon how long prior to the arrest a suspect took the drug, it is possible that no detectable levels were present at the time the blood sample was drawn even though the behavioral effects were present.

There is some recent evidence that blood samples, if not frozen quickly, or preserved with the proper chemicals, allow some drugs (e.g., cocaine) to be metabolized after collection. If this occurred in our study, then the blood assays might fail to detect the drug even though it was present at the time the DRE examined the suspect.

## CONCLUSION

The police officers participating in this study were faced with a formidable task of determining whether the suspects brought to them were under the influence of drugs, and if so, what drugs. Determining what drugs the suspects had used was severely complicated by the fact that such a large percentage of the suspects the DREs evaluated had used multiple drugs (in over 70% two or more drugs were detected in the blood samples). There were over 40 different drug combinations detected in the blood of the suspects. There is little doubt that many of these drug combinations resulted in specific drug symptoms being masked or altered in some way.

In the face of these complications, these officers, trained in the LAPD drug recognition procedure, were quite accurate when they judged that suspects had used drugs. In addition, they were able to correctly identify at least one drug other than alcohol in most of the suspects they judged impaired by drugs. In close to half of the suspects they correctly identified all of the drugs detected in the suspect's blood.

The results of the two studies conducted by NHTSA appear to show that the LAPD drug recognition procedure provides the trained police officer with the ability to accurately recognize the symptoms of many types of drug use by drivers. When the officers identify a suspect as having used particular drugs a blood test almost always will confirm their judgement. Blood tests are not currently conducted on a routine basis because the cost of testing for many possible drugs is prohibitively expensive. Because this procedure allows the police to focus on a few specific drugs, the cost of the blood test should be much less expensive and could therefore be more routine. Information regarding the particular drugs used by DUI drivers should increase successful prosecutions. Thus, this procedure appears to be a useful tool that will greatly enhance the enforcement of "driving under the influence of drugs" laws.

## REFERENCES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Williams, A.F., Peat, M.A., Crouch, J.K., and Finkle, B.S. 1985 "drugs in Fatally Injured Young Male Drivers," Public Health Reports, Vol. 100, No. 1, January-February 1985, pp. 19-25.

APPENDIX A

OFFICE OF OPERATIONS

ORDER NO. 10 June 19, 1985

TO: All Concerned Personnel, Office of Operations

FROM: Director, Office of Operations

SUBJECT: DRUG RECOGNITION EXPERT FIELD VALIDATION TEST

PURPOSE

The Los Angeles Police Department, in cooperation with the National Highway Traffic Safety Administration (NHTSA), will be conducting a validation test of the Department's Drug Recognition Expert (DRE) Program. The test will compare the DRE's evaluation with the results obtained in an independent laboratory analysis of an arrestee's blood sample.

TESTING CRITERIA

The test begins on June 26, 1985, and will continue for approximately three months. The test needs a minimum of 300 evaluations to ensure a valid sampling. When a sufficient number of tests have been completed, a notification will be sent to all concerned personnel advising the cancellation of the field validation test. Only officer-initiated arrests for 23152(a)VC (DUI) are affected. The testing will be limited to five nights a week, Wednesday through Sunday, beginning at 1830 hours and ending at 0300 hours the following morning.

Exception: Arrestees who are involved in traffic accidents, or who have sustained an injury, or who are juveniles are not included in this test.

When an arrestee meeting the above criteria is taken into custody for a violation of 23152(a)VC (DUI), the arrestee shall be evaluated by a DRE at one of the jail facilities listed in this Order if the arrestee is:

1. Administered a Gas Chromatograph Intoximeter (GCI) test which reflects results inconsistent with the observed symptoms of intoxication; OR,
2. The arrestee is suspected of driving under the influence of drugs, or a combination of alcohol and drugs.

ARRESTING OFFICER'S RESPONSIBILITIES

The arresting officer shall:

* Transport the arrestee to a specially designated jail facility.

  NOTE: For the purposes of this evaluation, persons arrested within Operations-Central Bureau, Operations-South Bureau, Hollywood Area, or Wilshire Area shall be transported to Jail Division. Persons arrested within Operations-Valley Bureau, West Los Angeles Area, or Pacific Area shall be transported to Valley Jail Section. Two senior DREs and a DRE supervisor will be at each of these jail facilities.

* Advise the DRE of the circumstances of the arrest.
* Obtain and book a urine sample from the arrestee when the arrestee agrees to submit to a urine test; or assist the DRE in causing two vials of blood to be drawn by Medical Services personnel at the respective jail dispensary when the arrestee agrees to submit to a blood test.
* Obtain booking approval from the DRE supervisor.

  NOTE: If the DRE supervisor is unavailable, booking approval shall be obtained from the concerned jail watch commander.

* Book male arrestees at the jail facility where they were examined by the DRE, and female arrestees at Sybil Brand Institute or Valley Jail Section according to existing procedures.
* Complete the necessary reports and submit them to the DRE for review.
* Obtain report approval from the DRE supervisor.

  NOTE: If the DRE supervisor is unavailable, obtain report approval in accordance with established procedures.

* Provide the DRE supervisor with a copy of all related reports.

* Ensure that original arrest and related reports are left at either Jail Division or Valley Jail Section, as directed by the DRE supervisor.

  EXCEPTION: The original reports for arrests occurring in Harbor, West Los Angeles, Pacific, or Foothill Area shall be returned to the records unit at the Area of occurrence.

DRUG RECOGNITION EXPERT'S RESPONSIBILITIES

The DRE shall:

* Advise the arrestee of the DUI Drug Admonition.

* Conduct a drug influence evaluation of the arrestee.
* Request the arrestee to submit to a required second chemical test (either blood or urine) if the conclusion is that the arrestee is under the influence of a drug, or a combination of alcohol and drugs.

If the arrestee chooses to submit to a blood test, the DRE shall additionally:

* Cause TWO vials of blood to be drawn by medical services personnel at the concerned jail dispensary.
* Ensure that the vials are packaged in accordance with established procedures.
* Cause the evidence to be booked at Property Division or Valley Property Section prior to end of watch.

NOTE: For the purposes of this test, the DRE supervisor shall assume responsibility for the booking and disposition of blood samples. In addition, when blood samples have been booked by the DRE supervisor, the DRE supervisor will also assume the responsibility for the final disposition of any booked evidence associated with the arrest.

If the arrestee chooses to submit to a urine test, the DRE shall ensure that the arresting officer obtains, packages, and books the urine sample in accordance with established procedures.

DRUG RECOGNITION EXPERT SUPERVISOR'S RESPONSIBILITIES

The DRE supervisor shall:

* Provide booking and report approval.
* Book, and assume responsibility for the disposition of, blood samples.
* Supervise drug evaluations, provide procedural advice when necessary, and resolve any conflict arising from the provisions of this Order.

Court appearance locations are not affected by this Order. The arresting officer shall inform the booking employee that the arrestee shall be cited to appear in the court that is appropriate to the location of arrest.

James C. Hardin f.o.
MARVIN D. IANNONE, Assistant Chief
Director
Office of Operations

DISTRIBUTION "O"

LOS ANGELES POLICE DEPARTMENT
Drug Recognition Expert Program

ROSTER OF SENIOR DRUG RECOGNITION EXPERTS
FIELD VALIDATION STUDY PARTICIPANTS

| RANK | LAST NAME | 1ST NAME | DIV | DRE SCHOOL | CERTIFIED |
|---|---|---|---|---|---|
| Ofcr. | Beck | Joseph | STD | 12-15-82 | 03-15-83 |
| Ofcr. | Berry | Patricia | WTD | 02-06-81 | 10-08-82 |
| Ofcr. | Carlson | Robert | CTD | 02-06-81 | 05-06-81 |
| Ofcr. | Ferrel | Larry | WTD | 03-30-80 | 06-30-80 |
| Ofcr. | Gray | David | VTD | 03-30-80 | 06-30-80 |
| Ofcr. | Hall | Ian | VTD | 10-05-82 | 05-24-84 |
| Ofcr. | Hone | John | WTD | 10-27-82 | 05-24-84 |
| Ofcr. | Hutchinson | Donald | CTD | 05-27-83 | 05-24-84 |
| Ofcr. | John | Clark | STD | 04-03-82 | 11-29-83 |
| Ofcr. | Kalstrom | Robert | VTD | 03-30-80 | 06-30-80 |
| Ofcr. | Laetzsch | Baron | VTD | 04-03-82 | 07-03-82 |
| Ofcr. | Laird | Charles | CTD | 03-30-80 | 06-30-80 |
| Ofcr. | McComb | Ralph | STD | 12-15-82 | 03-15-83 |
| Ofcr. | Murray | Michael | VTD | 02-06-81 | 05-06-81 |
| Ofcr. | Nabonne | Eugene | WTD | 12-15-82 | 01-14-83 |
| Ofcr. | Oowell | Jerry | COP | 04-24-82 | 05-22-82 |
| Ofcr. | Sherman | Scott | STD | 05-02-82 | 08-02-82 |
| Ofcr. | Sidell | Garry | WTD | 05-27-83 | 08-27-83 |
| Ofcr. | Stoney | James | VTD | 03-30-80 | 06-30-80 |
| Ofcr. | Tanner | John | CTD | 03-30-80 | 06-30-80 |
| Ofcr. | Taylor | Geoffrey | STD | 12-15-82 | 03-15-83 |
| Ofcr. | Turner | Arvin | CTD | 07-28-83 | 05-24-84 |
| Ofcr. | Voelker | Larry | VTD | 10-05-82 | 01-05-83 |
| Ofcr. | Widder | Michael | CTD | 05-27-82 | 08-27-82 |
| Ofcr. | Wilbanks | Leslie | STD | 07-28-83 | 05-24-84 |
| Ofcr. | Zielinski | Richard | VTD | 12-01-82 | 03-01-83 |
| SUPERVISORS | | | | | |
| Sgt. | Haversat | Arthur | VTD | 03-30-80 | 06-30-80 |
| Sgt. | Studdard | Richard | CTD | 03-30-80 | 03-30-80 |

_____Control Number

DRE FIELD VALIDATION TEST CHECKLIST

Arrestee (last, first)_____ BK#_____

DRE (name serial number)_____ DR#_____

____ (1)Arrestee meets test criteria (adult, no injuries, no traffic accident).
____ (2)GCI administered. _____
___ (a)GCI refused.
____(3) Cursory examination to determine evidence of drug impairment. (In order: nystagmus check, pupillary reaction, pulse rate.)_____
____(4) ARRESTEE'S NAME LOGGED IN CONTROL BOOK.
____(5) Arrestee appears to be under the influence of a drug. (If not, advise arresting officer of disposition of arrestee; complete log book; discontinue checklist).
____(6) Arrestee's driver's license history (DMV), CII history, arrest trailer history and AWWS check obtained by arresting officer.
____(7) Arrestee advised of Drug Admonition by DRE.
____(8) Chemical sample chosen:
___(a) Blood. 2 blood samples obtained by arresting ofc (within 2 hours of arrest; received by DRE
___(b) Urine. Sample obtained by arresting officer.
___(c) Refused chemical tests.
____(9) ARRESTEE MIRANDIZED BY DRE.
____(10) Drug Influence Evaluation (CONDUCTED IN ORDER):
___(a) Nystagmus and strabismus
___(b) Pulse _____
___(c) Rhomberg balance test (eyes closed)
___(d) One-leg-stand-test
___(e) Finger-to-nose test
___(f) Walk-the-line test
___(g) Pulse _____
___(h) Blood pressure
___(i) Pupillary reaction
___(j) Physical exam for ingestion signs
____(11) Drug Evaluation report completed.
____(12) Arrestee disposition:
___(a) Booked by arresting officer.
___(b) Released.
____(13) Arresting officer's report reviewed for completeness & accuracy.
___(a) Report initialed at conclusion of narrative by DRE.
____(14) TEST CONTROL NUMBER PLACED IN UPPER LEFT CORNER OF ALL REPORT PAGES
____(15) PROPERTY SECTION OF REPORT STAMPED "DISPO CARD TO TCS".
____(16) Report approved by supervisor.
____(17) Original and one copy of arrest report package obtained (plus copy(ies) needed for booking of evidence).
____(18) Evidence booked. (Blood booked by DRE at Property Division. Urine booked by arresting officer).
____(19) Log completed.
____(20) Checklist attached to TCS copy.
____(21) Arrest report to records for distribution.

LAPD 08.40.2 (7/83)

# DRUG INFLUENCE EVALUATION

DR

Page ___ of ___

| ARRESTEE'S NAME (LAST, FIRST, MI) | BOOKING NO. | LOCATION OF ARREST |
|---|---|---|
| DATE EXAMINED / TIME / LOCATION | ARRESTING OFFICER(S) NAME, DIVISION, UNIT NO. | |

**DUI DRUG ADMONITION** (To be given after breath test if arrestee is suspected of driving under the influence of drugs, or the combined influence of alcohol and drugs):

1. The breath test you have just taken is designed to detect only the alcoholic content of your blood.
2. Because I believe you are under the influence of drugs or a combination of drugs and alcohol, you are required by state law to submit to a blood or urine test to determine the drug content of your blood.
3. If you refuse to submit to a test, or fail to complete a test, your driving privilege WILL BE SUSPENDED FOR SIX MONTHS, OR FOR ONE YEAR if you have been convicted within the last five years of driving under the influence of alcohol or drugs, or any combination of these, including such a charge reduced to reckless driving.
4. 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.
5. If you are incapable of, or state you are incapable of, completing the test you choose, you must submit to & complete a remaining test.
6. Your refusal to submit to a chemical test will be commented on in a court and a jury will be instructed that your refusal may show consciousness of guilt on your part.

ADMONITION GIVEN BY / SERIAL NO. / ☐ GIVEN IN SPANISH

Will you take a blood or urine test now? Response:

CHEMICAL TESTS: ☐ BREATH — INSTRUMENT NO. / GC1 READINGS ☐ URINE ☐ BLOOD ☐ ALL TESTS REFUSED

| MIRANDA ADMONITION GIVEN BY ☐ GIVEN IN SPANISH | DO YOU UNDERSTAND EACH OF THE RIGHTS I HAVE EXPLAINED TO YOU? | DO YOU WISH TO GIVE UP THE RIGHT TO REMAIN SILENT? | DO YOU WISH TO GIVE UP THE RIGHT TO SPEAK TO AN ATTORNEY AND HAVE THE ATTORNEY PRESENT DURING QUESTIONING? |
|---|---|---|---|

| WHAT HAVE YOU EATEN TODAY? ....WHEN? | WHAT HAVE YOU BEEN DRINKING? .... HOW MUCH? | TIME OF LAST DRINK? | TIME NOW | WHEN DID YOU LAST SLEEP? | HOW LONG? |
|---|---|---|---|---|---|
| | | | | | |

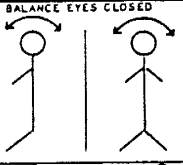
| | | |
|---|---|---|
| ARE YOU SICK OR INJURED? Y N | ARE YOU EPILEPTIC OR DIABETIC? Y N | ARE YOU UNDER THE CARE OF A DOCTOR OR DENTIST? Y N |
| DO YOU TAKE INSULIN? Y N | DO YOU HAVE ANY PHYSICAL DEFECTS? Y N | ARE YOU TAKING ANY MEDICINE OR DRUGS? Y N |
| | | (EXPLAIN YES ANSWERS COMPLETELY IN NARRATIVE) |

| WHAT MEDICINE OR DRUG HAVE YOU BEEN USING? ....HOW MUCH? | TIME OF USE | WHERE WERE DRUGS USED? (INCLUDE ADDRESS WHEN POSSIBLE) |
|---|---|---|
| | | |

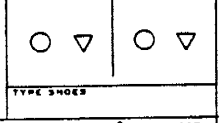
NYSTAGMUS: ☐ HORIZONTAL ☐ VERTICAL

PULSE

BALANCE EYES CLOSED

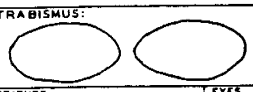


BALANCE ○ RIGHT FOOT △ LEFT FOOT



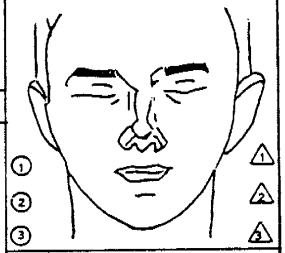
TYPE SHOES

STRABISMUS:



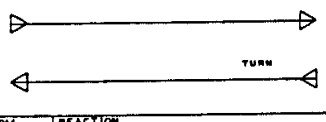
BLOOD PRESSURE

○ RIGHT INDEX △ LEFT INDEX
DRAW LINES TO SPOTS TOUCHED



| ATTITUDE | EYES |
|---|---|
| BREATH | FACE |
| COORDINATION | SPEECH |

LINE TEST ○ RIGHT FOOT △ LEFT FOOT



TURN

| PUPILS: | DARKNESS | INDIRECT | DIRECT | ROOM | REACTION |
|---|---|---|---|---|---|
| | ___MM | ___MM | ___MM | ___MM | |

WEARING GLASSES? Y N
WEARING CONTACTS? Y N
EYE PROBLEMS? Y N

1) DESCRIPTION OF EXAMINATION: INCLUDE ARRESTEE'S STATEMENTS, PHYSICAL AND MENTAL SIGNS OF DRUG USE. 2) EXAMINING OFFICER'S NARRATIVE & OPINION.

CONTINUE ON REVERSE

| EXAMINING OFFICER | SERIAL NO. | DIVISION | UNAVAILABLE DATES |
|---|---|---|---|
| | | | |

| PAGE ___ OF ___ | BOOKING NO. | DR |
|---|---|---|

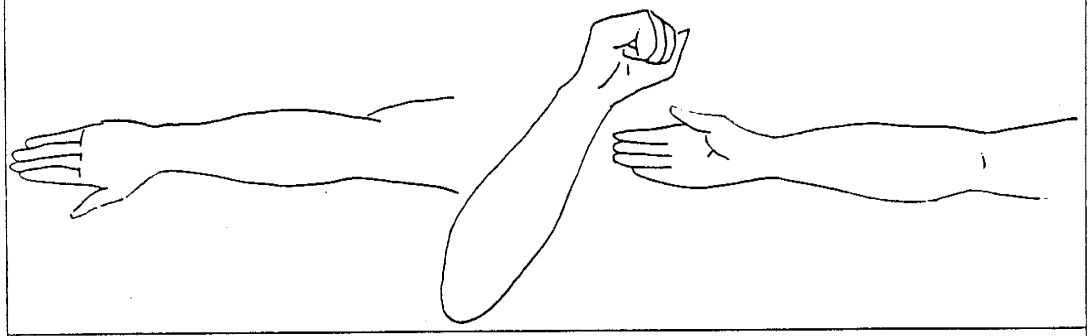
USE CONTINUATION SHEET

| STATEMENTS: | NO. CURES | DATES | LOCATIONS | DRUG FIRST USED: | TYPE | AGE |
|---|---|---|---|---|---|---|
| | | | | | | |

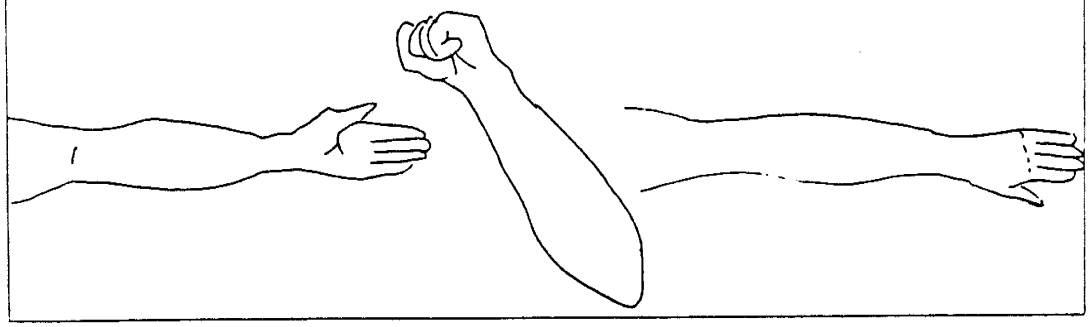
| LAST FIX: | DATE | TIME | LOCATION | AMOUNT | COST | EXAMINED: | DATE | TIME | LOCATION |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

RIGHT ARM

ATTACH PHOTOS OF ALL FRESH PUNCTURE MARKS



LEFT ARM



Drug Recognition Expert Program

EXPANDED CHEMICAL TEST ADMONITION

ARRESTEE'S NAME _____ RPT# _____
The blood-alcohol chemical test admonition, as required by Section 13353 of the California Vehicle Code, was given to the arrestee by:

OFFICER: _____ SER#: _____ LOC: _____

BREATH (1) ____%, (2) ____%, (3) ____% BLOOD ____ URINE ____
The following DUI-Drug chemical admonition shall be given to the arrestee prior to the completion of the Drug Influence Evaluation:

1. The breath test you have just taken is designed to detect only the alcoholic content of your blood. Do you understand?

   RESPONSE: _____

2. Because I believe you are under the influence of drugs or a combination of drugs and alcohol, you are required by state law to submit to an additional chemical test to determine the drug content of your blood. Do you understand?

   RESPONSE: _____

3. If you refuse to submit to a test, or fail to complete a test, your driving privilege will be suspended for six months, or for one year if you have been convicted within the last five years of driving under the influence of alcohol or drugs, or any combination of these, including such a charge reduced to reckless driving, or if you have had more than one of these convictions within the last five years, your driving privilege will be revoked for three years. Do you understand?

   RESPONSE: _____

4. 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. Do you understand?

   RESPONSE: _____

5. If you are incapable of, or state you are incapable of, completing the test you choose, you must submit to and complete a remaining test. Do you understand?

   RESPONSE: _____

6. Your refusal to submit to a chemical test will be commented on in a court and a jury will be instructed that your refusal may show consciousness of guilt on your part. Do you understand?

   RESPONSE: _____

7. Will you take the blood test now?

   RESPONSE: _____

8. Will you take a urine test instead of a blood test?

   RESPONSE: _____

OFFICER: _____ SER#: _____ LOC: _____

APPENDIX B

FIGURE B-1

Blood Levels of PCP By DRE Identification

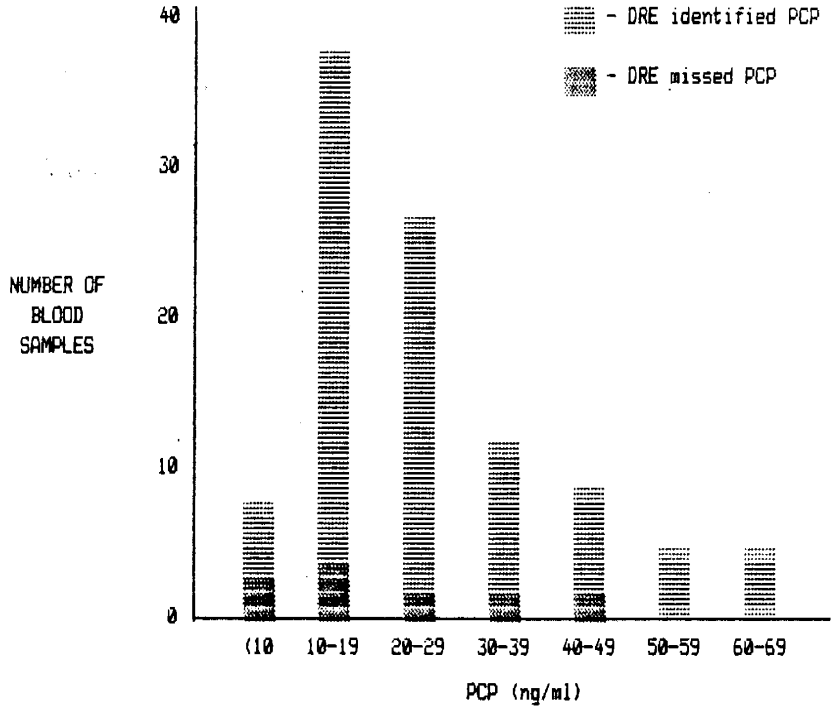



Figure B-1 shows the distribution of blood levels for PCP. The average blood level was 24 ng/ml with a range of 5 to 61 ng/ml. Because we do not know when the suspects ingested the PCP it is not possible to interpret these blood levels in terms of typical doses. The figure also indicates whether the DRE identified PCP in the suspects in which it was found. The accuracy of the DRE's identification of PCP was not related to the blood level.

FIGURE B-2

Distribution of BACs

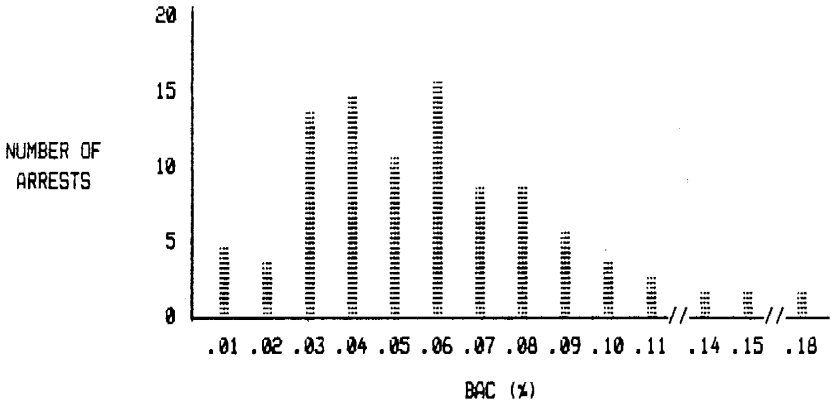



Figure B-2 shows the distribution of BACs in the 91 suspects who had consumed alcohol (47.4% of the suspects had not consumed alcohol). The positive BACs ranged from .01% w/v to .18% w/v, with a mean BAC of .06%. Approximately 36% of the positive BACs were in the range of .01-.04% BAC, 55% of the BACs were in the range of .05-.09% BAC, and 9% were equal to or above 0.10% BAC.

FIGURE B-3

Blood Levels of THC By DRE Identification

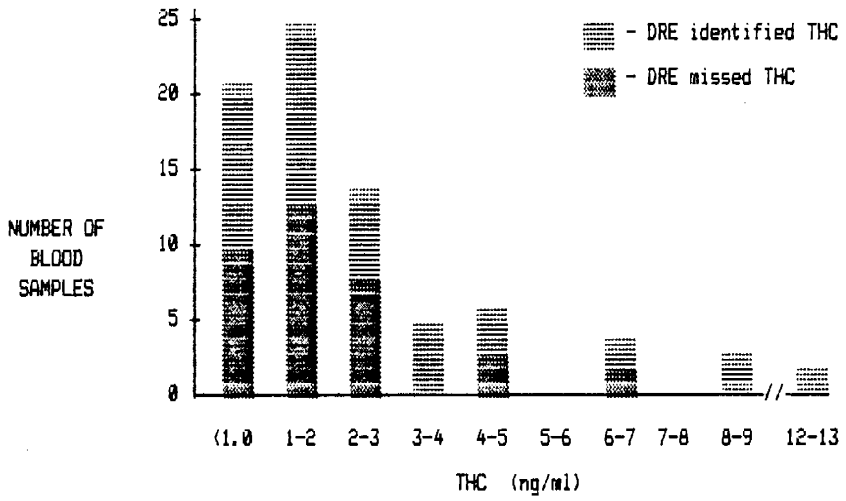



Figure B-3 shows the distribution of blood levels of THC (marijuana) by whether the DRE correctly identified the presence of THC. THC was detected in the blood of 77 suspects (44%). In approximately one quarter of the cases in which marijuana was detected, the blood level was found to be just s trace amount (< 1.0 ng/ml). The range was from <1.0 to 12.4 ng/ml. The median level was 1.7 ng/ml, with three fourths of the samples below 3.0 ng/ml.

THC is known to be metabolized rapidly from the blood after smoking (Willette, 1985). Blood levels are typically below 10 ng/ml two hours after injestion. The blood samples from the suspects in this study were drawn typically 1-2 hours after the suspect was arrested. There is no way to known how long prior to the arrest the suspects ingested the marijuana. The half dozen samples in the range of 6.3 - 12.4 ng/ml seem to represent atypical marijuana use.

TABLE B-4

PERCENTAGE OF SUSPECTS IN WHICH THE DREs MISSED A DRUG OR IDENTIFIED A DRUG NOT DETECTED IN THE BLOOD BY THE NUMBER OF DRUGS USED BY THE SUSPECTS

| | NUMBER OF DRUGS DETECTED IN THE SUSPECT'S BLOOD | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | OVERALL |
| JUDGMENT | % (N) | % (N) | % (N) | % (N) | % (N) |
| DRE MISSED DRUG | 8% (4) | 34% (28) | 75% (30) | 100% (3) | 38% (65) |
| DRE IDENTIFIED DRUG NOT FOUND IN BLOOD | 49% (23) | 21% (17) | 10% (4) | 0% (0) | 25% (44) |

Table B-4 shows the two types of errors the DREs could make when they did not correctly identify the drugs detected in a suspects blood sample broken out by the number of drugs found in the suspects blood. The DREs could fail to identify one or more drugs that were found in the blood sample, or could incorrectly identify one or more drugs that were not detected in the blood sample.

The number of suspects in which the DREs failed to identify a drug that was detected in the suspect's blood, increased as the number of drugs found in the blood increased (Table B-4). For example, in 75% of the suspects in whom three drugs were detected the DREs missed at least one drug. This compares to the same error occurring in just 8% of the suspects in whom one drug was detected. This suggests it becomes more difficult to recognize the symptoms of a drug as the number of other drugs taken increases.

On the other hand, the number of suspects in which the DRE identified a drug that was <u>not</u> found in the suspect's blood, decreased as the number of drugs used increased. Thus, for example, the DREs committed this type of error in 10% of the suspects in whom three drugs were detected versus 49% of the suspects in whom one drug was found. It is possible that the DREs were less likely to mistake the symptoms a suspect exhibited for a drug not taken, as the number of drugs detected increased, or it may be simply that the chances were better they would be correct if they were guessing.

DRE Accuracy For Specific Drugs

Table B-5 shows the accuracy of the DREs for specific drugs in terms of the number of times the DREs identified a drug as present, given that the drug was detected in the suspect's blood. This is a slightly different way of looking at the accuracy of the DREs judgments than that shown in Table 8 (in the results section) which indicated the number of times that a drug was found in the blood, given that a DRE had identified that drug as present.

The data shown here must be interpeted cautiously because we do not have data from suspects the DREs did not judge as impaired by drugs. A more accurate estimation of how well the DREs could detect the presence of a drug would come from a data set from suspects both under the influence of drugs and not under the influence of drugs. These data are still useful however, since partial controls were provided by the suspects in whom different drugs were detected.

As shown in the bottom right-hand corner of Table B-7, the DREs correctly identified the presence of a drug (or drug class) 70% of the time when that drug was detected in the suspect's blood. Only 7% of the time did the DREs say a drug was present when it was not detected in the blood.

PCP, which was detected in over half of the suspects, was correctly identified by the DREs 91% of the time. This is not surprising given the marked and unique behavioral symptoms it produces. In only nine cases did the DREs fail to recognize the presence of PCP. The mean blood levels of PCP did not differ between those cases where the officers successfully recognized PCP or failed to detect it's presence. PCP appears to be a popular substance in Los Angeles that can be readily recognized by trained officers.

Marijuana, on the other hand, also appears to be widely used (by almost half the suspects), but is more difficult for the officers to detect. They correctly identified the presence of this drug 60% of the time, missing its presence 40% of the time. When one looks only at those cases where marijuana was present alone or in combination with alcohol, the DREs correctly identify it's presence 90% of the time. Thus, it appears that the presence of other drugs (e.g., PCP) will mask the symptoms of marijuana making it difficult for the officers to detect it's presence. The mean blood levels of THC in those cases the DREs identified it correctly was 2.6 ng/ml, while the mean for those cases where the DREs failed to detect it was 1.8 ng/ml.

The two opiates, mescaline and codeine, were also somewhat difficult for the officers to accurately detect. They correctly recognized the symptoms of these drugs approximately 65% of the time it was present. However, when the opiates were present alone, or in combination with alcohol, the DREs were much better at detecting it's presence, correctly recognizing it's symptoms 89% of the time (8 out of 9 cases). As with marijuana, it appears that the presence of other drugs masks or alters the behavioral symptoms of the opiates.

The CNS depressants, (e.g., the barbiturates, benzodiazepines, methaqualone) were a little easier for the officers to detect. They correctly spotted these drugs 74% of the time. In those cases that these drugs were found alone, or in combination with alcohol, the DREs ability to correctly detected their presence increased to 80% of the time (4 out of 5 cases).

## TABLE B-5

### DRE ACCURACY FOR SPECIFIC DRUGS (DRUG CLASSES)

(NUMBER OF TIMES A DRE SAID SUSPECT WAS IMPAIRED BY A DRUG GIVEN IT WAS DETECTED IN THE BLOOD)

DRE ACCURACY FOR PCP

| | | PCP DETECTED IN BLOOD Y | PCP DETECTED IN BLOOD N | |
|---|---|---|---|---|
| DRE SAID PCP PRESENT | Y | 88 (91%) | 8 (11%) | 96 |
| | N | 9 (9%) | 68 (89%) | 77 |
| | | 97 (100%) | 76 (100%) | 173 |

DRE ACCURACY FOR COCAINE

| | | COCAINE DETECTED IN BLOOD Y | COCAINE DETECTED IN BLOOD N | |
|---|---|---|---|---|
| DRE SAID COCAINE PRESENT | Y | 4 (19%) | 8 (5%) | 12 |
| | N | 17 (81%) | 144 (95%) | 161 |
| | | 21 (100%) | 152 (100%) | 173 |

DRE ACCURACY FOR THC

| | | THC DETECTED IN BLOOD Y | THC DETECTED IN BLOOD N | |
|---|---|---|---|---|
| DRE SAID THC PRESENT | Y | 46 (60%) | 13 (14%) | 59 |
| | N | 31 (40%) | 83 (86%) | 114 |
| | | 77 (100%) | 96 (100%) | 173 |

DRE ACCURACY FOR CNS DEPRESSANTS

| | | CNS DEPRESSANTS DETECTED IN BLOOD Y | CNS DEPRESSANTS DETECTED IN BLOOD N | |
|---|---|---|---|---|
| DRE SAID CNS DEPRESSANTS PRESENT | Y | 14 (74%) | 14 (9%) | 28 |
| | N | 5 (26%) | 140 (91%) | 145 |
| | | 19 (100%) | 154 (100%) | 173 |

DRE ACCURACY FOR OPIATES

| | | OPIATES DETECTED IN BLOOD Y | OPIATES DETECTED IN BLOOD N | |
|---|---|---|---|---|
| DRE SAID OPIATES PRESENT | Y | 17 (65%) | 3 (2%) | 20 |
| | N | 9 (35%) | 144 (98%) | 153 |
| | | 26 (100%) | 147 (100%) | 173 |

DRE ACCURACY OVER ALL DRUGS

| | | DRUGS DETECTED IN BLOOD Y | DRUGS DETECTED IN BLOOD N | |
|---|---|---|---|---|
| DRE SAID DRUGS PRESENT | Y | 169 (70%) | 46 (7%) | 215 |
| | N | 71 (30%) | 579 (93%) | 650 |
| | | 240 (100%) | 625 (100%) | 865 |

Cocaine (a CNS stimulant) appeared to give the DREs the most trouble. They correctly detected it's presence only 19% of the time. There were only three cases where cocaine had been used alone or with alcohol, and the DREs did little better with these cases, detecting the drug only once (33%). There is some evidence that cocaine continues to metabolize in blood samples if not properly preserved, and it is possible this occurred in our study. If it did, then the blood assays might fail to detect the presence of cocaine even though it was present in the blood at the time the DRE was examining the suspect. It is also likely that the other drugs present with cocaine masked it's symptoms.