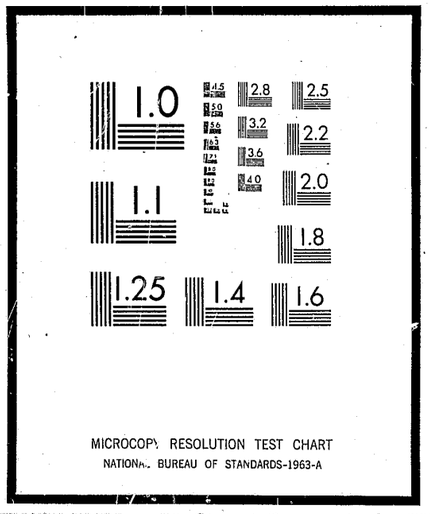

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DOT HS-801 161

EVALUATION OF PORTABLE BREATH TEST DEVICES FOR SCREENING SUSPECTED DRUNKEN DRIVERS BY POLICE IN HENNEPIN COUNTY, MINNESOTA

Contract No. DOT-HS-048-1-064

June 1974

Final Report

'ARED FOR:

DEPARTMENT OF TRANSPORTATION
ONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
HINGTON, D.C. 20590

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16. Abstract

This evaluation report examines use in the field of portable breath test (PBT) devices by police in Hennepin County, Minnesota. Thirteen Borg-Warner J2 and J2A-200 "ALERT" devices were deployed by seven enforcement agencies. This report is presented in five parts. Part I provides police officials and administrators, public officials and others concerned with traffic safety an informal summary of information emerging from the PBT field evaluation. Part II is an analysis and discussion of data collected during the PBT field evaluation. Part III reports on maintenance and performance problems. The attitudes of officers, PBT calibrators, and supervisory personnel toward the PBT and the concept of pre-arrest screening are summarized in Part IV. Part V reports on an attempted controlled study which did not yield sufficient data.

The results indicate that pre-arrest screening devices are accepted by and useful to the police and that the models tested functioned accurately and dependably.

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PREFACE AND ACKNOWLEDGEMENT

This research report is presented in five parts. Part I has been structured to provide police officers and administrators, public officials and others concerned with traffic safety with an informal summary of information emerging from the PBT field evaluation. Part I was prepared by Forst Lowery, Project Director, Hennepin County ASAP; Richard A.Mons, Deputy Director, Hennepin County ASAP; Duane M. Kramer, Training officer, Minnesota State Patrol; and David A. Schaefer, St. Louis Park Police Department.

Parts II through V were prepared by the Evaluation Section of the Hennepin County ASAP, Professor Vernon E. Weckwerth, Principal Investigator. Part II is a detailed analysis and discussion of PBT field evaluation data. Part III is a report on maintenance and performance problems encountered with the PBT. Part IV examines the attitude of officers, PBT calibrators, and supervisory personnel toward the breath testing device and the concept of pre-arrest screening. Finally, Part V reports the findings of a controlled comparison of PBT assisted arrest rates with arrests resulting from more traditional police procedures. Authors are Stuart D. Rosen, Assistant Director of Evaluation; Bruce H. Sielaff, Research Fellow; and Floyd Romslo, Director of Evaluation, Hennepin County ASAP. The latter are staff of the Program in Hospital and Health Care Administration, School of Public Health, University of Minnesota, Minneapolis, Minnesota.

The interested reader will find a brief description of Hennepin County in Appendix M of this report.

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PART I

Administrative Summary Of Highlights: Field Evaluation
Of Portable Breath Testing Devices

Administrative Summary Of Highlights: Field Evaluation Of Portable Breath Testing Devices

Introduction

The first phase of field evaluation for portable breath test (PBT) devices was conducted in Hennepin County, Minnesota as a part of the Hennepin County Alcohol Safety Action Project (ASAP) under a contract with the U. S. Department of Transportation.

Thirteen Borg Warner J2 and J2A devices were deployed beginning April 4, 1973 with seven different enforcement agencies participating. These agencies include the Minnesota State Patrol, the Hennepin County Sheriff's Department, and the police departments of Minneapolis, Brooklyn Park, Golden Valley, St. Louis Park and Richfield.

Minnesota law permits requiring a preliminary screening test "When a police officer has reason to believe from the manner in which a driver is driving, operating, or actually controlling...that such driver may be violating (the drunken driving law)". Implied consent applies to screening as well as evidentiary tests. Above .05 BAC is relevant evidence and .10 BAC or above is illegal per se.

Devices for preliminary screening tests must be approved by Minnesota Commissioner of Public Safety. Specifications and standards have been established. The Breathalyzer (because it is used for preliminary tests in the ASAP vans) and the Borg Warner units have been approved.

Because the field evaluation was conducted in as near to real world conditions as possible, each participating department was free to establish its own policies regarding use of the PBT in various situations. Some departments direct officers to use the PBT in all DWI cases when it was available; others did not use it if the case was "obvious" and the officer would make a DWI arrest anyway, reserving PBT tests for circumstances when there was a question in the officer's mind.

This variation in use policy, plus a controlled study now under way, will enable the project to gather more information about the effect of PBT use under various conditions and policies.

Tests Given

Through August, more than 1200 PBT tests were administered. Of these, 48 percent showed over .10 BAC, 33 percent showed between .05 and .10, and 19 percent showed .05 or under (red, amber and green lights displayed).

Lower Average BAC At Arrest

The average BAC in arrests based on PBT use was .14 as contrasted with a .18 average BAC in arrests made without using a PBT. These averages were drawn from all PBT based arrests against all other (non-PBT) DWI arrests in Hennepin County in the same period. It should be noted that an even greater difference would appear if PBTs had been used only when the officer was in doubt.

High BAC Surprises

The PBTs have effectively demonstrated to many officers that without a screening test outward appearances and even physical performance tests would have led them to pass up some seriously impaired drivers. Debriefing sessions almost always reveal that officers have been frequently surprised when a suspect who failed the PBT but "didn't look too bad" later blew a high Breathalyzer BAC (e.g., .18, .19, and even in the point-twenties).

PBT vs Performance Tests

Whenever possible officers were asked to give the conventional physical performance tests--balance, walking heel to toe, and touching finger to nose. The balance test was given in association with 478 of 893 PBT tests. Of these 478, 240 received "fail" readings on the PBT. Among those who failed, 62 percent had been rated "good" or "fair" in balance! The proportion of PBT-fails rated "good" or "fair" on the other performance tests, were 58 percent in walking, and 57 percent in finger-to-nose.

Increased Number Of Arrests

In the period April through July those departments which had at least one PBT available to them increased their DWI arrests 62 percent in 1973 compared with same period 1972. (1,807 vs 1,113). All other Hennepin County departments increased their DWI arrests in the comparable periods 23 percent (644 vs 522).

	DWI Arrests Apr-July,73	DWI Arrests Apr-July,72	Change
ASAP-PBT equipped	1807	1113	62%
ASAP, No PBT	344	258	33%
Non-ASAP, No PBT	300	264	14%
All-No PBT	644	522	23%

It should be noted that those departments identified as "PBT-equipped" were in no sense fully so equipped. Each enforcing agency had only two devices except Minneapolis which had up to four at any given time and the State Patrol which had only one. Squads which did not carry a PBT could, and did, call for assistance from a PBT-equipped squad, however, so the devices were used by squads which did not have them on direct assignment. The intent was to use the non-PBT-equipped departments as a control. However, they were not informed of this and it was soon apparent that the departments were informally asking the help of PBT-equipped squads in adjacent communities. Since ASAP is an "action" project and is not engaged in pure research, as such, no attempt was made to stop these assists. The number of such assists was not great, but the demand for more PBT units has been. The non-PBT-equipped departments have been assured that they will have an opportunity to use the portable breath testers.

Maintenance

At the beginning of the field testing program many devices encountered maintenance problems; however, these were generally minor (e.g., burned out light bulbs, broken connectors, etc.). The majority of these problems could be corrected in the field or at a central agency and the units were generally returned to service within one day. (The manufacturer has played an active role in diagnosing problems and has changed the production model to defeat minor maintenance problems). In all, the reliability of the device would rate "high" based upon five months use.

Accuracy

The devices appear to be sufficiently accurate; however, the accuracy of the device is largely dependent upon the calibration. Calibration is accomplished by setting the device to fail with a .11 simulator solution. At this point of calibration, about three to five percent of the fail readings will be below .10. By increasing the simulator solution to .13 BAC a lower number of "false-positives" would be made; however, it is possible that drivers with.10 and .11 BACs would not be detected or arrested.

Questionnaire Response

Both police administrators and line officers rate the device as being very useful and contributing greatly to traffic safety. Both groups also rate the need for such devices as being very high.

Line officers have only one complaint: the difficulty in obtaining an adequate sample of breath. However, the line officers seem to be split as to whether this occurs frequently or rarely. Those that feel it occurs rarely generally note that the incidence of this difficulty decreases as they become more familiar with the device.

Perhaps the best summary is, as one officer wrote, "The devices will be recognized as an ordinary tool for each patrol car to have. (They) will be accepted as an accurate device by both the police officer and the public."

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* This section (Administrative Summary of Highlights) was prepared in early September, 1973 to provide information to Hennepin County ASAP, Minnesota Department of Public Safety, National Highway Traffic Safety Administration, and other interested parties, such as the International Association of Chiefs of Police, as soon as useful data emerged. There are minor differences between data reported in this section and that reported in subsequent sections. These differences are not significant, are the result of error correction during data analysis, and do not alter the conclusions tentatively arrived at in this preliminary summary.

PART II

Analysis And Discussion Of Portable Breath Testing
Device Field Evaluation Data

S U M M A R Y

In a study of the operation and utility of portable breath testing (PBT) devices, thirteen Borg Warner A.L.E.R.T. units were distributed to seven Hennepin County police departments for general field use.

This study was conducted over a four month period, beginning April 4 and ending July 31, 1973. During this period, squads using the PBT were required to complete a data sheet on each alcohol related stop (i.e., suspected DWI) and a summary sheet detailing patrol activities for each PBT-shift.

PBT carrying squads made a total of 2480 traffic stops during the study, of which 978 involved a suspected intoxicated driver. Thirty-seven percent of the 978 stops were made during the week and sixty-three percent on the weekend. Nearly seventy-three percent occurred between midnight and 4 a.m., and twenty-three percent between 8 p.m. and midnight.

The most commonly reported reason for stopping a suspected intoxicated driver was erratic driving (47%), followed by speeding (13%), and faulty equipment (7%).

The A.L.E.R.T. unit was employed in 898 of the "suspected" driver stops. Forty-eight percent of the PBT tests resulted in a fail (BAC $\geq$.11%), thirty-three percent in a warn, and nineteen percent in a pass. Of those failing the PBT, eighty-one percent were charged with DWI, approximately two percent received another charge, and seventeen percent were not charged.

A total of 341 evidentiary tests were reported by participating departments; 298 involving drivers arrested on the basis of a PBT fail, and 43 on the basis of officer's judgment and/or physical signs test results. The average BAC for PBT-fail related evidentiary tests was .14% and .18% for all other tests.

Use of the PBT units resulted in 37 "false positives"; that is drivers failing the PBT but passing the evidentiary test with a BAC reading less than .10%. Data indicated that this could not be attributed to the time lag between PBT and evidentiary tests.

Finally, a comparison of officer's rating of driver performance on physical signs tests and PBT test results indicated that physical signswere an unreliable indicator of driver

(S U M M A R Y C O N T' D)

intoxication. For example, of those drivers failing (BAC $\geq$ .11%) the PBT nearly sixty-two percent had been rated "good" or "fair" in performance on the balance test. The inadequacy of physical performance tests is also indicated by the percent rated "good"-"fair" who then failed the PBT; for example, forty percent of the motorists performing satisfactorily on the balance test received a PBT-fail reading.

*METHODOLOGY

The study was conducted over a four month period, beginning April 4 and ending July 31, 1973.

Seven Hennepin County police departments participated. They were:

Brooklyn Park
Golden Valley
Hennepin County Sheriff
Minneapolis
Minnesota State Patrol
Richfield
St. Louis Park

The PBT utilized in the study was the Borg Warner A.L.E.R.T. This unit employed a light-indicator to signal the presence and level of alcohol intoxication. This system can be calibrated to selected BAC ranges. In this study the PBT was calibrated to indicate a pass for BAC levels less than .06%. Blood alcohol levels greater than .06% but less than .11% triggered a warn light, and a fail was indicated for BAC of.11% or more.[1]

Twenty A.L.E.R.T. units were available for use in the study. Thirteen were distributed to the participating departments; two each, with the exception of the State Patrol which received only one PBT unit. The remaining seven PBT devices were held in

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[1]Under Minnesota law it is illegal to drive with a BAC of.10% or greater. The PBT units were calibrated for a fail at .11% to minimize the possibility of arresting "border line cases" (i.e., .10%) who might, due to alcohol metabolism, have BAC readings below .10% by the time of the evidentiary test 30 to 60 minutes later.

*This report was completed October 2, 1973.

reserve as a contingency for field-unit malfunctions, and for use in public information programs.

Each of the A.L.E.R.T. units in field use was recharged and correct calibration verified on a daily basis by the participating departments. In each department, this task was conducted by a two-man team of certified Breathalyzer operators. These officers had received special training in the calibration and operation of the A.L.E.R.T. in a class prepared by ASAP in conjunction with the State Bureau of Criminal Apprehension. This course was conducted during the last week of March.[2]

In addition to maintaining the PBT devices, each two-man team was responsible for training officers in their respective departments in the use of the portable breath testers. The performance of each team was reviewed by the ASAP Enforcement Co-ordinator during a round of department checks during the first weeks of the study.

The participating departments were encouraged to make maximum use of their PBT units in the field during all time periods, but particularly during the evening hours when alcohol involvement

[2] Minnesota law permitting a preliminary screening test does not require a specific amount or kind of training before an officer can employ a PBT device.

in accidents is greatest.

Each department was responsible for assigning available PBT units to squads during day and evening shifts. Each of the squads assigned a PBT was required to complete a set of color coded forms which provided information on patrol activities, PBT utilization, and the results of A.L.E.R.T. unit and evidentiary tests during their shift. A copy of each form, Operator Summary For Shift and Screening Test Report Form and Check List, is contained in Appendix B and C, respectively. These forms were turned in at the end of a shift and sent to the ASAP Enforcement Co-ordinator for coding and data system entry.

Patrol summary data indicates that the A.L.E.R.T. units were field tested in a total of 584 patrol shifts for a minimum of 2212 patrol hours with an average shift length of 5.09 hours.[3] During these shifts, a total of 2480 traffic stops were made, 978 involving a suspected drunk driver. In 898 of the "suspected driver" stops the portable breath testing units were employed to determine whether the driver was

[3] This is the minimum total patrol hours based on complete reports from only 434 of the 584 patrol-shifts.

illegally intoxicated. In the remaining eighty stops the officer used his own judgment and/or physical sign tests to make this determination. For detailed information on dates, times, charges and other associated data for the 978 "suspected" driver stops, the interested reader is referred to Appendix A.[4]

A distribution of patrol activities for the 2480 total traffic stops made by PBT carrying squads is displayed in the table below.

PBT USED-RESULTED IN ARREST	398
PBT USED-DRIVER RELEASED	500
PBT TEST REFUSED-DRIVER ARRESTED	28
PBT TEST REFUSED-DRIVER RELEASED	8
PBT NOT USED-DRIVER ARRESTED	66
PBT NOT USED-DRIVER RELEASED	101
UNSPECIFIED STOP ACTIVITY-NON PBT	1379
TOTAL STOPS MADE BY PBT SQUADS	2480

4 Due to missing data, information is presented in Appendix A for only 975 "suspected" driver stops.

F I N D I N G S

PBT READING BY TIME OF STOP

The Portable Breath Tester (PBT) was utilized in 898 of the 975 DWI suspected traffic stops. A distribution of the PBT test readings by time of stop is contained in Table 1. The figures show that twenty-two percent of the PBT tests were conducted between 8 p.m. and midnight, and sixty-eight percent between midnight and 4 a.m.

For all PBT tests forty-eight percent resulted in a fail, thirty-three percent in a warn, and nineteen percent in a pass. However, between midnight and 4 a.m. fifty-two percent of the tests resulted in a fail, in contrast to a fail rate of forty-five percent for tests conducted between 8 p.m. and midnight.

PBT READING BY DEPARTMENT

The distribution of PBT readings by participating departments is displayed in Table 2. As can be seen, there was considerable variation in the proportion of PASS-WARN-FAIL readings reported by the different departments. For example, Brooklyn Park and Minneapolis had a relatively low fail rate of thirty-five and thirty-four percent, respectively. In comparison, the fail rate for both Richfield and St. Louis Park was approximately sixty-eight percent.

Table 1

PBT Reading by Time of Day

Time (24 Hour Clock)	PBT Reading						
	Pass		Warn		Fail		
	Number	%	Number	%	Number	%	Total
0001 - 0400	92	15.1%	203	33.4	313	51.5%	608
0401 - 0800	0	0.0%	5	41.7%	7	58.3%	12
0801 - 1200	0	0.0%	2	33.3%	4	66.7%	6
1201 - 1600	2	50.0%	1	25.0%	1	25.0%	4
1601 - 2000	3	23.1%	3	23.1%	7	53.8%	13
2001 - 2400	57	28.8%	52	26.3%	89	44.9%	198
Time not Reported	16	28.1%	29	50.9%	12	21.0%	57
Total	170		295		433		898

Table 2

PBT Reading by Department

	PBT Reading						
	Pass		Warn		Fail		
	Number	%	Number	%	Number	%	Total
Brooklyn Park	21	16.0%	64	48.9	46	35.1%	131
Golden Valley	45	28.1%	58	36.3%	57	35.6%	160
Henn. County Sheriff	29	20.6%	56	39.7%	56	39.7%	141
Minneapolis	26	27.4%	37	38.9%	32	33.7%	95
Richfield	16	15.1%	18	17 %	72	67.9%	106
St. Louis Park	21	10.4%	45	22.4%	135	67.2%	201
Minn. State Patrol	12	21.4%	13	23.2%	31	55.4%	56
Misc.	0	0.0%	4	50.0%	4	50.0%	8
Total	170		295		433		898

The proportion of PBT pass readings was twenty-eight percent in Golden Valley and twenty-seven percent in Minneapolis. However, only ten percent of the PBT tests in St. Louis Park and fifteen percent in Richfield resulted in a pass.

The proportion of warn readings was highest in Brooklyn Park, forty-nine percent, and lowest in Richfield, seventeen percent. [5]

PBT READING BY REASON FOR STOP

The relationship of PBT test results to reason for stop is presented in Table 3. It is apparent that the reason category with the highest fail rate was erratic driving & speeding, with nearly seventy-eight percent. This was followed by assisting other officer (63%), accident scene (60%), and erratic driving (50%). In contrast to these categories, drivers stopped for faulty equipment failed the PBT in only seventeen percent of the tests.

PBT READING BY CHARGE

Table 4 examines the relationship between PBT reading and the charge brought against the driver. The data show that in fifty-six percent of the 898 PBT tests the driver was not charged. Forty percent of the tests were associated with a charge of DWI and five percent with some other charge.

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[5] A possible factor contributing to these widely varied rates may be departmental policy in the use of the PBTs. For example, a department may follow the policy of providing a preliminary test in every case of traffic violation and thus administer the test to a greater number of non-intoxicated drivers who were stopped for charges such as speeding. Other departments may follow a different policy and utilize the tests only where drunken driving is suspected.

Table 8

Reason for Stop by PBT Reading

	PBT Reading						
	Pass		Warn		Fail		
	N	%	N	%	N	%	Total
Equipment Failure	27	42.9%	25	39.7%	11	17.5%	63
Erratic Driving	68	16.5%	135	32.8%	209	50.7%	412
Failure to Dim Lights	5	19.2%	12	46.2%	9	34.6%	26
Speeding	31	27.2%	41	36.0%	42	36.8%	114
Speeding & Erratic Driving	2	4.0%	9	18.0%	39	78.0%	50
Assist Other Officers	4	6.7%	18	30.0%	38	63.3%	60
Accident Scene	7	14.0%	13	26.0%	30	60.0%	50
Other	23	21.3%	36	33.3%	49	45.4%	108
TOTAL	167		289		427		883

Table 4

PBT Reading by Charge

Charge	PBT Reading						
	Pass		Warn		Fail		
	N	%	N	%	N	%	Total
DWI	2	.6%	4	1.1%	351	98.3%	357
Other	11	26.8%	20	48.8%	10	24.4%	41
Not Charge	157	31.4%	271	54.2%	72	14.4%	500
Total	170		295		433		898

Eighty-one percent of those failing the PBT were charged with DWI, approximately two percent received some other charge, and seventeen percent were not charged, despite the fail.

It is not clear why the officers did not make an arrest when the subjects had failed the PBT test; two possible explanations are available. First, the test may have been administered after an accident which the officer did not witness. In this case, the officer cannot make an arrest unless a witness is willing to make a citizen's arrest. However, an examination of the data shows that only eight percent involved an accident. Surprisingly, the largest proportion of non-arrest cases, forty-three percent, involved a stop for reason of erratic driving, another fifteen percent involved assistance to another officer, and nineteen percent other unspecified reasons.[6] The second possible explanation is that the officer was either still not convinced that the driver was intoxicated (see page 16), or was unwilling to make the arrest for other reasons. (For example, some officers are reluctant to process the arrest when they doubt that it will stand up in court.[7] This would likely be the case

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6 Due to incomplete data on reasons for stop these percentages are based on sixty-seven of the seventy-two PBT-fail non-arrest cases.

7 In view of the importance of PBT-fail non-arrest cases a further investigation of this matter is being conducted. Factors being considered are officer involved, duty type (i.e., ASAP vs non-ASAP), time of test, and PBT device involved.

when the reason for the stop is not directly related to driving behavior such as faulty equipment). In the latter case, it is evident that the device will not replace the officer's discretion.

PBT READING BY PHYSICAL SIGNS

Physical signs of alcohol intoxication are frequently an officer's basis for arresting a motorist for DWI. The physical signs commonly looked for are impairment in balance, ability to walk a straight line, and touching the nose with the finger. Table 5 contains the cross-tabulation of physical test results by PBT reading for those cases in which the officer administered both.

The data suggests that physical signs may not be a reliable indicator of true driver intoxication. For example, in the balance test forty percent of the motorists receiving a rating of "good" or "fair" failed the PBT (BAC $\geq$ .11%). The proportion performing satisfactorily in the walking and finger-nose tests but failing the PBT are equally disturbing; thirty-nine and thirty-eight percent, respectively. Only when the motorist performs poorly is there a high probability (approximately eighty-two percent on all three tests) of failing the PBT.

The inadequacy of physical test performance as an indicator of intoxication is even more striking when the data is examined in terms of physical test ratings given to drivers who failed

Table 5

PBT Reading by Physical Sign Test

Plysical Test	PBT Reading						
	Pass		Warn		Fail		
Balance	N	%	N	%	N	%	Total
Good	52	42.3%	51	41.5%	20	16.3%	123
Fair	22	9.0%	94	38.5%	128	52.5%	244
Poor	10	9.0%	10	9.0%	91	82.0%	111
							478
Walking							
Good	54	40.9%	57	43.2%	21	15.9%	132
Fair	21	9.4%	85	37.9%	118	52.7%	224
Poor	9	7.4%	11	9.1%	101	83.5%	121
							477
Finger to Nose							
Good	37	38.1%	43	44.3%	17	17.5%	97
Fair	16	10.6%	58	38.4%	77	51.0%	151
Poor	7	8.0%	8	9.2%	72	82.8%	87
							335

the PBT (BAC $\geq$.11%). For example, the proportion of PBT fails receiving a rating of "good" or "fair" on the balance test was sixty-two percent. For the walking and finger to nose tests the corresponding percentages were fifty-eight and fifty-seven percent, respectively.

PHYSICAL SIGNS BY BAC

The unreliability of physical signs is also demonstrated by the comparison of performance ratings with BAC readings obtained on drivers administered an evidentiary test. The data presented in Table 6 shows that if an officer had arrested only those drivers rated as "poor" on one of the physical sign tests a large percentage of the motorists who were illegally intoxicated (BAC $\geq$.10%)would not have been arrested. Of those drivers with a BAC of .10% or greater, less than half or forty-one percent were rated "poor" on the balance test. The percentage for finger-nose and walking tests were forty-four and forty-nine percent, respectively.

Table 6

BAC Reading by Physical Sign Test

	.05		.050-.099		.100-.149		.150-.199		.200-.300		Total
	N	%	N	%	N	%	N	%	N	%	
Balance											
Good	0	0.0%	2	20.0%	5	50.0%	3	30.0%	0	00.0%	10
Fair	6	5.3%	14	12.4%	44	38.9%	33	29.2%	16	14.2%	113
Poor	3	3.9%	3	3.9%	28	36.4%	24	31.2%	19	24.7%	77
											200
Walking											
Good	0	0.0%	2	22.2%	5	55.6%	2	22.2%	0	00.0%	9
Fair	5	5.0%	12	12.0%	42	42.0%	31	31.0%	10	10.0%	100
Poor	4	4.3%	5	5.3%	32	34.0%	28	29.8%	25	26.6%	94
											203
Finger to Nose											
Good	0	0.0%	2	22.2%	4	44.4%	2	22.2%	1	11.1%	9
Fair	2	2.8%	7	9.9%	30	42.3%	25	35.2%	7	9.9%	71
Poor	5	7.6%	6	9.1%	20	30.3%	22	33.3%	13	19.7%	66
											146

EVIDENTIARY TEST RESULTS

Table 7 displays the distribution of evidentiary test blood alcohol readings for all Breathalyzer, urine and blood tests reported in association with the PBT study. The figures show that eighty-seven percent of the 341 chemical tests had equaled or exceeded the .10% illegal-to-drive limit set by the State of Minnesota. A large segment of the evidentiary readings, nearly fifteen percent, were in the.20-.30 BAC range indicating high levels of alcohol intoxication.

The 341 evidentiary tests were distributed as follows:

ASSOCIATED WITH PBT FAIL	298
ASSOCIATED WITH PBT WARN	3
ASSOCIATED WITH PBT PASS	1
ASSOCIATED WITH ARREST MADE WITHOUT PBT TEST	39
TOTAL	341

The average chemical test BAC for DWI arrests made during the study without the PBT was .179%, almost identical to the .17% figure reported for all DWI arrests in Hennepin County during the last three quarters of 1972. In contrast, the average BAC for evidentiary tests associated with a PBT fail reading is.14%.[8] This is an encouraging finding. It indicates that the A.L.E.R.T. identifies intoxicated drivers (BAC$\geq$.11%) who may be missed by other methods if the driver evidences few behavioral signs of his intoxication.

[8] The difference in average BAC for PBT fail related (.141%) and all other tests (.179%) is statistically significant: $t=3.45$, $p \leq .002$.

Table 7

Evidentiary Test Results

BAC	Number	%
Negative	2	0.6%
.001 - .049	11	3.2%
.050 - .099	29	8.5%
.100 - .149	137	40.2%
.150 - .199	111	32.6%
.200 - .300	51	15.0%
Total	341	100.0%

FALSE POSITIVES

Cases in which a driver fails the PBT test but shows an evidentiary test BAC of .10% or under are referred to as "false positives". These apparently erroneous PBT readings are of considerable concern. They reflect on the reliability of the portable breath testing unit, and may result in the unjustified arrest of non-intoxicated drivers.

These false positive results have another very serious implication. As was noted in one community, the officers' faith in the devices was seriously shaken by the incidence of "false positive" results. The credibility of the devices is largely dependent upon the reliability of the results. This is understandable when one recognizes the officer's misgivings when he has to explain to a motorist whose car has been towed and who knows he is sober that "it was all a mistake." After being "burned" once or twice, the officer may be especially reluctant to follow through with an arrest when only the device supports such an action.

Table 8 displays the relationship between PBT readings and evidentiary test blood alcohol concentrations. This data indicates that there were thirty-seven false positives in the course of the study. This total represents twelve percent of all evidentiary tests run for PBT-fail related arrests, and four percent of all PBT tests run during the study. Eleven

Table 8

PBT Reading by Evidentiary Test Result

BAC	PBT Reading			Total
	Pass	Warn	Fail	
< .05	1	0	11	12
.050 - .099	0	1	26	27
.100 - .149	0	1	129	130
.150 - .199	0	0	95	95
.200 - .300	0	1	37	38
Total	1	3	298	302

of the false positives involved drivers with evidentiary BAC readings below .05% and twenty-six with readings between .05% and .099% BAC.

There was some variation in the incidence of false positives by department; this is illustrated in Table 9 which shows the distribution of PBT-fail related evidentiary tests by police department. As can be seen, the number of false positives varied from zero in Minneapolis to a high of twenty in St. Louis Park. The unusual number of erroneous readings in St. Louis Park represented nearly eighteen percent of the total PBT-fail related evidentiary tests reported by the department and ten percent of the PBT tests it reported running during the study.

A partial explanation for the number of false positives in St. Louis Park can be found in the distribution of false positives by A.L.E.R.T. unit presented in Table 10. One or more false positives was reported for each of the thirteen PBT units in field use. However, thirty-two percent of the erroneous readings were reported for a single unit, PBT #213, which was one of the units assigned to St. Louis Park. Field reports indicate that many of the false-positive readings from this PBT can be attributed to a malfunction of instrument components.

There are several possible explanations for the occasional occurance of false positive readings in the other A.L.E.R.T.

Table 9

PBT-Fail Related Evidentiary Tests by Department

	BAC										
	.05		.050-.099		.100-.149		.150-.199		.200-.300		Total
	N	%	N	%	N	%	N	%	N	%	
Brooklyn Park	0	0.0%	2]	5.9%	17	50.0%	9	26.5%	6	17.6%	34
Golden Valley	1	2.2%	3	6.5%	23	50.0%	16	34.8%	3	6.5%	46
Henn. Co. Sheriff	3	15.8%	1	5.3%	8	42.1%	5	26.3%	2	10.5%	19
Mpls.	0	0.0%	0	0.0%	7	28.0%	10	40.0%	8	32.0%	25
Richfield	0	0.0%	4	11.1%	22	61.1%	8	22.2%	2	5.6%	36
St. Louis Park	7	6.3%	13	11.6%	39	34.8%	40	35.7%	13	11.6%	112
Minn. State Patrol	0	0.0%	3	12.5%	13	54.2%	5	20.8%	3	12.5%	24
Misc.	0	0.0%	0	0.0%	00	0.0%	2	100.0%	0	0.0%	2
Total	11		26		129		95		37		298

Table 10

False Positives by A.L.E.R.T. Unit

PBT Serial Number	Frequency
103	1
115	1
119	3
121	1
201	2
212	1
213	12
220	1
221	2
222	4
224	3
227	4
228	2

units, other than a mechanical malfunction.[9]

One would be the presence of mouth alcohol in the stopped driver. In administering a PBT test the officer is not required, as he is in Breathalyzer tests, to have the driver in his presence a minimum of twenty minutes to permit the evaporation of mouth alcohol. Unless the driver admitted to drinking just prior to being stopped, it is likely that a PBT test would be administered shortly after the stop and that it would reflect the presence of alcohol in the mouth.

Table 11 displays the evidentiary test BAC readings associated with false-positives reported for each of the A.L.E.R.T. units. The presence of mouth alcohol, and resulting erroneous PBT reading, could explain the ten evidentiary tests with BAC readings in the .01-.049% range, considerably below the .06% cut-off for a pass indication on a properly calibrated PBT.

The presence of mouth alcohol might account for several of the false positives with BAC readings in the .05-.099% range. Other possibilities are mis-calibration or the time lag between PBT and evidentiary test which, in "border-line cases" (BAC=.10-.11%) would allow for the metabolism of sufficient alcohol to bring a blood or Breathalyzer test below the .10% value.

Data bearing on the problem of time-lag is presented in Tables 12 and 13 which display the distributinn of time-lag in minutes between PBT and associated evidentiary tests. For the group as a whole,

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[9] A discussion of maintenance problems encounted with the PBT can be found in Part III of this publication.

Table 11

A.L.E.R.T. Unit False Positives by Evidentiary Test BAC

PBT Serial Number	BAC List		
	Negative	.010 - .049	.050 - .099
103	0	0	1
115	0	1	0
119	0	0	3
121	0	0	1
201	0	0	2
212	0	1	0
213	0	2	10
220	0	1	0
221	0	1	1
222	0	0	4
224	0	1	2
227	0	2	2
228	0	1	1
Total	0	10	27

Table 12

Time Lag in Minutes between PBT and Evidentiary Test

Minutes	BAC Range					
	.00-.049	.05-.099	.10-.149	.15-.199	.20-.30	Total
91-150	0	0	3	1	0	4
76- 90	1	0	1	2	1	5
61- 75	0	1	9	6	3	19
46- 60	0	1	24	12	5	42
31- 45	0	7	29	23	10	69
16- 30	5	10	23	26	6	70
0- 15	1	2	21	8	3	35
Total	7	21	110	78	28	244

Table 13

Time Lag in Minutes between PBT and Evidentiary Test

	BAC									
	.00 - .099		.10 - .149		.15 - .199		.20 - .30		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
> 60	2	7.1%	13	11.8%	9	11.5%	4	14.3%	28	11.5%
31 - 60	8	28.6%	53	48.2%	35	44.9%	15	53.6%	111	45.5%
0 - 30	18	64.3%	44	40.0%	34	43.6%	9	32.1%	105	43.0%
Total	28	100.0%	110	100.0%	78	100.0%	28	100.0%	244	100.0%

time-lag for 105 of 244 paired tests, or forty-three percent, was thirty minutes or less.[10] In forty-six percent of the tests the time-lag varied between thirty and sixty minutes. In only twenty-eight tests, representing just twelve percent of the total, was the time-lag more than one hour; a period of time sufficient to bring a border line PBT fail below the .10% level.[11]

False positives are combined in the first column of Table 13. It can be seen that in only two of the false positives with time-lag data was the priod between PBT and evidentiary test in excess of sixty minutes. In the majority of false positives, sixty-four percent, time-lag is thirty minutes or less.

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10 This data is for PBT fail subjects only. Due to incomplete time-of-test data, time-lag information is provided for only 244 of the 298 PBT fail tests.

11 Alcohol is metabolized at a fairly constant rate amounting to .015% of the blood alcohol concentration per hour.

PART III

PBT Maintenance And Performance Problems

*PBT Maintenance And Performance Problems

Data relating to PBT battery charging, PBT operation under varying temperatures, mechanical problems, and repair record of the Borg-Warner J-2A-200 series are reviewed in this report. Several minor problems developed during PBT field testing. A majority of these were corrected immediately while other problem areas were eliminated in the newer J-2A-1000 series. Temperature did not appear to cause PBT operating problems.

INTRODUCTION

The objective of this section is to report the maintenance and performance problems experienced with the Borg-Warner ALERT Model J-2A-200 series portable breath test devices. The data in this report was obtained from a number of sources during PBT field testing in Hennepin County, Minnesota. The field testing was began in April of 1973.

Data sources utilized include Operator Screening Test Report Form And Check List and Operator Summary For Shift, Charging and Calibration Logs, and copies of the manufacturer's service records. Numerous verbal communications have also been incorporated in this report.

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*This report was completed January 31, 1974.

FINDINGS

BATTERY CHARGING

A low battery warning light was reported 20 times out of a total of 584 Shift Reports submitted by cooperating police departments.

Number of PBT Tests Before Low Battery Warning	1	2	3	4 - 7	10 - 12	41
Number of Shift Summaries Received	3	2	4	1	1	7	1	1

A review of the Charging and Calibration Logs indicated several causes for the occurance of these low battery readings. In many cases the unit had not been recharged after the last shift. The officer responsible for calibration had noted this and had recharged the PBT for 1 - 3 hours. However, this was insufficient time to reach a fully charged condition. Less frequently, the ALERT unit had been mistakenly connected to the calibration plug rather than the charging plug of the combined calibrator-charger unit.

The type of battery used in the ALERT unit has a characteristic which might also explain a low number of tests per charge. If the batteries are repeatedly recharged after they have been only slightly discharged, the batteries will fail to accept a full charge until they have been discharged well past the point where the battery light comes on. This complete discharge can be accomplished in the field by repeatedly cycling the ALERT unit or in the shop by factory designated procedures.

TEMPERATURE AS AN OPERATING FACTOR

The distribution of outside air temperatures at the time the PBT tests were conducted is displayed in the following table:

Degrees Fahrenheit	Number of Tests Reported	%
71 or above	164	17
51 - 70	387	41
33 - 50	298	31
32 or below	107	11
	956	100

Temperature readings were obtained from nearby thermometers or radio reports. The range of reported temperatures was from 10 to 90 degrees Fahrenheit. A periodic office review of the reporting did not reveal noticeable errors.

The operator chose whether to administer the test in the squad car or in another inside or outside location. A thermometer was attached to the case supplied with each PBT. The temperature at the test location was often recorded from this source although several officers chose to leave the case at the station. The following table indicates the number of cases where a subsequent blood or Breathalyzer test yielded a result lower than .10% (i.e., False Positive) despite the occurance of a FAIL light on the ALERT unit.

Estimated Temperature in Test location	Location of ALERT test	
	In Squad Car	Out of Squad Car
71 or above	6	0
33 - 70	14	2
32 or below	1	2
	21	4

Considering the small number of "false positives" in relation to total test results in each temperature category, it does not appear that this problem is related to temperatures within the range experienced during field testing.

MECHANICAL PROBLEMS

There were no major structural problems with the ALERT Model J-2A-200 series. Minor mechanical problems did develop in two areas, those of fasteners and external breath sampling parts.*

The on-off switch and the multi-contact electrical connectors for charging and calibrating frequently came loose. These were usually tightened in the field and sealed with epoxy glue or silicone cement.

A jumper plug was connected to the PBT charging socket to operate the ALERT unit. These were occasionally pulled out, but this was usually noticed and reconnected in the field, resulting only in annoyance and delay.

External parts of the breath-sampling system were also a common source of problems. The breath sample inlet was constructed of rubber and protruded approximately an inch from the case. Cracks frequently developed on the tube in the area of a small hole which vented a portion of the breath sample.

The exit port consisted of a rubber grommet-like unit with a small metal orifice in the center. This orifice occasionally fell

*These comments refer to the Model J-2A-200 series unit. The manufacturer has incorporated modifications in the J-2A-1000 series which deal with the minor mechanical problems described above. The authors have worked with the 1000 series devices and have observed their operation under field conditions. It is our belief that the modifications have satisfactorily met the problems described in this section of the report.

out or was removed. It was later found in the purge-pump inlet hole on more than one occasion.

A review of the officers' written comments and verbal contacts indicate that the units have survived dropping on the street and to the floors of squad cars after sudden stops. (In one case of a hard drop to the street, problems developed in an internal electrical connector.)

REPAIR RECORD

Records for repairs requiring factory-trained personnel were compared with equipment utilization records for the first three months of field testing. The problems and repairs for fourteen ALERT units which were in active service during all three months are listed below:

Will not calibrate to warn or fail.
Replaced two electronic components.

Inconsistent results. Purge circuit appears inoperative.
Replaced electronic component in purge circuit.

Response to alcohol varies.
Replaced thermostats.

Will not get a ready light.
Retainer missing from relay. Relay replaced, retainer installed.

No ready light.
Burned out bulb replaced.

Ready and test light will not go out when taking sample.
Defective electronic component replaced.

Warn and pass lights come on at the same time.
Replaced electronic component.

These seven breakdowns represent six different instruments. Since there were fourteen instruments each operating during three months, total service time would be forty-two unit-months of experience.

Comparing this time with the seven breakdowns results in an average time between internal breakdowns of six months. This average must be interpreted cautiously since it represents the first three months of service for these units. More recent experience indicates that less frequent repairs have been needed.*

* While records indicate that fourteen units were regularly calibrated and used by the participating departments, not more than thirteen PBT units were in active use during any one night.

PART IV

A Survey Of Police Officer And Supervisory Personnel Attitudes Toward The Portable Breath Testing Device

*A Survey Of Police Officer And Supervisory Personnel Attitudes Toward The Portable Breath Testing Device

INTRODUCTION

Increasing awareness of the drinking-driver problem has focused the attention of law enforcement and traffic safety personnel on the need for reliable and accurate portable breath testers to provide rapid pre-arrest screening of suspected intoxicated drivers.

Since April of 1973, the Hennepin County Alcohol Safety Action Project (HCASAP) has been conducting an evaluation of portable breath testers (PBTs) under the auspices of OAC-NHTSA and the Minnesota Department of Public Safety with the cooperation of local police departments and the Minnesota Bureau of Criminal Apprehension. This evaluation was made possible by the recent availability of PBT devices in various stages of development and DWI laws enacted by the 1971 Minnesota State Legislature which (A) authorized preliminary screening breath tests, and (B) made it illegal to drive at or above .10% BAC.

The HCASAP evaluation of portable breath testers was conducted in two phases. Phase I involved the general field deployment of a PBT device by seven Hennepin County police departments. Through the use of specially designed reporting forms, logs, and questionnaires, data was collected on the following factors:

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*This report was completed December 14, 1973

(1) The utilization of the PBT and the outcome of PBT based DWI arrests.

(2) The attitude of police officers, their supervisors, and PBT calibrators toward the device, and their suggestions for improvement in its design.

(3) Problems encountered in the maintenance and calibration of PBT devices.

Evaluation of the field deployment is fully discussed in Parts I and II. Data analyses indicated that the PBT employed in the study was a highly reliable device which considerably increased arrests in the low-illegal BAC ranges (.10%-.15%) where the officer was least likely to detect intoxication on the basis of physical signs (e.g., finger-nose test).

A discussion of PBT maintenance problems can be found in Part III. Data indicated that difficulties encountered in daily use of the PBT were minimal.

This report presents the findings of an attitude survey of police officers, PBT calibrators and supervisory personnel who had participated in the general field deployment of portable breath testers in Hennepin County. Their assessment of the PBT device and the concept of pre-arrest screening provided needed data on the "users" reaction to portable breath testers and a guide to the reaction such devices might receive in other communities.

METHODOLOGY

Data for this study were questionnaire responses of three separate subject groups. These were: patrolmen, PBT calibrators, and supervisory personnel (e.g., Chief, Captain, Lieutenant or Sergeant). Members of each group had participated in an earlier study of PBT field operation.[1] Questionnaires were mailed to the respective departments of the study participants for distribution, and all subjects were requested to complete their questionnaire and return it to HCASAP.

The content of the questionnaires distributed to each subject group reflected the type of information the project believed each would be best able to provide based on the nature and extent of their contact with the portable breath testing devices.

Questionnaires for patrolmen and supervisory personnel included a series of seven-position (Likert-Type) rating scales. It was hoped this format would optimize both the quantity of data obtained by the project and the ease with which participating police could provide it. The extreme poles of each scale were labeled to indicate opposing reactions to various aspects of the

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1 For a full discussion of the experimental field use of breath testing devices in Hennepin County, the reader is referred to Part II: Analysis and discussion of portable breath testing device field evaluation data.

PBT or to the general concept of pre-arrest screening.[2] An example of this scale is presented below.

THE PBT WE ARE USING (IS):

TOO SMALL 1 2 3 4 5 6 7 TOO LARGE

The respondent was directed to indicate his opinion by circling the appropriate position or number on each scale. Ratings of 1-3 or 5-7 reflected a preference for one or the other of the PBT descriptors. Ratings of 4 were taken to indicate either a neutral reaction (e.g., "The PBT is neither VERY FRAGILE or VERY RUGGED") or a favorable reaction (e.g., "The PBT is neither TOO SMALL nor TOO LARGE").

In addition, positive and negative connotations for poles of adjacent scales were alternated, scores of 1 or 7 indicating favorable aspects of the PBT for one scale but less favorable reactions on the following scale. It was hoped that this would counteract any tendency to perceive 1 or 7 as the "good" or "favorable" end of the continuum.[3]

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2 The portable breath tester being evaluated by the subject groups was the Borg Warner A.L.E.R.T., model J-2A-200.

3 Certain individuals have a tendency to always pick one end of a scale. This "response style" is discouraged by alternating the meaning of scale poles.

Questionnaires mailed to patrolmen contained eighteen rating scales. Three scales concerned the officer's assessment of the public reaction to pre-arrest screening, the reaction he perceived in other patrolmen and the contribution such screening can make to traffic safety. The following thirteen scales were concerned with the physical characteristics, arrest effect, and overall value of the PBT. In addition, a pair of matching scales assessing the NEED (e.g., "OFTEN NEEDED" or "NEVER NEEDED") for such devices were placed at the beginning and end of the scale series to serve as indicators of response consistency or reliability.

Twelve of the eighteen scales contained in the patrolman questionnaire were selected for inclusion in the questionnaire administered to supervisory personnel. These twelve assessed reaction to the concept of pre-arrest screening by patrolmen and the public, and the effect of portable breath testers on the arrest process. Scales concerned with physical characteristics of the PBT (e.g., size, ruggedness) were not included since supervisory personnel generally had insufficient field experience on which to base an accurate evaluation of the devices' construction.

All questionnaires included open-ended questions to which subjects could respond in a few sentences. This format was the only one used in questionnaires mailed to calibrators.

The type of questions presented to each subject group

varied. Patrolmen were asked about problems encountered with the PBT in the field, in particular obtaining a breath sample. Questions were also included on possible improvements in PBT design and recommendations for training officers in the use of portable breath testers.

Supervisory personnel were asked to comment on the PBT concept, inadequacies of the devices and possible improvements. In addition, they were requested to indicate the funding priority PBT devices would receive in their department and the appropriate ratio of PBT devices to night time squads.

Demographic questions concerning department, age, PBT calibration training, Breathalyzer certification, and extent of PBT experience were included in the patrolmen questionnaires but not those of the supervisors or calibrators.

Questionnaires were mailed to 91 patrolmen, 16 calibrators, and 15 management personnel. All departments participating in the initial PBT study were included in this mailing. A total of 84 patrolmen, 14 calibrator and 11 supervisory questionnaires were returned to HCASAP, representing a very high rate of questionnaire completion for all subject groups. Data summarizing the results of this questionnaire mailing are presented in Table 1.

Table 1

Questionnaire Returns By Subject Group

SUBJECT GROUP	NUMBER MAILED	NUMBER RETURNED	PERCENT RETURNED
PATROLMEN	91	84	92%
CALIBRATORS	16	14	88%
SUPERVISORS	15	11	73%
TOTAL	122	109	89%

Data analysis was conducted at a descriptive level. This was necessitated by the frequency-count and qualitative nature of the questionnaire content, and the small numbers of subjects in the calibrator and supervisory personnel groups.

Open-ended question responses were reviewed and similar responses clustered together. Care was taken to determine the frequency with which each response category occurred and to paraphrase the type of response represented so that the respondents thoughts were not significantly altered.

For patrolmen, average ratings were determined for each scale along with the percentage of respondents falling at the following positions on the scale continuum: Values of 1-3, a value of 4, and values of 5-7. In addition, in cases where there appeared to be a sizable dichotomy of opinion (e.g., large percentages rating the PBT as TOO SMALL and as TOO LARGE) scale ratings were cross-tabulated with each of the demographic

variables to determine if ratings were associated with departmental membership, age or any of the other variables for which data was available.

For supervisory personnel, only the numbers of subjects giving a particular response have been indicated. The small size of the subject group made the calculation of percentages or averages inappropriate.

For the interested reader, copies of the questionnaires administered to patrolmen, calibrators, and supervisory personnel are contained in Appendix D through F, respectively.

FINDINGS

PATROLMEN RATINGS

The percentage breakdown and mean ratings assigned by patrolmen to each of the eighteen rating scales is pictorially represented in figures 1A to 18A. Percentages indicate that portion of the group responding with a rating of 1-3, 4, or 5-7. The mean rating is indicated both numerically and by a point on the Likert-Type rating scale. The total number of times each scale position was selected is shown in Appendix G.

Ratings of the physical characteristics and operation of the PBT devices (FIG. 1A - 7A, 11A - 13A) tend to be highly favorable.

Approximately eighty-three percent of the patrolmen feel the device is neither too large or too small (Fig. 1A).

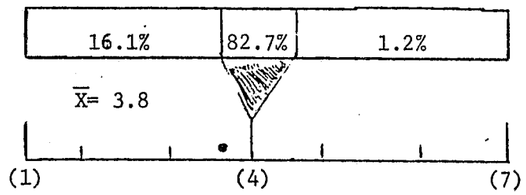
Ninety-one percent feel it is neither too light or too heavy (Fig. 2A).

Eighty-four percent find the PBT easy to read (Fig 4A).

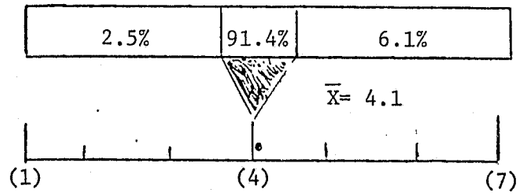
Seventy-seven percent state that the PBT is easy to operate and only nine percent said PBT operation was difficult (Fig. 5A). Similarly, seventy-four percent claimed it was convenient to operate and only nine percent felt otherwise (Fig. 6A).

There was a dichotomy of opinion on the ruggedness (Fig. 3A) and speed of operation (Fig. 7A) of the PBT. Only twenty-two percent of the patrolmen rated the PBT as rugged, thirty-five percent were neutral (4) and forty-three percent rated it as very fragile.

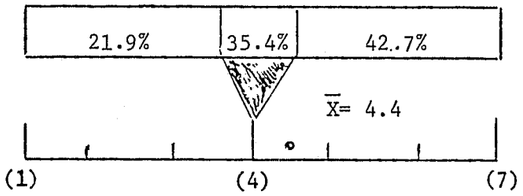
1A TOO LARGE — TOO SMALL



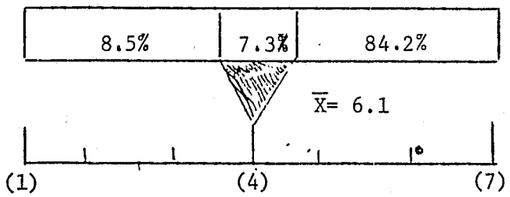
2A TOO LIGHT — TOO HEAVY



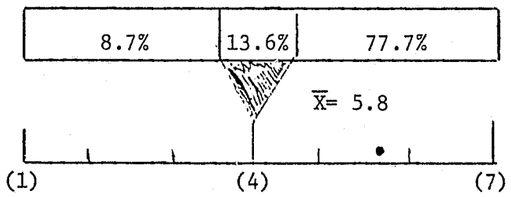
3A VERY RUGGED — VERY FRAGILE



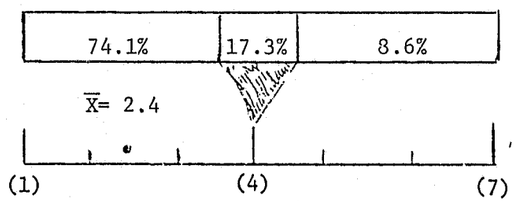
4A DIFFICULT TO READ — EASY TO READ



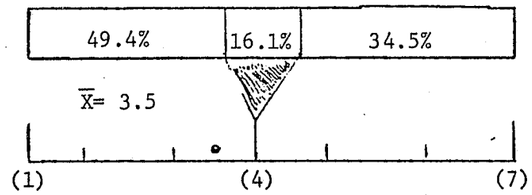
5A DIFFICULT TO OPERATE — EASY TO OPERATE



6A CONVENIENT TO OPERATE — INCONVENIENT TO OPERATE

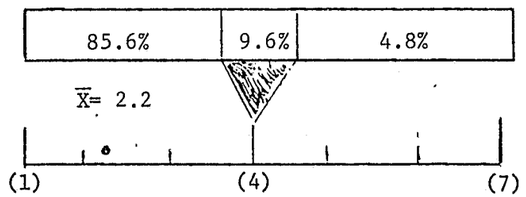


7A QUICK TO OPERATE



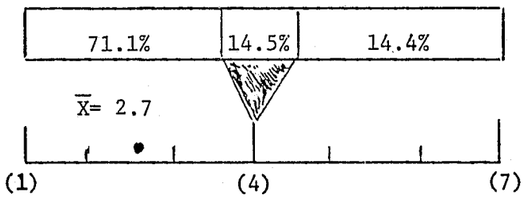
SLOW TO OPERATE

8A CAN CONTRIBUTE GREATLY TO TRAFFIC SAFETY



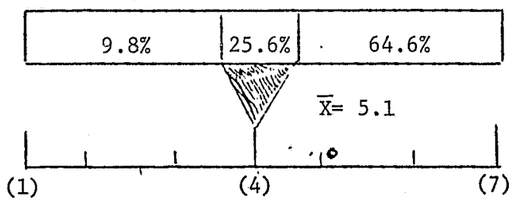
CAN CONTRIBUTE NOTHING TO TRAFFIC SAFETY

9A WORTHWHILE



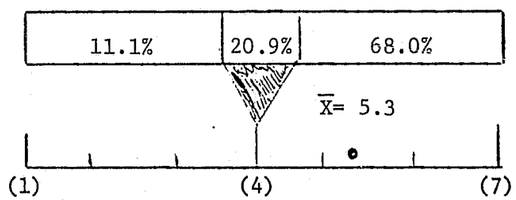
WORTHLESS

10A AN EXTRAVAGANCE



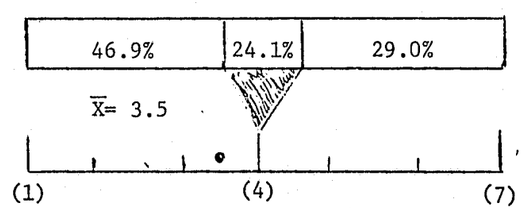
A NECESSITY

11A COMPLICATES DWI ARRESTS



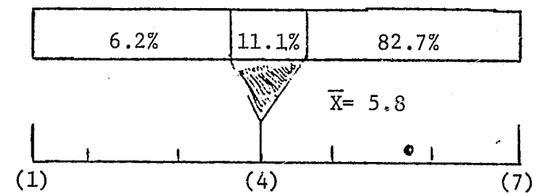
SIMPLIFIES DWI ARRESTS

12A SPEEDS DWI ARRESTS



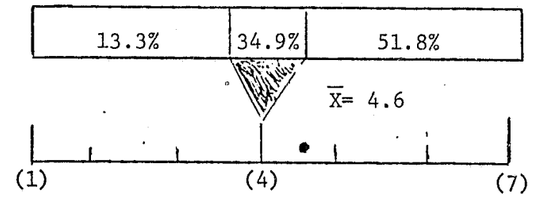
SLOWS DWI ARRESTS

13A WILL DECREASE ARRESTS



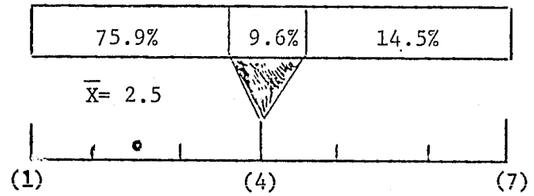
WILL INCREASE ARRESTS

14A WILL BE STRONGLY OPPOSED BY THE MOTORING PUBLIC



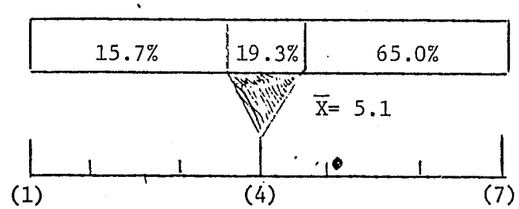
WILL BE HIGHLY ACCEPTED BY THE MOTORING PUBLIC

15A WILL BE WIDELY ACCEPTED BY POLICE OFFICERS



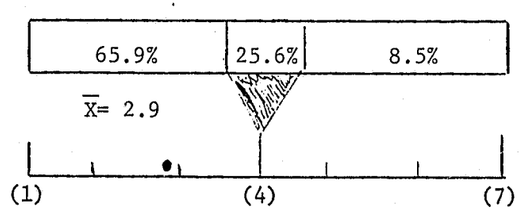
WILL NOT BE ACCEPTED BY POLICE OFFICERS

16A DISLIKED



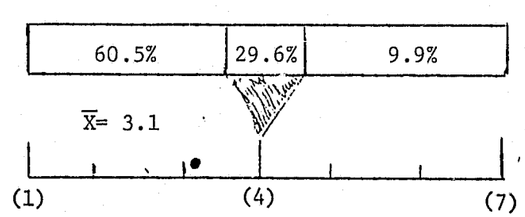
LIKED

17A OFTEN NEEDED



NEVER NEEDED

18A OFTEN NEEDED



NEVER NEEDED

On the question of how quickly the PBT operated (Fig. 7A) forty-nine percent said that it was quick to operate, sixteen percent were neutral, and nearly thirty-five percent felt that it was slow to operate.

A dichotomy of opinion is also seen on the question of whether the PBT speeds DWI arrests or slows them (Fig. 12A). Forty-seven percent of the patrolmen felt that the PBT speeded arrests, but twenty-nine percent stated that arrests were actually slowed.

On the question of whether the PBT complicates or simplifies arrests (Fig 11A), two-thirds of the subjects (68%) were of the opinion that arrests were simplified. Only eleven percent claimed that DWI arrests were complicated by the use of the portable breath testers.

Finally, an overwelming percentage, 83%, felt that PBT devices would increase arrests (Fig. 13A). Only six percent felt that the number of DWI arrests would decrease as the result of their use.

Ratings of the acceptance of pre-arrest screening and its contribution to traffic safety indicate a very favorable reaction (Fig. 8A, 14A - 16A).

An encouraging eighty-five percent of the patrolmen participating in the study felt that pre-screening CAN CONTRIBUTE GREATLY TO TRAFFIC SAFETY (Fig. 8A).

Nearly seventy-six percent rated portable breath testing as acceptable to police officers, only fourteen percent said that it would not be accepted (Fig. 15A). Similarly, sixty-five percent of the patrolmen stated that the PBT was liked, only nineteen percent gave a neutral rating (4), and fifteen percent claimed that it was disliked (Fig. 16A).

On the question concerning public reaction to pre-arrest screening- will or will not be accepted - the responding officers appear uncertain(Fig. 14A). The majority, fifty-two percent felt that the concept of pre-arrest screening would be HIGHLY ACCEPTED BY THE MOTORING PUBLIC. However, a very large portion, thirty-five percent were neutral in their response. This may reflect mixed public reaction to the PBT encountered by officers in actual field use.

Scales reflecting the overall value of the PBT device are represented by Figures 9A - 10A. The ratings tend to be quite positive, again indicating acceptance of the portable breath tester.

Seventy-one percent of the patrolmen rated the PBT as worthwhile in contrast to only fourteen percent rating it as worthless (Fig. 9A).

Sixty-four percent of the officers felt that the PBT was a necessity (Fig. 10A). The majority of the remaining respondents, twenty-five percent, gave a neutral rating indicating that such devices were neither a necessity nor an extravagance.

Figures 17A - 18A, which originally had appeared at the beginning and end of the rating scale series, indicate the officer's assessment of departmental need for such devices and the consistency of his ratings.

At the start of the rating scale series (Fig. 17A) nearly sixty-six percent of the officers stated that portable breath testers were often needed and twenty-five percent reacted neutrally to this question. At the conclusion of the rating series the percentage again rating the PBT as often needed had changed slightly, down just five points to sixty percent. Similarly, the mean scale rating had only shifted from 2.9 to 3.1 on the seven position Likert scale.

ASSOCIATION OF RATINGS AND DEMOGRAPHIC VARIABLES

As previously reported, there was a noticable dichotomy of opinion on the questions concerning the ruggedness and speed of operation of the portable breath tester, and its effect on the time spent in making a DWI arrest (Fig. 3A, 7A & 12A). To determine whether any of the scale dichotomies might be associated with demographic characteristics of the patrolmen, scale ratings were cross-tabulated with demographic variables and the resulting contingency tables examined for trends.

Demographic characteristics of the patrolmen are presented in Table 2. The figures show that patrolmen tended to be forty or younger with the largest segment, forty-five percent, in the thirty or younger age bracket. The data also show that seventy-eight percent of the officers were <u>not</u> trained to calibrate

Table 2

Demographic characteristics of patrolmen

VARIABLE	FREQUENCY	PERCENTAGE
Age		
30 or less	36	45.6
31 - 40	28	35.5
41 or more	15	18.9
	79	100.0%
Trained to Calibrate the PBT		
No	65	78.3
Yes	18	21.7
	83	100.0%
Certified as a Breathalyzer operator		
No	41	49.4
Yes	42	50.6
	83	100.0%
Number of PBT Tests Run		
10 or less	18	21.5
11 - 25	28	33.3
26 - 50	28	33.3
51 or more	10	11.9
	84	100.0%

the PBT, and half (50%) had been certified to operate the Breathalyzer. Finally, sixty-six percent of the officers had conducted 11 - 50 PBT tests by the time of the questionnaire administration. Only twelve percent had conducted more than 50 tests and twenty-one percent had run ten or fewer tests with the device.

Cross-tabulation data for rating scales 3A, 7A, and 12A are presented in Tables 3 through 5.

Ruggedness. On the question of the ruggedness or fragility of the PBT device, ratings appear to bear a relationship to the department of the patrolman, his age, whether he is certified on the Breathalyzer, and his experience with the PBT.

Officers from Minneapolis tended to perceive the portable breath tester as very fragile or reacted with a neutral rating. Similar patterns are evident for Brooklyn Park and the Sheriff's department. However, there is a dichotomy of opinion in Richfield and Golden Valley with a sizable percentage rating PBTs either as VERY RUGGED or VERY FRAGILE. St. Louis Park is unique in that it is the only department in which a very small segment of the patrolmen (18%) rated the portable breath tester as fragile.

The relationship of age to rating is interesting in that the percentage rating the PBT as rugged decreases as age category increases. While thirty percent of the patrolmen thirty years or younger rate the device as rugged, the same is true for just seven percent (N = 1) of the officers older than forty. This may reflect an association of PBT ratings and years of experience as a patrolman with the more experienced officers

Table 3

A cross-tabulation of patrolman demographic characteristics and ratings on the scale VERY RUGGED - VERY FRAGILE

	Very Rugged 1-3	4	Very Fragile 5-7
Department*			
Brooklyn Park	2 (20.0)	4 (40.0)	4 (40.0)
St. Louis Park	4 (36.4)	5 (45.5)	2 (18.2)
Richfield	5 (35.7)	3 (21.4)	6 (42.8)
Minneapolis	2 (8.6)	9 (39.1)	12 (52.1)
Sheriff	0 (0.0)	6 (46.2)	7 (53.9)
Golden Valley	4 (40.0)	2 (20.0)	4 (40.0)
Age			
41	1 (6.7)	6 (40.0)	8 (53.3)
31 - 40	3 (11.4)	9 (34.6)	14 (54.0)
30	11 (30.6)	14 (38.9)	11 (30.6)
Trained to calibrate the PBT			
No	14 (21.9)	24 (37.5)	26 (40.6)
Yes	4 (23.5)	5 (29.4)	8 (47.1)
Certified as a Breathalyzer operator			
No	11 (26.8)	16 (39.0)	14 (34.2)
Yes	7 (17.5)	13 (32.5)	20 (50.0)
Number of PBT Tests Run			
51 +	4 (40.0)	1 (10.0)	5 (50.0)
26 - 50	8 (28.6)	11 (39.3)	9 (32.1)
11 - 25	3 (11.2)	12 (44.4)	12 (44.4)
10 or less	3 (17.7)	5 (29.4)	9 (52.9)

* Bracketed figures indicate row percentages

reacting less favorably. Possibly, ratings by Breathalyzer operators reflect unfavorable comparison between the quite light and compact PBT and the larger Breathalyzer.

Increased experience with the portable breath tester appears to be associated with more favorable ratings of the device. This is seen in the relationship of number of PBT tests run to ratings of the ruggedness or fragility of the PBT. Seventeen percent of those with 10 or less tests and eleven percent with 11 - 25 tests rated the PBT as rugged. In contrast, a similar rating was given by twenty-eight percent of the officers with 50 tests and forty percent with 51 or more tests. Another possible explanation for this association may be found in the influence of opinions on behavior. Officers least favorably inclined to the concept of pre-arrest screening devices may simply have made minimal use of the PBT device in the field.

Speed of operation. Similar patterns of association between demographic characterictics and PBT ratings are indicated in Tables 4 and 5 for the remaining scales: QUICK TO OPERATE vs SLOW TO OPERATE, and SPEEDS ARRESTS vs SLOWS ARRESTS.

The portable breath tester was rated as QUICK TO OPERATE by the majority of the respondents in Brooklyn Park, St. Louis Park and Richfield. Brooklyn Park was highest with ninety percent rating the device as QUICK and Richfield lowest with only fifty-

Table 4

A cross-tabulation of patrolman demographic characteristics and ratings on the scale QUICK TO OPERATE - SLOW TO OPERATE

	Quick to Operate 1 - 3	4	Slow to Operate 5 - 7
Department*			
Brooklyn Park	9 (90.0)	1 (10.0)	0 (00.0)
St. Louis Park	7 (63.6)	1 (9.1)	3 (27.3)
Richfield	8 (57.1)	3 (21.4)	3 (21.4)
Minneapolis	6 (27.3)	5 (22.7)	11 (50.0)
Sheriff	5 (46.2)	2 (15.4)	5 (38.5)
Golden Valley	3 (30.0)	1 (10.0)	6 (60.0)
Age			
41	6 (40.0)	3 (20.0)	6 (40.0)
31 - 40	10 (38.4)	5 (19.2)	11 (42.3)
30	22 (61.2)	5 (13.9)	9 (24.9)
Trained to calibrate the PBT			
No	27 (42.8)	11 (17.5)	25 (39.7)
Yes	13 (72.2)	2 (11.1)	3 (16.7)
Certified as a Breathalyzer operator			
No	22 (53.8)	6 (14.6)	13 (31.6)
Yes	18 (45.0)	7 (17.5)	15 (37.5)
Number of PBT Tests Run			
51 +	8 (80.0)	1 (10.0)	1 (10.0)
26 - 50	16 (57.2)	4 (14.3)	8 (28.5)
11 - 25	11 (40.8)	5 (18.5)	11 (40.8)
10 or less	5 (31.1)	3 (18.8)	8 (50.1)

* Bracketed figures indicate row percentages

seven percent. Opinion in the Sheriff's department appears to have been split with forty-six percent rating the PBT QUICK and thirty-eight percent rating it as SLOW. In contrast, the majority of respondents in Minneapolis and Golden Valley rated the PBT as SLOW TO OPERATE.

As before, the younger officers give the most favorable ratings. Sixty-one percent of the officers thirty or younger rated the device as QUICK TO OPERATE, and only twenty-five percent felt that it was SLOW. In comparison, thirty-eight percent of the officers between thirty and forty years of age and forty percent of those over forty rated the PBT as QUICK, the remainder either rating it as SLOW (40% and 42%) or responding with a neutral rating (4).

While PBT calibration training had not been related to ratings for the RUGGED - FRAGILE scale, there is an obvious association concerning the speed with which the device operates. Seventy-two percent of the officers trained to calibrate the PBT rated it favorably as QUICK TO OPERATE. Only sixteen percent of these specially trained officers perceived the PBT operation to be SLOW. This is in sharp contrast to the larger group of officers who were not calibrators. Of this group, only forty-two percent rated the PBT as QUICK, nearly forty percent rated it as SLOW TO OPERATE and seventeen percent were neutral in their opinion. The less favorable response of the non-calibrators may reflect impatience with the length of the PBT warm-up and/or re-cycle operation, a delay which might be more readily accepted by the calibrator who is more experienced with the PBT, its

operation and construction.[4]

Experience with the PBT, but not Breathalyzer certification, appears to be associated with ratings with the least experienced officer holding the least favorable opinion. For example, only thirty-one percent of the officers with 10 or less PBT tests run rated the device as QUICK while fifty percent rated it as SLOW TO OPERATE. In contrast, eighty percent of the officers with 51 or more tests completed rated the PBT as QUICK. As previously noted (see page 61) this relationship may actually reflect the effect of opinion on the use of PBT devices.

Arrest effect. One advantage of the PBT is that it could speed the arrest process by minimizing time wasted in transporting borderline cases to the department for a Breathalyzer test, or the need to rely on personal judgment and unreliable physical sign tests (e.g., walking a straight line). There was a clear split in opinion as to whether these devices actually do speed the arrest process.

The majority of the respondents in St. Louis Park (63%) and Golden Valley (70%) felt that portable breath testers do speed arrests. This view was not shared by the other departments, most notably Minneapolis in which only twenty-nine percent of the patrolmen were of the opinion that the PBT SPEEDS ARRESTS while forty-five percent stated that arrests were actually slowed.

[4] PBT calibrators had received special training in the calibration and operation of the Borg Warner A.L.E.R.T. in a class prepared by HCASAP in conjunction with the State Bureau of Criminal Apprehension.

Table 5

A cross-tabulation of patrolman demographic characteristics and ratings on the scale SPEEDS ARRESTS - SLOWS ARRESTS

	Speeds Arrests 1 - 3	4	Slows Arrests 5 -7
Department*			
Brooklyn Park	5 (50.0)	3 (30.0)	2 (20.0)
St. Louis Park	7 (63.6)	3 (27.3)	1 (9.1)
Richfield	6 (42.9)	3 (21.4)	5 (35.7)
Minneapolis	7 (29.2)	6 (26.0)	11 (45.8)
Sheriff	6 (46.2)	4 (30.8)	3 (23.1)
Golden Valley	7 (70.0)	1 (10.0)	2 (20.0)
Age			
40	6 (40.0)	5 (33.3)	4 (26.7)
31 - 40	12 (44.4)	4 (14.8)	11 (40.7)
30	20 (55.6)	9 (25.0)	7 (19.5)
Trained to calibrate the PBT			
No	30 (51.3)	12 (29.3)	8 (19.5)
Yes	8 (44.5)	6 (33.3)	4 (22.3)
Certified as a Breathalyzer operator			
No	21 (51.3)	12 (29.3)	8 (19.5)
Yes	17 (41.5)	8 (19.5)	16 (39.0)
Number of PBT Tests Run			
51 +	6 (60.0)	1 (10.0)	3 (30.0)
26 - 50	13 (46.5)	10 (35.7)	5 (17.8)
11 - 25	13 (46.5)	6 (21.4)	9 (32.1)
10 or less	7 (41.2)	3 (17.6)	7 (41.1)

* Bracketed figures indicate row percentages

In Richfield there appears to be a dichotomy of opinion with similar percentages (43% and 36%) rating the PBT as speeding and slowing arrests. Similar response patterns are seen in Brooklyn Park and the Sheriff's department where approximately half the officers perceived the PBT as speeding arrests, nearly one-third responded with a neutral rating, and the remainder believed that arrests were slowed by use of the device in the DWI arrest process.

Age, calibration training and certification on the Breathalyzer were not as clearly associated with rating of arrest effect as had been true for the previous scales. The only apparent trend is for a somewhat larger percent of the patrolmen between the ages of 31 - 40 and those certified on the Breathalyzer to perceive the PBT as slowing arrests rather than speeding them up.

Similarly, the shift in ratings with PBT experience is not as evident as it had been on the previous scales discussed, though sixty percent of the patrolmen with 51 or more tests run rate the PBT as speeding up arrests, in contrast to approximately forty percent for all other experience categories.

SUPERVISOR RATINGS

Responses of the eleven supervisory personnel to the rating scales appearing in their questionnaire are presented in Figures 1B through 12B. The frequency with which each scale value was selected is indicated in brackets.

In general, ratings by this subject group are equally as favorable as those made by patrolmen and imply acceptance of the portable breath tester by those in authority in the participating departments.

1B	CAN CONTRIBUTE GREATLY TO TRAFFIC SAFETY	(6) (3) (2) 1 2 3 4 5 6 7	CAN CONTRIBUTE NOTHING TO TRAFFIC SAFETY
2B	WILL BE STRONGLY OPPOSED BY THE MOTORING PUBLIC	(2) (1) (3) (4) (1) 1 2 3 4 5 6 7	WILL BE HIGHLY ACCEPTED BY THE MOTORING PUBLIC
3B	OFTEN NEEDED	(6) (1) (4) 1 2 3 4 5 6 7	NEVER NEEDED
4B	WILL BE WIDELY ACCEPTED BY POLICE OFFICERS	(2) (4) (3) (1) (1) 1 2 3 4 5 6 7	WILL NOT BE ACCEPTED BY POLICE OFFICERS
5B	VERY USEFUL	(3) (5) (1) (2) 1 2 3 4 5 6 7	VERY USELESS
6B	COMPLICATES DWI ARRESTS	(2) (1) (2) (1) (5) 1 2 3 4 5 6 7	SIMPLIFIES DWI ARRESTS
7B	SPEEDS DWI ARRESTS	(3) (2) (4) (2) 1 2 3 4 5 6 7	SLOWS DWI ARRESTS
8B	WILL DECREASE ARRESTS	(1) (1) (1) (1) (1) (6) 1 2 3 4 5 6 7	WILL INCREASE ARRESTS
9B	OFTEN NEEDED	(1) (5) (1) (3) (1) 1 2 3 4 5 6 7	NEVER NEEDED
10B	DISLIKED	(1) (2) (2) (1) (3) (2) 1 2 3 4 5 6 7	LIKED
11B	WORTHWHILE	(5) (3) (2) (1) 1 2 3 4 5 6 7	WORTHLESS
12B	AN EXTRAVAGANCE	(2) (2) (2) (3) (2) 1 2 3 4 5 6 7	A NECESSITY

* Bracketed figures indicate frequency of selection

Supervisors reacted most positively to the scale assessing the traffic safety contribution of pre-arrest screening devices (Fig. 1B). All eleven supervisors rated the PBT favorably on this dimension with 6 of 11 selecting the extreme positive pole of the continuum.

Supervisors tended to respond favorably to all aspects of the PBT but in particular they felt it was WORTHWHILE (Fig. 11B), that it was ACCEPTED by police officers (Fig. 4B), and USEFUL (Fig. 5B). The remaining scales elicited several unfavorable ratings. For example, three supervisors did not feel that the PBT simplifies the arrest procedure (Fig. 6B). Two respondents definitely were of the opinion that the PBT would decrease arrests (Fig. 8B), two viewed it as an EXTRAVAGANCE (Fig. 12B), and three indicated that such devices were DISLIKED (Fig. 10B).

Two matching scales appearing at the start and conclusion of the series asked whether the PBT was OFTEN NEEDED or NEVER NEEDED (Fig. 3B & 9B). Responses to both scales were, as expected, very similar. The majority of the supervisors, 7 of 11, rated the device favorably on this dimension. However, four supervisors were either neutral or negative in response indicating that in their opinion the PBT was not a necessary part of the DWI arrest process.

OPEN-ENDED QUESTION RESPONSES

Responses of patrolmen, calibrators, and supervisory personnel to the open-ended questions contained in their respective questionnaires contribute additional information on the views of these subject groups that could not be obtained from simple scale ratings. In particular, suggestions for alterations in the design of the PBT, its calibration, and for officer training. A summary of the responses of each study subject group are presented in the following segments of this report. The actual paraphrased answers of the question respondents are contained in Appendices H through J for the interested reader.

Patrolmen

Comments or Suggestions Relating to the Difficulty in Obtaining an Adequate Breath Sample.

By far the most frequent comment was the need to redesign the mouth piece (most thought it should be larger). Some felt that drivers had too much difficulty blowing hard and/or long enough to obtain an adequate breath sample.

Other Problems in the Field Use of the PBT.

Many officers feel that drivers are suspicious of the PBT and do not trust it. Other complaints are that the warm-up time and purge time are too long.

Improvements in the Design or Construction of the PBT.

The most frequent suggestion related to a change in the type of read out - presently a series of lights - to give more information on the actual BAC. Another frequent suggestion pertained to the size of the mouth piece, and several patrolmen want a longer tube attached to the mouth piece. Other suggestions were directed toward increasing the ruggedness of the machine and changes in the present BAC fail limit.

Recommendations for Training Officers to Use the PBTs.

Several patrolmen felt that all officers should be trained to use the PBT. For the actual training most thought that complete, easy to understand instructions and on the road usage would be best, while a few thought that formal classroom study would be helpful.

Supervisors

For supervisors the general consensus appears to be very favorable to the concept and potential of the PBT. The only reservations registered were that it will take some time for officers to accept and trust the machine and that possibly the PBT should not be used in cases of obvious DWI.

There were some criticisms of and suggestions for improving the PBT. The criticisms ranged from too many false readings through too much lung power needed, and too much down time and high costs. These criticisms could not have been too overriding since none was mentioned more than once. With one exception, the respondents felt that the PBT was meeting their expectations.

Two suggestions for improvement were mentioned most frequently, increase in the time interval between calibrations and a change in the readout system from the present three lights to some form of linear scale. It was also suggested that the PBT connections should be better constructed.

PBT Calibrators

The calibrators seemed to be the least happy with the PBT. They felt that the machine was difficult to calibrate and that the procedure should be simplified. They also felt that the minimum fail level should be increased to eliminate false positives. The main difficulty with this suggestion is that it would negate a portion of the BAC distribution where the PBT is most useful -- those with BACs just over the 10% level since these are the drivers that it is most difficult for the officer to spot.

DISCUSSION

The PBT devices were very favorably received by the three subject groups who had participated in actual field use of portable breath testers in Hennepin County.

On six of ten scales assessing the physical characteristics of the PBT and its effect on the arrest process (Fig. 1A - 2A, 4A - 6A, 13A) better than 70% of the patrolmen gave the device a positive rating. They described it as acceptable in size and weight, easy to read and operate, and a source of increased DWI arrests.

On three other scales assessing the ruggedness, speed of operation of the PBT and whether or not it speeds-up the arrest process, there was a clear dichotomy of opinion with a sizable percentage (29% - 42%) of the patrolmen selecting the unfavorable pole of the scale. Examination of available data indicated that unfavorable ratings were associated with a number of demographic factors. In particular, less favorable opinion of the PBT was held by the older or more experienced officers, men certified on the Breathalyzer, and those least experienced with the device. There was also considerable inter-departmental variation in ratings on these specific scales.

Response to the remaining scales in the series were quite positive. More than sixty percent of the patrolmen rated the device as WORTHWHILE, A NECESSITY, and OFTEN NEEDED. Sixty-five percent indicated that the PBT was generally liked and seventy-six percent stated that it would be widely accepted by police officers. While there was some uncertainty as to the public's re-

action to the PBT, eighty-five percent of the officers believed that the PBT would contribute to traffic safety.

The patrolman's very favorable opinion of both the PBT and the concept of pre-arrest screening was shared by his supervisor. Supervisory personnel were unanimous in their belief that such devices can contribute greatly to traffic safety and, with few exceptions, rated the PBT as USEFUL, WORTHWHILE, and a NECESSITY.

In general, the written responses of the subject groups reflected satisfaction with the concept of pre-arrest screening devices but frustration with certain design or operating characteristics of the particular PBT they had used in the field. This was also brought out in a series of informal debriefing sessions held with officers at three of the departments participating in the evaluation of PBT devices.

Specifically, criticisms were related to the difficulty of obtaining a breath sample, the size or shape of the mouth piece, easily damaged connections, the type of read out used, the difficulty of calibration and the occurrence of "false positives".[6] Several of these complaints reflect the early stage of PBT development and can be, or already have been, remedied as device design is improved on the basis of the type of field experience obtained in Hennepin County. Difficulties in obtaining a breath sample and the occurrence of false positives can and often do reflect factors in the field use of the PBT which are not easily adjusted for in PBT design but can be handled by the officer in

[6] Cases in which a driver fails the PBT test but shows an evidentiary test BAC of less than .10% are considered false positives.

the field. For example, the intoxicated driver who does not want an accurate BAC reading will frequently blow for too short a period of time or may blow very softly by allowing air to escape around the edges of the plastic mouth piece and then object when the officer requests a re-test. Likewise, the driver who is not shown the proper manner in which to hold the mouth piece may put the plastic piece between his lips in such a way that it is impossible to deliver an adequate breath sample.

False positives can result from improper calibration or machine malfunction. However, it is more probable that erroneous readings reflect the presence of mouth alcohol. This can be remedied by waiting several minutes after the traffic stop to allow the alcohol to evaporate. False positives can also result in border line cases (.10% - .11% BAC) when there is a protracted interval between the traffic stop and evidentiary testing which would allow for the metabolism of sufficient alcohol to bring the BAC below the .10 illegal-to-drive limit.

In conclusion, the reactions of patrolmen, calibrators, and supervisory personnel have been very positive and encouraging. The concept of pre-arrest screening and the portable breath testing device have, in general, been accepted by the officer in the field and departmental administration. While some difficulties have been encountered with the PBT, these can be remedied by minor design changes or alterations in PBT field procedures.

PART V

A Controlled Study Of Portable Breath Tester Effects On DWI Arrest Rates

*A Controlled Study Of Portable Breath Tester Effect On DWI Arrest Rates

INTRODUCTION

Increasing awareness of the drinking-driver problem has focused the attention of law enforcement and traffic safety personnel on the need for reliable and accurate portable breath testers to provide rapid pre-arrest screening of suspected intoxicated drivers.

Since April of 1973, the Hennepin County Alcohol Safety Action Project (HCASAP) has been conducting an evaluation of portable breath testers (PBTs) under the auspices of OAC-NHTSA and the Minnesota Department of Public Safety with the cooperation of local police departments and the Minnesota Bureau of Criminal Apprehension. This evaluation was made possible by the recent availability of PBT devices in various stages of development and DWI laws enacted by the 1971 Minnesota State Legislature which (A) authorized preliminary screening breath tests, and (B) made it illegal to drive at or above .10% BAC.

The HCASAP evaluation of portable breath testers was conducted in two phases. Phase I involved the general field deployment of a PBT device by seven Hennepin County police departments. Through the use of specially designed reporting forms, logs, and questionnaires, data was collected on the following factors:

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(1) The utilization of the PBT and the outcome of PBT based DWI arrests.

(2) The attitude of police officers, their supervisors, and PBT calibrators toward the device, and their suggestions for improvements in its design.

(3) Problems encountered in the maintenance and calibration of PBT devices.

Evaluation of the field deployment is fully discussed in Parts I and II. Data indicated that the PBT employed in the study was a highly reliable device which considerably increased arrests in the low-illegal BAC ranges (.10% - .14%), where the officer was least likely to detect intoxication on the basis of physical signs (e.g., finger-nose test).

A discussion of police attitudes toward the PBT and PBT maintenance problems can be found in Parts IV and III. Data analyses indicated that reaction to the device was positive and that problems encountered in daily use of the PBT were minimal.

The objective of Phase II was a controlled comparison of PBT assisted arrest rates with arrests resulting from more traditional police procedures. At present, most DWI arrests are made without benefit of a screening test and are based on the officer's impression of driver behavior and appearance. After arrest, an evidentiary test (breath, blood or urine) is administered unless refused, in which case Implied Consent is invoked. Squad reports during Phase I indicated that arrests

based on physical performance were highly unreliable and could result in the release of illegally intoxicated drivers. Availability of portable breath testers allows the patrolman to use the objective data of device readout in determining whether to make an arrest.[1] This advantage may be reflected in a lower ratio of stops to DWI arrests, in higher average number of DWI arrests per shift, and a lower average BAC reading reflecting the apprehension of more borderline (.10% - .14%) cases.[2]

Due to unforseen complications, it was not possible to collect usable comparative arrest data during Phase II. However, the difficulties encountered are instructive and should be useful information for others considering this type of research. The remainder of this report discusses the methodology of Phase II, difficulties encountered in implementation and presents a summary of data collected.

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[1] As part of the HCASAP Enforcement Countermeasure Breathalyzer equipped vans have been made available to local police for evidentiary testing or pre-screening at the scene of the stop.

[2] It is always possible that drivers tested with the PBT may demand a blood test for evidentiary purposes in preference to the Breathalyzer. Since a blood test requires considerably more time such a shift in evidentiary test preference would cut down on squad shift time free for patrol and DWI apprehension. As a result, there could actually be fewer rather than more DWI arrests per shift.

METHODOLOGY

There are several possible study designs for the collection of comparative arrest data. The simplest would compare the arrests of squads using the PBT with the arrests of squads using traditional arrest procedures. However, the portable breath tester, as a new and novel device, presents a complicating factor of individual motivation which makes this simplistic approach unsatisfactory. If PBT and NON-PBT carrying squads were to be compared, there would be no assurance that officers without portable breath testers would be as motivated to stop a vehicle or make a DWI arrest as officers with the new device at their side. Variances in motivation would be confounded with true differences resulting from the utilization of pre-arrest screening devices. The resulting bias in comparative data for control (NON-PBT) and experimental (PBT) squads would be difficult if not impossible to correct on a post hoc basis.[3]

This difficulty was dealt with in the Phase II design by utilizing each PBT equipped squad as its own control. To achieve this, squads participating in the study made both PBT assisted and NON-PBT arrests, maintaining separate records of the two arrest types.

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[3] This is not to say that the added motivation arising from the availability of the PBT is not an important element in evaluation of the device. However, the "motivation" element did appear to be represented in findings reported for Phase I (e.g., increased arrests by PBT-using departments) and it was the intent of this study to measure the effect on arrest rates of actual PBT use rather than the effect of having the PBT.

Whether a determination of intoxication would be made by traditional procedures or using the PBT was randomly determined and carefully controlled. Squads were not informed in advance which type of procedure would be used but learned of this only (1) after stopping the driver and (2) determining that he was a potential DWI who should be further examined prior to an arrest or release. As a result, officers were equally motivated to make all stops or, at least, the motivation to make a stop would be independent of the type of procedure that might be used. In addition, it was hoped this approach would minimize the possibility that drivers would be released when the officer considered the required procedure undesirable.

The selection of examination procedures was controlled through the use of tear-envelopes assigned to each participating police squad. Each envelope contained one of the following instructions:

(1) PBT YES

(2) PBT NO

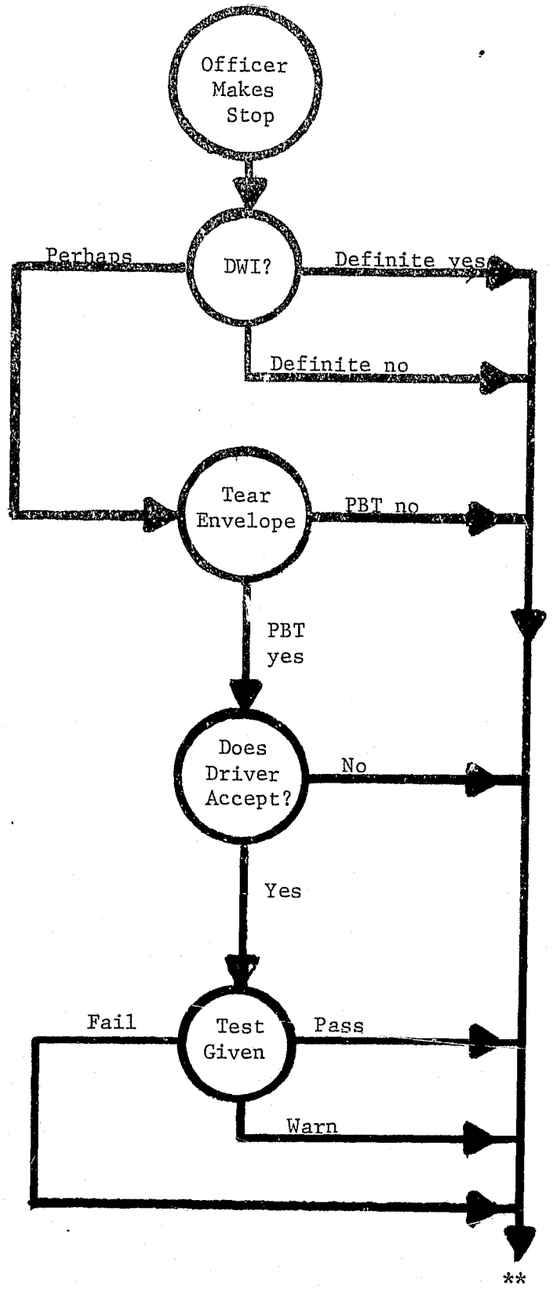
Tear-envelopes were randomly ordered to insure that officers could not anticipate which procedure would be employed in consecutive DWI stops. Also, it had been determined on the basis of previous arrest data that a realistic maximum of four arrests per evening for DWI could be expected for any one squad. As a result, envelopes were randomized within blocks of four to prevent or minimize the chance occurrence of a particular procedure (i.e., PBT or NON-PBT) three or more times in succession.

ASAP funded police squads from St. Louis Park and the City of Minneapolis participated in the study. All officers participating in the study were volunteers. No effort was made to select particular officers for this assignment, or to exclude others on the basis of past performance or other relevant characteristics.

The procedures to be followed by each squad participating in Phase II are detailed in Figure I. As already noted, an officer made a traffic stop without knowing which DWI procedure (i.e., PBT or NON-PBT) would be used. Next, the officer approached the driver and decided whether (A) further examination would be made to determine if the driver were intoxicated or (B) the driver was so obviously intoxicated that further examination prior to arrest was unnecessary. If the second alternative was selected, the envelope procedure was by-passed and the driver was taken to the station for evidentiary testing. If the first alternative was selected, the officer returned to his car, opened the next envelope in his set and proceeded on the basis of the instructions printed on the enclosed card (i.e., PBT or NON-PBT). If the officer decided by either procedure that the driver was illegally intoxicated, he was taken in for an evidentiary test. If he passed the physical performance test, did not appear to be illegally intoxicated, or received a warn or pass on the PBT, the driver was either released or tagged for an appropriate NON-DWI violation of the law (speeding, careless driving, etc.).

Figure 1

STUDY FLOW CHART FOR SUSPECTED
DWI TRAFFIC STOPS



** 1. Follow standard departmental operating procedures including arrest, warn and release, and implied consent where appropriate.
** 2. Complete ASAP squad log for stop.

The reason for each stop, the steps taken, envelope involved, and evidentiary test findings were recorded on a specially prepared log. A copy of this log is contained in Appendix K. Logs were turned in after each shift and forwarded to HCASAP for coding and analysis.

Phase II was conducted from August 10 to September 29, 1973. During this period, 9 officers from St. Louis Park and 25 from Minneapolis participated in the study, with each going out on one or more evening shifts.

In St. Louis Park, the length of an evening shift was 4 hours, starting at 11 p.m. and concluding at 3 a.m., with squads going out Friday and Saturday night plus one evening during the week. In Minneapolis, the length of the shift was 6 hours, starting at 9 p.m. and concluding at 3 a.m. Squads went out every evening except Sundays and Mondays.

Information is presented in Table 1 on the number of squad shifts, number of patrol hours, number of stops made and other relevant information for both St. Louis Park and Minneapolis.

The PBT utilized in the study was the Borg Warner A.L.E.R.T. This unit employs a light-indicator to signal the presence and level of alcohol intoxication and can be calibrated to selected BAC ranges. In this study the PBT was calibrated to indicate a pass for BAC levels less than .06%. Blood alcohol levels greater than .06% but less than .11% triggered a warn light, and a fail was indicated for BAC of .11% or more. Each of the A.L.E.R.T. units in field use was recharged and correct calibration verified on a daily basis by the participating departments.

Table 1

	ST. LOUIS PARK	MINNEAPOLIS
TOTAL NUMBER OF PARTICIPATING OFFICERS	9	25
TOTAL NUMBER OF SQUAD SHIFTS	46	71
[a] TOTAL NUMBER OF SHIFT HOURS	195.3	426.0
[a] AVERAGE LENGTH OF SHIFT	4.2	6.0
TOTAL NUMBER OF TRAFFIC STOPS REPORTED	203	341

[a] Computation of Total Shift Hours and Average Shift Length for Minneapolis are based on complete data for only 332 of the 341 total traffic stops reported.

IMPLEMENTATION

Representatives of both police departments were involved early in the design and development stages of the study. The final arrangements agreed upon reflect the results of numerous co-operative revisions of both design and operating procedures. An effort was also made to involve on-the-street officers in a review of the study plan. They offered helpful suggestions as well as displaying some vague skepticism about the study. This skepticism was in the nature of "I think it's a good idea, but I douht if it will work." However, officers were unable to provide specific reasoning for these doubts.

Materials and forms provided to the officers were developed considering his current load of paperwork. The most feasible route appeared to be that of expanding the current ASAP patrol activity log sheet. This was done after consulting with both participating departments.

Before commencement of the study, copies of the design, procedures, and forms (see Appendix L) were supplied to the departments. This was done prior to voluntary sign-up of officers for ASAP duty. Each officer participating was later supplied with material for his personal use.

An informal meeting was held with the participating patrolmen in St. Louis Park. All but one officer attended. The meeting started with an overview of the data needs of ASAP specifically relating to the use of the PBT. Next, the purpose and procedures

of this controlled study were reviewed, leading to a discussion of potential problems and how they could be managed. By the end of the meeting the officers appeared satisfied that they would be able to cooperate.

It was not feasible to hold a similar group meeting with the participating Minneapolis officers due to conflicting work schedules and locations. However, copies of the study design and procedures were placed with each PBT and were supplied in advance to each officer. In addition, an effort was made to contact Minneapolis officers when they reported for duty to answer any questions they might have. The Chemical Test Officer on duty during patrol hours was also familiar with the study and was available to answer questions.

The PBTs were kept in briefcases along with related forms. At the time the study started, old forms were removed and the new forms inserted, along with the design and procedure write-up and a file folder in which the randomized instructions were stapled.

The squad logs for the controlled study were reviewed as they were received by HCASAP. Within a week it appeared that the comparative arrest data would be much less than had been anticipated. This fact was communicated verbally back to the departments and directly with a few of the participating officers. The decision was then made not to place added pressure on the officers, but to compensate by running the study longer than originally planned. As the findings indicate, this failed to yield a satisfactory body of data.

FINDINGS

This section presents a brief summary of Phase II data detailing arrest activities of participating squads and providing additional clarification of factors contributing to the difficulties encountered in obtaining sufficient comparative data on DWI arrests.

In total, 202 traffic stops were reported by St. Louis Park and 336 by Minneapolis. Table 2 displays a complete breakout of squad activity for stops involving the use of randomized envelopes as a determinant of examination (DWI) procedures. Table 3 presents a similar breakout of data for all remaining traffic stops.

Figures in Table 2 show that officers in Minneapolis utilized the tear-envelope procedure just 6 times in 336 traffic stops. In only one case, when the PBT could not be used, did a DWI arrest result. In comparison, squads in St. Louis Park made 62 stops in which tear-envelopes were employed, or thirty-one percent of all traffic stops reported by the department. Twenty-one (33.9%) of the stops made under experimental conditions involved a DWI arrest. Of this total, 15 utilized the PBT while the remaining 6 arrests were made on the basis of physical performance.

For both departments participating in Phase II, the total number of DWI arrests conducted under experimental conditions (randomized envelopes) were considerably short of the totals originally expected and were inadequate for a valid comparative

Table 2

Distribution of departmental arrest activity under experimental conditions showing reasons for traffic stop and procedure used

REASON FOR STOP X PROCEDURE USED IN ARREST DETERMINATION.	MINNEAPOLIS			ST. LOUIS PARK			
	NO DWI ARREST	DWI ARREST		NO DWI ARREST	DWI ARREST		TOTALS
		BAC ∠.10	BAC ≥.10		BAC ∠.10	BAC ≥.10	
EQUIPMENT VIOLATION OR FAILURE TO DIM LIGHTS							
USE TRADITIONAL PROCEDURE USED PBT TEST				2		1	3
PASS				1			1
WARN							
FAIL				1		1	2
RAN STOP SIGN OR LIGHT							
USED TRADITIONAL PROCEDURE USED PBT TEST				1		1	2
PASS							
WARN	1						1
FAIL						1	1
SPEEDING OR ERRATIC DRIVING							
USED TRADITIONAL PROCEDURE USED PBT TEST	2			21	1	3	27
PASS	2			4			6
WARN				10			10
FAIL					2	11	13
ASSIST OTHER OFFICER, AT ACCIDENT SCENE, OR OTHER							
USED TRADITIONAL PROCEDURE USED PBT TEST			1	1			2
PASS							
WARN							
FAIL							
TOTALS	5	0	1	41	3	18	68

Table 3

Distribution of departmental arrest activity under non-experimental conditions showing reasons for traffic stops and procedure used

REASON FOR STOP X PROCEDURE USED IN ARREST DETERMINATION.	MINNEAPOLIS			ST. LOUIS PARK			
	NO DWI ARREST	DWI ARREST		NO DWI ARREST	DWI ARREST		TOTALS
		BAC ∠.10	BAC ≥.10		BAC ∠.10	BAC ≥.10	
EQUIPMENT VIOLATION OR FAILURE TO DIM LIGHTS							
USED TRADITIONAL PROCEDURE USED PBT TEST	59	1	1	25			86
PASS	1			1			2
WARN							
FAIL							
RAN STOP SIGN OR LIGHT							
USED TRADITIONAL PROCEDURE USED PBT TEST	43			1			44
PASS							
WARN							
FAIL							
SPEEDING OR ERRATIC DRIVING							
USED TRADITIONAL PROCEDURE USED PBT TEST	65	5		80	11		161
PASS				1			1
WARN							
FAIL							
ASSIST OTHER OFFICER, AT ACCIDENT SCENE, OR OTHER							
USED TRADITIONAL PROCEDURE USED PBT TEST	82	3	69	17	1	1	173
PASS							
WARN	1						1
FAIL						2	2
TOTALS	251	4	75	125	1	14	470

analysis of DWI arrests. Explanations for the insufficient DWI data and the contrasting patterns of study participation revealed in Table 2 for Minneapolis and St. Louis Park may be two fold.

First, it is possible that there was a conflict between the participating patrolman's self-image as an officer and restrictions placed on squad activities by experimental procedures which mitigated against full involvement in the study. An indicator of this conflict may have been the previously noted general skepticism expressed by some officers in pre-study meetings. Transfer of experiments from paper or lab to the "real world" are seldom without complications, and undoubtedly it was easier for project evaluators to envision full compliance with study procedures than it was for the working patrolman to comply. The end result may have been some tendency in both departments, but particularly in Minneapolis, to bring a NON-DWI charge against drivers who were not obviously intoxicated rather than be "bothered" by the study.

A second explanation for the lack of usable data from Minneapolis may be found in Table 4 which presents the distribution of REASONS FOR STOP by department. As the figures show, officers in both departments stopped similar percentages of drivers for reasons of faulty equipment or failure to dim headlights. However, in all other categories substantial differences are apparent. For example, St. Louis Park made seventy-one percent of its stops for reasons of erratic driving and speeding. In Minneapolis, only twenty-two percent of the stops were made for similar reasons.

Table 4

Reasons for stop by participating department

REASONS FOR STOP	MINNEAPOLIS		ST. LOUIS PARK	
EQUIPMENT VIOLATION OR FAILURE TO DIM LIGHTS	62	18%	32	16%
RAN STOP SIGN OR LIGHT	44	13%	4	2%
ERRATIC DRIVING OR SPEEDING	74	22%	145	71%
ASSISTING OTHER OFFICER, ACCIDENT SCENE OR OTHER	157	47%	22	11%
TOTALS	337	100%	303	100%

Data from Phase I indicate that erratic driving and speeding are the factors most commonly associated with intoxicated driving. As a result, the probability of stopping an intoxicated driver would appear to have been considerably lower for officers in Minneapolis than in St. Louis Park.

A partial explanation for this pattern of stops is found in the role of ASAP squads in Minneapolis. Officers in Minneapolis make more stops as a part of assistance to regular precinct squads, or at an accident scene than the suburban ASAP officers. Forty-seven percent of the traffic stops in Minneapolis were for these reasons in contrast to only eleven percent for St. Louis Park. Assistance to another arresting officer or complicating factors (e.g., time or injuries) at an accident scene might prohibit the use of study procedures. Also, the officer requesting assistance may have already determined that the driver was intoxicated and decided to arrest for DWI which would prevent the employment of experimental procedures by the ASAP squad.

DISCUSSION

The inadequate level of study participation and insufficient body of comparative data appear to have been the outcome of two major factors. The first was the choice of Minneapolis ASAP squads without due consideration of restrictions on their study participation resulting from their primarily assistance role. While the size of the Minneapolis police force made their participation quite attractive, it may have been wiser to select a smaller department whose ASAP squads were more directly involved in DWI apprehension.

The second factor was the requirement that officers use the experimental procedure (i.e., randomized envelopes) only if the driver was not obviously intoxicated. This procedure allowed the officer to circumvent study controls in two ways. First, it made it possible for the officer in disagreement with study purposes or experimental procedures (i.e., PBT vs Traditional Approach) to consciously or unconsciously bias his assessment of the driver's level of intoxication and take directly to the station drivers who might have first been included in the study by other officers. In addition, this procedure permitted the officer inclined to the use of the PBT to include in the study drivers who might have appeared borderline and would have been released by other officers. In essence, the officer rather than the experimental design determined when a driver would be included in the study.

In initially designing the study, it had been planned that all stops of suspected intoxicated drivers would be included in the experimental phase. However, in discussing the study design with the departments there had been considerable opposition to this requirement since it would have removed the officer's use of his personal discretion in each case. Thus, the present design represented a compromise to assure departmental participation.

Other factors which should be considered include the failure to hold an explanatory meeting with participating Minneapolis police and the skepticism expressed by some of the officers in both departments. Both occurrences suggest that, in hindsight, there should have been more effort expended in motivating full cooperation in what must essentially have appeared to many working patrolmen a very academic endeavor that potentially interfered with patrol duties.

APPENDIX A

Detailed Information On "Suspected" Driver Stops

DETAILED INFORMATION ON "SUSPECTED" DRIVER STOPS

DATE OF STOP

Table 14 contains a distribution of the 975 alcohol related stops by month. The distribution indicates that the greatest number of stops, thirty-four percent, occurred during April, the first month of the study.[12] May, June, and July accounted for twenty-three, twenty-six, and seventeen percent of the total, respectively.

Thirty-seven percent of the stops were made during the week and sixty-three percent on the weekend.[13] However, some monthly variation in this distribution is evident. During May fifty-eight percent of the suspected intoxicated drivers were stopped on the weekend, in contrast to seventy percent for June. The figures for April and July were sixty-three and sixty percent, respectively.

STOPS BY TIME OF DAY

A distribution of the 975 traffic stops by time of day is displayed in Table 15. The majority of the stops, seventy-three percent, were made between midnight and 4 a.m. Another twenty-three percent occurred between 8 p.m. and midnight.

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[12] This may be accounted for by the novelty of PBT devices during the early stages of the study.

[13] For the purposes of this study, Monday through Thursday were considered weekdays and Friday through Sunday the weekend.

Table 14

Stops by Month

APRIL	
* April 4 - 5	16
April 6 - 8	69
* April 9 - 12	55
April 13 - 15	73
* April 16 - 19	22
April 20 - 22	39
* April 23 - 26	30
April 27 - 29	31
Total	335

MAY	
* April 30 - May 3	18
May 4 - 6	31
* May 7 - 10	22
May 11 - 13	34
* May 14 - 17	21
May 18 - 20	33
* May 21 - 24	11
May 25 - 27	33
* May 28 - 31	22
Total	225

JUNE	
June 1 - 3	29
* June 4 - 7	24
June 8 - 10	33
* June 11 - 14	13
June 15 - 17	41
* June 18 - 21	18
June 22 - 24	35
* June 25 - 28	20
June 29 - July 1	36
Total	249

JULY	
* July 2 - 5	37
July 6 - 8	45
* July 9 - 12	22
July 13 - 15	32
* July 16 - 19	0
July 20 - 22	9
* July 23 - 26	5
July 27 - 29	14
* July 30 - Aug. 2	2
Total	166

* Weekdays

Table 15

Stops by Time of Day

Time (24 Hour Clock)	Stops Number	%
0001 - 0200	466	47.8%
0201 - 0400	171	17.5%
0401 - 0600	12	1.2%
0601 - 0800	0	0
0801 - 1000	0	0
1001 - 1200	6	.6%
1201 - 1400	4	.4%
1401 - 1600	2	.2%
1601 - 1800	6	.6%
1801 - 2000	7	.7%
2001 - 2200	36	3.7%
2201 - 2400	169	17.3%
Time Not Reported	96	9.9%
Total	975	100.0%

STOPS BY POLICE DEPARTMENT

A distribution of the 975 "suspected" driver stops by participating police departments is displayed in Table 16.

The number of stops made by each department varied considerably, from 215 for St. Louis Park to 73 for the Minnesota State Patrol. Nine stops credited to a miscellaneous category were actually assists by participating departments to a number of neighboring communities including Deephaven and Excelsior.

The proportion of stops made by the various departments on the weekend and during the week varied, possibly due to departmental differences in the scheduling of ASAP patrols. For example, Brooklyn Park made eighty percent of its stops on the weekend in contrast to forty-three percent for Minneapolis. With the exception of Minneapolis, the general pattern was for a greater percentage of the traffic stops to fall on the weekend.

REASONS FOR STOP

The reasons for making a stop fell into eight categories or clusters. A distribution of the 975 stops by reason is presented in Table 17. As can be seen, the most common reason for making a stop was erratic driving, accounting for forty-seven percent of the traffic stops. This was followed by speeding and faulty equipment with thirteen and seven percent of the total, respectively. The miscellaneous category, other reasons, was indicated for twelve percent of the stops.

Table 16

Stops by Department

Department	Stops					
	Weekday		Week-End		Total	%
	Number	%	Number	%		
Brooklyn Park	28	20.3%	110	79.7%	138	14.2%
Golden Valley	59	35.8%	106	64.2%	165	16.9%
Hennepin County Sheriff	64	43.0%	85	57.0%	149	15.3%
Minneapolis	63	57.3%	47	42.7%	110	11.3%
Richfield	36	31.0%	80	69.0%	116	11.9%
St. Louis Park	77	35.8%	138	64.2%	215	22.1%
Minnesota State Patrol	27	37.0%	46	63.0%	73	7.5%
Misc.	5	55.6%	4	44.4%	9	0.9%
Total	359	100.0%	616	100.0%	975	100.0%

Table 17

Reasons for Stop

Reason	Number	%
Equipment Failure	67	7.1%
Erratic Driving	453	47.9%
Failure to Dim Lights	28	3.0%
Speeding	51	5.4%
Speeding and Erratic Driving	62	6.6%
Assist Other Officers	57	6.0%
Other	108	11.4%
TOTAL	946	100.0%

REASONS FOR STOP BY DEPARTMENT

A distribution of reasons for stop by participating police departments is presented in Table 18. The distribution shows that for all departments, erratic driving was the reason listed most often. In Golden Valley and Minneapolis, approximately a third of the stops were for this reason. In the remaining departments the proportion was closer to one-half.

The ranking of the reason categories was not consistent across departments. In Minneapolis the second most common reason was the miscellaneous category, other. However, in Golden Valley, it was speeding, in St. Louis Park it was assisting other officer, and in Brooklyn Park it was equipment failure.

STOPS BY CHARGE

Table 19 displays a distribution of the 975 traffic stops by resulting charge. The figures indicate that forty-two percent of all stops resulted in a charge of Driving While Intoxicated. Five percent resulted in a charge other than DWI, and fifty-three percent of the drivers were not charged.

Table 5 also shows that the percentage of the stops on the weekend and during the week resulting in a charge of DWI were almost identical; forty-one and forty-three percent, respectively.

CHARGE BY DEPARTMENT

A distribution of charges by department is contained in Table 20. The figures show a large difference between departments

Table 1 8

Reasons for Stop by Department

	Brooklyn Park		Golden Valley		Henn. Co. Sheriff		Mpls.		Richfield		St. Louis Park		Minn. H. Dept.		Misc.	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Equipment Failure	17	12.9%	10	6.1%	11	7.7%	12	11.5%	5	4.3%	8	3.8%	4	5.6%	0	00.0%
Erratic Driving	71	53.8%	62	37.8%	76	53.1%	36	34.6%	55	47.4%	111	53.4%	39	54.9%	3	37.5%
Failure to Dim Lights	3	2.3%	6	3.7%	1	00.7%	4	3.8%	6	5.2%	4	1.9%	3	42.0%	1	12.5%
Speeding	16	12.1%	35	21.3%	16	11.2%	8	7.7%	14	12.1%	23	11.1%	6	8.5%	2	25.0%
Speeding & Erratic Driving	1	0.8%	12	7.3%	2	1.4%	2	1.9%	10	8.6%	19	9.1%	5	7.0%	0	00.0%
Assist Other Officers	2	1.5%	11	6.7%	14	9.8%	5	4.8%	4	3.4%	26	12.5%	0	00.0%	0	00.0%
Accident Scene	6	4.5%	6	3.7%	10	7.0%	15	14.4%	8	6.9%	5	2.4%	6	8.5%	1	12.5%
Other	16	12.1%	22	13.4%	13	9.1%	22	21.2%	14	12.1%	12	5.8%	8	11.3%	1	12.5%
TOTAL	132	100.0%	164	100.0%	143	100.0%	104	100.0%	116	100.0%	208	100.0%	71	100.0%	8	100.0%

Table 19

Stops by Charge

Charge	Number	%
DWI	412	42.3
Other	44	4.5
No Charge	519	53.2
TOTAL	975	100.0%

Table 20

Charge by Department

Department	Charge						Total
	DWI		Other		No Charge		
	Number	%	Number	%	Number	%	
Brooklyn Park	41	29.7%	4	2.9%	93	67.4%	138
Golden Valley	51	30.9%	8	4.8%	106	64.2%	165
Hennepin County Sheriff	48	32.2%	5	3.4%	96	64.4%	149
Minneapolis	40	36.4%	1	0.9%	69	62.7%	110
Richfield	55	47.4%	11	9.5%	50	43.1%	116
St. Louis Park	129	60.0%	8	3.7%	78	36.3%	215
Minnesota State Patrol	45	61.6%	5	6.8%	23	31.5%	73
Miscellaneous	3	33.3%	2	22.2%	4	44.4%	9
Total	412	42.3%	44	4.5%	519	53.2%	975

in the proportion of total alcohol related stops resulting in a charge of DWI. Departments such as Brooklyn Park, Golden Valley, and the Hennepin County Sheriff had a relatively low proportion, approximately thirty percent, of DWI arrests to total alcohol related stops. The proportion for other departments, such as St. Louis Park and the Minnesota State Patrol, was closer to sixty percent.

Appendix B

OPERATOR SUMMARY FOR SHIFT

HENNEPIN COUNTY
ALCOHOL SAFETY ACTION PROJECT
338-4756

PORTABLE BREATH TESTER (PBT)
OPERATOR SUMMARY FOR SHIFT

Operator:
Dept._____

Name_____

Duty:
____Patrol - Regular
____Patrol - Traffic
____Accident Investigation
____ASAP
____Other_____

Breathalyzer Certified

___No ___Yes

	DATE	TIME (24 HR)
OUT		
IN		
Length of Shift		

Estimated number of hours instrument was available for use, not including breaks, calls, etc. (near-est 15 min.)

_____Hrs. _____Min.

BORG-WARNER J-2
Serial Number: _____

OPERATING SUMMARY:

Test Results:
Number of Pass _____

Number of Warn _____

Number of Fail _____

DEMONSTRATIONS _____

TOTAL TESTS _____

Did battery light come on? _____

If so, after how many tests? _____

DWI RELATED ACTIONS

	ARRESTED	NOT ARRESTED
PBT Used	____	____
PBT Offered-Refused	____	____
PBT Not Used	____	____

TOTAL TRAFFIC STOPS DURING SHIFT _____

OPERATING COMMENTS:
Handling, damage, battery light, malfunction, etc. Please report time, circumstances, suggestions.

_____

_____

_____

_____

_____

_____

Appendix C

SCREENING TEST REPORT FORM AND CHECK LIST

HENNEPIN COUNTY
ALCOHOL SAFETY ACTION PROJECT
338-4756

PORTABLE BREATH TESTER (PBT)
SCREENING TEST REPORT FORM AND CHECK LIST

Operator:
Dept._____

Name _____

Duty:
___Patrol - Regular
___Patrol - Traffic
___Accident Investigation
___ASAP
___Other_____

Stop:
Date_____ Temp._____ (Outside)
Location:

_____

_____

Weather: (Check one or more)
___No precipitation
___Raining
___Snowing
___Fog
___Gusty or high winds

Initial Reason for Stop:
___Equipment violation
___Failure to dim headlights
___Ran stop sign or light
___Speeding
___Erratic driving
___Assist other officers
___Accident scene
___Other:

_____

FOR ACCIDENT ONLY:
___Only one driver involved
___Two or more drivers
Check each that applies
___Fatal, no pedestrian
___Injury, no pedestrian
___Property damage
___Injury, pedestrian
___Fatal, pedestrian
Number at scene:

___Fatal ___Injured

BORG-WARNER J-2
Serial Number: _____

Alcohol-Related Tests, if given:
Balance ___Good ___Fair ___Poor
Walking ___Good ___Fair ___Poor
Finger-Nose ___Good ___Fair ___Poor
Location of PBT test:
___In assigned vehicle Temp._____
___Other:_____
Time unit out of case before test_____

OPERATIONAL CHECK LIST:
1. Subject:
___Time since last drink_____(15 min.)
___Foreign matter in mouth_____(5 min.)
___Time since last smoke_____(5 min.)
Check if non-smoker____
2. Preliminary:
___Install new mouthpiece
___Jumper plugs attached
3. START Switch on:
___ON lamp on
___WAIT lamp on
4. Ready:
___WAIT lamp off
___READY and ON lamps on
___BATTERY lamp off
5. Conduct test:
___"Take a deep breath and blow hard until I tell you to stop."
(Until TEST and READY lamps go out)
6. Results:
___Wait 20 seconds for reading
___Record time of test: __:__ (24 hour)
___Record reading below: (Circle)
Green -Pass- Yellow -Warn- Red -Fail-
7. Shut-down:
___Turn off, discard mouthpiece

Action:
___Released, no arrest
Arrest made: (see other side)
___Used PBT
___Subject chose only evidentiary test
___Subject refused all tests - Imp/Con.
___PBT test not offered, why?

_____

HENNEPIN COUNTY
ALCOHOL SAFETY ACTION PROJECT
338-4756

ALCOHOL RELATED TRAFFIC ARREST FORM

Check if charged with:

___DWI → FOR DWI ARREST ONLY
___DAS or Revocation
___Careless
___Open Bottle
___Ran Stop Sign or Light
___Speeding
List other traffic related:

_____

_____

If more, check here _____.

Arresting Officer: (if different)

Dept. _____

Name _____

Duty: ___Regular ___ASAP

ARRESTED:
Name: _____
(first) (middle) (last)

Address: _____
(street) (city) (zip)

DOB _____ SEX ___M ___F

EVIDENTIARY TEST:

TIME: __:__ (24 hr. clock)

___Blood	(1)	BAC
___Urine	(2)	.
___Breathalyzer	(3)	. _____
___	(4)	
___	(5)	
___	(6)	
___	(7)	
___	(8)	

___Driver refused, under Implied Consent (9)
___No evidentiary test made (0)
Why? _____

Appendix D

QUESTIONNAIRE ADMINISTERED TO PATROLMEN

HENNEPIN COUNTY ALCOHOL SAFETY ACTION PROJECT

625 Second Avenue South
Minneapolis, Minnesota 55402
612 338-4756

PBT Operator Opinion

Name _____ Rank _____

Department _____ Age _____

Have you been trained to calibrate the PBT? ___Yes ___No
Have you been certified as a Breathalyzer operator? ___Yes ___No
About how many PBT tests have you run for enforcement purposes?
___10 or less ___11-25 ___26-50 ___ 51 or more

This questionaire consists of two sections:
I) Concept of pre-arrest screening
II) Reactions toward the Borg-Warner ALERT unit

CIRCLE THE ONE NUMBER ON EACH QUESTION SCALE THAT BEST REPRESENTS YOUR OPINION

1. Assuming that you have an accurate and dependable portable breath tester, the concept of pre-arrest screening:

CAN CONTRIBUTE GREATLY TO TRAFFIC SAFETY	1 2 3 4 5 6 7	CAN CONTRIBUTE NOTHING TO TRAFFIC SAFETY
WILL BE STRONGLY OPPOSED BY THE MOTORING PUBLIC	1 2 3 4 5 6 7	WILL BE HIGHLY ACCEPTED BY THE MOTORING PUBLIC
OFTEN NEEDED	1 2 3 4 5 6 7	NEVER NEEDED
WILL BE WIDELY ACCEPTED BY POLICE OFFICERS	1 2 3 4 5 6 7	WILL NOT BE ACCEPTED BY POLICE OFFICERS

Comments about the concept and potential use of pre-arrest screening:

CIRCLE THE ONE NUMBER ON EACH QUESTION THAT BEST REPRESENTS YOUR OPINION

II.

1) The PBT we are using (is):

TOO LARGE	1 2 3 4 5 6 7	TOO SMALL
TOO LIGHT	1 2 3 4 5 6 7	TOO HEAVY
VERY RUGGED	1 2 3 4 5 6 7	VERY FRAGILE
DIFFICULT TO OPERATE	1 2 3 4 5 6 7	EASY TO OPERATE
QUICK TO OPERATE	1 2 3 4 5 6 7	SLOW TO OPERATE
CONVENIENT TO OPERATE	1 2 3 4 5 6 7	INCONVENIENT TO OPERATE
DIFFICULT TO READ	1 2 3 4 5 6 7	EASY TO READ
COMPLICATES DWI ARRESTS	1 2 3 4 5 6 7	SIMPLIFIES DWI ARRESTS
SPEEDS DWI ARRESTS	1 2 3 4 5 6 7	SLOWS DWI ARRESTS
WILL DECREASE ARRESTS	1 2 3 4 5 6 7	WILL INCREASE ARRESTS
OFTEN NEEDED	1 2 3 4 5 6 7	NEVER NEEDED
DISLIKED	1 2 3 4 5 6 7	LIKED
WORTHWHILE	1 2 3 4 5 6 7	WORTHLESS
AN EXTRAVAGANCE	1 2 3 4 5 6 7	A NECESSITY

PLEASE ANSWER EACH OF THE FOLLOWING QUESTIONS IN A FEW SENTENCES

2. a) One reported problem with the PBT is that some subjects have had difficulty blowing an adequate sample of their breath.
   1) Have you experiences this problem?
   ___No ___Yes

   aa If yes, how often? ___Rarely ___Occasionally ___Often

   bb If yes, has the problem decreased as you have gained experience:
   ___Yes ___No

   2) Other comments or suggestions relating to the difficulty in obtaining an adequate breath sample.

b) Have you encountered other problems in the field use of the PBT? (reaction of subject, etc.)

c) What improvements would you like to see in the design or construction of the PBT? (read-out, case, connections, etc.)

d) What recommendations do you have for training officers to use the PBT's?

Appendix E

QUESTIONNAIRE ADMINISTERED TO CALIBRATORS

HENNEPIN COUNTY ALCOHOL SAFETY ACTION PROJECT

625 Second Avenue South
Minneapolis, Minnesota 55402
612 338-4756

PBT OPINION

For PBT Calibrator:

Name _____

Department _____

Have you been Breathalyzer certified? ___Yes ___No

PLEASE ANSWER EACH OF THE FOLLOWING QUESTIONS IN A FEW SENTENCES:

1) Do you have any complaints about calibrating the PBT's?
___No
___Yes, they are:

2) Would you suggest any changes in the PBT calibration procedures?
___No
___Yes, they are:

3) Other comments about the PBT's in use.

Appendix F

QUESTIONNAIRE ADMINISTERED TO SUPERVISORY PERSONNEL

HENNEPIN COUNTY ALCOHOL SAFETY ACTION PROJECT

625 Second Avenue South
Minneapolis, Minnesota 55402
612 338-4756

Pre-Arrest Screening Survey

Name _____

Department _____

This questionnaire consists of two sections:
I) Concept of pre-arrest screening
II) Reactions toward the Borg-Warner ALERT unit

CIRCLE THE ONE NUMBER ON EACH QUESTION SCALE THAT BEST REPRESENTS YOUR OPINION

I. A. Assuming that you have an accurate and dependable portable breath tester, the concept of pre-arrest screening:

CAN CONTRIBUTE GREATLY TO TRAFFIC SAFETY	1 2 3 4 5 6 7	CAN CONTRIBUTE NOTHING TO TRAFFIC SAFETY
WILL BE STRONGLY OPPOSED BY THE MOTORING PUBLIC	1 2 3 4 5 6 7	WILL BE HIGHLY ACCEPTED BY THE MOTORING PUBLIC
OFTEN NEEDED	1 2 3 4 5 6 7	NEVER NEEDED
WILL BE WIDELY ACCEPTED BY POLICE OFFICERS	1 2 3 4 5 6 7	WILL NOT BE ACCEPTED BY POLICE OFFICERS

B. Comments about the concept and potential use of pre-arrest screening.

CIRCLE THE ONE NUMBER ON EACH QUESTION SCALE THAT BEST REPRESENTS YOUR OPINION

II. A. The PBT we are using (is):

VERY USEFUL	1 2 3 4 5 6 7	VERY USELESS
COMPLICATES DWI ARRESTS	1 2 3 4 5 6 7	SIMPLIFIES DWI ARRESTS
SPEEDS DWI ARRESTS	1 2 3 4 5 6 7	SLOWS DWI ARRESTS
WILL DECREASE ARRESTS	1 2 3 4 5 6 7	WILL INCREASE ARRESTS
OFTEN NEEDED	1 2 3 4 5 6 7	NEVER NEEDED
DISLIKED	1 2 3 4 5 6 7	LIKED
WORTHWHILE	1 2 3 4 5 6 7	WORTHLESS
AN EXTRAVAGANCE	1 2 3 4 5 6 7	A NECESSITY

PLEASE ANSWER EACH OF THE FOLLOWING QUESTIONS IN A FEW SENTENCES.

B. 1) Are the PBT's meeting your expectations as a pre-arrest screening device? In what ways are they inadequate?

2) What improvements would you like to see in the design or construction of the PBT? (read-out, case, connections, calibration, etc.)

3) If all ASAP funded activity was discontinued and all ASAP PBT's withdrawn from use,
a) What would be your funding priority if PBT's cost $500 each?

___Urgent ___Need ___Luxury

b) How many?
MINIMUM: one per _____active traffic cars at night
ADEQUATE: one per _____active traffic cars at night

Comments:

4) Other comments:

Appendix G

FREQUENCY WITH WHICH EACH SCALE VALUE WAS
SELECTED BY PARTICIPATING PATROLMEN

[a]FREQUENCY WITH WHICH EACH SCALE VALUE WAS
SELECTED BY PARTICIPATING PATROLMEN

CAN CONTRIBUTE GREATLY TO TRAFFIC SAFETY	(33) 1	(22) 2	(16) 3	(8) 4	(2) 5	(0) 6	(2) 7	CAN CONTRIBUTE NOTHING TO TRAFFIC SAFETY
WILL BE STRONGLY OPPOSED BY THE MOTORING PUBLIC	(6) 1	(0) 2	(5) 3	(29) 4	(21) 5	(14) 6	(8) 7	WILL BE HIGHLY ACCEPTED BY THE MOTORING PUBLIC
OFTEN NEEDED	(11) 1	(22) 2	(21) 3	(21) 4	(4) 5	(2) 6	(1) 7	NEVER NEEDED
WILL BE WIDELY ACCEPTED BY POLICE OFFICERS	(31) 1	(22) 2	(10) 3	(8) 4	(6) 5	(2) 6	(4) 7	WILL NOT BE ACCEPTED BY POLICE OFFICERS
TOO LARGE	(1) 1	(4) 2	(8) 3	(67) 4	(1) 5	(0) 6	(0) 7	TOO SMALL
TOO LIGHT	(1) 1	(0) 2	(1) 3	(74) 4	(3) 5	(2) 6	(0) 7	TOO HEAVY
VERY RUGGED	(2) 1	(7) 2	(9) 3	(29) 4	(14) 5	(3) 6	(8) 7	VERY FRAGILE
DIFFICULT TO OPERATE	(4) 1	(2) 2	(1) 3	(11) 4	(4) 5	(20) 6	(39) 7	EASY TO OPERATE
QUICK TO OPERATE	(17) 1	(14) 2	(9) 3	(13) 4	(11) 5	(11) 6	(6) 7	SLOW TO OPERATE
CONVENIENT TO OPERATE	(28) 1	(24) 2	(8) 3	(14) 4	(3) 5	(1) 6	(3) 7	INCONVENIENT TO OPERATE
DIFFICULT TO READ	(4) 1	(0) 2	(3) 3	(6) 4	(3) 5	(15) 6	(51) 7	EASY TO READ
COMPLICATES DWI ARRESTS	(6) 1	(1) 2	(2) 3	(17) 4	(9) 5	(19) 6	(27) 7	SIMPLIFIES DWI ARRESTS
SPEEDS DWI ARRESTS	(22) 1	(10) 2	(7) 3	(20) 4	(5) 5	(9) 6	(10) 7	SLOWS DWI ARRESTS
WILL DECREASE ARRESTS	(3) 1	(0) 2	(2) 3	(9) 4	(11) 5	(23) 6	(33) 7	WILL INCREASE ARRESTS
OFTEN NEEDED	(7) 1	(26) 2	(16) 3	(24) 4	(4) 5	(3) 6	(1) 7	NEVER NEEDED
DISLIKED	(5) 1	(5) 2	(3) 3	(16) 4	(13) 5	(19) 6	(22) 7	LIKED
WORTHWHILE	(28) 1	(23) 2	(8) 3	(12) 4	(1) 5	(6) 6	(5) 7	WORTHLESS
AN EXTRAVAGANCE	(4) 1	(2) 2	(2) 3	(21) 4	(14) 5	(22) 6	(17) 7	A NECESSITY

[a] Bracketed figures indicate frequency of selection

Appendix H

OPEN-ENDED QUESTION RESPONSES OF PATROLMEN

FREQUENCY

QUESTION: Other comments or suggestions relating to the difficulty in obtaining an adequate breath sample.

RESPONSES:

Need a larger mouth piece.	9
The "force" of the air sample is set too high.	1
Redesign the mouth piece.	2
Some PBTs pose more of a breath sample problem than others.	1
Adjust the PBT for a shorter blowing time.	1
Most giving an inadequate breath sample know or think they will fail.	1
Use nose air instead of mouth air.	1
PBT gives a reading before the subject has completed his breath sample.	2
Some drivers are not strong enough to blow as hard as the PBT requires.	1
Most subjects don't want to give a continuous breath and stop to inhale.	1

QUESTION: Have you encountered other problems in the field use of the PBT? (reaction of subject, etc.)

RESPONSES:

It takes too much time to warm up.	3
Occationally the PBT must be restarted due to an inadequate breath sample.	7
Improper calibration resulting in fail on PBT, but below .10% on Breathalyzer.	1
Many people suspect the accuracy of the PBT.	6
When the subject is blowing the WAIT light comes back on.	3
Most subjects are skeptical of the PBT prior to the test.	1
Some subjects are unimpressed with the PBT due to its small size.	1
During bad weather and at accident scenes the PBT takes up needed room.	1
Purge takes too long.	1
Subjects often want to hold the PBT during the test.	2
The PBT is not needed - it only has value for the inexperienced officer.	1

FREQUENCY

QUESTION: What improvements would you like to see in the design or construction of the PBT? (read-out, case, connections, etc.)

RESPONSES:

Have the face of the PBT toward the subject when he gives the breath sample.	1
Recess or eliminate the jack plugs.	1
Have a ridge on the mouth piece so one doesn't swallow it.	1
A print out similar to the yellow Breathalyzer sheet.	1
Read out of the different levels of intoxication.	9
A digital read out to prevent false positives.	1
If a party stops blowing for a brief moment, he could start again without recycling the unit.	5
A smaller more durable PBT.	3
Eliminate the influence of low temperatures.	1
Use recessed connections.	1
Use stronger connections.	5
Let operator know how far the subject is over the .10% limit.	1
Attach a longer tube to the mouth piece.	8
Faster warm up.	3
ON/off switch should be better constructed.	1
Provide a smaller or more rugged storage case.	4
Should be able to recharge in squad car.	1
Set the minimum fail read out to .12-.13.	3
Lights are difficult to read in bright sun light.	3
Raise the fail limit to .15 to prevent false positives.	1
Make it easier to blow an air sample.	1
Wouldn't use PBT as basis for arrest because it's inaccurate compared to the Breathalyzer.	1
"I would like to see it work."	1

FREQUENCY

QUESTION: What recommendations do you have for training officers to use the PBT?

RESPONSES:

Plain, easy to understand instructions.	4
Use instructions and detailed green operational sheets for several weeks.	2
All officers should be trained to use the PBT.	6
Should be taken to roll calls, explained and demonstrated.	1
Four hours in classroom followed by four more hours 60 days later.	1
Two hours training - one hour in class and one hour in field.	1
Learn by actual on-the-road usage.	2
Explain the theory of the machine.	1
Have a check list and form telling the subject how to take the test.	2
Require complete training on the Breathalyzer and in PBT calibration.	1
Assure the subject that the PBT is not for evidence.	1
There should be a PBT in every squad car.	1

Appendix I

OPEN-ENDED QUESTION RESPONSES OF CALIBRATORS

QUESTION: Do you have any complaints about calibrating the PBT's?

RESPONSES:

At times some PBT's do not work properly.
Calibrator holes sometimes off center with alignment of calibrating screw slot. Should go to some type of recessed plastic screwdriver holder surrounding the calibration screw.
Takes long and hard to get an exact calibration.
Procedure is too complicated in adjusting up to the fail light.
Simulator solutions in use at St. Louis Park. The ideal for checking rough accuracy of units. With this procedure the solutions also have to be continually checked.

QUESTION: Would you suggest any changes in the PBT calibration procedures?

RESPONSES:

Go to a pass & failure indication as being more desirable than (2) Fails- it is my feeling that this is a more desirable procedure, eliminating the setting of the calibration screw too sensitive so the calibrator will get his two fail indications.
Unable to say.
Although not really a suggestion because I don't know if it would be possible. I would like to eventually see a simplified form of calibration such as tuning fork for radar, etc.
To have the warn & pass lights calibrated on a more frequent basis.
Less steps to calibrating.
I don't think they need calibration as often as required by B.C.A.
Have more people trained to calibrate them. Some times they go too long without being calibrated. We only have two officers trained and when we're off duty the PBT's are just let go.
Simplify - calibrate once 2 wk - Set fail level upwards of .11% to allow for tolerence thus not causing one to fail PBT set at .11% then pass breath test on breathalyzer at .09%.
Once every three or four days.

QUESTION: Other comments about the PBT's in use.

RESPONSES:

PBT is not a convenient instrument to work with on the street. A tube system like on the Breathalyzer would be a great improvement.

Operator must be extremely cautious that the drinking subject hasn't been drinking in vehicle just prior to stop, this leads to too many false positive readings. If there is any question at all on this subject, operator of PBT will have to keep subject under observation for the required 15 minutes prior to running test.

The blowing into them causes problems. Takes a lot of blowing.

I am satisfied with their performance up to this point.

Would like to see digital readings so we could get away from having people fail and then go less than .10% B.A. on a evidentiary test.

Weather seems to have an effect on the unit. Plastic caps on front of the units should have a stronger chain and caps.

Still having trouble getting a proper sampler.

I think the simulator solution should be more than .11% to make sure the violator is over the .10% when given the evidentury test. It seems that too many times the blood tests come out under .10%.

Good instrument.

Takes too much breath to put out lights, back force & duration.

Appendix J

OPEN ENDED QUESTION RESPONSES OF SUPERVISORY PERSONNEL

QUESTION: Comments about the concept and potential use of pre-arrest screening.

RESPONSES:

We have found this a great asset to our officers in their field activity.
I believe a good tool to assist the officer. More so in case of accident and you are there with a PBT. Rather than take party to office for a test.
Great potential. Sound concept.
The pre-arrest screening device is an important tool in the detection and apprehension of the drunk driver. It eliminates the need for experience on the part of the officer as a trained new officer can use the PBT as a substitute for experience. It also sharpens up the older officer and thus enables the detection of a lot of dangerous drivers who have relatively few signs, other than their driving of being under the influence.
Good tool if used properly. I feel that the PBT should only be used to confirm the need to arrest a violator and should not be used when the officer is already convinced on the need to arrest the violator.
It will take time for officers to accept this unit and have confidence in it.

QUESTION: Are the PBT's meeting your expectations as a pre-arrest screening device? In what ways are they inadequate?

RESPONSES:

No more experience than I get in my position, very difficult to answer. Suggest using only those who are actively engaged in using equipment.
Yes - Our experience has been excellent.
Not really. Too many false readings.
Yes. Some difficulties of getting results (especially females.) due to the large amount of lung power needed.
Yes.
Yes. I do not feel that they are inadequate.

Yes. 1) too frequent need for calibration. 2) High cost.
Yes. Uniform officers have not really used them as intended as yet.
Yes. Very minor problems-Officers tend to give over reliance to this equipment and not carry out normal investigative procedures in developing DWI evidence re-questions and preformance roadside testing.
A. Yes. B. Too much down time.

QUESTION: What improvements would you like to see in the design or construction of the PBT? (read-out, case, connections, calibration, etc.)

RESPONSES:

Some type of scale for the readings rather than the present 3 light system.
A machine that would have to be calibrated only once a month and do by an expert so no real area for mistakes.
Easier way of getting an ample breath supply.
None at the present.
Reduce the need for calibration from the present every other day to at least weekly. (Monthly would be much better.)
1. Improve male-female connections (prongs too delicate).
2. See previous not on calibration--weekly would be better.
Connections - the chain is always breaking on blue plug. Air sample should be more restricted so volume of sample could be cut down and person would not run out of breath.
Read-out's, also a holder to be attached inside police vehicles.
Digital Read-out would be nice. Build in calibration.

QUESTION: If all ASAP funded activity was discontinued and all ASAP PBT's withdrawn from use, comments.

RESPONSES:

We presently are utilizing our own units.
Excellent equipment for untrained officers in DWI enforcement.

QUESTION: Other comments.

RESPONSES:

ASAP is an excellent program meeting with favorable community opinion.
Cost per unit is quite high - If this could be reduced by 50% it would be helpful.
The entire ASAP program has been excellent and meaningful in every way not only to law enforcement officials but accomplishing the intent of Program Policies, the man dates of safer highways, etc.

Appendix K

ASAP SQUAD LOG

ASAP SQUAD LOG
PBT STUDY

DATE _____ MILEAGE END _____ SQUAD NUMBER _____

HOURS WORKED:

START _____ MILEAGE START _____ COMMUNITY _____

STOP _____ MILES DRIVEN _____ OFFICER _____

TIME		IND/ACT	REASON	LOCATION	ACTION TAKEN-	HAD NOT	HAD BEEN DRINKING			ENVEL.	PBT	BAC	-Comments-
STOP	CLEAR	or CALL	FOR STOP		SPECIFY CHARGES OR RELEASED	BEEN DRINKING	Under Influence? NO	YES	POSSIBLE	NUMBER	TEST RESULT		NAME OF PARTY if CHARGED and HAD BEEN DRINKING

Appendix L

STUDY DESIGN FOR PARTICIPATING OFFICERS:
EFFECT OF THE PBT ON
ALCOHOL-RELATED ARREST RATES

EFFECT OF THE PBT ON ALCOHOL-RELATED ARREST RATES

PURPOSE:

To estimate the difference in arrest rates for alcohol-related offenses between two methods of determining intoxication:

1) Use of the Portable Breath Tester
2) Use of conventional procedures such as balance, straight line, finger-to-nose, etc.

DISCUSSION:

The effectiveness of a portable breath tester is difficult to assess while in unrestricted service due to differences between areas patrolled, time of patrol, etc. The procedure outlined below uses each squad as its own comparison. This is accomplished by randomly choosing whether or not to use the PBT for suspected DWI's. The success of this procedure depends heavily upon the police officer to follow through fairly and equally for each stop made.

This study is not an attempt to measure differences between the performance of officers. Differences between areas patrolled, day of week, weather, others, etc., would make officer comparisons meaningless.

PROCEDURE:

The process would begin with the officer making a stop. After initial contact with the driver, but before asking the driver to get out of his car, the officer would come to a conclusion:

1. Definitely not a potential DWI
2. Definitely yes, a serious DWI
3. Uncertain, proceed with further inquiry and testing

The first two conclusions would be handled in the normal manner and only noted in the squad log. In the uncertain case the following plan would be in effect:

The officer will receive a set of sealed envelopes. He will open the next envelope, finding the following:

A. PROCEED WITH A PBT TEST

or

B. EMPLOY NORMAL, non-PBT PROCEDURES

The envelopes are in random order.

Special circumstances should be noted on the squad log.

FORMS FOR OFFICERS: (See attached samples).

Currently used: ASAP Squad Logs would have extra columns for needed data.

Added: Envelopes containing a note as to whether or not to use the PBT.

Appendix M

DESCRIPTION OF THE COMMUNITY

DESCRIPTION OF THE COMMUNITY

Hennepin County has a population of 955,617 or 25% of the population of Minnesota. The City of Minneapolis occupies about 10% of the land area of Hennepin County and has a population of 456,199 or about half of the county population. The county itself is a part of a seven-county metropolitan area of nearly half of the state's population and is contiguous with Ramsey County (St. Paul), the second most populated county in the state. There are 49 political subdivisions within the county and traffic law enforcement is performed by more than 25 police agencies.

Hennepin County, as a part of the State of Minnesota, has a generally good body of DWI law, including workable implied consent, preliminary screening tests, illegal per se to drive with .10% BAC, and authority of court to suspend imposition of all or part of sentence if violator undergoes treatment when indicated.

END