ACCURACY OF VIRGINIA ACCIDENT DATA

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ABSTRACT

The sources, magnitude, and characteristics of the inaccuracies in Virginia's police-reported accident data were examined. Five techniques were used to (1) determine how accident data are documented, (2) examine the contents of the accident report used to collect the data, and (3) document problems relating to the accuracy of the data. Recommendations were designed to enhance the overall quality of the data by (1) revising the current accident report and accompanying instruction manual, (2) modifying police training procedures, (3) upgrading the field reviews and editing procedures for the accident reports, and (4) establishing a process to continually monitor and update the police accident report.

ACKNOWLEDGEMENTS

This study was funded by the Virginia Department of Transportation Safety. Throughout the project, a great deal of assistance was given by many members of the Virginia Highway and Transportation Research Council staff. In particular, thanks are extended to Delores Green for her assistance in tabulating the questionnaire data, and to Toni Thompson for her diligence in typing the draft manuscript.

Acknowledgement is also extended to many individuals in the Virginia Department of Highways and Transportation, Division of Motor Vehicles, and Department of State Police and several other state and local agencies for their cooperation and assistance. Reference is made throughout the report to specific individuals for their particular contributions. Finally, appreciation is extended to the many police officers who participated in the survey.

RECOMMENDATIONS

These recommendations have been designed to enhance the quality of accident data, i.e., its accuracy and completeness; however, other major benefits are likely to result. For example, they may lead to less expensive and more expeditious data handling and processing procedures, and increased use and credibility of the accident data. The recommendations for the Virginia traffic records system relate only to those areas thought to be most pertinent to this study.

Police Training in Accident Investigation and Reporting

1. Formal training procedures such as that used by the Department of State Police should be established for local and county police officers.

2. Training for all police should place special emphasis on the importance of accurate accident data.

3. Training references should be expanded to incorporate pertinent information on the causes of accidents.

4. A feedback mechanism should be developed for providing all police officers with the results from periodic monitoring of accident data.

5. Regular and "as needed" refresher courses on accident investigation and reporting procedures should be developed and scheduled for all police officers.

FR-300P and Instruction Manual

1. The FR-300P and the Instruction Manual should be revised. The detailed revisions found in Appendix C are recommended for consideration in the 1983 edition of the FR-300P form.

2. Local and county police departments should adopt the Department of State Police practice of using the FR-300P "Field Notes."

3. Beyond these short term recommendations, Virginia should consider expanding the use of computers. This includes, but is not limited to:

   - developing a computerized accident locator system;

- developing the capability of computerizing the Accident Diagram and Accident Description portions of the FR-300P; and

- exploring the capability of a more highly automated data entry system (e.g., remote data entry from field offices and the use of scan sheets).

Review and Editing Procedures

1. Attention should be placed on upgrading the quality of the field reviews, especially for local and county police agencies. This should include:

   - making reviewers aware of the need for better reviews,

   - notifying reviewers of errors they have missed, and

   - additional training for review personnel as needed.

2. All editing procedures should be documented and upgraded to provide sophisticated accuracy checks.

3. Department of State Police and Virginia Department of Highways and Transportation editing operations should include regular and formal procedures for documenting errors so that feedback can be provided to the appropriate agencies and individuals.

4. These two departments should adopt a common coding scheme.

Revision Process

1. The existing revision committee should review the results and recommendations presented here and decide whether or not any changes should be made to the 1982 edition of the FR-300P.

2. A formal, permanent committee consisting of representatives from the Division of Motor Vehicles, Department of State Police, Virginia Department of Highways and Transportation, and Virginia Highway and Transportation Research Council should be established to maintain, update, and revise the FR-300P and the Instruction Manual.

Future Research

1. The limited Level 3 reporting done in Virginia should be used in conjunction with the hierarchical reporting comparison technique presented here to determine inaccuracies in accident data.

2. For each data element on the FR-300P that currently contains the "Other" response option, a determination should be made of whether more specific response options should be included.

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INTRODUCTION

In 1980, there were 116,382 reported motor vehicle accidents in Virginia in which 1,045 persons were killed and 58,037 persons were injured (Department of State Police 1980). According to the National Safety Council (McFarland et al. 1979), these resulted in an economic loss of more than $478 million. The reporting of these accidents is the responsibility of the investigating police officer, and the Virginia Motor Vehicle Accident Report (FR-300P) is used to document tha accident facts.

The FR-300P is the single most important source of information used by agencies concerned with highway safety. The data it provides are a fundamental component in highway safety program design, selection, and evaluation, and in the analysis of deficiencies in safety at specific locations. Consequently, the importance of high quality accident data is paramount.

In the past, however, safety researchers have encountered a notable amount of difficulty in accurately interpreting the data from the accident reports. The areas of confusion or conflicting information include

1. contributing or causal factors relating to the driver, vehicle or environment;
2. accident type, e.g., head-on, angle, etc.;
3. accident severity;
4. accident location; and
5. characteristics of the roadway.

Furthermore, a recent study clearly demonstrated that (1) significant reporting errors exist, (2) these errors can be identified, and (3) corrective measures can be formulated (Gravallese 1979).

OBJECTIVES AND SCOPE

The primary objective of this study was to improve the quality and accuracy of accident data. The secondary objective was to provide information to transportation safety researchers for optimal interpretation of the FR-300P accident data. The scope was limited to Virginia's traffic records system and accident data. However, other systems were reviewed for comparative purposes.

TASK DESCRIPTION

The tasks required to accomplish the study objectives were organized into three functional categories. The first series of tasks documented the agencies and procedures involved in the handling of accident data. A review was undertaken of both the national and Virginia traffic records systems, with particular attention being placed on documenting the sources, users, and uses of Virginia accident data. The flow of the FR-300P was traced through the processing agencies to gain insight on the mechanisms for reporting and reviewing the accuracy of the reports. In addition, police training and accident investigation procedures were examined. Finally, because the accident report was under revision, a review of the revision process was included.

The second task involved determining the magnitude, characteristics, and sources of the inaccuracies in the Virginia accident data. A review of the various methods available for doing this indicated that a multiple approach was most appropriate. The final methodology included

1. a comparison of the data elements employed by several other state and federal reporting strategies,
2. an analysis of the results of hierarchical reporting studies,
3. a questionnaire survey of police officers,
4. personal interviews; and
5. an analysis of the current use of the report form.

The third group of tasks included synthesizing the results from the second task. In addition, recommendations were made for (1) modifying police training practices, (2) revising the accident report and accompanying instruction manual, (3) changing the review and editing procedures, and (4) modifying the process used to update the accident report.

ACCIDENT DATA INFORMATIONAL FRAMEWORK

This section of the report gives an overview of federal legislation and the National traffic records systems, a review of the major components that comprise the Virginia traffic records system, a brief synopsis on police training in Virginia, a discussion of accident investigation and reporting procedures, and descriptions of how the completed FR-300P's are handled and the process by which the form is revised.

National Overview

The Federal Highway Safety Act of 1966 established the National Highway Safety Bureau (NHSB), which is now called the National Highway Traffic Safety Administration (NHTSA). At that time, the NHSB was given regulatory and policy-making responsibilities, and charged with the duty of setting uniform highway safety standards with which all states were to comply (Kelsh 1979). Shortly thereafter, the NHSB issued the "Traffic Records" Highway Safety Program Standard, which states that

> Each state, in cooperation with its political subdivisions, shall maintain a traffic records system. The statewide system (which may consist of compatible subsystems) shall include data for the entire state. Information regarding drivers, vehicles, accidents, and highways shall be compatible for purposes of analysis and correlation. Systems maintained by local governments shall be compatible with, and capable of furnishing data to, the State system. The state system shall be capable of providing summaries, tabulations, and special analyses to local governments on request. (Federal Highway Administration 1967)

As a result of the Standard, four basic files were recommended for application in national and state traffic records systems. These are shown in Table 1. Of primary concern to this study is the accuracy and completeness of the Virginia traffic records system accident file.

In keeping with its mission to promote national and statewide traffic records systems, the NHTSA has been responsible for three major developments. The fatal accident reporting system (FARS), implemented in 1974, was the first nationwide fatal accident data system. The data analysis and reporting techniques (DART) system is a computer software package designed to help states use their own accident data for problem identification and analysis. It was first made available in 1977. Finally, the national accident sampling system (NASS), which provides for accident investigations by multidisciplinary teams, is currently being implemented in selected localities throughout the country.

Table 1

Traffic Record Files

File	Types of Data Contained in File
DRIVER	License status, physical description, driver history, address.
VEHICLE	Vehicle description, owner's name and address, registration, inspection.
HIGHWAY	Milepost, structures, geometry, average daily traffic, traffic control, speed limits, skid characteristics, intersections.
ACCIDENT	Type, location, drivers and vehicles involved, injuries and property damage, environment, contributing factors.

Virginia Traffic Records System

The Traffic Records Standard forced Virginia to examine its own procedures for the collection, processing, storage, distribution, analysis, and use of accident data. This effort came to be known as the Virginia traffic records project. In 1970, a traffic records committee was established to examine Virginia's system and propose the modifications necessary to make it conform to the national standard (Kelsh 1979).

A study by Taylor (1973) found the following seven major deficiencies in Virginia's traffic records system at that time.

1. Absence of centralization in the handling of traffic records.

2. Inaccurate and incomplete recording of accident locations.

3. Nonuniform accident reporting procedures.

4. No uniform procedures for detecting and correcting accident reports that are incomplete, inaccurate, or improper.

5. Untimely and inefficient collection, processing, and dissemination of accident data.

6. No direct data inquiry mechanism for the Highway Safety Division.

7. No regular feedback of accident data to localities.

As a result of work done by the traffic records committee, Virginia initiated the traffic records information system project in 1974. The project team was charged with four major tasks: (1) describe the existing system, (2) document the data needs of state and local traffic safety agencies, (3) propose system alternatives, and (4) develop and implement the new system (Kelsh 1979).

At present, Virginia traffic record files are maintained by three state agencies. The driver and vehicle files are maintained by the Division of Motor Vehicles (DMV); the highway and accident files by the Virginia Department of Highways and Transportation (VDH&T); and the accident file by the Department of State Police (DSP).

Sources of Accident Data

There are four primary sources of accident data for use in the Virginia traffic records system.

1. Citizen reports (FR-300C)
2. Police reports (FR-300P)
3. Limited investigations
4. Intensive investigations

The focus of this study was on the FR-300P; however, the other sources were examined for comparative purposes. Copies of the FR-300C and FR-300P are shown in Appendix A.

Citizen reports are filed by drivers (or some person acting for the driver) involved in a motor vehicle accident. This report must be filed within five days after the accident for all accidents involving death, injury, or property damage in excess of $350. In addition, the commissioner of the DMV may require supplemental data from the driver and witnesses if deemed necessary. For those accidents involving death or injury, the Motor Vehicle Laws of Virginia (Division of Motor Vehicles 1979) requires that the driver immediately notify a police official.

The Motor Vehicle Laws of Virginia also requires that an FR-300P be filed by a police officer "who in the course of duty investigates a motor vehicle accident of which a report must be made" (§46.1-401).

Once the accident investigation is completed, the police officer is required to submit the FR-300P to the DMV within 24 hours.

Limited investigation reports are made on a sample of accidents dependent on research needs. These investigations can be performed by police officials or safety research staff.

Intensive investigations are performed by multi-disciplinary teams on a very limited sample of accidents. The NHTSA's NASS project and the Virginia crash team reports are good examples of this type of accident data source.

In addition to the above sources, the Motor Vehicle Laws of Virginia specifies that sources of secondary accident data include (1) reports by medical examiners of deaths resulting from motor vehicle accidents (§46.1-404), and (2) reports by persons in charge of garage or repair shops to which an accident-damaged vehicle is brought (§46.1-406).

Users of Accident Data

Many state, local and county government agencies in the Commonwealth use accident data for a variety of purposes. Table 2 outlines the major accident data users (NHTSA 1976).

Table 2

Users of Accident Data

STATE	LOCAL	COUNTY
Department of State Police	Police Department	Sheriff/Police Department
Virginia Department of Highways and Transportation	City Traffic Engineer	County Traffic Engineer
Division of Motor Vehicles		
Virginia Department of Transportation Safety (VDTS)		
Department of Education		

The Virginia Code (1980) specifically outlines the responsibilities of three state agencies. The DMV is required to "prepare and supply" the FR-300P's to all police departments in the Commonwealth, as well as to make available the FR-300C's (§46.1-403). The DSP is responsible for publishing statistical information on traffic accidents "at least annually" (§52-4.2(a)). In addition, the DSP "may conduct research to determine the cause, control and prevention of highway accidents" (§52-4.2(b)). Finally, the Virginia Code specifies that the VDTS is to conduct special studies relating to transportation safety and the evaluation of the highway safety program (§33.1-396).

The use of the accident data varies somewhat from what the Virginia Code specifies. The following documentation of data use and application was achieved primarily through interviews with those individuals responsible for the handling of accident reports and the data contained in them.

The DMV processed 133,508 FR-300P's and 232,729 FR-300C's in fiscal year 1979.* It has three primary uses of accident data. First, it maintains and updates the driver file. Second, the citizen reports are matched with the police reports to ensure that the proper number of each has been submitted based on accident reporting requirements. And third, it monitors the vehicle insurance information to determine if the damages are covered under the policy and to assess a $200 uninsured motorist fee if appropriate.**

The DSP also has three primary uses of accident data from the FR-300P only. The accident file is maintained at the State Police Headquarters in Richmond; accident statistics for the Commonwealth are published annually in Virginia Traffic Crash Facts; and, lastly, the DSP prepares, on occasion, special statistical reports on urban and rural accidents.+

Local and county police departments use FR-300P data on a more limited basis. Primarily, police officers use the reports to document charges brought against a particular party to ensure they are properly carried out.++ Additionally, they sometimes provide accident data to fulfill requests from insurance companies.

The VDH&T maintains both the highway and accident files. Both files are used to perform the variety of studies and produce the

*Charles Anderson 1981: personal communication.

**Karl Hawk 1981: personal communication.

+Lt. P. C. Hollandsworth 1981: personal communication.

++Sgt. Sloan 1981: personal communication.

many reports generated by that department. The use of accident data are distinguished on the basis of whether or not the data are computerized. Use of noncomputerized data requires the manual inspection and analysis of such FR-300P features as the accident diagram, vehicle damage, and points of impact. These analyses are usually done for engineering studies that are typically site specific and usually produce collision diagrams with which remedial actions can be determined for safety-deficient locations.*

The greatest use of accident data in the VDH&T is for studies of locations experiencing numerous accidents. These studies use computerized data and comprise over 34% of all engineering studies performed by the VDH&T.** Other uses by that department include statistical reports summarizing accident data, environmental impact statements, evaluations of completed highway projects, special site-specific studies performed only on request, and monthly and quarterly summaries on accidents for each district traffic engineer in Virginia.

At the local and county levels, traffic engineers make use of accident data supplied to them for a variety of engineering studies. The following list (ENO Committee 1947) outlines the types of studies performed at this level.

1. Traffic control device uses
2. Speed zoning and control procedures
3. Traffic regulation reform
4. Street and highway lighting provisions
5. Intersection design or redesign
6. Vertical and horizontal alignment and super-elevation design and corrections
7. Sight distance design
8. Pavement width and surface design
9. Shoulder improvement
10. Guardrail installation

These studies are obviously highly location-dependent, and vary from one district in Virginia to another.

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*Charles D. Hall 1981: personal communication.

**Fred Small 1981: personal communication.

In addition to the users documented above, there are other agencies in the Commonwealth that use accident data at more aggregate levels (e.g., non-site-specific). For example, statewide accident data summaries are used by the VDTS for general program development and evaluation, and by the Department of Education for identification of driver and pedestrian education programs. Since these uses of aggregate accident data are extremely peripheral to this study, it is not necessary to document the specifics.

Police Training

As prescribed by Virginia law, all police officers in the Commonwealth must receive basic schooling in traffic accident investigation and reporting, including instruction for filling out the FR-300P. Many localities rely on regional training academies; however, larger urban areas and the DSP maintain their own training facilities.

There are eleven regional training academies in Virginia, each of which has a permanent director, secretary and, sometimes, assistant director. All instructors are chosen on an ad hoc basis and are volunteers from the DSP, local and county police departments, and, on occasion, federal agencies such as the Federal Bureau of Investigation. Since the academies are largely funded by a federal grant, no direct fee is charged for the training provided to local police officers. Localities taking advantage of the academies must, however, provide their share of the total 5% local funding required.*

Some localities in Virginia operate independent police training academies or join with other jurisdictions to cooperatively support training programs. Oftentimes outside police officers are admitted to these independent training academies if space is available.

The training provided by both the regional and independent academies consists of 290 hours of basic training, of which a minimum of 21 hours must be devoted to traffic. Within traffic, 6 hours must be devoted to the Motor Vehicle Code of Virginia, 2 hours to traffic direction, 1 hour to summons, and the majority of the time (12 hours) to accident investigation. The breakdown of accident investigation includes general investigation procedures, hit and run accidents, and accident reporting. No minimum number of classroom hours is specified for the three categories under accident investigation.** All textbooks and reference materials, as well as the

*Dean Jennings 1981: personal communication.

**Lex Eckenroade 1981: personal communication.

contents and balance of the instruction in the accident investigation area are determined by the individual instructors. As a result, substantial differences are likely to exist.

The training of state troopers, in their own training schools, emphasizes accident investigation more than does the typical training received by local and county police officers. A total of 38 hours of classroom time is devoted to accident investigation training, including a minimum of 4 classroom hours of filling out the FR-300P. Unlike the police attending regional academies, state troopers are required to accumulate 20 hours of field training that includes investigating and reporting at least two mock accidents and following the accidents through to moot court sessions. Baker's (1973) text is used for accident investigation training along with the DMV manual for filling out the FR-300P.* In addition to this basic training, state troopers are required to attend in-service training 1 week every year. Training topics are based on current needs and vary from year to year.

Accident Investigation

Investigations of accidents serve three general purposes: (1) they secure facts about the accident for use in accident prevention or highway safety programs; (2) they determine if any laws have been violated and provide on-the-scene police action; and (3) they ascertain all causal and related factors so those involved can properly exercise claims under civil law (Weston 1960).

Figure 1 illustrates the complexity of the actions and decisions required of the investigating police officer upon arrival at the accident scene. In regard to the actual completion of the accident report, two particular points are noteworthy. First, a "field" report form is often used to record the data at the scene of the accident. This report differs somewhat from the FR-300P final report (see Appendix A for a copy of the FR-300P "Field Notes"). Second, post-accident investigation may be necessary to gather pertinent information required to complete the FR-300P. The type of additional information typically includes highway and medical data and that obtained from interviews with participants and witnesses.

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*Sgt. Rasnick 1981: personal communication.

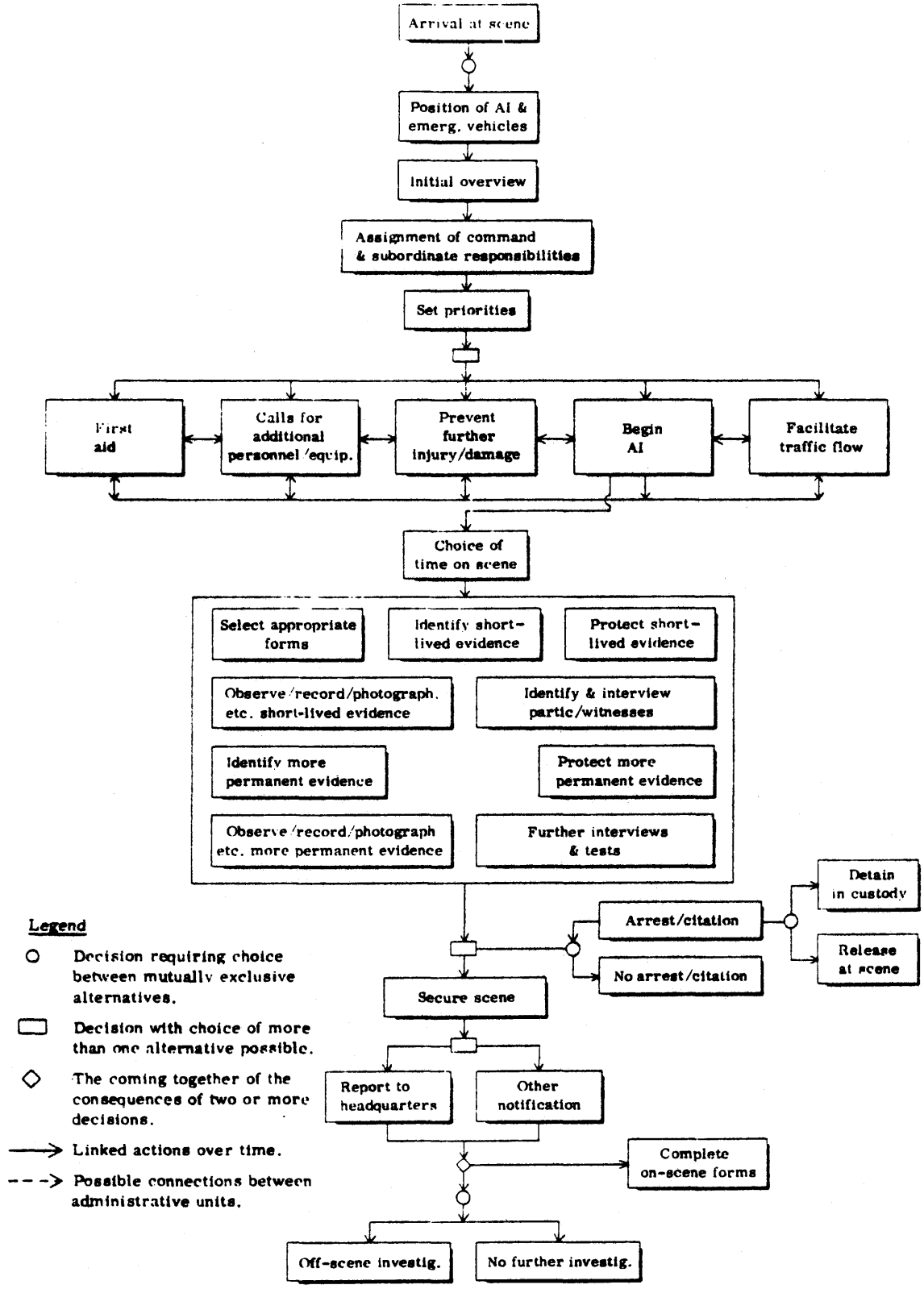

Figure 1. On-the-scene accident investigation (AI) sequence (Blumenthal et al. 1969).

Given the complex nature of accident investigation, there are many factors which influence the police officer's actions and decisions as they relate to gathering and documenting the accident facts. As expected, there are a number of different types of errors that can occur that ultimately determine the accuracy and completeness of the data coded on the report form. The four basic types of errors are omissions, incomplete items, discrepancies, and misinterpretations (adapted from Garrett and Tharp 1969).

Errors of omission are fairly obvious; the investigating officer simply does not provide the information required. Incomplete items refer to those situations where the officer began to answer a question but for some reason did not finish his answer. Discrepancy errors exist when there is disagreement between two or more items on the report form. Although difficult to detect, discrepancy errors also include situations where there is an inconsistency between the information recorded on the FR-300P and the facts surrounding the accident. Finally, misinterpretation errors occur when the officer provides an incorrect response because he did not understand the question. Misinterpretation errors also include those situations when there is a misinterpretation of the accident facts and erroneous conclusions are documented.

When examining accident data, omissions and incomplete items can be readily detected. Detecting inconsistencies between data items on the reports is also straightforward, although it typically requires extensive computerized editing procedures or time-consuming manual checks. As an example, Garrett and Tharp (1969) used a manual editing procedure to examine 100 accident reports and found 227 errors, of which 86 (38%) represented misinterpretations. Obviously, these results cannot be generalized as they are extremely dependent on many highly variable factors.

Since editing procedures rely solely on the data contained in the accident reports it is difficult to identify misinterpretation errors unless they are associated with discrepancy errors. It may also be difficult to distinguish between discrepancy and misinterpretation errors. More importantly, the editing procedures may not be able to detect basic inconsistencies between the facts surrounding the accident and the data on the report form, unless inconsistencies are reflected in the reported data.

With the exception of completeness errors, which are almost always the result of carelessness, all of these errors may be caused by several factors, including:

- Unclear or cumbersome report form,
- Inadequate or inconsistent instruction manual,

- Inadequate or inconsistent training,
- Poor judgement,
- Carelessness.

Handling of the FR-300P

Once an investigating officer completes an FR-300P, it is processed by numerous individuals in several agencies. During this processing, a variety of reviews and edits are performed which ultimately determine the accuracy of the final data. Therefore, it is important to understand how alterations are made in the documentation of the accident by the investigating officer.

As shown in Figure 2, the completed FR-300P receives at least one, sometimes more, initial reviews by supervisory police personnel of the state, local, or county office. Typically, the state police reports receive more reviews than both the local and county police reports. The exact nature of the review varies from a general scan of the accident report for obvious errors to a detailed review for complete and accurate responses to all questions.

Division of Motor Vehicles

In all cases, the DMV receives the original and copies of the FR-300P as soon as the initial reviews are completed. The DMV extracts only that information it requires to meet its responsibilities. The editing required pertains to driver and vehicle identification, insurance, and other information. Checks are made to ensure information has not been omitted.* As depicted in Figure 3, the data are coded and the driver file is updated and stored on microfilm. Approximately 1 month after the FR-300P's are received, all police reports are matched with citizen reports to identify any unreported accidents by either citizens or police (Lisle and Heitzler 1975). The FR-300P's are then distributed to the appropriate agencies. Follow-up matchings for missing reports are typically completed within another 45 days (Lisle and Heitzler 1975).

Department of State Police

Eventually, all FR-300P's are sent to the DSP Headquarters in Richmond. Most arrive from the DMV (see Figure 3), but some report copies are sent directly (see Figure 2) from the State Police Divisions. Figure 4 outlines the processing of the FR-300P by the state police. Upon completion of preliminary checking for duplications and reorganization by location type, the reports are manually coded.

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*Karl Hawk 1981: personal communication.

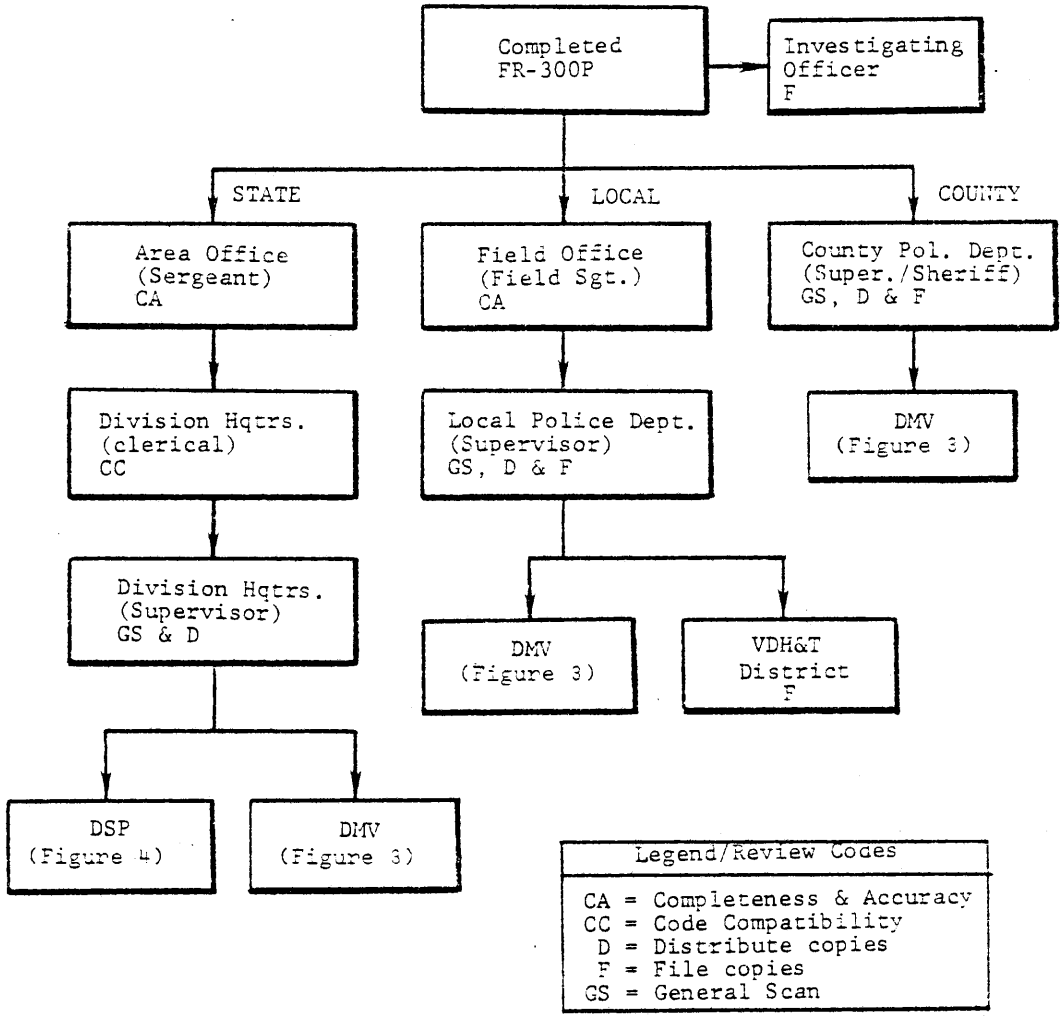

Figure 2. Initial FR-300P review sequence.

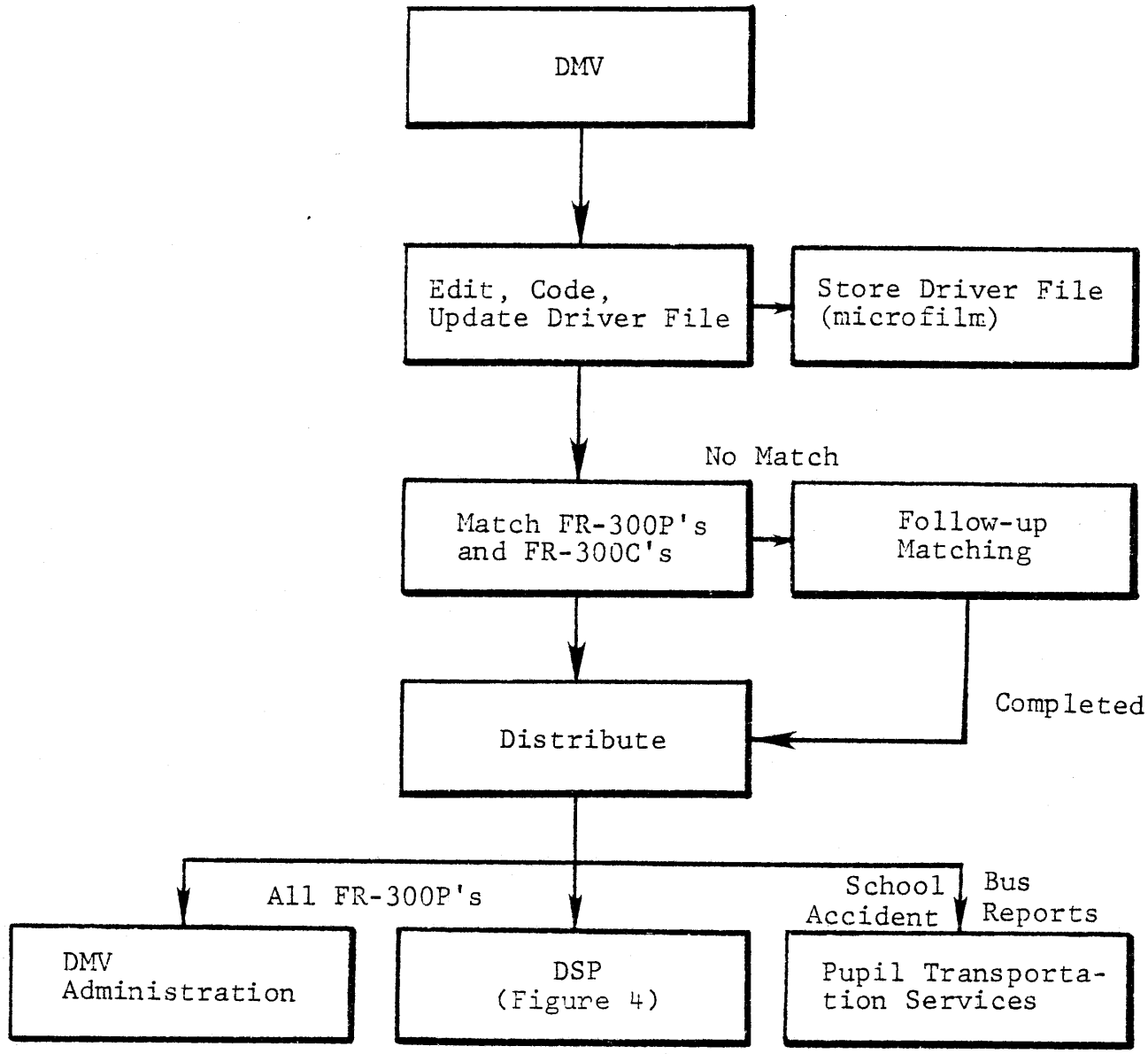

Figure 3. DMV handling of the FR-300P.

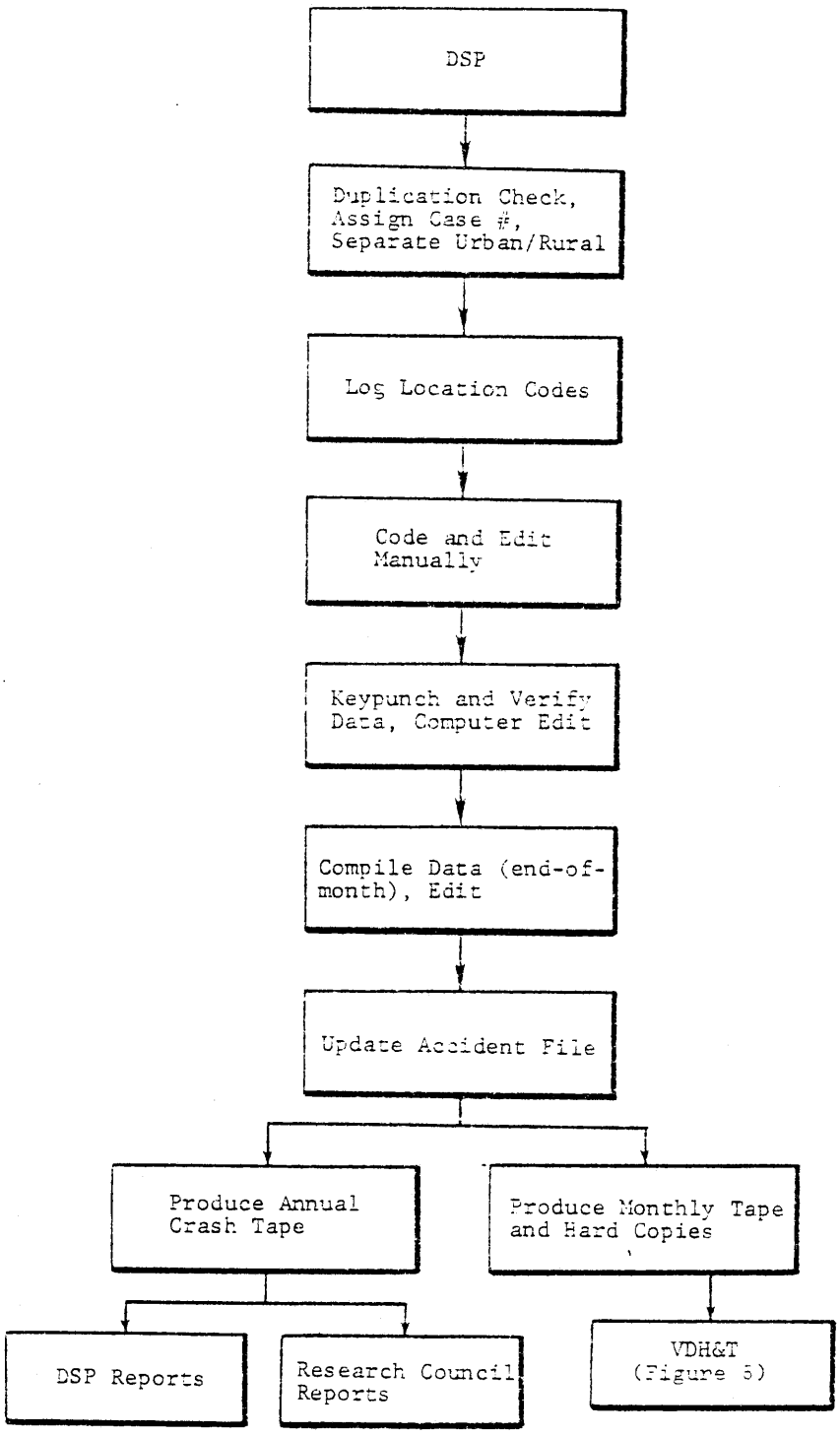

Figure 4. DSP handling of the FR-300P.

This entails assigning numerical codes to most of the data that have not already been coded by the police officer (i.e., FR-300P overlay). The data elements include the time and place (county) of accident, driver occupation and place of residence, driver sex and birthdate, vehicle make and type, state of registration, and one point of impact only. Additionally, special items are coded for the VDH&T (see Appendix A) on the reverse side of the FR-300P.*

At present, manual editing is performed on those data elements already coded by the police officers. For example, if a data element has been improperly reported or simply left blank, the appropriate code is inserted only if it can reasonably be determined. Otherwise, a "not stated" code is used. The codes currently used for the "not stated" designation are not shown on the FR-300P nor are they consistent between data elements.

Approximately 25% of the accident reports require some manual revisions.* Recurring or consistent errors are usually brought to the attention of the coding supervisor. Feedback to the investigating police officer is typically handled by the field representatives, who contact the localities within their division on a monthly basis.**

After the accident data have been keypunched at the DSP, computer edits are performed. Over 90% of the required editing simply checks for valid codes. The remainder consists of compatibility checks between different data elements in the accident file.+ However, none of the special VDH&T data elements are edited at the DSP.

Highway and Transportation Department

The VDH&T receives the monthly tape of all reported accidents from the DSP. In addition, permanent hard copy files of the actual accident reports are maintained by the Department. Figure 5 shows the handling of the FR-300P's and the accident data.

To maintain the highway and accident files, VDH&T recodes some of the data elements. In addition, all pertinent data are reedited. Based on editing experience, 7% to 10% of the accident reports contain errors.++ This coding and editing requires approximately 1 month. Therefore, roughly 3 months elapse between the date of the accident and the completion of all accident data processing.

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*Virginia Vaughan 1981: personal communication.

**Lt. P. C. Hollandsworth 1981: personal communication.

+Thomas O'Neal, Jr. 1981: personal communication.

++Charles D. Hall 1981: personal communication.

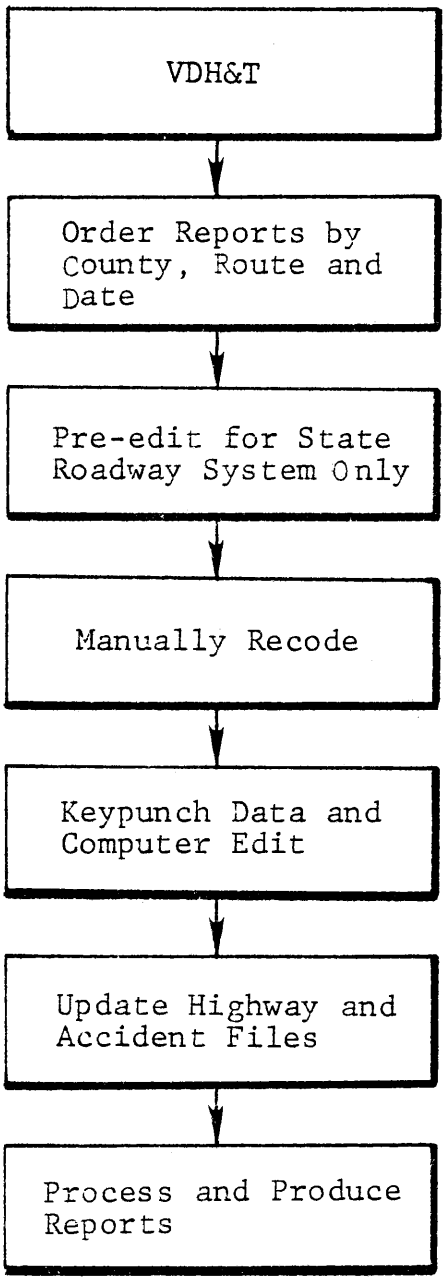

Figure 5. VDH&T handling of the FR-300P.

FR-300P Revision Process

The DMV is required by law to prepare and distribute the FR-300P's. However, no formal process has been established for handling possible changes to the report form. At present, the DMV is preparing a revision of the FR-300P for 1982. The last revision, in January 1978, resulted in dramatic changes in the format and content; however, the proposed changes for 1982 are minor. To facilitate the current revision, the DMV has established an informal, three-way correspondence between itself, the DSP, and the VDH&T, and a group of their representatives have solicited comments from concerned parties. The coordination of these changes has become the responsibility of the DSP as the DMV believes its own use of the FR-300P data is minimal compared to that of the DSP or VDH&T.* Once all of the recommended changes are made, the DMV will assume the responsibility for redesigning the FR-300P for 1982.

ALTERNATIVE APPROACHES FOR DETERMINING ACCURACY OF ACCIDENT DATA

As has been noted there are several types of errors caused by a variety of factors that ultimately lead to problems with the accuracy of accident data. This being the case, it was not possible to devise a single approach that would provide complete information on the magnitude, characteristics, and sources of poor quality data. As a result, a multiple approach was developed wherein different techniques were employed to provide information on particular facets of the problem. The purpose of this section is to outline and discuss the five techniques used.

Hierarchical Reporting Comparison

"Hierarchical reporting" refers to the relationship between the following levels of accident reporting.

Level 1 — Basic reporting (i.e., FR-300P, FR-300C),

Level 2 — Limited investigation reporting; and

Level 3 — Intensive investigation reporting.

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*Karl Hawk 1981: personal communication.

The significance of hierarchical reporting to this study lies in the comparison of the accident data from the different reporting levels. More specifically, if it is assumed that the data from Level 3 reporting are more accurate and complete than those of Level 1, a comparison of these data will identify Level 1 reporting errors. Shinar and Treat (1977) identified the following five reasons for the higher accuracy and, therefore, greater validity of Level 3 data.

1. The amount of professional investigation is more for Level 3 reporting; multidisciplinary teams are used that typically consist of four or more professional investigators, each with his own area of expertise.

2. Level 3 reporting is based on accurate measurements, extensive testing, and interviews.

3. The final Level 3 data are based on a composite of opinions from four or more experts.

4. The Level 3 investigators are not associated with the legal systems, and information provided by the driver is perceived as confidential.

5. The Level 3 data are subjected to quality control checks by the team members, project supervisor, sponsor (e.g., the NHTSA) personnel, and statistical tests.

Level 3 reporting is being used at the national level in the NASS. Established in 1976 by the NHTSA, the NASS program employs multidisciplinary accident investigation teams located throughout the United States. These teams are responsible for making in-depth investigations of a sample of accidents as well as collecting exposure data. As noted by Kahane et al. (1977), the objectives of NASS are to —

1. estimate and disseminate annual national totals and rates of accidents and exposure, accident causes, and consequences at a level of detail not currently available;

2. evaluate existing countermeasures, motor vehicle safety standards and highway safety program standards;

3. provide data during the field test or demonstration phase of proposed standards and countermeasures to

assist in evaluating their likely accident and injury reducing benefit;

4. provide a current and detailed accident and injury causation data base suitable for establishing priorities for and assisting in the design of future countermeasures; and

5. monitor changes and trends in the highway safety environment.

While greater reliance is still placed on Level 1 reporting for most analyses, Level 3 reporting is gaining wider acceptance and usage. At the state level, it is being used more for the in-depth investigation of special interest accidents, particularly those that are spectacular or catastrophic. However, since very limited hierarchical reporting is done in Virginia, the approach could not be applied directly in the current study. The technique is of value, however, as it has been used by other researchers, and it is possible to transfer their findings to Virginia's reporting practices.

Data Element Comparison

The data element comparison approach is based on the hypothesis that the problems with the accuracy of data may be more prevalent or severe in situations where Virginia significantly deviates from common or recommended reporting practices. The technique is applied by examining the individual data elements on the FR-300P. Specifically, a three-way comparison is made between the FR-300P data elements, the data elements contained in the accident reports used by other states, and the data elements outlined in the national standard for accident reporting.

The national standard is defined by the American National Standards Institute (ANSI) which describes the following traffic data elements in detail.

- Motor vehicle registration
- Driver licensing
- Highway
- Accident
- Financial responsibility
- Motor vehicle inspection
- Commercial vehicle reciprocity
- Traffic law enforcement
- Emergency medical services

The purpose of the ANSI D20.1 standard is twofold:

1. to provide a common language for developers and users of state and local traffic records systems; and

2. to promote uniformity in the administration and transmission of traffic records data.

The ANSI D20.1 standard does not require that all state and local traffic records systems maintain all of the data elements cited in the Data Element Dictionary. It does, however, require by law the data elements that are used be defined and represented in accordance with the Dictionary. Additionally, the Dictionary does not give a standardized data base design, file structure, or method of internal storage. These components of the traffic records system are to be determined by the state and localities using the system.

The application of this approach focused on the ANSI D20.1 data elements in the areas of "highway" and "accident" because these areas account for the majority of the FR-300P data elements. The accident reports used by twelve states, in addition to the FR-300P, were chosen for comparison with the ANSI D20.1 standard. The sample of state reports was chosen from those of the 50 states on a subjective basis to reflect —

1. the most comprehensive and least redundant reports,

2. a variety of approaches to report formatting, and

3. literature evidence indicating a concern for the overall quality of accident data.

The states that best met these criteria were Alabama, California, Colorado, Florida, Iowa, Minnesota, Missouri, Montana, New York, North Carolina, Rhode Island, and South Carolina.

Frequency-Redundancy Analysis

When completing most of the items on the FR-300P, the investigating officer must select from a multitude of predesigned response options the one that best describes the accident environment. An examination of the FR-300P data elements, however, shows that these response options may be overly specific, insufficiently defined, or excessively redundant. Moreover, the large number of response

options available may confuse rather than help the officer correctly document the facts surrounding the accident. For example, the "driver's action" data element on the current FR-300P contains 37 response options.

In such cases, it is important to examine the usefulness and appropriateness of each of the response options. If a particular response item is rarely or never used and is not otherwise important, then it should be deleted from the report. Likewise, response options that are (1) often used and unnecessarily vague, and (2) apparently redundant should be candidates for elimination.

Personal Interviews

It is widely held that one of the best ways to understand a problem is to talk to the people that have to deal with it on a day-to-day basis. To accomplish this, personal interviews were arranged with those individuals who are most closely associated with the FR-300P. Police officers were interviewed because they are responsible for reporting the accident data on the FR-300P, and a variety of state agency personnel were interviewed because they handle and use the FR-300P data. The purpose of this approach was to determine, directly, what difficulties the FR-300P may be causing police officers in filing the accident report. Additionally, users of accident data can identify problems they have experienced.

Questionnaire Survey

The last technique consisted of a survey of Virginia police officers to determine how they report data elements on the FR-300P for selected accident conditions. To accomplish this, a questionnaire was developed wherein the officers were instructed to complete portions of the report form for several predesigned accident scenarios. While this approach was designed to identify and document the variance in reporting, it was also used to identify data elements and response options that may be misleading or unclear. An analysis was also performed to determine the relationship between the experience of the police officer and the accuracy of his reporting.

Based on the results of the four previous approaches, the individual scenarios were designed to test those data elements where problems (i.e., inaccuracies) were suspected. These included data elements that (1) contained overlapping general and specific response options, (2) could be interpreted as causal or inventory, and (3) were perceived as confusing or awkward. In some cases,

however, candidate data elements presented formatting difficulties and could not be included in the questionnaire. For example, hypothetical alignment conditions could not be adequately represented by photographs or sketches. Nevertheless, all of the more critical data elements were included in the questionnaire, and the most highly suspected items were included in all of the scenarios. In addition to the accident scenarios, two questions were included regarding the respondents' experience in accident investigation. Finally, before the questionnaire was distributed, it was pretested to ensure clarity and completeness and to demonstrate the expected response variance. A copy of the questionnaire can be found in Appendix B.

In determining the sample population for distributing the questionnaire, it was apparent that traditional statistical methods were not applicable since the variance and permitted error were not known. As a result, a sample size of approximately 100 police officers was selected somewhat arbitrarily. It was felt, however, that this would be large enough to define the response variance and the necessary test statistics.

To ensure that the sample population was representative of the entire population of all Virginia accident reports, the questionnaire was distributed to state, local, and county police departments according to the respective numbers of accident reports filed. Using the Virginia Crash Facts 1979, a 3:5:2 ratio was derived for the number of FR-300P's submitted by state, local, and county police officers, respectively. This distribution scheme also provided the basis for determining the differences, if any, between the types of police agencies. The participating state, local, and county police departments were selected on the basis of (1) geographic distribution, (2) population, and (3) degree of urbanization. The number of questionnaires sent to individual police departments were based on the number of officers assigned to investigate accidents and are shown in Table 3.

Table 3

Questionnaire Sample Population and Distribution

Police Agency	Population	Distribution	
		No. Sent	No. Returned
STATE:	1. Culpeper	12	12
	2. Salem	11	11
	3. Chesapeake	10	10
LOCAL:	1. Charlottesville	8	7
	2. Alexandria	21	20
	3. Staunton	7	7
	4. Lynchburg	20	13
COUNTY:	1. Fairfax	15	11
	2. Buckingham	2	2
	3. Franklin	6	3
	Total	112	96

RESULTS OF MULTIPLE-APPROACH METHODOLOGY

The sections below summarize the significant findings of the five analysis techniques employed. It is noteworthy that several of the methods produced similar findings; i.e., they give multiple evidence of inaccuracies in the accident data. However, even though the techniques provided evidence of many of the inaccuracies, the remedial treatment in each case was not necessarily obvious.

The results presented here are synthesized in a later section so that appropriate conclusions can be drawn.

Hierarchical Reporting Comparison

As noted earlier, the hierarchical reporting technique uses a comparison of Level 3 and Level 1 data to determine reporting problems in the latter. The limited amount of Level 3 reporting in Virginia, however, precludes the method from being applied directly to Virginia data. As a result, the approach consisted of an analysis of results of a similar study by Shinar and Treat (1977). In that study, Level 1 and Level 3 data were compared for an identical sample of accidents using a variety of statistical measures; e.g., percent agreement and disagreement and uncertainty coefficient. The results are summarized according to four functional groupings of data elements: accident or inventory data, driver-vehicle data, causal data, and alcohol-related data. In addition, within the basic reporting structure, differences between the state, local, and county police data are identified.

The accident or inventory data grouping was defined as those data elements that require only observations at the scene of the accident. Results of the comparison between Level 1 and Level 3 reporting revealed that police data are fairly to highly reliable in terms of the date, location, number of drivers, vehicles, and passengers involved; and direction of vehicles prior to the accident.

The accuracy of the police data was poorest in the areas of vertical curvature and accident severity when compared with Level 3 data. Interagency (state, local, and county) comparisons showed an overall higher accuracy for the state police data and lower accuracy for the local police data. Most notable interagency differences occurred in the areas of speed limit, road surface composition, and vertical curvature.

Comparisons using driver-vehicle data revealed substantial discrepancies in the statistics reported and, therefore, the accuracy of the police data could not be effectively determined.

As expected, the Level 3 reporting was considerably more complete than the Level 1 in regard to the causal data elements. The police data were generally accurate in reporting direct human causal factors. However, indirect human and environmental causal factors were often ignored in police reporting and were typically beyond the scope of Level 1 reporting. Once again, interagency comparisons revealed that state police reporting of causal factors was most reliable and local police reporting was least reliable.

Both presence detection and causal-related alcohol data were examined. Overall, Level 1 data were most accurate for (1) injury-producing accidents, (2) single-vehicle accidents, (3) drivers over 55 years or under 25 years of age, and (4) male drivers. In the reporting of alcohol-related accidents, the state police data corresponded closely with Level 3 reporting.

Data Element Comparison

The data element comparison approach was applied by comparing the individual data elements and accompanying response options on the FR-300P, the 12 selected accident reports, and those prescribed by ANSI D20.1. Because slight differences in reporting strategies were considered acceptable, the analysis focused on the identification of significant differences in the more pertinent data elements. The results presented below are organized into the following groupings of data elements.

1. Accident summary
2. Location
3. Vehicle and occupant
4. Pedestrian
5. Injury
6. Safety equipment usage
7. Emergency equipment
8. Roadway
9. Environment
10. Accident characteristics
11. Diagrams-descriptions
12. Contributing-causal factors

Accident Summary Data

ANSI D20.1 does not provide a listing of summary data, whereas Virginia and most other states do provide for the recording of some summary data. Specifically, "number of persons involved" is included in one-third of the sample reports; however, no such data element appears on the FR-300P.

Location Data

In general, documentation of accident location has been standardized on the accident reports. Unlike most sample reports and ANSI D20.1, however, the FR-300P does not provide for the direct coding of the type of roadway system and specific accident location on roadway or highway (e.g., main road, frontage road, gore area, intersection, exit, entrance).

Vehicle and Occupant Data

In agreement with ANSI D20.1, the majority of the sample reports provide for the coding of "vehicle defects" under the data element section entitled "contributing factors." Virginia does not follow this coding scheme. In addition, 50% of the sample reports provide for the coding of "special use" for vehicle type involved; Virginia does not. In the area of vehicle speed, the FR-300P follows the ANSI D20.1 standard for reporting the "prior speed of vehicle" and the majority of sample reports do not. Most notable, however, is the variance in reporting the "safe speed", which is required by Virginia and not prescribed by ANSI D20.1 nor contained in any of the sample reports. When compared with all 50 state accident reports, the FR-300P is one of only eight reports that require data on "safe speed."

With regard to occupant data, Virginia varies from the practices of the other states in requiring data on "Driver experience" and by not including the "Total number of passengers." The ANSI D20.1 standard does not cite either of these data elements.

Pedestrian Data

Generally, the FR-300P, the sample reports, and the ANSI D20.1 standard agree in the reporting of pedestrian data elements. The only exception is that ANSI D20.1 recommends the coding of a "visibility" data element describing the clothing worn.

Injury Data

No major variances were found between the FR-300P and the sample reports in the data element on injuries. However, Iowa and New York are the only states in the sample that follow the ANSI D20.1 standard outlining three separate and distinct data elements with which to code injuries. The prescribed reporting practice is to code "severity," "location of complaint," and "type of injury."

Safety Equipment Usage Data

No major variances were found in the reporting of safety equipment usage data.

Emergency Equipment Data

The FR-300P does not contain a section on reporting whether or not emergency equipment was called to the scene of the accident. Only one-third of the sample reports do contain such a section. ANSI D20.1 identifies nine emergency vehicle codes for accident reporting purposes.

Roadway Data

The majority of the sample reports, the ANSI Dictionary and the FR-300P, do not contain a data element for the coding of "damages to roadway and appurtenances." In contrast, 50% of the sample reports do require the coding of "roadway owner" (i.e., state, private, etc.), whereas the FR-300P does not. Lastly, the ANSI D20.1 standard outlines several codes for the data element "traffic control-functioning;" however, most state reports and the FR-300P require only a binary choice code; i.e., yes or no.

Environment Data

In general, no major variances are found in the data elements describing the environmental conditions at the time of the accident. However, in reporting "weather," the FR-300P differs slightly from ANSI D20.1 with respect to the individual response options or available codes.

Accident Characteristics Data

Within the data element "vehicle maneuvers," ANSI D20.1 specifies approximately twice the number of response option codes as

compared with the FR-300P and the majority of the sample reports. For "type of collision," the FR-300P specifies more individual codes than do the sample reports containing this data element. No entry could be found for this category in the ANSI D20.1 Dictionary. The most significant variance occurred for the data element labeled "skidding," which is contained on the FR-300P. Neither the sample reports nor the ANSI D20.1 standard make any reference to this data element in the coding of accident data. Overall, Virginia is one of only seven of 50 states that require the coding of "skidding" in accident reporting.

Diagrams-Descriptions Data

This category primarily refers to the specific formatting and inclusion of narrative and graphical description of the accident. The FR-300P is similar in format and content to the sample reports for the "accident diagram," the "vehicle diagrams," and the "accident description" sections. The only variance occurs in the specific formatting of the "accident diagram." Some include an outline of roadways, others include a grid, and the majority, including Virginia, simply leave a blank space in which to sketch the accident scene.

Contributing-Causal Factors Data

The major variance in this category between the FR-300P and the sample reports is the manner in which the data elements are organized on the report forms. For Virginia, all contributing factor data elements are scattered throughout sections of the report, whereas the majority of the sample reports contain one section on contributing factors and list all relevant data elements in that section. More specifically, over half of the sample reports contain a "cause of accident" data element in accordance with the ANSI guidelines. The FR-300P does not adhere to this practice. Other data elements found under the contributing factors section of the sample reports are "obstructed vision," "driver handicaps and limitations," and "drinking." These same data elements are found on the FR-300P, but are not grouped under one report section. The response options do not vary much between the FR-300P, the sample reports, and ANSI D20.1.

A great deal of variance was discovered for the data element "drugs." Two-thirds of the sample reports follow the ANSI D20.1 standard for reporting drug-related accidents. Virginia does not provide for the coding of drug involvement, nor does the FR-300P include a data element on "sobriety tests," whereas 50% of the

sample reports do require coding for this element. Typically, three pieces of information are coded: (1) whether a sobriety test was given or refused, (2) the type of test, and (3) the test results. In addition, ANSI D20.1 outlines nine types of sobriety tests.

Frequency-Redundancy Analysis

As previously noted, the frequency-redundancy analysis was used to examine the response options for each of the data elements. Specifically, the data elements were examined to determine those that were (1) infrequently used or overly specific, (2) frequently used or excessively vague, and (3) duplicative of response options in other data elements.

Data for the analysis were extracted from the 1980 Virginia DSP crash tape and consisted of roughly 10,000 accident cases. Every twelfth accident report was used to ensure that the sample was representative of the entire population of approximately 120,000 accidents and to reduce computer costs. The computer package SPSS (Statistical Package for the Social Sciences - Nie et al. 1975) was used to generate the frequency tables and summary statistics necessary for the analysis.

As noted above, the response options were evaluated according to three criteria. First, response options were identified as being infrequently used, overly specific, or inappropriate for inclusion in the particular data element. A low usage threshold of 0.5% was selected somewhat arbitrarily; however, it was generally observed that response options used less than 0.5% of the time were extremely specific or did not belong in the subject data element. Response options that were frequently used and particularly vague or poorly defined were identified largely on a subjective basis. In many cases, vague or poorly defined response options were the most commonly used items for the data element. Finally, redundant response options were identified by examining the response options in other data elements.

While this approach generated a great deal of information, only the most significant results are reported. It is also noteworthy that these results alone were not always viewed as sufficient cause to delete a particular response option. The results of the analysis are summarized below. For each data element, the response options that meet the specified criteria are identified.

Traffic Control

1. Low frequency, overly specific, or inappropriate response options include:

   - Officer or watchmen (0.3%)
   - Railroad crossings with markings and signs (0.03%)

- Railroad crossings with signals (0.09%)
- Railroad crossings with gate and signals (0.03%)

2. High frequency or poorly defined response options include:
   - Traffic lanes marked (36.1%)
3. Redundant response options include:
   - Railroad crossing options (codes 10, 11, and 12) redundant with railroad inventory data.

Weather

1. Low frequency, overly specific,or inappropriate response options include:
   - Smoke, dust (0.02%)

Surface Condition

1. Low frequency, overly specific, or inappropriate:
   - Muddy (0.1%)
   - Oily (0.1%)

Roadway Defects

1. Low frequency, overly specific,or inappropriate:
   - Under repair (0.5%)
   - Restricted width (0.5%)
   - Roadway obstructed (0.1%)

Kind of Locality

1. Low frequency, overly specific, or inappropriate:
   - Playground (0.1%)

Safety Equipment Used

1. Low frequency, overly specific, or inappropriate:
    - Harness (0.1%)
    - Lapbelt and harness (0.5%)
    - Child restraint (0.00%)
    - Air bag (0.00%)

Driver's Action

1. Low frequency, overly specific, or inappropriate:
    - Overtaking on hill (0.03%)
    - Overtaking on curve (0.06%)
    - Overtaking at intersection (0.06%)
    - Improper passing of school bus (0.03%)
    - Failing to signal or improper signal (0.2%)
    - Improper turn, wide right turn (0.5%)
    - Improper turn, cut corner on left turn (0.2%)
    - Improper start from parked position (0.2%)
    - Disregarding officer or watchman (0.06%)
    - Failing to stop at through highway — no sign (0.08%)
    - Driving through safety zone (0.01%)
    - Failing to set out flares or flags (0.06%)
    - Failing to dim headlights (0.02%)
    - Driving without lights (0.05%)
    - Improper parking location (0.05%)
    - Avoiding pedestrian (0.2%)

- Crowded off roadway (0.5%)
- Car ran away, no driver (0.2%)
- Blinded by lights (0.1%)

2. High frequency or poorly defined:
   - Did not have right-of-way (9.2%)
   - Driver inattention (11.7%)
   - Other violations (10.2%)

3. Redundant:
   - Speed options (codes 2 and 3). See front of report for speed information.
   - Overtaking or passing options (codes 4 through 9). See vehicle maneuver, alignment, and vehicle type data elements.
   - Improper turn options (codes 14 through 17). See vehicle maneuver data element.
   - Disregarded traffic control options (codes 20 through 22). See traffic control data element.
   - Blinded by lights (code 36). See driver vision obscured data element.

Vehicle Maneuver

1. Low frequency, overly specific, or inappropriate:
   - Making U turn (0.4%)
   - Starting from parked position (0.5%)
   - Parked (0.4%)

Type of Collision — First Event

1. Low frequency, overly specific, or inappropriate:
   - Train (0.1%)
   - Other animal (0.5%)
   - Motorcyclist (0.02%)

Collision with Fixed Object

1. Low frequency, overly specific, or inappropriate:
    - Impact cushioning device (0.05%)

Driver Vision Obscured

1. Low frequency, overly specific, or inappropriate:
    - Windshield otherwise obscured (0.1%)
    - Vision obscured by load on vehicle (0.2%)
    - Building (0.1%)
    - Embankment (0.3%)
    - Sign board (0.01%)
2. High frequency or poorly defined:
    - Other (14.6% of types listed)

In addition to the summarized results presented above, three points are noteworthy. First, a high percentage of responses to most of the data elements were coded as "not stated." This occurs when a police officer fails to respond to the data element, and the DSP coder is unable to determine the correct response option from the accident report. For the data elements examined, the frequency of "not stated" responses ranged from 0.1% to 5.5%; the average was 1.2%. The second and third points focus on overall low usage data elements. For "driver's action," 35% of the cases provided no useful information on the action of the driver precipitating the accident. In addition, 80.3% of the cases indicated that the police officer failed to determine what, if any, safety equipment was being used by the vehicle occupants.

Personal Interviews

The purpose of this approach was to identify problems associated with the FR-300P as perceived by the agencies who process and use the accident data. This was accomplished by conducting interviews with at least one representative who was familiar with the agency's data needs and processing procedures. While the interviews were informal, each was structured around prepared questions pertinent

to the specific agency. In addition, the interviewers encouraged informal discussion of related issues in order to obtain candid opinions on deficiencies in the records system and possible improvements.

Representatives of the following agencies were interviewed.

1. VDH&T
2. Virginia Highway and Transportation Research Council (VHTRC)
3. DMV
4. DSP
5. Local Police Departments (LPD)

The interviews conducted with each of the agencies generated a great deal of information. The more significant findings are summarized below.

The major inaccuracies found in the FR-300P accident data seemed to focus on certain data elements. The VDH&T cited five such elements:

1. Location of accident (especially for rural accidents)
2. Type of collision
3. Collision with fixed object
4. Roadway defects (especially for construction-related accidents),
5. Driver's action

In addition, substantial frustration was expressed regarding the differences in the VDH&T and DSP coding schemes and the number of missing and miscoded data elements. This latter problem was thought to be caused by a combination of —

1. poorly structured data elements on the report,
2. misleading and incorrect statements in the Instruction Manual, and
3. failure by the investigating officers to follow proper instructions.

In comparison, the VHTRC safety research staff cited the following seven FR-300P data elements as being inadequate:

1. Accident location
2. Injury type

3. Condition of traffic control devices
4. Roadway defects
5. Driver's action
6. Type of collision
7. Collision with fixed object

In addition, concern was expressed over those situations where data were being unnecessarily lost. For example, an investigating officer may indicate several "points of impact"; however, only one is coded by the DSP. Also, the officer is instructed to identify only one "vehicle damage" description, although several may be appropriate. As with the VDH&T, the VHTRC staff cited the DMV instruction manual as a source of confusion in regard to several data elements (e.g., type of collision and kind of locality). Finally, the safety staff noted that (1) additional data items would be very helpful in research work (e.g., total number of persons involved in the accident), and (2) they have not had the opportunity to input these needs into the revision process.

In general, the DMV was satisfied with the FR-300P. The report contains all of the data necessary for it to fulfill its responsibilities.* However, it is believed that the FR-300P is burdened with information and that because of this the accuracy of the data suffers.**

Both police officers and administrative personnel were interviewed at the DSP. The most common complaint received from state troopers who fill out the FR-300P's pertained to the "type of collision" data element. Ambiguity is the major cause for their complaint.+ More specific problem areas were cited by administrative personnel in charge of coding and editing the FR-300P data. In general, legibility is oftentimes poor, misspelling of names is a continuing problem, and the accident diagrams are poorly drawn. In regard to specific data elements the "type of collision" data element consistently contains errors. In addition the vehicle type description is often not explicit and incorrectly coded. Lastly, the "driver's action" data element is almost always coded with a 23 (driver inattention) or a 37 (other violations); that is, very few of the remaining 35 response options are used.++

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*Charles Anderson 1981: personal communication.

**Karl Hawk 1981: personal communication.

+Lt. P. C. Hollandsworth 1981: personal communication.

++Virginia Vaughn 1981: personal communication.

The major complaint of local police department personnel concerned the DMV Instruction Manual. The Manual was said to be generally confusing and of little assistance in filling out the FR-300P's.*

Questionnaire Survey

As outlined in Table 3, a total of 112 questionnaires were distributed to a sample population of state, local, and county police officers. The state police returned 100% of their questionnaires, the local police returned 84%, and the county police 70%, for a combined response rate of 86%. This resulted in an adequate sample size for the analysis.

Using the SPSS, frequency tables were generated for each of the questionnaire scenarios by state, local, and county police respondents, and the results are summarized in Table 4. The following criteria were used in analyzing the accuracy of the responses.

1. The relationship between the average number of response options acceptable and the average number used,

2. the average percent response of the most commonly chosen response option,

3. the average percent of totally inappropriate responses, and

4. the average percent of less specific responses.

More detailed results are presented below by each data element examined.

Kind of Locality

Oftentimes more than one response option was acceptable for describing a given accident. However, there did tend to be an overuse of "open country," "business-industrial," and "interstate" responses, which accounts for the majority of the less specific responses noted in Table 4.

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*Sgt. Sloan 1981: personal communication.

Table 4

Questionnaire Summary Statistics

Data Element	Avg. No. Response Options Acceptable (% of Total)	Avg. No. Response Options Used (% of Total)	Avg. Percent Most Common Response	Avg. Percent Totally Inappropriate Response	Avg. Percent Less Specific Response
Kind of Locality	1.67 (16.7)	3.8 (38.3)	69.5	6.2	8.3
Roadway Defects	1.33 (12.1)	4.1 (37.3)	61.7	25.0	*
Driver's Action	1.2 (3.7)	7.7 (19.7)	56.2	13.5	39.0
Vehicle Maneuver	1.2 (7.1)	5.2 (30.6)	77.3	12.0	*
Type of Collision (1st&2nd events)	1.3 (7.4)	5.6 (31.1)	79.2	14.6	*
Collision with Fixed Object	1.0 (8.3)	3.7 (30.8)	86.5	11.5	*
Condition of Driver & Ped.	1.7 (16.7)	3.7 (37.0)	67.5	2.2	*
Drinking	2.0 (28.6)	4.3 (61.4)	64.2	*	*
Vehicle Condition	1.2 (10.9)	5.2 (47.3)	62.0	*	*

*typically less than 1%

Roadway Defects

The large variance in response options used accounts for most of the totally inappropriate responses. Specifically, five results are noteworthy:

1. Poor lane delineation was coded as "no defect" by 47% of the respondents,

2. Maintenance operation obstruction (mowing) was coded as "no defect" by 35%,

3. Narrow Bridge was cited as "restricted width" by 77%,

4. Icy road was coded as "slick pavement" by 67%,

5. "Under repair" was coded by 55% when a response of "restricted width" would have been more specific.

Driver's Action

As illustrated in Table 4, an average of almost 8 response options were cited for a given accident. This reporting variance was also shown by an average of only 56.2% agreement in the most common response option. The high percentage of less specific responses accounted for the majority of the noted reporting variance. Two response options in particular predominated the less specific responses, "driver inattention" and "other violations."

Vehicle Maneuver

The majority of the totally inappropriate responses were the result of carelessness (e.g., switching Vehicle 1 and Vehicle 2 responses). While respondents typically selected the same response, occasionally less specific response options were chosen in cases where there were multiple vehicle maneuvers immediately before the accident.

Type of Collision (first and second events)

An average of 5.6 response options were used when an average of only 1.3 were acceptable for a given accident. In addition, the following three types of confusions accounted for the almost 15% totally inappropriate responses.

1. What constitutes a first event and what constitutes a second event?

2. What is the difference between an angle and side-swipe collision?

3. Whether roadside furniture is "on" or "off" the road (e.g., guardrail, bridge rails, and sign-boards).

Collision with Fixed Object

There was general agreement in the type of fixed object hit. However, a noticeably careless reporting of this data element accounted for the 11.5% of totally inappropriate responses (e.g., switching Vehicle 1 and Vehicle 2 responses).

Condition of Drivers and Pedestrians

The major reporting errors noted here were that responses of "no defect" and "not applicable" were used interchangeably, when only one or the other was acceptable.

Drinking

Overall, responses for this data element were acceptable given that "drinking" scenarios are difficult to test by questionnaire. It is noteworthy, however, that 86% of the respondents cited alcohol involvement regardless of its causal nature.

Vehicle Condition

An overall high variance of reporting was shown for this data element. Once again, "no defects" and "not applicable" appeared to be cited interchangeably. Generally, all police respondents were apt to report "no defects" unless defects were obvious. In addition, obvious vehicle conditions were oftentimes not identified unless they were the primary cause of the accident. For example, only half of the respondents cited "motor trouble" on a vehicle that was stalled in the roadway and subsequently hit by another vehicle.

In addition to the results cited above, the following results were also noted. It was generally observed that as the number of possible response options per data element increased, the average number cited by the police respondents also increased. Overall, an average of 9.7% of the responses were totally inappropriate. Omissions accounted for 0.83% of the responses; that is, almost 1% of the questionnaire responses were left blank. Another inappropriate,

careless response was the switching of Vehicle 1 and Vehicle 2 data. Lastly, 75% of the respondents failed to report a phantom vehicle (as in Scenario 3) as one of the vehicles involved in the accident. This is clearly a misinterpretation error. Among the three police groups, the local police respondents were least accurate in their reporting, and they were followed by the county police. The state police provided by far the most accurate responses to the questionnaire.

As previously mentioned, the relationship between police experience and reporting accuracy was examined. Two variables were used to describe the individual police respondents' experience in accident investigation and reporting: (1) the average number of reports filed per month, and (2) the years of accident investigation experience. Table 5 outlines the average police experience of the survey sample.

Table 5

Summary of Police Experience

Survey Sample	Average Number of Reports Per Month	Average Years of Experience
TOTAL	6.89	7.85
STATE	9.11	10.49
LOCAL	4.94	6.53
COUNTY	8.06	6.31

The results of this analysis showed the following:

1. There was no observable relationship between the number of reports filed per month and the number of years' experience (bivariate plot showed no trend or pattern, and correlation coefficient was 0.046).

2. Police officers with less than the average number of years' experience (i.e., less than 8 years) had more of a tendency to agree on the most appropriate response option than officers with more than average service (Sign Test, $p = 0.003$).

3. On the average, police officers who fill out more reports than average (i.e., more than 7 reports per month) tend to use fewer response options for a given data element (Sign Test, $p = 0.007$).

Over 34% of the respondents provided written comments on the questionnaire. Their comments are reproduced in Appendix B. In summary, the following three major points were generally agreed upon by police respondents.

1. The questionnaire was well-designed and demonstrated typical problems associated with the use of the FR-300P.

2. The FR-300P was, in general, a confusing and less than optimal report form.

3. Some of the accident scenarios contained in the questionnaire were somewhat vague and required personal interpretations.

In contrast, only two of the respondents' comments suggested that the FR-300P was a good report form.

A data element of particular concern to the majority of the respondents was "type of collision". It was generally believed that this data element was confusing and poorly designed. Other specific comments are summarized below.

1. The Instruction Manual provides very little assistance in filling out the FR-300P.

2. The carbon paper used in making multiple FR-300P copies does not work well.

3. The accident diagram should be on a separate page to facilitate detailed drawings.

4. A space for phone numbers is needed.

DISCUSSION OF RESULTS AND CONCLUSIONS

Four areas were identified as the major sources of the inaccuracies found in accident data:

1. Police training in accident investigation and reporting.

2. FR-300P and Instruction Manual.

3. Review and editing procedures.

4. Revision process.

The results are discussed by source area below and conclusions are presented.

Police Training in Accident Investigation and Reporting

The analysis dealt with poor reporting practices in a general sense as well as specific types of reporting errors. In regard to general reporting practices, it was found that police officers did not follow instructions. In many cases, legibility was very poor, misspellings were common, and the accident diagrams were poorly sketched. It was also found that police officers who fill out more than the average number of FR-300P's tend to overuse favorite (oftentimes less specific) response options. Furthermore, the local police were generally less accurate in their reporting of accidents than the other two groups (i.e., they cited more inappropriate or less specific response options); and overall, police sensitivity to causal factors was found to be generally low, especially for indirect human and environmental causes. In contrast, police officers with less than the average number of years' experience generally agreed on the appropriate response option.

On the average, for all data elements on the FR-300P overlay, an omission rate of approximately 1% was found. This means that at least one out of every four accident reports contains one or more omissions. For accidents similar to the questionnaire scenarios, a minimum of 65% of the officers are likely to use a totally inappropriate code for at least one data element on the report. In addition, over 80% of the responses for safety equipment usage were incomplete; the officers neglected to acquire the necessary data. Lastly, less specific responses were most prevalent for the "driver's action" data element.

The following conclusions were drawn from the analysis of the results of the heirarchial reporting comparisons, interviews, and questionnaire survey.

1. The officers did not follow instructions provided in their training courses and the Instruction Manual.

2. Some officers were disturbingly careless in their reporting practices.

3. Officers who file many accident reports tended to be less specific, and therefore, less accurate in their reporting.

4. All officers were especially poor in identifying causal factors, especially indirect human and environmental factors.

5. Good training does result in more accurate accident reporting.

6. More recently trained police officers reported accidents more accurately.

7. Local and county police officers are in most need of improved training.

FR-300P and Instruction Manual

In identifying sources of problems on the FR-300P, each of the analysis techniques provided significant and, oftentimes, similar results. The problems presented below are generally the result of three primary causes: (1) poorly structured data elements, (2) a poor list of response options, and (3) unclear intent of the question (e.g., inventory versus causal).

In general, the results indicated that a number of data elements were confusing and that misinterpretations were typical. The data elements for which inaccuracies were most prevalent include roadway defects, driver's action, type of collision, collision with fixed object, location identification, and condition of traffic control devices. In regard to the response options of a given data element, when "general" and "specific" options were mixed within a single data element, the "general" response options tended to be overused. In addition, for a given data element, a set of response options that were all fairly broad and mutually exclusive resulted in a lower reporting variance than did more highly specific and overlapping response options.

In conjunction with these results, there was a great deal of evidence indicating that certain data elements should be added, deleted, or modified. Additionally, nearly all of the data elements on the overlay and several on the front page had response options requiring modification or deletion. Three criteria were used to assess each response option, including whether or not the response option was —

1. overly specific or rarely used,

2. heavily used or overly vague, and

3. duplicative of other information on the report or in other data files.

Lastly, the results indicated that, in general, the basic formatting of the FR-300P caused confusion; the documentation of accident description data, and apparent contributing factors, was particularly poor; and the Instruction Manual oftentimes confused the police officers and lacked complete explanations for most of the data elements.

Based on these results, the following conclusions were drawn.

1. The FR-300P overlay concept currently used represents the state of the art in accident reporting.

2. A significant portion of the inaccuracies in accident data are caused by problems in the FR-300P.

3. The usefulness of some data elements is highly questionable.

4. Current reporting practices do not take full advantage of computer capabilities. There is unnecessary duplication of information between data elements on the FR-300P and other data files (e.g., the driver and vehicle files). Furthermore, not all of the data on the FR-300P are coded.

5. Major changes in the FR-300P will necessitate major changes in the computer software used to handle accident data. Obviously, this will require time and money.

6. The Instruction Manual used is not as much of an aid in the filing of an FR-300P as it is intended to be.

Review and Editing Procedures

The FR-300P review and editing procedures involve the general handling of the FR-300P once it leaves the officer's hands and until the accident data are set up on file at the VDH&T. During this period, each FR-300P receives a variety of reviews and edits, some of which are manual and some automated. It was found that, in general, the state police have a larger number and more comprehensive field reviews than both the local and county police. It was also found that once all field reviews are completed, the DMV receives the reports and does not perform any significant editing of the data. In contrast, the DSP editing procedures detect errors on approximately 25% of the accident reports. Furthermore, after

the DSP edits, the VDH&T discovers 7% to 10% of the reports still require corrections. It is noteworthy that these figures must be taken as minimum values since the true values are unknown.

Based on these results, the following conclusions can be made.

1. Current review and editing operations detect many data errors. However, several inaccuracies, such as those resulting from carelessness or not following instructions, go undetected.

2. Editing operations could be more comprehensive and, therefore, more effective at detecting errors.

3. In the DSP and VDH&T editing there are no formal mechanisms for detecting and documenting consistent data errors and providing feedback to the field.

4. Current field reviews are inadequate, especially those of local and county police agencies. This results in excessive amounts of poor quality data and makes the coding and editing processes more difficult. The greater accuracy of the state police reports is partially attributed to better field reviews.

5. Improvements in field review and editing feedback procedures are possible and would increase the general quality of accident data; therefore increasing the efficiency of coding and editing operations.

6. Current differences in the coding schemes used by the VDH&T and DSP make the VDH&T editing operations more difficult and, in general, undermine the production of quality accident data.

Revision Process

Information regarding the revision process for the FR-300P was obtained primarily from the personal interviews. It was found that the DMV has the statutory responsibility for the revision of the FR-300P. However, the DMV also has, by far, the most modest needs for accident data (i.e., driver, vehicle, and insurance identifications). Appropriately, the current practice is for the DMV to delegate its responsibility to an informal

committee which, in turn, is responsible for assembling and synthesizing recommendations for revisions to the FR-300P and submitting the recommendations to the DMV. There is no formal revision process and, as a result, some users of the accident data are not involved in revisions of the FR-300P.

The following conclusions can be drawn with regard to the revision process.

1. Since the DMV has the least operational interest in the FR-300P data, it should not have the sole responsibility for revisions to the report form.

2. The lack of a formal, permanent, and continuous revision effort is largely, although indirectly, responsible for the inaccuracies in the accident data.

3. Prior revision efforts have maintained the use of certain data elements that are of marginal or questionable value.

4. Minor revisions in the FR-300P could have an observable impact on the accuracy of the accident data. For the most part, however, major revisions are required to significantly increase the quality of the data.

5. The current revision efforts have avoided major changes in the FR-300P, since this would necessitate major computer software changes for the VDH&T and the DSP.

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APPENDIX A

VIRGINIA MOTOR VEHICLE ACCIDENT REPORTS

COMMONWEALTH OF VIRGINIA · DIVISION OF MOTOR VEHICLES

DMV COPY

POLICE ACCIDENT REPORT

PAGE ____ OF ____ PAGES

FR-300P 1/78

ACCIDENT DATE Month Day Year | DAY OF WEEK | TIME AM PM | COUNTY OF ACCIDENT | MILE POST NUMBER | RAILROAD CROSSING ID. NO. IF WITHIN 150 FEET

1 CITY OR TOWN | LANDMARKS AT SCENE | NUMBER OF VEHICLES | OFFICIAL USE ONLY | 17

ROUTE NO. OR STREET NAME AT SCENE | 18

ROUTE NUMBER OR STREET NAME

AT INTERSECTION WITH OR ____ MILES FEET N S E W OF

2 **VEHICLE NO. 1** | **VEHICLE NO. 2 (OR PEDESTRIAN)**

DRIVER'S NAME (LAST, FIRST, MIDDLE) | OCCUPATION | DRIVER'S NAME (LAST, FIRST, MIDDLE) | OCCUPATION

3 ADDRESS (STREET & NO.) | YEARS OF DRIVING EXPERIENCE | ADDRESS (STREET & NO.) | YEARS OF DRIVING EXPERIENCE | 19

CITY | STATE | ZIP CODE | CITY | STATE | ZIP CODE | 20

4 DATE OF BIRTH Month Day Year | SEX | DRIVER'S LICENSE NUMBER | STATE | DATE OF BIRTH Month Day Year | SEX | DRIVER'S LICENSE NUMBER | STATE | 21

VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE) | VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE) | 22

ADDRESS (STREET & NO.) | ADDRESS (STREET & NO.)

5 | 23

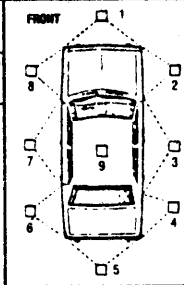
CITY | STATE | ZIP CODE | CITY | STATE | ZIP CODE

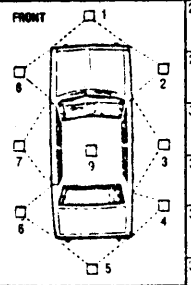
MAKE & TYPE OF VEHICLE (SHOW MOPED, MOTORCYCLE, AMBULANCE, ETC....) | YEAR | REPAIR COST | MAKE & TYPE OF VEHICLE (SHOW MOPED, MOTORCYCLE, AMBULANCE, ETC....) | YEAR | REPAIR COST | 24

6 LICENSE PLATE NUMBER | STATE | NAME OF INSURANCE CO. (NOT AGENT) | LICENSE PLATE NUMBER | STATE | NAME OF INSURANCE CO (NOT AGENT) | 25

DAMAGE TO PROPERTY OTHER THAN VEHICLES | OBJECT STRUCK (TREE, FENCE, ETC.) | OWNER'S NAME (LAST, FIRST, MIDDLE) | ADDRESS | REPAIR COST | 26

7 **VEHICLE NO. 1 DAMAGE** CHECK POINTS OF IMPACT | ACCIDENT DIAGRAM | **VEHICLE NO. 2 DAMAGE** CHECK POINTS OF IMPACT | 27





8 | 28 29 30 31 32 33

SPEED | **SPEED**

BEFORE ACCIDENT | LIMIT | MAXIMUM SAFE | BEFORE ACCIDENT | LIMIT | MAXIMUM SAFE

INDICATE NORTH BY ARROW

VEHICLE NO. 1 DAMAGES: ☐ UNKNOWN ☐ NO DAMAGE ☐ OVERTURNED ☐ MOTOR ☐ UNDERCARRIAGE ☐ TOTALED ☐ BY FIRE ☐ OTHER | **VEHICLE NO. 2 DAMAGES:** ☐ UNKNOWN ☐ NO DAMAGE ☐ OVERTURNED ☐ MOTOR ☐ UNDERCARRIAGE ☐ TOTALED ☐ BY FIRE ☐ OTHER | 34

ACCIDENT DESCRIPTION: | 35

| 36

| 37

OFFENSES CHARGED DRIVER:

	9	10	11	12	13	14	15	16	NAMES OF INJURED - IF DECEASED, INCLUDE DATE OF DEATH
ALL INJURED A									
B									
C									
D									
E									

TROOPER/OFFICER'S NAME | BADGE/CODE NUMBER | DEPARTMENT NAME AND CODE NUMBER | REVIEWING OFFICER | DATE REPORT FILED

IF A QUESTION DOES NOT APPLY, ENTER AN "X". IF AN ANSWER IS UNKNOWN, ENTER A "U". "OTHER" - EXPLAIN IN ACCIDENT DESCRIPTION. FR-300P 1/78

1 TRAFFIC CONTROL

1. NO TRAFFIC CONTROL
2. OFFICER OR WATCHMAN
3. TRAFFIC SIGNAL
4. STOP SIGN
5. SLOW OR WARNING SIGN
6. TRAFFIC LANES MARKED
7. NO PASSING LINES
8. YIELD SIGN
9. ONE WAY ROAD OR STREET
10. RAILROAD CROSSING WITH MARKINGS AND SIGNS
11. RAILROAD CROSSING WITH SIGNALS
12. RAILROAD CROSSING WITH GATE AND SIGNALS
13. OTHER

2 WAS TRAFFIC CONTROL DEVICE WORKING BEFORE ACCIDENT?

1. YES
2. NO

3 ALIGNMENT

1. STRAIGHT - LEVEL
2. CURVE - LEVEL
3. GRADE - STRAIGHT
4. GRADE - CURVE
5. HILLCREST - STRAIGHT
6. HILLCREST - CURVE
7. DIP - STRAIGHT
8. DIP - CURVE
9. OTHER

4 WEATHER

1. CLEAR
2. CLOUDY
3. FOG
4. MIST
5. RAINING
6. SNOWING
7. SLEETING
8. SMOKE - DUST
9. OTHER

5 SURFACE CONDITION

1. DRY
2. WET
3. SNOWY
4. ICY
5. MUDDY
6. OILY
7. OTHER

6 ROADWAY DEFECTS

1. NO DEFECTS
2. HOLES, RUTS, BUMPS
3. SOFT OR LOW SHOULDER
4. UNDER REPAIR
5. LOOSE MATERIAL
6. RESTRICTED WIDTH
7. SLICK PAVEMENT
8. ROADWAY OBSTRUCTED
9. OTHER DEFECTS

7 LIGHT

1. DAWN
2. DAYLIGHT
3. DUSK
4. DARKNESS - STREET OR HIGHWAY LIGHTED
5. DARKNESS - STREET OR HIGHWAY NOT LIGHTED

8 KIND OF LOCALITY

1. SCHOOL
2. CHURCH
3. PLAYGROUND
4. OPEN COUNTRY
5. BUSINESS/INDUSTRIAL
6. RESIDENTIAL
7. INTERSTATE
8. OTHER

DRIVER'S ACTION

1. NONE
2. EXCEEDED SPEED LIMIT
3. EXCEEDED SAFE SPEED BUT NOT SPEED LIMIT
4. OVERTAKING ON HILL
5. OVERTAKING ON CURVE
6. OVERTAKING AT INTERSECTION
7. IMPROPER PASSING OF SCHOOL BUS
8. CUTTING IN
9. OTHER IMPROPER PASSING
10. WRONG SIDE OF ROAD - NOT OVERTAKING
11. DID NOT HAVE RIGHT - OF - WAY
12. FOLLOWING TOO CLOSE
13. FAIL TO SIGNAL OR IMPROPER SIGNAL
14. IMPROPER TURN - WIDE RIGHT TURN
15. IMPROPER TURN - CUT CORNER ON LEFT TURN
16. IMPROPER TURN FROM WRONG LANE
17. OTHER IMPROPER TURNING
18. IMPROPER BACKING
19. IMPROPER START FROM PARKED POSITION
20. DISREGARDED OFFICER OR WATCHMAN
21. DISREGARDED STOP - GO LIGHT
22. DISREGARDED STOP OR YIELD SIGN
23. DRIVER INATTENTION
24. FAIL TO STOP AT THROUGH HIGHWAY - NO SIGN
25. DRIVE THROUGH SAFETY ZONE
26. FAIL TO SET OUT FLARES OR FLAGS
27. FAIL TO DIM HEADLIGHTS
28. DRIVING WITHOUT LIGHTS
29. IMPROPER PARKING LOCATION
30. AVOIDING PEDESTRIAN
31. AVOIDING OTHER VEHICLE
32. AVOIDING ANIMAL
33. CROWDED OFF ROADWAY
34. HIT AND RUN
35. CAR RAN AWAY - NO DRIVER
36. BLINDED BY LIGHTS
37. OTHER VIOLATIONS

VEHICLE NO. 1 → 17
VEHICLE NO. 2 → 18

VEHICLE MANEUVER

1. GOING STRAIGHT AHEAD
2. MAKING RIGHT TURN
3. MAKING LEFT TURN
4. MAKING U - TURN
5. SLOWING OR STOPPING
6. STARTING IN TRAFFIC LANE
7. STARTING FROM PARKED POSITION
8. STOPPED IN TRAFFIC LANE
9. RAN OFF ROAD - RIGHT
10. RAN OFF ROAD - LEFT
11. PARKED
12. BACKING
13. PASSING
14. CHANGING LANES
15. OTHER

VEHICLE NO. 1 → 19
VEHICLE NO. 2 → 20

TYPE OF COLLISION

1. REAR END
2. ANGLE
3. HEAD ON
4. SIDESWIPE - SAME DIRECTION
5. SIDESWIPE - OPPOSITE DIRECTION
6. FIXED OBJECT IN ROAD
7. TRAIN
8. NON - COLLISION
9. FIXED OBJECT - OFF ROAD
10. DEER
11. OTHER ANIMAL
12. PEDESTRIAN
13. BICYCLIST
14. MOTORCYCLIST
15. BACKED INTO
16. OTHER

FIRST EVENT: VEHICLE WITH → 21
SECOND EVENT: VEHICLE NO. 1 → 22
SECOND EVENT: VEHICLE NO. 2 → 23

COLLISION WITH FIXED OBJECT

1. BANK OR LEDGE
2. TREES
3. UTILITY POLE
4. FENCE OR FENCE POST
5. GUARD RAIL OR POST
6. PARKED VEHICLE
7. BRIDGE, UNDERPASS, CULVERT, ETC.
8. SIGN, TRAFFIC SIGNAL
9. IMPACT CUSHIONING DEVICE
10. OTHER

VEHICLE NO. 1 → 24
VEHICLE NO. 2 → 25

DRIVER VISION OBSCURED

1. NOT OBSCURED
2. RAIN, SNOW, ETC. ON WINDSHIELD
3. WINDSHIELD OTHERWISE OBSCURED
4. VISION OBSCURED BY LOAD ON VEHICLE
5. TREES, CROPS, ETC.
6. BUILDING
7. EMBANKMENT
8. SIGNBOARD
9. HILL CREST
10. PARKED VEHICLES
11. MOVING VEHICLES
12. SUN OR HEADLIGHT GLARE
13. OTHER

VEHICLE NO. 1 → 26
VEHICLE NO. 2 → 27

COMMONWEALTH OF VIRGINIA
DIVISION OF MOTOR VEHICLES

POLICE ACCIDENT REPORT

INJURY TYPE

1. DEAD BEFORE REPORT MADE
2. VISIBLE SIGNS OF INJURY, AS BLEEDING WOUND OR DISTORTED MEMBER; OR HAD TO BE CARRIED FROM SCENE
3. OTHER VISIBLE INJURY, AS BRUISES, ABRASIONS, SWELLING, LIMPING, ETC.
4. NO VISIBLE INJURY BUT COMPLAINT OF PAIN OR MOMENTARY UNCONSCIOUSNESS

CONDITION OF DRIVERS AND PEDESTRIAN

1. NO DEFECTS
2. EYESIGHT DEFECTIVE
3. HEARING DEFECTIVE
4. OTHER BODY DEFECTS
5. ILL
6. FATIGUED
7. APPARENTLY ASLEEP
8. OTHER HANDICAP

VEHICLE NO. 1 → 28
VEHICLE NO. 2 → 29
PEDESTRIAN → 30

DRINKING

1. HAD NOT BEEN DRINKING
2. DRINKING - OBVIOUSLY DRUNK
3. DRINKING - ABILITY IMPAIRED
4. DRINKING - ABILITY NOT IMPAIRED
5. DRINKING - NOT KNOWN WHETHER IMPAIRED

VEHICLE NO. 1 → 31
VEHICLE NO. 2 → 32
PEDESTRIAN → 33

VEHICLE CONDITION

1. NO DEFECTS
2. LIGHTS DEFECTIVE
3. BRAKES DEFECTIVE
4. STEERING DEFECTIVE
5. PUNCTURE OR BLOWOUT
6. WORN OR SLICK TIRES
7. MOTOR TROUBLE
8. CHAINS IN USE
9. OTHER DEFECTS

VEHICLE NO. 1 → 34
VEHICLE NO. 2 → 35

SKIDDING

1. BEFORE APPLICATION OF BRAKES
2. AFTER APPLICATION OF BRAKES
3. BEFORE AND AFTER APPLICATION OF BRAKES

VEHICLE NO. 1 → 36
VEHICLE NO. 2 → 37

WHICH VEHICLE OCCUPIED

1. VEHICLE NO. 1
2. VEHICLE NO. 2
B. BICYCLIST
P. PEDESTRIAN
O. OTHER

POSITION IN/ON VEHICLE

1. DRIVER 2-7. PASSENGERS
8. RIDING/HANGING ON OUTSIDE

8 / 1 2 3 / 8 4 5 6 8 / 7 / 8

SAFETY EQUIPMENT USED

1. NO RESTRAINT USED
2. LAP BELT
3. HARNESS
4. LAP BELT AND HARNESS
5. CHILD RESTRAINT
6. AIR BAG
7. OTHER

EJECTION FROM VEHICLE

1. NOT EJECTED
2. PARTIALLY EJECTED
3. EJECTED

BIRTH DATE MONTH	DAY	YEAR	SEX M/F

PEDESTRIAN ACTIONS

1. CROSSING AT INTERSECTION - WITH SIGNAL
2. CROSSING AT INTERSECTION - AGAINST SIGNAL
3. CROSSING AT INTERSECTION - NO SIGNAL
4. CROSSING AT INTERSECTION - DIAGONALLY
5. CROSSING NOT AT INTERSECTION - RURAL
6. CROSSING NOT AT INTERSECTION - URBAN
7. COMING FROM BEHIND PARKED CARS
8. GETTING OFF OR ON SCHOOL BUS
9. PLAYING IN ROADWAY
10. GETTING OFF OR ON OTHER VEHICLE
11. HITCHING ON VEHICLE
12. WALKING IN ROADWAY WITH TRAFFIC, SIDEWALKS AVAILABLE
13. WALKING IN ROADWAY WITH TRAFFIC, SIDEWALKS NOT AVAILABLE
14. WALKING IN ROADWAY AGAINST TRAFFIC, SIDEWALKS AVAILABLE
15. WALKING IN ROADWAY AGAINST TRAFFIC, SIDEWALKS NOT AVAILABLE
16. WORKING IN ROADWAY
17. STANDING IN ROADWAY
18. LYING IN ROADWAY
19. NOT IN ROADWAY
20. OTHER

9 10 11 12 13 14 15 16

NAMES OF INJURED - IF DECEASED, INCLUDE DATE OF DEATH

480

FR 300 C (4-80)

COMMONWEALTH OF VIRGINIA
DIVISION OF MOTOR VEHICLES
CITIZEN ACCIDENT REPORT

DMV COPY

ACCIDENT INFORMATION (SEE REVERSE SIDE FOR INSTRUCTIONS AND PENALTY FOR NOT FILING)

ACCIDENT DATE (MONTH / DAY / YEAR)	DAY OF WEEK	TIME (AM / PM)	INVESTIGATED AT SCENE BY POLICE?	NO. OF VEHICLES	WAS THERE AN INJURY?	WAS THERE A DEATH?	CITY OR COUNTY OF ACCIDENT

ROUTE NO. OR STREET NAME AT SCENE

☐ AT INTERSECTION WITH

OR _____ MILES FEET N S E W OF

ROUTE NO. OR STREET NAME

VEHICLE INFORMATION

YOUR VEHICLE	OTHER VEHICLE OR PEDESTRIAN INVOLVED
DRIVER'S NAME (LAST, FIRST, MIDDLE)	DRIVER'S NAME (LAST, FIRST, MIDDLE)
ADDRESS (NO. & STREET)	ADDRESS (NO. & STREET)
CITY / STATE / ZIP CODE	CITY / STATE / ZIP CODE
DATE OF BIRTH (MONTH / DAY / YEAR) / SEX / DRIVER'S LICENSE NUMBER / STATE	DATE OF BIRTH (MONTH / DAY / YEAR) / SEX / DRIVER'S LICENSE NUMBER / STATE
VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE)	VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE)
ADDRESS (NO. & STREET)	ADDRESS (NO. & STREET)
CITY / STATE / ZIP CODE	CITY / STATE / ZIP CODE
DATE OF BIRTH (MONTH / DAY / YEAR) / SEX / OWNER'S DRIVER LICENSE NUMBER / STATE	DATE OF BIRTH (MONTH / DAY / YEAR) / SEX / OWNER'S DRIVER LICENSE NUMBER / STATE
MAKE & TYPE OF VEHICLE / YEAR / VEHICLE PARKED?	MAKE & TYPE OF VEHICLE / YEAR / VEHICLE PARKED?
LICENSE PLATE NUMBER / STATE / COST TO REPAIR $	LICENSE PLATE NUMBER / STATE / COST TO REPAIR $

DAMAGE TO PROPERTY OTHER THAN VEHICLES

EST. AMOUNT OF DAMAGES $

WAS VEHICLE INSURED?	NAME OF OWNER'S LIABILITY INSURANCE COMPANY (NOT AGENT)	POLICY NUMBER

INSURED'S NAME (LAST, FIRST, MIDDLE)

POLICY PERIOD (MONTH / DAY / YEAR TO MONTH / DAY / YEAR)

SIGNATURE OF DRIVER	DATE FILLED	IF SIGNED BY PERSON OTHER THAN DRIVER, GIVE REASON

CITIZEN ACCIDENT REPORT INSTRUCTIONS

THE DRIVER OF ANY VEHICLE INVOLVED IN AN ACCIDENT THAT RESULTS IN ANY PERSONAL INJURY OR IN $350 OR MORE TOTAL DAMAGES TO ALL VEHICLES AND OTHER PROPERTY MUST FILE AN ACCIDENT REPORT WITH DMV WITHIN FIVE DAYS. THIS INFORMATION IS REQUIRED BY VIRGINIA LAW AND FAILURE TO FURNISH IT MAY RESULT IN THE SUSPENSION OF THE VEHICLE OWNER'S DRIVER'S LICENSE AND LICENSE PLATES.

THE ONLY EXCEPTIONS TO THIS ARE THAT IF YOUR VEHICLE WAS LEGALLY PARKED OR THE ACCIDENT OCCURRED ON PRIVATE PROPERTY, NO REPORT IS REQUIRED. IF THE DRIVER IS PHYSICALLY INCAPABLE OF FILING A REPORT, AN OCCUPANT ABLE TO MAKE A REPORT MUST DO SO.

WHEN FILLING OUT THIS REPORT PLEASE:

1. USE A TYPEWRITER OR PRINT PLAINLY IN INK.
2. FILL IN ALL INFORMATION TO THE BEST OF YOUR KNOWLEDGE.
3. PLACE A CIRCLE AROUND THE PROPER ANSWERS IN THE ACCIDENT INFORMATION AREA.
4. WHEN COMPLETING INFORMATION CONCERNING YOU AS THE DRIVER, USE SECTION MARKED "YOUR VEHICLE".
5. USE INFORMATION EXACTLY AS IT APPEARS ON YOUR DRIVER'S LICENSE, REGISTRATION CARD, AND INSURANCE POLICY.
6. FOR "TYPE OF VEHICLE" WRITE THE EXACT TYPE OF VEHICLE SUCH AS: SEDAN, STATION WAGON, TRUCK, MOTORCYCLE, MOTOR HOME, CAR AND TRAVEL TRAILER, MINI-BIKE, BICYCLE, ETC.
7. USE A SECOND REPORT FORM OR A PLAIN SHEET OF PAPER TO REPORT ADDITIONAL VEHICLES.
8. PLEASE SIGN AND DATE THE REPORT AND MAIL THE FIRST AND SECOND COPIES TO: FINANCIAL RESPONSIBILITY DEPARTMENT, DIVISION OF MOTOR VEHICLES, P.O. BOX 27412, RICHMOND, VIRGINIA 23269.

YOU MAY KEEP THE LAST COPY OF THE REPORT FOR YOUR RECORDS.

THE PERSONAL INFORMATION REQUIRED ON THIS REPORT IS USED TO IDENTIFY PERSONS AND VEHICLES INVOLVED IN ACCIDENTS. ALL INSURANCE INFORMATION WILL BE VERIFIED WITH YOUR INSURANCE COMPANY.

TO BE COMPLETED BY INSURANCE COMPANY WHEN COVERAGE IS DENIED.

TO: DIVISION OF MOTOR VEHICLES
FINANCIAL RESPONSIBILITY DEPARTMENT
P. O. BOX 27412
RICHMOND, VIRGINIA 23269

THE RECORDS OF THE UNDERSIGNED COMPANY SHOW THERE WAS NO AUTOMOBILE LIABILITY INSURANCE POLICY IN FORCE PROVIDING VIRGINIA MINIMUM LIMITS OF LIABILITY REQUIRED UNDER SECTION 46.1-504 CODE OF VIRGINIA FOR THE VEHICLE INVOLVED IN THE ACCIDENT SHOWN ON THE REVERSE SIDE OF THIS FORM.

NAME OF INSURANCE COMPANY	SIGNATURE OF AUTHORIZED REPRESENTATIVE: DATE

COMMONWEALTH OF VIRGINIA DIVISION OF MOTOR VEHICLES

PAGE OF _ PAGES

POLICE ACCIDENT REPORT

FIELD NOTES

FR-300P - 1/78

ACCIDENT DATE | DAY OF WEEK | TIME AM PM | COUNTY OF ACCIDENT | MILE POST NO. | RAILROAD CROSSING ID NO. IF WITHIN 150 FEET

CITY OR TOWN OF | LANDMARKS AT SCENE | NO. OF VEHICLES | OFFICIAL USE ONLY

ROUTE NO. OR STREET NAME AT SCENE

ROUTE NUMBER OR STREET NAME

AT INTERSECTION WITH OR _ _ MILES FEET N S E W OF

VEHICLE NO. 1

DRIVER'S NAME (LAST, FIRST, MIDDLE) | OCCUPATION

ADDRESS (STREET & NO.) | YRS. OF DRIVING EXPERIENCE

CITY | STATE | ZIP CODE

DATE OF BIRTH MO. DAY YR. | SEX | DRIVER'S LICENSE NUMBER | STATE

VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE)

ADDRESS (STREET & NO.)

CITY | STATE | ZIP CODE

MAKE & TYPE OF VEHICLE (SHOW MOPED - MOTORCYCLE - AMBULANCE, ETC. . .) | YEAR | REPAIR COST

LICENSE PLATE NO. | STATE | NAME OF INSURANCE CO. (NOT AGENT)

VEHICLE NO. 2 (OR PEDESTRIAN)

DRIVER'S NAME (LAST, FIRST, MIDDLE) | OCCUPATION

ADDRESS (STREET & NO.) | YRS OF DRIVING EXPERIENCE

CITY | STATE | ZIP CODE

DATE OF BIRTH MO. DAY YR. | SEX | DRIVER'S LICENSE NUMBER | STATE

VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE)

ADDRESS (STREET & NO.)

CITY | STATE | ZIP CODE

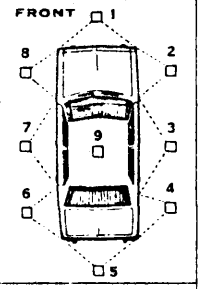
MAKE & TYPE OF VEHICLE (SHOW MOPED - MOTORCYCLE - AMBULANCE, ETC. . . .) | YEAR | REPAIR COST

LICENSE PLATE NO. | STATE | NAME OF INSURANCE CO. (NOT AGENT)

DAMAGE TO PROPERTY OTHER THAN VEHICLES | OBJECT STRUCK (TREE, FENCE, ETC.) | OWNER'S NAME (LAST, FIRST, MIDDLE) | ADDRESS | REPAIR COST

VEHICLE NO. 1 DAMAGE

CHECK POINTS OF IMPACT



SPEED

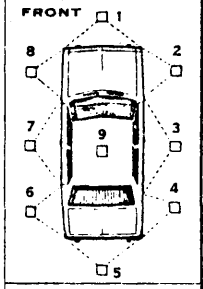
BEFORE ACCIDENT	LIMIT	MAX. SAFE

ACCIDENT DIAGRAM

INDICATE NORTH BY ARROW

VEHICLE NO. 2 DAMAGE

CHECK POINTS OF IMPACT



SPEED

BEFORE ACCIDENT	LIMIT	MAX. SAFE

VEHICLE NO. 1 DAMAGES: UNKNOWN NO DAMAGE | OVERTURNED MOTOR | UNDERCARRIAGE TOTALED | BY FIRE OTHER

VEHICLE NO. 2 DAMAGES: UNKNOWN NO DAMAGE | OVERTURNED MOTOR | UNDERCARRIAGE TOTALED | BY FIRE OTHER

ACCIDENT DESCRIPTION

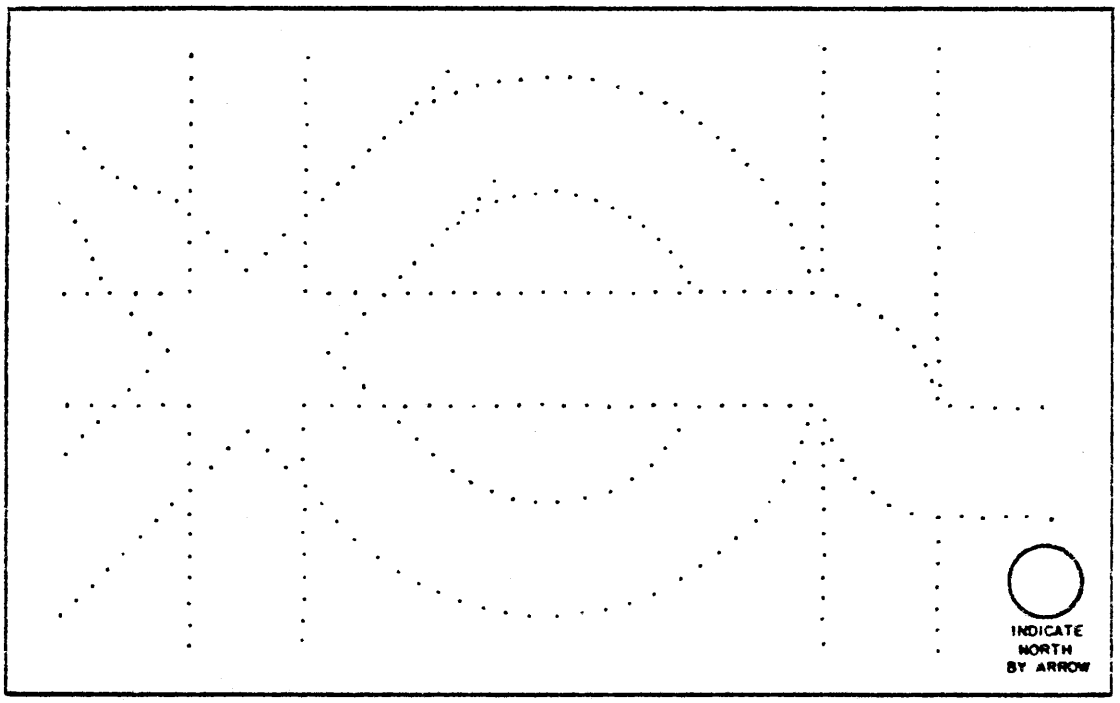
OFFENSES CHARGED DRIVER:

	9	10	11	12	13	14	15	16	NAMES OF INJURED - IF DECEASED, INCLUDE DATE OF DEATH
A									
B									
C									
D									
E									

ACT. INJURED

TROOPER/OFFICER'S NAME	BADGE/CODE NUMBER	DEPARTMENT NAME AND CODE NUMBER	REVIEWING OFFICER	DATE REPORT FILED

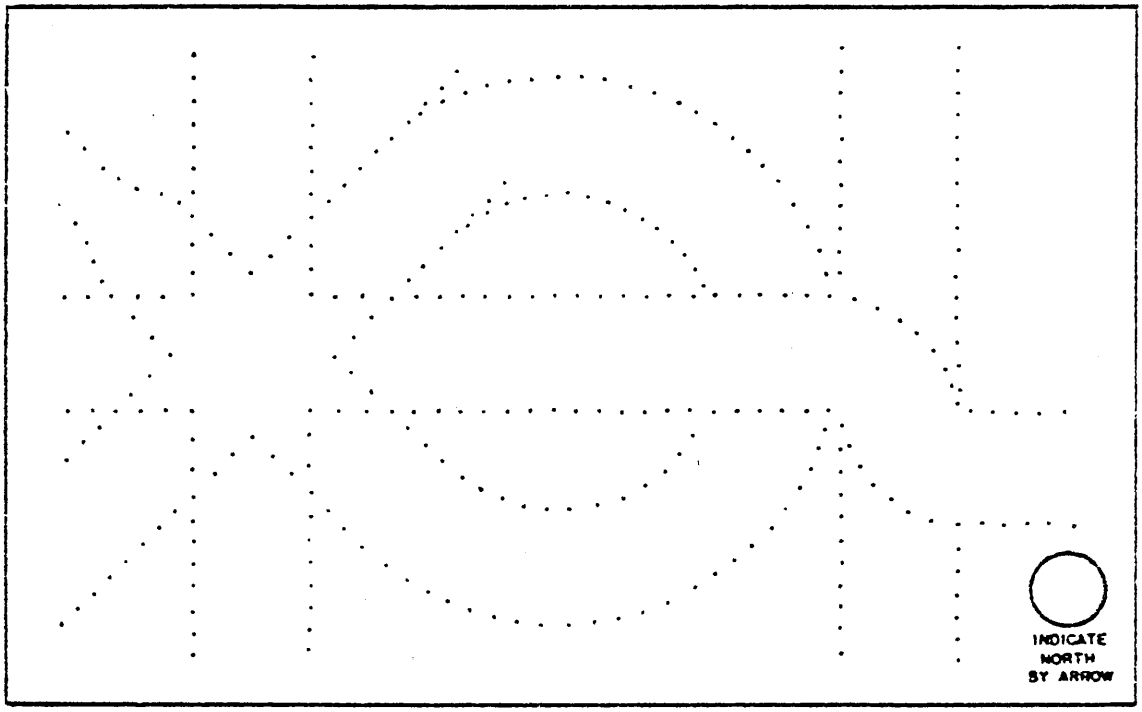
WRECKER CALLED	VEHICLE STORED
FIRM	
DATE CALLED: TIME CALLED:	
REQUEST OWNER/OPERATOR:	
NEAREST: YES NO	
WITNESS NAME:	WITNESS NAME:
ADDRESS:	ADDRESS
LOCATION:	LOCATION:
STATEMENT:	STATEMENT:
STATEMENT OF OPERATOR NUMBER	STATEMENT OF OPERATOR NUMBER



INVESTIGATION DETAILS

DATE: _____ TIME NOTIFIED: _____ TIME OF ARRIVAL: _____

WRECKER CALLED	VEHICLE STORED
FIRM	
DATE CALLED: TIME CALLED:	
REQUEST OWNER/OPERATOR:	
NEAREST: YES NO	
WITNESS NAME:	WITNESS NAME:
ADDRESS:	ADDRESS
LOCATION:	LOCATION:
STATEMENT:	STATEMENT:
STATEMENT OF OPERATOR NUMBER	STATEMENT OF OPERATOR NUMBER



INVESTIGATION DETAILS

DATE: _____ TIME NOTIFIED: _____ TIME OF ARRIVAL: _____

SPECIAL ITEMS CODED FOR VIRGINIA DEPT. OF HIGHWAYS & TRANSPORTATION													
SECTION NUMBER	MILE POST	SURFACE		KIND OF HIGHWAY	INTERSECTION		LOCATION IMPACT ZONE	MAJ. FACTOR	PLACEMENT			
		TYPE	WIDTH		TYPE	ROUTE NO.			NORTH	EAST	SOUTH	WEST

APPENDIX B

QUESTIONNAIRE AND RESULTS

Cover Letter

COMMONWEALTH of VIRGINIA

HIGHWAY & TRANSPORTATION RESEARCH COUNCIL

BOX 3817, UNIVERSITY STATION
CHARLOTTESVILLE, VIRGINIA 22903

HOWARD H. NEWLON, JR.
RESEARCH DIRECTOR

IN REPLY PLEASE
REFER TO FILE NO. _____

June 11, 1981

Dear

In reference to our telephone conversation, I have enclosed copies of a questionnaire to be distributed to police officers under your supervision who have experience in filing FR-300P accident reports. A variety of state, local and county police officers in Virginia will be involved in this survey. The results from this study will provide valuable information to researchers involved in accident analysis. Therefore, we encourage respondents to make any comments or suggestions that may help to increase the effectiveness of this questionnaire.

Please have the enclosed questionnaires completed and returned to me by June 18th. Your cooperation is greatly appreciated.

Sincerely,

Julie M. Hargroves
Research Engineer

JMH/tt

Enclosure

VIRGINIA POLICE OFFICER QUESTIONNAIRE

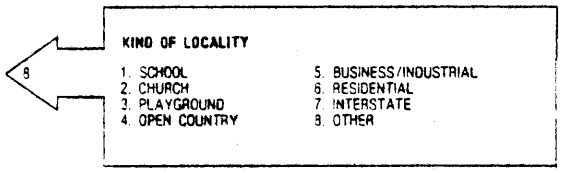
The Virginia Highway and Transportation Research Council is distributing this questionnaire to a sample of police officers throughout the Commonwealth of Virginia. The results will aid researchers in transportation safety studies using FR-300P accident data.

Most of the questions are opinion-type; and your own personal responses are desired and will be considered confidential. Please feel free to make any comments where questions are unclear.

General Instructions — Assume you are the investigating officer at the scene of a motor vehicle accident.

I. Code each of the following using the FR-300P codes shown.

(1) Kind of Locality



Code	Accident Location
	a. Entrance to rural country club parking lot.
	b. Apartment/townhouses in downtown area.
	c. Interstate in undeveloped rural area.
	d. Park road in central city.
	e. Unpaved road in state forest area.
	f. Parking lot of interstate rest area.

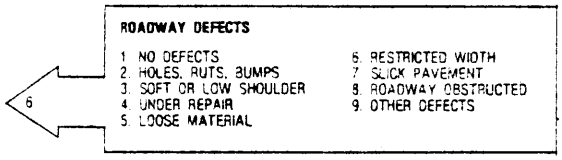
Explain "Other": (If Appropriate)

a. _____ d. _____

b. _____ e. _____

c. _____ f. _____

(2) Roadway Defects



Code	Roadway/Accident Description
	a. Mowing operation on shoulder/vehicle hits mower that is partially in roadway.
	b. Right lane narrowed for road repairs/vehicle sideswipes another vehicle.
	c. Loose gravel from recent surface repair/vehicle skids into telephone pole.
	d. Pavement edge line barely visible/vehicle fails to negotiate curve at night.
	e. Temporary concrete construction barrier on edge of right lane/vehicle forced into barriers by passing vehicle.
	f. Fallen rock on interstate/vehicle sideswipes another vehicle.
	g. Icy road/vehicle runs off road.
	h. Narrow, two-lane bridge/two vehicles sideswipe opposite direction.
	i. Traffic temporarily stopped for road repairs/rear-end collision at end of 1/2 mile back-up.

Explain "Other":
(if appropriate)

a. _____ f. _____

b. _____ g. _____

c. _____ h. _____

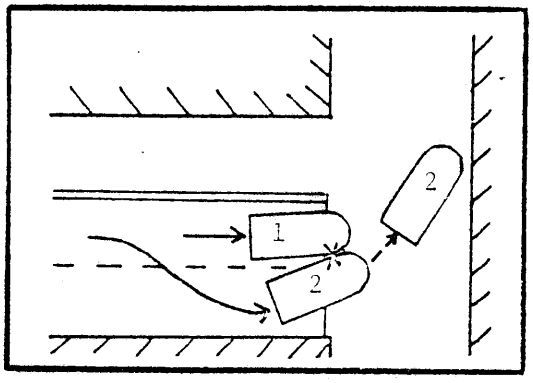
d. _____ i. _____

e. _____

II. For the following accident scenarios, code each of the FR-300P categories provided as you would in filing an accident report.

- If a question does not apply, enter an "X".
- If an answer is unknown, enter a "U".
- Use "Accident Description" only to explain "Other" responses. Do not re-describe the accident.

Scenario 1: Vehicle 1 is stalled in left lane at intersection. Vehicle 2 approaches intersection in left lane to make left turn. In an attempt to get around Vehicle 1, Vehicle 2 sideswipes stalled vehicle. An odor of alcohol can be detected on both drivers. However, no effects of the alcohol are obvious.



DRIVER'S ACTION → VEHICLE NO. 1 17, VEHICLE NO. 2 18

1. NONE
2. EXCEEDED SPEED LIMIT
3. EXCEEDED SAFE SPEED BUT NOT SPEED LIMIT
4. OVERTAKING ON HILL
5. OVERTAKING ON CURVE
6. OVERTAKING AT INTERSECTION
7. IMPROPER PASSING OF SCHOOL BUS
8. CUTTING IN
9. OTHER IMPROPER PASSING
10. WRONG SIDE OF ROAD - NOT OVERTAKING
11. DID NOT HAVE RIGHT - OF - WAY
12. FOLLOWING TOO CLOSE
13. FAIL TO SIGNAL OR IMPROPER SIGNAL
14. IMPROPER TURN - WIDE RIGHT TURN
15. IMPROPER TURN - CUT CORNER ON LEFT TURN
16. IMPROPER TURN FROM WRONG LANE
17. OTHER IMPROPER TURNING
18. IMPROPER BACKING
19. IMPROPER START FROM PARKED POSITION
20. DISREGARDED OFFICER OR WATCHMAN
21. DISREGARDED STOP - GO LIGHT
22. DISREGARDED STOP OR YIELD SIGN
23. DRIVER INATTENTION
24. FAIL TO STOP AT THROUGH HIGHWAY - NO SIGN
25. DRIVE THROUGH SAFETY ZONE
26. FAIL TO SET OUT FLARES OR FLAGS
27. FAIL TO DIM HEADLIGHTS
28. DRIVING WITHOUT LIGHTS
29. IMPROPER PARKING LOCATION
30. AVOIDING PEDESTRIAN
31. AVOIDING OTHER VEHICLE
32. AVOIDING ANIMAL
33. CROWDED OFF ROADWAY
34. HIT AND RUN
35. CAR RAN AWAY - NO DRIVER
36. BLINDED BY LIGHTS
37. OTHER VIOLATIONS

VEHICLE MANEUVER → VEHICLE NO. 1 19, VEHICLE NO. 2 20

1. GOING STRAIGHT AHEAD
2. MAKING RIGHT TURN
3. MAKING LEFT TURN
4. MAKING U - TURN
5. SLOWING OR STOPPING
6. STARTING IN TRAFFIC LANE
7. STARTING FROM PARKED POSITION
8. STOPPED IN TRAFFIC LANE
9. RAN OFF ROAD - RIGHT
10. RAN OFF ROAD - LEFT
11. PARKED
12. BACKING
13. PASSING
14. CHANGING LANES
15. OTHER

TYPE OF COLLISION → FIRST EVENT: VEHICLE WITH 21; SECOND EVENT: VEHICLE NO. 1 22, VEHICLE NO. 2 23

1. REAR END
2. ANGLE
3. HEAD ON
4. SIDESWIPE - SAME DIRECTION
5. SIDESWIPE - OPPOSITE DIRECTION
6. FIXED OBJECT IN ROAD
7. TRAIN
8. NON - COLLISION
9. FIXED OBJECT - OFF ROAD
10. DEER
11. OTHER ANIMAL
12. PEDESTRIAN
13. BICYCLIST
14. MOTORCYCLIST
15. BACKED INTO
16. OTHER

Accident Description:

CONDITION OF DRIVERS AND PEDESTRIAN → VEHICLE NO. 1 28, VEHICLE NO. 2 29, PEDESTRIAN 30

1. NO DEFECTS
2. EYESIGHT DEFECTIVE
3. HEARING DEFECTIVE
4. OTHER BODY DEFECTS
5. ILL
6. FATIGUED
7. APPARENTLY ASLEEP
8. OTHER HANDICAP

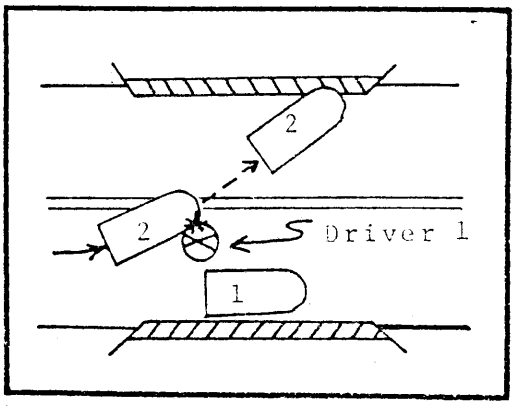
DRINKING → VEHICLE NO. 1 31, VEHICLE NO. 2 32, PEDESTRIAN 33

1. HAD NOT BEEN DRINKING
2. DRINKING - OBVIOUSLY DRUNK
3. DRINKING - ABILITY IMPAIRED
4. DRINKING - ABILITY NOT IMPAIRED
5. DRINKING - NOT KNOWN WHETHER IMPAIRED

VEHICLE CONDITION → VEHICLE NO. 1 34, VEHICLE NO. 2 35

1. NO DEFECTS
2. LIGHTS DEFECTIVE
3. BRAKES DEFECTIVE
4. STEERING DEFECTIVE
5. PUNCTURE OR BLOWOUT
6. WORN OR SLICK TIRES
7. MOTOR TROUBLE
8. CHAINS IN USE
9. OTHER DEFECTS

Scenario 2: Vehicle 1 has a flat tire at night on a two-lane bridge with no shoulder. Driver leaves car lights on while changing tire. Vehicle 2 does not see Vehicle 1 stopped on bridge until the last minute. Vehicle 2 hits Driver 1 and then hits left side of bridge.



DRIVER'S ACTION — VEHICLE NO. 1 17 / VEHICLE NO. 2 18

1. NONE
2. EXCEEDED SPEED LIMIT
3. EXCEEDED SAFE SPEED BUT NOT SPEED LIMIT
4. OVERTAKING ON HILL
5. OVERTAKING ON CURVE
6. OVERTAKING AT INTERSECTION
7. IMPROPER PASSING OF SCHOOL BUS
8. CUTTING IN
9. OTHER IMPROPER PASSING
10. WRONG SIDE OF ROAD - NOT OVERTAKING
11. DID NOT HAVE RIGHT - OF - WAY
12. FOLLOWING TOO CLOSE
13. FAIL TO SIGNAL OR IMPROPER SIGNAL
14. IMPROPER TURN - WIDE RIGHT TURN
15. IMPROPER TURN - CUT CORNER ON LEFT TURN
16. IMPROPER TURN FROM WRONG LANE
17. OTHER IMPROPER TURNING
18. IMPROPER BACKING
19. IMPROPER START FROM PARKED POSITION
20. DISREGARDED OFFICER OR WATCHMAN
21. DISREGARDED STOP - GO LIGHT
22. DISREGARDED STOP OR YIELD SIGN
23. DRIVER INATTENTION
24. FAIL TO STOP AT THROUGH HIGHWAY - NO SIGN
25. DRIVE THROUGH SAFETY ZONE
26. FAIL TO SET OUT FLARES OR FLAGS
27. FAIL TO DIM HEADLIGHTS
28. DRIVING WITHOUT LIGHTS
29. IMPROPER PARKING LOCATION
30. AVOIDING PEDESTRIAN
31. AVOIDING OTHER VEHICLE
32. AVOIDING ANIMAL
33. CROWDED OFF ROADWAY
34. HIT AND RUN
35. CAR RAN AWAY - NO DRIVER
36. BLINDED BY LIGHTS
37. OTHER VIOLATIONS

VEHICLE MANEUVER — VEHICLE NO. 1 19 / VEHICLE NO. 2 20

1. GOING STRAIGHT AHEAD
2. MAKING RIGHT TURN
3. MAKING LEFT TURN
4. MAKING U - TURN
5. SLOWING OR STOPPING
6. STARTING IN TRAFFIC LANE
7. STARTING FROM PARKED POSITION
8. STOPPED IN TRAFFIC LANE
9. RAN OFF ROAD - RIGHT
10. RAN OFF ROAD - LEFT
11. PARKED
12. BACKING
13. PASSING
14. CHANGING LANES
15. OTHER

TYPE OF COLLISION — FIRST EVENT: VEHICLE WITH 21 / SECOND EVENT: VEHICLE NO. 1 22 / VEHICLE NO. 2 23

1. REAR END
2. ANGLE
3. HEAD ON
4. SIDESWIPE - SAME DIRECTION
5. SIDESWIPE - OPPOSITE DIRECTION
6. FIXED OBJECT IN ROAD
7. TRAIN
8. NON - COLLISION
9. FIXED OBJECT - OFF ROAD
10. DEER
11. OTHER ANIMAL
12. PEDESTRIAN
13. BICYCLIST
14. MOTORCYCLIST
15. BACKED INTO
16. OTHER

COLLISION WITH FIXED OBJECT — VEHICLE NO. 1 24 / VEHICLE NO. 2 25

1. BANK OR LEDGE
2. TREES
3. UTILITY POLE
4. FENCE OR FENCE POST
5. GUARD RAIL OR POST
6. PARKED VEHICLE
7. BRIDGE, UNDERPASS, CULVERT, ETC.
8. SIGN, TRAFFIC SIGNAL
9. IMPACT CUSHIONING DEVICE
10. OTHER

Accident Description:

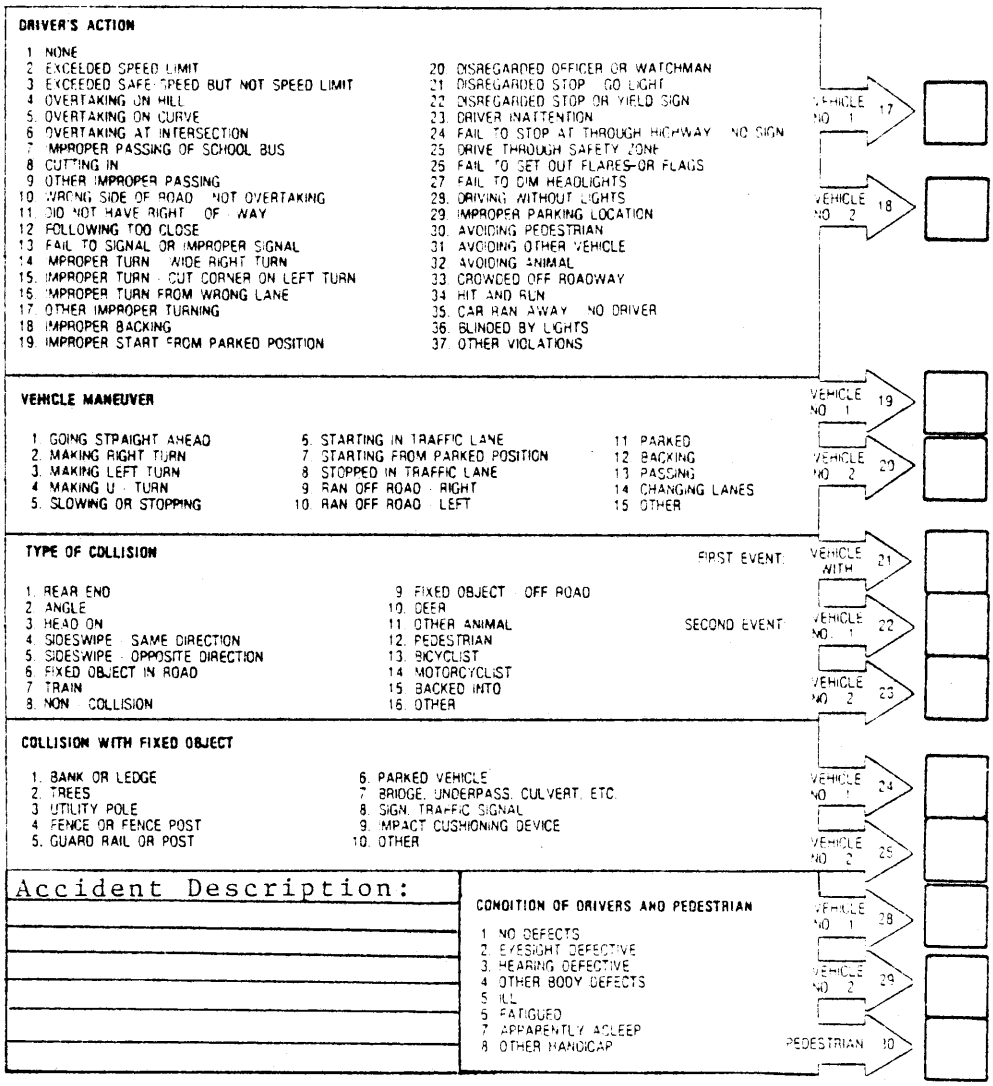
CONDITION OF DRIVERS AND PEDESTRIAN — VEHICLE NO. 1 28 / VEHICLE NO. 2 29 / PEDESTRIAN 30

1. NO DEFECTS
2. EYESIGHT DEFECTIVE
3. HEARING DEFECTIVE
4. OTHER BODY DEFECTS
5. ILL
6. FATIGUED
7. APPARENTLY ASLEEP
8. OTHER HANDICAP

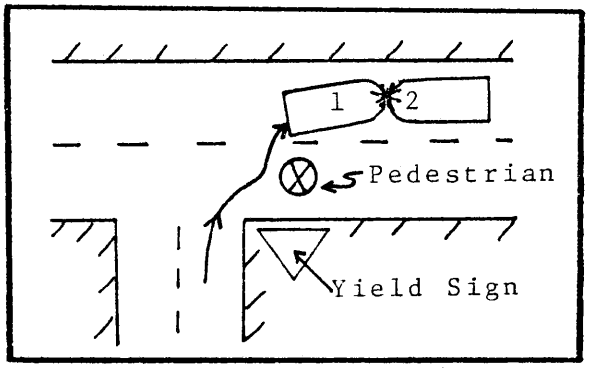
VEHICLE CONDITION — VEHICLE NO. 1 34 / VEHICLE NO. 2 35

1. NO DEFECTS
2. LIGHTS DEFECTIVE
3. BRAKES DEFECTIVE
4. STEERING DEFECTIVE
5. PUNCTURE OR BLOWOUT
6. WORN OR SLICK TIRES
7. MOTOR TROUBLE
8. CHAINS IN USE
9. OTHER DEFECTS

Scenario 3: While travelling on a two-lane rural highway, Vehicle 1 hits a cow in the roadway. This collision forces Vehicle 1 off the road to the right and into a small shed. Driver claims he was blinded by the high-beams of an oncoming vehicle.



Scenario 4: While making a right turn, Vehicle 1 swerves into oncoming vehicle to avoid hitting a pedestrian.



DRIVER'S ACTION

1 NONE
2 EXCEEDED SPEED LIMIT
3 EXCEEDED SAFE SPEED BUT NOT SPEED LIMIT
4 OVERTAKING ON HILL
5 OVERTAKING ON CURVE
6 OVERTAKING AT INTERSECTION
7 IMPROPER PASSING OF SCHOOL BUS
8 CUTTING IN
9 OTHER IMPROPER PASSING
10 WRONG SIDE OF ROAD - NOT OVERTAKING
11 DID NOT HAVE RIGHT - OF - WAY
12 FOLLOWING TOO CLOSE
13 FAIL TO SIGNAL OR IMPROPER SIGNAL
14 IMPROPER TURN - WIDE RIGHT TURN
15 IMPROPER TURN - CUT CORNER ON LEFT TURN
16 IMPROPER TURN FROM WRONG LANE
17 OTHER IMPROPER TURNING
18 IMPROPER BACKING
19 IMPROPER START FROM PARKED POSITION
20 DISREGARDED OFFICER OR WATCHMAN
21 DISREGARDED STOP - GO LIGHT
22 DISREGARDED STOP OR YIELD SIGN
23 DRIVER INATTENTION
24 FAIL TO STOP AT THROUGH HIGHWAY - NO SIGN
25 DRIVE THROUGH SAFETY ZONE
26 FAIL TO SET OUT FLARES OR FLAGS
27 FAIL TO DIM HEADLIGHTS
28 DRIVING WITHOUT LIGHTS
29 IMPROPER PARKING LOCATION
30 AVOIDING PEDESTRIAN
31 AVOIDING OTHER VEHICLE
32 AVOIDING ANIMAL
33 CROWDED OFF ROADWAY
34 HIT AND RUN
35 CAR RAN AWAY - NO DRIVER
36 BLINDED BY LIGHTS
37 OTHER VIOLATIONS

VEHICLE NO. 1 17
VEHICLE NO. 2 18

VEHICLE MANEUVER

1 GOING STRAIGHT AHEAD
2 MAKING RIGHT TURN
3 MAKING LEFT TURN
4 MAKING U - TURN
5 SLOWING OR STOPPING
6 STARTING IN TRAFFIC LANE
7 STARTING FROM PARKED POSITION
8 STOPPED IN TRAFFIC LANE
9 RAN OFF ROAD - RIGHT
10 RAN OFF ROAD - LEFT
11 PARKED
12 BACKING
13 PASSING
14 CHANGING LANES
15 OTHER

VEHICLE NO. 1 19
VEHICLE NO. 2 20

TYPE OF COLLISION

1 REAR END
2 ANGLE
3 HEAD ON
4 SIDESWIPE - SAME DIRECTION
5 SIDESWIPE - OPPOSITE DIRECTION
6 FIXED OBJECT IN ROAD
7 TRAIN
8 NON - COLLISION
9 FIXED OBJECT - OFF ROAD
10 DEER
11 OTHER ANIMAL
12 PEDESTRIAN
13 BICYCLIST
14 MOTORCYCLIST
15 BACKED INTO
16 OTHER

FIRST EVENT
SECOND EVENT

VEHICLE WITH 21
VEHICLE NO. 1 22
VEHICLE NO. 2 23

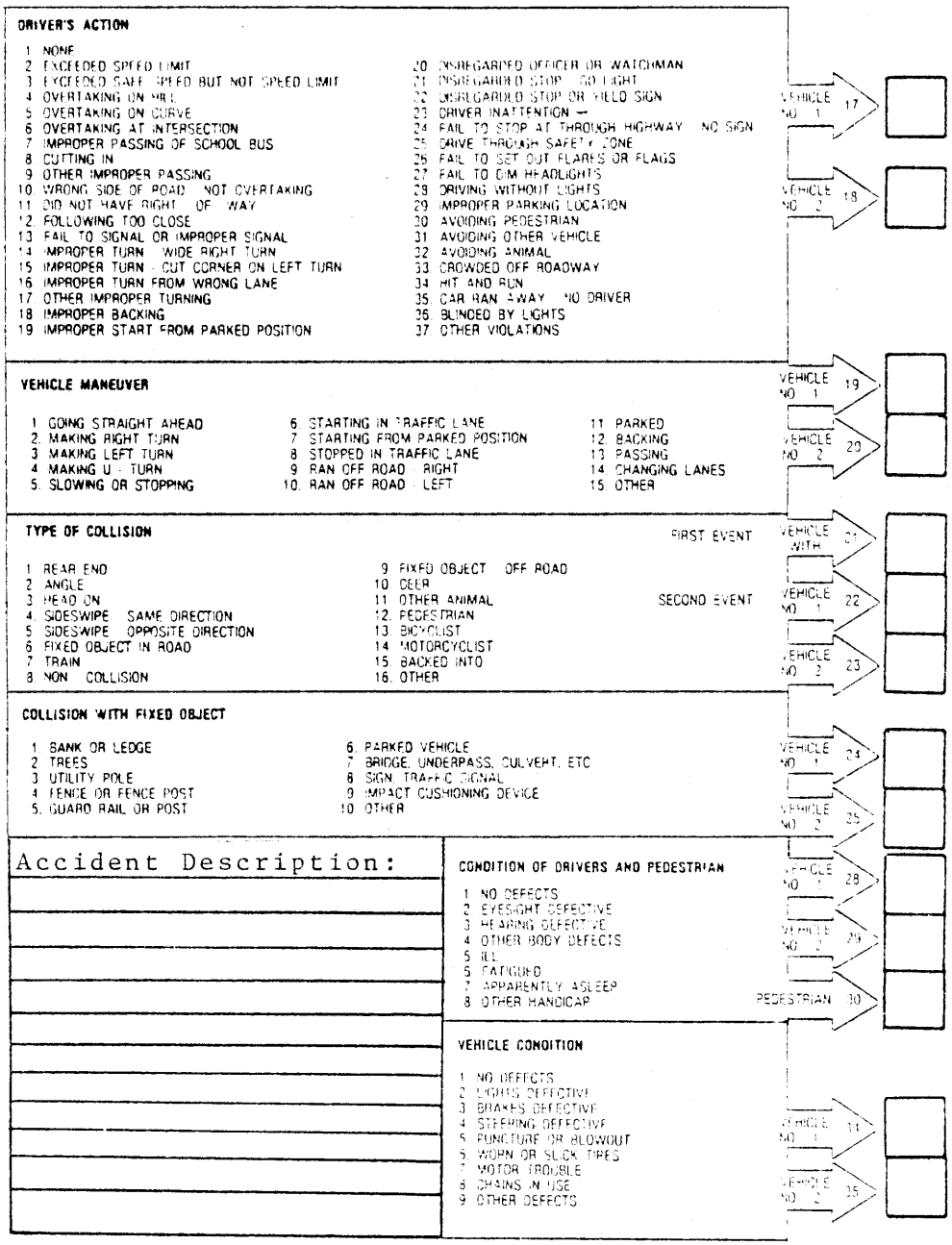
Accident Description:

CONDITION OF DRIVERS AND PEDESTRIAN

1 NO DEFECTS
2 EYESIGHT DEFECTIVE
3 HEARING DEFECTIVE
4 OTHER BODY DEFECTS
5 ILL
6 FATIGUED
7 APPARENTLY ASLEEP
8 OTHER HANDICAP

VEHICLE NO. 1 28
VEHICLE NO. 2 29
PEDESTRIAN 30

Scenario 5: Vehicle 1 passes Vehicle 2 on a steep downgrade of a two-lane mountain road. Vehicle 1 cuts back in front of Vehicle 2 and then brakes for a sharp curve. Vehicle 2 locks brakes and skids into guardrail.



III. General Information — Fill in the blanks.

1. Approximately how long have you been filling out FR-300P's?
_____ years

2. On the average, how many accident reports do you personally fill out every month? _____

3. Comments

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for your assistance.

QUESTIONNAIRE RESULTS

Comments Section

Questionnaire No.	Comment
1101	Questions cannot be correctly answered without being on the scene and seeing the drivers. Answers on this report were based on the driver and vehicle being in good condition unless otherwise stated.
1104	This is a perfect example that the FR-300 we are now using is of little value — there is too much confliction.
1108	More information needed in accident description to give accurate responses.
1112	The response block (driver vision obscured) should have been used in scenario #3 instead of (condition of drivers) as it would have been more appropriate.
1201	This is a good report. It takes time and application to become proficient at filing this report. There are times when questions arise as to what is the appropriate answer for a particular situation. Many things can be interpreted in several different ways.
1207	I always obtain more information at scene of accident than is provided in this questionnaire. Not enough information provided to make fair judgement as to what blocks apply in all categories.
1208	Not enough information on each case.
1211	On the type of collision #21-22-23, a block is provided for the first and second event; however, in the collision with fixed object there is no place to indicate the second event.

Questionnaire No.	Comment
1305	In these reports there was no mention of vehicle condition and driver's physical condition. All listed unknown.
1306	Many of the scenarios are not clear enough to fill in the corresponding blocks. According to the description it seems a number of answers could be possible.
1307	Very vague in areas. Need more information on drivers.
1309	This is very good, however on some of the questions we didn't have enough information to fill out properly.
2101	Type of collision is confusing 1st event and 2nd event.
2104	All I can say is that some accidents are very complex and some are easy. I always try to be fair with both drivers. I think there should be a box for the phone number of both drivers in case they forget some of the information needed to complete the accident.
2105	I think the FR-300P is a good form; more space for information is available. I can't help but wonder sometimes if someone not at the accident scene can always understand what the officer taking the report means, though, because any two people can take the same information and interpret it differently. This form does clarify some of the possible confusion.
2106	Each scenario doesn't give you enough info to base an investigation — nor parties involved to conduct interviews, nor physical evidence — to assess on the investigation.
2107	The form is an improvement over the old style; however, the carbon paper doesn't pick up very well. If it could be made out of pressure sensitive paper would be a big help.

Questionnaire No.	Comment
2203	Officer actually investigating accident would have more information and could more accurately assess the accident.
2206	It was difficult doing an exercise on paper rather than on site.
2207	Scenarios #3 and #5 could have been coded easier with a diagram provided.
2210	Some of the scenarios were too vague! Several of the answers (unknown and other) had to be made without assuming or reading into the situation. However, the exercise showed a need for possible revision(s) of the FR-300.
2213	As demonstrated by this questionnaire, I feel that even though answers to the questions (on the FR-300P) are usually quite specific, they are also somewhat ambiguous and often a matter of personal interpretation. Definitions of these specifics may eliminate variations in reporting.
2214	Make a section for phone numbers on the form for each driver.
2219	There is no block for the major problem. More accidents are caused by stupidity than any other reason!! Please be advised that when answering reference conditions of driver, pedestrians, and vehicles I assumed that there were no unusual conditions since none were stated in the scenario description.
2301	The problem that I have is with first event, and vehicle 1, vehicle 2. I feel you should just list event one and two for each vehicle - or - whichever vehicle was at fault.
2303	The report seems simple enough except in the box section of type of collision, where the first event does not seem to apply to either vehicle in particular unless you're to number it yourself.

Questionnaire No.	Comments
2305	I feel some categories on the form need more clarification.
2406	Many of the codes used are vague & at times more than one could apply. And as stated, personal opinion carries a lot of weight.
2408	This survey cannot be very accurate as the accident descriptions leave too much needed information untold. As the vehicle cutting in after passing on two lane down grade. No mention was made as to whether the driver actually completed his pass and was back in the proper lane before braking for the sharp curve. Also how many feet had the vehicle travelled after completing the pass before braking.
3103	1. A could be 5 or 4. #2 A could be 1 or 8 (?) B 6 or 4. C 5 or 8. F 8 or 5. I 1, 9 or 4. In most instances locality or roadway have more than one answer. From information at hand the most probable reason for the accident was chosen.
3106	It would be nice to see an FR-300 instruction manual that was uniform and fully explained. See no reason why diagram cannot be put on blank piece of paper, if need be. Your explanations in this paper are too vague to complete properly. Vehicles which are not physically involved in accidents are listed only in summary section.
3107	I had to answer "U" to all conditions of drivers and vehicles because it was not listed in scenarios. Occasionally diagram needs to be on separate paper for proper detail. Vehicles that are not physically involved in accident are not listed on FR-300, but may be mentioned in the narrative.

Questionnaire No.	Comment
3110	Scenario #3 - with the info given in the description - driver's action block I put no violation - usually there are contributing factors in this type of accident - speed or driver inattention.

APPENDIX C

MODIFICATIONS RECOMMENDED FOR THE FR-300P

REORGANIZATION OF FR-300P

All data elements (front page and overlay) have been organized into one of the five categories below:

(1) SUMMARY DATA

(2) ADMINISTRATIVE DATA

(3) INVENTORY DATA

(4) ACCIDENT DESCRIPTION DATA

(5) APPARENT CONTRIBUTING FACTORS DATA

REORGANIZATION AND STATUS OF FR-300P FRONT PAGE DATA ELEMENTS

CATEGORY	DATA ELEMENT	STATUS*
SUMMARY DATA	Total # Persons Killed	A
	Total # Persons Injured	A
	Total # Vehicles Involved	S
ADMINISTRATIVE DATA (Vehicle 1 and Vehicle 2)	Driver's Name	S
	Driver's Address	S
	Driver's Birthdate	S
	Driver's Sex	S
	Driver's License Number and State	S
	Occupation	D
	Yrs. of Driving Experience	D
	Drinking	A
	Vehicle Owner's Name	S
	Vehicle Owner's Address	S
	License Plate No. and State	S
	Name of Insurance Co.	S
	Total # Occupants This Unit	A

* Codes Explained:

A = Added
D = Deleted
M = Modified
S = Same/No Change

FRONT PAGE - CONTINUED

CATEGORY	DATA ELEMENT	STATUS
INVENTORY DATA	Accident Date	S
	Day of Week	S
	Time	S
	County of Accident	M*
	Milepost No.	M*
	RR Crossing Id. No.	M*
	City or Town	M*
	Landmarks at Scene	M*
	Route No. or Street Name	M*
	Intersection With or Miles of	M*
	Work Zone Location	A
	Vehicle Make and Type	S
	Vehicle Year	S
	Speed Before Accident	S
	Speed Limit	S
	Speed-Maximum Safe	D
	Names of Injured	S

*Modifications to these data elements are not specifically addressed.

FRONT PAGE - CONTINUED

CATEGORY	DATA ELEMENT	STATUS
ACCIDENT	Accident Diagram	S
DESCRIPTION	Accident Description	S
DATA	Vehicle Damages	M
	Vehicle Points of Impact	M
	Vehicle Repair Cost	M
	Was Vehicle Towed	A
	Property Damage —	
	Object Struck	S
	Owner's Name and Address	S
	Repair Cost	S
	Offenses Charged Driver	S

REORGANIZATION AND STATUS OF FR-300P
OVERLAY DATA ELEMENTS

CATEGORY	DATA ELEMENT	STATUS
INVENTORY DATA	Traffic Control	M
	Was T.C.D. Working	D
	Alignment	M
	Weather	M
	Surface Condition	M
	Light	S
	Kind of Locality	M
	Which Vehicle Occupied	S
	Position in/on Vehicle	S
	Safety Equipment Used	M
	Ejection From Vehicle	S
	Birthdate	S
	Sex	S
	Injury Type	M
ACCIDENT DESCRIPTION DATA	Vehicle Maneuver	M
	Type of Collision	M
	Collision with Fixed Object	M
	Pedestrian Actions	M
	Pedestrian Location	A
	Skidding	S

OVERLAY - CONTINUED

CATEGORY	DATA ELEMENT	STATUS
APPARENT	Roadway Defects	M
CONTRIBUTING	Driver's Action	M
FACTORS DATA	Driver Vision Obscured	M
	Condition of Drivers and Pedestrian	M
	Drinking	D
	Vehicle Condition	M

FRONT PAGE DATA ELEMENTS

SUMMARY

Total No. Persons ☐ Killed ☐ Injured

ADMINISTRATIVE

Had Been Drinking: Yes ☐ No ☐ BAC 0.____ , Test Type _____

Total No. Occupants This Unit: ☐

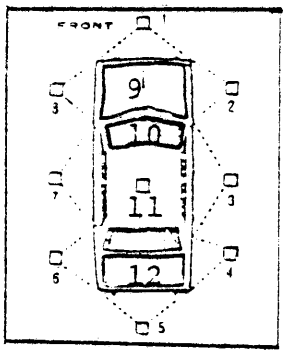
INVENTORY

Did the accident occur in highway maintenance or construction work zone? Yes ☐ No ☐

FRONT PAGE

ACCIDENT DESCRIPTION DATA ELEMENTS

Vehicle Damages (CHECK ALL THAT APPLY!)



- ☐13. overturned
- ☐14. motor
- ☐15. fire
- ☐16. undercarriage
- ☐17. totaled
- ☐18. none
- ☐19. unknown
- ☐20. other

Was Vehicle Towed? ☐ Yes ☐ No

Approximate Repair Cost ☐☐☐☐☐☐

OVERLAY

INVENTORY DATA ELEMENTS

Traffic Control

1. stop sign
2. yield sign
3. slow or warning sign
4. traffic signal
5. officer, flagman, school patrol
6. railroad signal/sign/gate
7. no passing zone
8. other

Kind of Locality

1. business/shopping
2. industrial/manufacturing
3. residential
4. open country
5. school/church
6. recreational (playground, park)
7. other

Alignment

1. level - straight
2. level - curve
3. grade - straight
4. grade - curve
5. hillcrest - straight
6. hillcrest - curve
7. other

Weather

1. clear
2. cloudy
3. raining
4. fog/smog
5. snowing
6. sleeting
7. severe wind
8. other

Road Surface

1. dry
2. wet
3. ice
4. snow
5. other

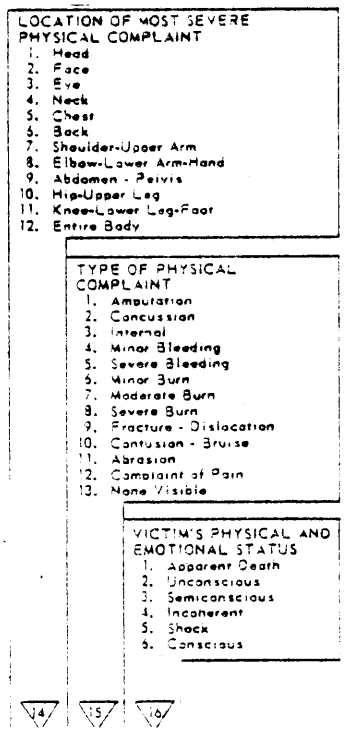
OVERLAY

INVENTORY DATA ELEMENTS

(Continued)

Safety Equipment Used

1. none
2. lap & shoulder harness
3. lap belt only
4. child restraint
5. helmet
6. other



OVERLAY

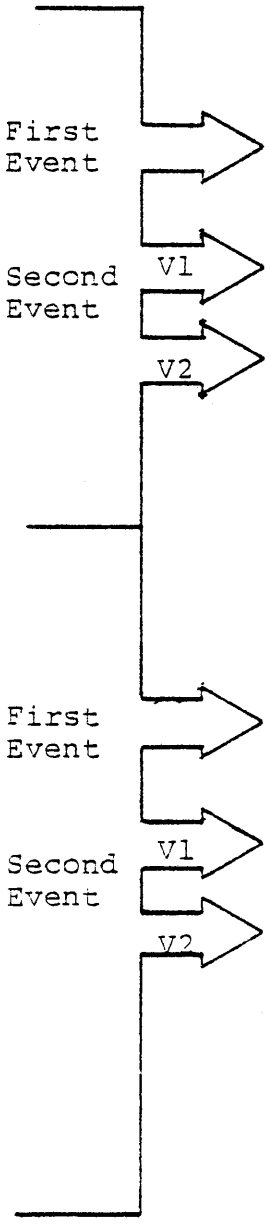
ACCIDENT DESCRIPTION DATA ELEMENTS

Type of Accident (First and Second Events)

1. collision with motor vehicle
2. collision with pedestrian
3. collision with bicyclist
4. collision with motorcyclist
5. collision with animal
6. collision with fixed object on road
7. collision with fixed object off road
8. other collision
9. overturn
10. fire/explosion
11. other non-collision

Collision Type and/or Fixed Object Struck
(First and Second Events)

1. rear end
2. angle
3. head on
4. backed into
5. sideswipe - same direction
6. sideswipe - opposite direction
7. other collision type
8. pole/post (utility,sign,signal)
9. guardrail or barrier
10. tree/shrub
11. building/wall/fence
12. bridge/underpass/culvert
13. embankment
14. parked vehicle
15. other fixed object



OVERLAY

ACCIDENT DESCRIPTION DATA ELEMENTS

(Continued)

Vehicle Maneuver

1. going straight ahead
2. making right turn
3. making right turn on RED
4. making left turn
5. making U-turn
6. passing
7. changing lanes/merging
8. slowing or stopping
9. starting in traffic lane
10. stopped in traffic lane
11. parked
12. starting from parked position
13. parking
14. backing
15. ran off road - right
16. ran off road - left
17. other

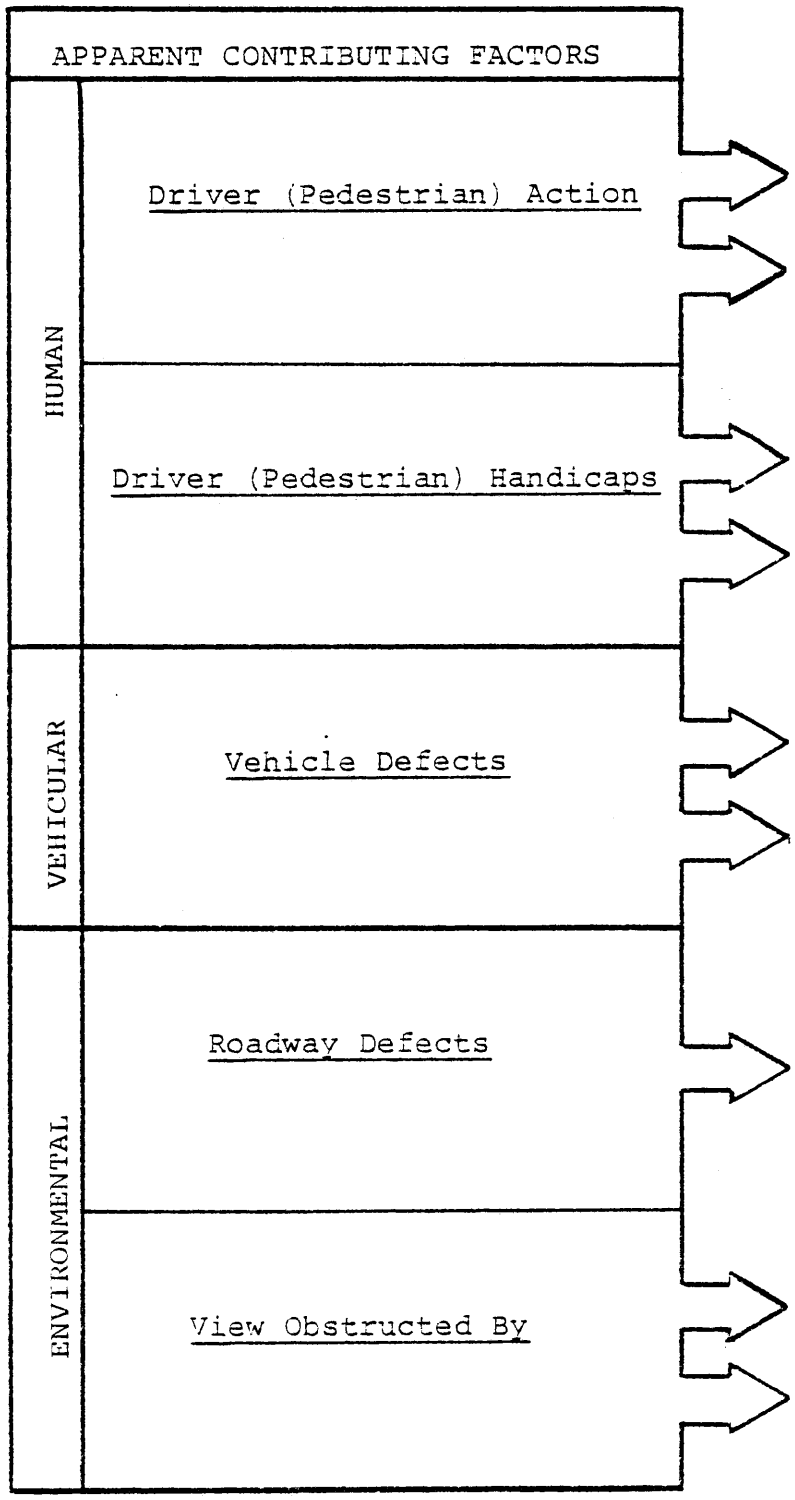
Pedestrian Location

1. intersection
2. non-intersection
3. off road
4. other location

Pedestrian Action

1. walking/crossing
2. working
3. standing
4. playing
5. getting in/out of vehicle
6. other action

OVERLAY


APPARENT CONTRIBUTING FACTORS
HUMAN
Driver (Pedestrian) Action
Driver (Pedestrian) Handicaps
VEHICULAR
Vehicle Defects
ENVIRONMENTAL
Roadway Defects
View Obstructed By

OVERLAY

APPARENT CONTRIBUTING FACTORS DATA ELEMENTS

(Continued)

HUMAN

Driver (Pedestrian) Action

1. illegal/unsafe speed
2. following too close
3. did not have right of way
4. wrong way driving
5. improper vehicle maneuver
6. disregarded traffic control
7. no/improper signal
8. driver inattention/distraction
9. avoiding other vehicle
10. avoiding pedestrian/animal
11. hit and run
12. improper pedestrian action
13. other action

Driver (Pedestrian) Handicaps

1. eyesight handicapped
2. hearing handicapped
3. other physical handicap
4. ill
5. fatigued
6. apparently asleep
7. alcohol/drug handicap
8. other handicap

OVERLAY

APPARENT CONTRIBUTING FACTORS DATA ELEMENTS

(Continued)

VEHICULAR

Vehicle Defects

1. lights defective
2. brakes defective
3. steering defective
4. tires defective
5. windows/wipers defective
6. power failure
7. other defect

ENVIRONMENTAL

Roadway Defects

1. lane(s) closed
2. restricted width
3. roadway obstructed
4. soft or low shoulder
5. holes/ruts/bumps
6. loose material
7. slick pavement
8. signs/signals obstructed or defective
9. poor delineation/markings
10. other defects

View Obstructed By

1. windshield (rain,dirt,damaged)
2. trees/crops/bushes
3. buildings/embankments/walls
4. hillcrest
5. moving vehicle
6. parked vehicle
7. glare (sun,headlight)
8. other