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EFFECT OF SATURATION
PATROLS FOR DWI ENFORCEMENT

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\$3,551,000

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Under sponsorship of

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300 Turner Road
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FINAL REPORT
SATURATION PATROL

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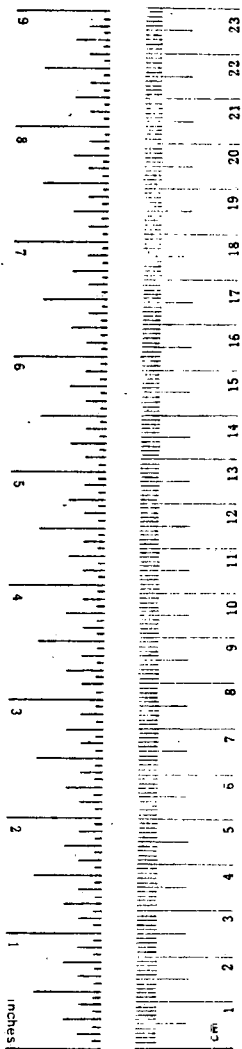
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16. Abstract The County was divided into regions and subdivided into two high arrest areas in each region. Circumferential routes around residential areas were used with high levels of saturation, one patrol car passing any site at approximately every four minutes. Although comparisons are difficult, number of contacts with motorists and number of written warnings appear to have increased, but DWI arrests, compared to baseline ASAP patrols, did not increase. Performance and cost effectiveness do not argue for saturation patrol. 12 pages, plus two appendices.			
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in. = 2.54 (exactly). For other exact conversions, and more detailed tables, see NBS Mon. Publ. 286, Units of Weights and Measures, Page 22-26, 50 (Catalog No. C-1, 10-286).



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F

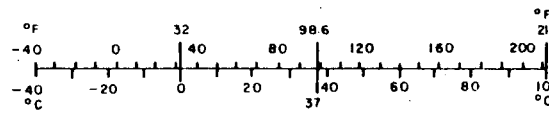


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1. INTRODUCTION.

The Fairfax ASAP Enforcement Study was developed to test whether area saturation patrols were an effective and efficient means of apprehending individuals in violation of alcohol-related traffic laws.

The general plan was operationalized by establishing high DWI arrest regions within Fairfax County and dividing these regions into two areas, test area and control. Data from each area as well as baseline data were tabulated for the effect of saturation patrols on arrests and accidents. Cost of patrol activity was also considered.

2. PROCEDURES.

Fairfax County was divided into two regions; each region was subdivided into two high arrest areas. Several criteria were used to establish a patrol route within each area. The areas had to be comparable in number of DWI arrests in the five months prior to initiation of patrol. The patrol route in each area was to be comparable in miles driven and time to complete route. The routes chosen were to encompass suburban areas. Thus, the patrol circled on main highways, generally through commercial areas. Motorists going to and from residences in these areas would have to drive through a saturation area. The typical saturation pattern of urban saturation patrols, crisscrossing through a particular area, was adapted for suburban residential configurations.

On September 5, 1975, patrols commenced in Region I, Area A. Patrols originated at the intersection of Route 1 and Route 629 and moved south on Route 1 to Route 626. The patrol turned east, then north on Route 626. The patrol continued northward to the original intersection.

Patrols in Area B began on November 7, 1975. Patrols drove a circular route from Route 1 and Route 235 south along Route 1 to Accotink, returned north on Route 1 to Mt. Vernon Highway, continuing northward onto Route 235, which intersects Route 1, the starting point. Both routes take approximately 20 minutes to drive.

Region II, Area A patrols began January 2, 1976. Patrols started at the intersection of Route 50 and Route 7 at Seven Corners and traveled west on Route 50. The patrols turned south on Prosperity Avenue to Route 236. On Route 236, the direction was east, then turning northeast on Route 244. At Route 7 the patrol turned northwest to Route 50 to complete the route.

On March 5, 1976, patrols began in Region II, Area B. The route originated at the intersection of Route 236 and Route 617. Patrol cars headed west on Route 236, turned south on Route 651 and continued south on Route 645. The route turned east onto Route 644, then north on Route 647, and Route 620. The circular route was completed at the Braddock Road and Little River Turnpike intersection. Both of these routes take 25 minutes driving time. Appendix A contains a map of routes.

Saturation of each region was heavy. In Region I a patrol car passed any specific point on the route at approximately four minute intervals. In Region II cars passed at approximately six minute intervals.

Officers were instructed to emphasize DWI enforcement. They were encouraged to investigate all suspicious driving behavior and to administer a prearrest screening device. Officers were instructed not to respond to other calls for service unless life was endangered or a felony was being committed. Officers completed one form in addition to the routine police paperwork and the ASAP contact sheet. This form, shown in Appendix B, included a report on the reason for stopping a motorist, the action taken and the outcome.

Patrol time was during high arrest time, Friday and Saturday night, 9:00 p.m. to 5:00 a.m. Five officers were assigned in one person marked cars. Each night had 40 man-hours of special patrol scheduled. Due to personal emergencies, mechanical problems with patrol cars and one scheduling difficulty on five nights of the scheduled patrols one officers was absent. Thus, for the 69 nights of patrol, a total of 340 eight hour shifts were worked. Although an officer may have worked more than once, we shall refer to 340 officers.

3. ANALYSIS.

The analysis will focus on five areas: number of contacts with motorists, number of written warnings, number of DWI arrests, crash results and cost effectiveness.

a. Contacts with Motorists.

As noted above officers were encouraged to make contact with any driver exhibiting suspicious driving behavior. Drivers with violations were also to be stopped, and officers were told to use the prescreening devices whenever it was thought to be justified.

The total number of contacts made by the 340 officers was 1,973. This is an average of 5.8 contacts per night per officer. There was a wide range of activity among officers with a low of one contact during the eight hour shift to a high of 15 during one shift. The average number of contacts by officer during each month of the eight month study shows little variation. See Table I. It is interesting to note that the highest number of contacts was found in December and in the last month of operations. Although the same officers did not work throughout the eight month period, it does appear that either traffic conditions changed or enthusiasm for the project waned.

The officers recorded the reason for contact. More than 80% of the reasons fell into two categories, 1. driving behavior, such as weaving, driving too slow or erratic speed, and 2. traffic violations, such as speeding or ran red light. Another 10% of the contacts were related to motor vehicle violations such as expired registration, headlight out or no brake lights. The remaining contacts were miscellaneous reasons, e.g., assisting stalled motorist, responding to loudparty and stopping suspicious pedestrians.

A survey of Fairfax police was conducted in September, 1975. The survey found that officers believed that a typical officer would make 3.5 contacts per week with motorists suspected of DWI. They reported that they made only .7 contacts during the preceding week.¹ This number was substantially lower than the 5.8 contacts per night made by the saturation patrol. Some reduction would be expected because of the numerous other duties associated with regular patrol activity.

b. Warnings.

The contact had four possible outcomes. The person could be released with no further action. The person could be given a verbal warning, a written warning, or the person could be issued a summons.

Of the 1,973 contacts, 137 resulted in written warnings and 251 resulted in arrests. One hundred and fifty-five of these arrests were DWI arrests. Verbal warnings were not tabulated. Only 6.9% of the contacts resulted in written warnings on the part of the police, and 12.7% resulted in arrests. Seven percent of the contacts resulted in DWI arrests.

¹Saunders, David N. and Linda J. Pemberton. Determinants of Police Officers' DWI Activity. Virginia Commonwealth University, Richmond, Va. 23220, p. 20, 1977.

TABLE 1
NUMBER OF CONTACTS

		No. of Contacts	No. of Officers	Average Contact per Officer
REGION I	September	260	39	6.6
	October	255	43	5.9
	November	288	45	6.4
	December	208	40	5.2
REGION II	January	277	49	5.6
	February	225	39	5.8
	March	224	40	5.6
	April	236	45	5.2
	TOTAL	1,973	340	5.8

Looking more closely at the warnings, we find some substantial differences by month. December had the highest number of written warnings and also the highest warnings per officer. See Table 2. Similar to the contacts, most warnings, except for December, occurred during the first month of activity in each Region.

On more than 1/3 of the 340 eight hour shifts, no written warnings were issued. Most written warnings were related to motor vehicle violations. Ten written warnings of the 137 were issued when the motorist's prearrest screening registered "warn". The remaining warnings were issued for other traffic violations, primarily speeding.

The proportion of officers issuing warnings during the saturation patrol is difficult to compare to the proportion reporting that they had issued a warning in response to the police attitude survey because of a difference in time periods and the difference between regular police activity and specialized DWI enforcement. With this limitation in mind, note that the survey found that 36.4% of the officers surveyed reported issuing written warnings during the previous week.² During the saturation patrol 17.9% of the officers issued warnings on an eight hour shift. It appears that more warnings were issued during the saturation patrol.

c. Arrests.

As noted above a total of 251 arrests, 155 of which were DWI arrests, resulted from the saturation patrol. See Table 3. The police attitude study found that officers thought a typical officer would make 1.6 DWI arrests per week while they reported their own arrest activity at .2 arrests per week.³ Since the average arrests per officer on an eight hour shift of saturation patrol was .45, one might conclude that the saturation was effective in increasing arrests. Again remember these two items are not directly comparable since the officers in the survey were considering their DWI arrests as part of regular patrol activity.

²Saunders, David N. and Linda J. Pemberton. Determinants of Police Officers' DWI Activity. Virginia Commonwealth University, Richmond, Va. 23220, p. 57, 1977.

³Saunders and Pemberton, 1977, p. 20.

TABLE 2
NUMBER OF WARNINGS

	No. of Warnings	No. of Officers	Average Warnings Per Officer
Region I	September	18	.46
	October	14	.32
	November	11	.24
	December	26	.65
Region II	January	25	.51
	February	13	.33
	March	13	.32
	April	15	.33
	TOTAL	135	.39

TABLE 3
DWI ARRESTS BY SATURATION PATROLS

	No. of Arrest	No. of Officers	Arrest Per Officer
Region I	September	22	.56
	October	25	.58
	November	21	.46
	December	10	.25
Region II	January	23	.47
	February	24	.61
	March	16	.40
	April	14	.31
	TOTAL	155	.45

A better comparison then would be between the saturation patrol and normal ASAP patrols that also focus primarily on DWI enforcement, but are not restricted to established routes.

Let us look at patrol hours spent per arrest by ASAP and saturation patrols. During the baseline period, July and August 1975, the number of DWI arrests made by ASAP patrols and the hours spent on patrol were tabulated.⁴ Regular ASAP patrols were scheduled from 8:00 p.m. to 4:00 a.m. Sunday through Thursday and 9:00 p.m. to 5:00 a.m. Friday and Saturday. Three cars were scheduled on weeknights and seven cars are on duty Friday and Saturday. The approximate number of hours per week spent on ASAP patrol is 232 with 120 spent on weeknights and 112 on Friday and Saturday. Since the saturation patrols worked only Friday and Saturday, the days of highest incidence of drunk driving according to the Roadside Survey,⁵ comparison of saturation patrols with normal ASAP patrols should show results favorable to saturation. However, this is not the case. The total hours per arrest for the baseline period was 17.25 while the total hours per arrest for the saturation period were 17.50. The increase is surprising and suggest the ineffectiveness of saturation patrols.

During the months of saturation patrol, ASAP patrol schedules were shifted toward more weekday hours so as not to conflict with the activity of the saturation patrols. Consequently, comparing ASAP patrols with saturation patrols should favor saturation. This is the case, with the hours per arrest being 17.5 for saturation patrols and 24.7 for ASAP patrols. See Table 4.

Although comparisons are difficult, the saturation patrol seems to have increased the level of police activity with relation to contact with motorists and issuance of written warnings. There was, however, no demonstrated increase in arrest rate, at least in comparison to baseline period ASAP patrols.

The early months in each region seem to produce the highest level of police activity. With contacts and warnings, the first month in each region had the highest level of activity which is then followed by a gradual decline. Arrests follow a similar pattern except that the second month of operations displays the highest arrests followed by a decline. One month is noticeably different.

⁴Although five jurisdictions participate in the Fairfax ASAP, only Fairfax County Police were involved in the saturation patrol. Data refers only to County ASAP Patrols.

⁵Smith, Thomas J. Trends in Drinking-Driving at Night:1974. Virginia Highway Research and Transportation Council, Charlottesville, Va. 22903, p.28,1975.

December had the fewest contacts, the most written warnings, and the fewest arrests. Could this be the variable, "holiday spirit"?

The pattern of high activity followed by a decline could be caused by the high visibility of the police deterring drunk driving, or drinking drivers could have taken different routes to their destination. This question was tested by looking at weekend DWI arrests by Fairfax County Police in a specific area one month prior to saturation patrols and during the first and second months of the patrols. If the patrols were deterring drunk driving, the pattern would be expected to be moderate arrests prior to saturation with little difference between the patrol area and the adjacent area. Followed by increased arrest in the saturation area but with little change in the adjacent area. The third month would then show arrests decreasing in saturation area but again little change in the adjacent area.

If the patrols were instead causing modification of driving routes, a different pattern would be expected. In the month preceding patrols little difference should be found in the test area and adjacent areas. During the first month of patrols, arrest would increase in patrolled area and some increase in adjacent areas should be found as drivers seek to avoid heavy police concentration. The following month should find a decrease in arrests in the patrol area, but a continuing high number in adjacent areas.

As seen in Table 5 and graphically displayed on Figure 1, the data supports the interpretation that drivers are changing their routes. The slight decline in February, however, does suggest that the patrols also had some deterrent effect.

d. Crash Results.

It was expected that the saturation patrol would have the effect of reducing traffic accidents in the heavily patrolled region. Ten major intersections were chosen to monitor in Region I, Area A, beginning with a two month base period.

No conclusive results can be drawn from this data because of the small number of accidents within these intersections both before and after the study commenced. Only three accidents occurred during the second two-month period. See Table 6.

One officer facetiously suggested the increase in accidents which occurred when the study was initiated was caused by motorists who ran off the road looking for the accident which brought all the police into the area.

TABLE 4

PATROL HOURS PER DWI ARREST

	<u>BASELINE</u>	<u>ASAP</u>	<u>SATURATION</u>
July	16.3	--	--
August	18.2	--	--
September	--	14.6	14.2
October	--	26.	13.8
November	--	22.4	17.1
December	--	22.1	32.0
January	--	52.5	17.0
February	--	26.	13.0
March	--	19.7	20.0
April	--	34.3	25.7
Average Hours per Arrest=	17.25	24.7	17.5

TABLE 5
 REGION II, AREA A
 PERCENT OF WEEKEND DWI ARRESTS

	<u>December</u>	<u>January</u>	<u>February</u>
Patrol Area	12.2	19.5*	18.3*
Adjacent Area	13.2	25.6	20.3
All Other Areas	74.5	54.9	61.4

*Saturation in effect

FIGURE 1
 REGION II, AREA A
 PERCENT OF WEEKEND DWI ARRESTS FOR
 SATURATION AND ADJACENT AREAS

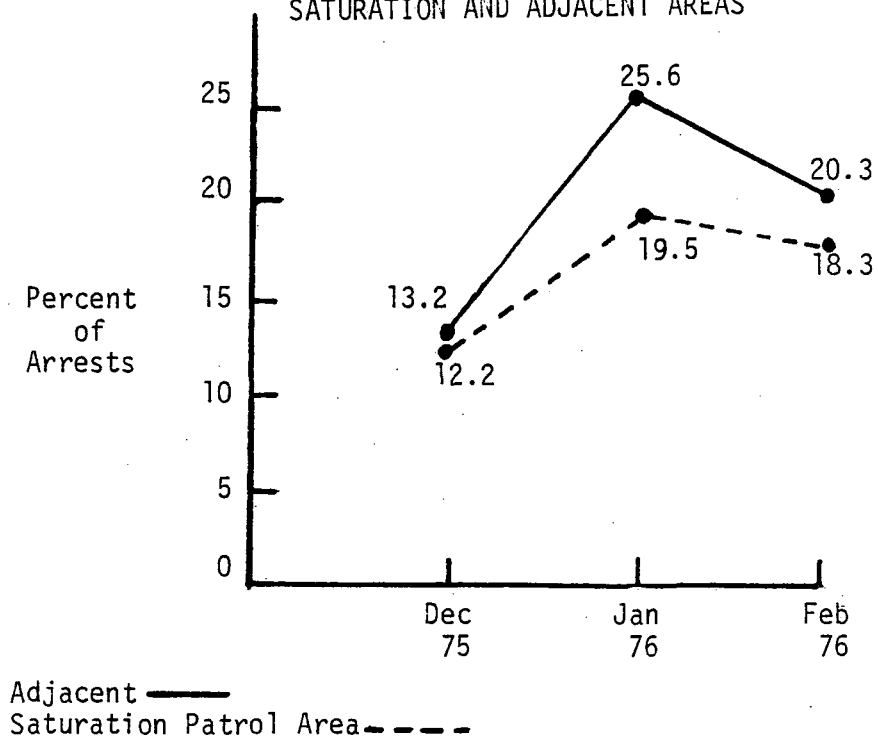


TABLE 6
NUMBER OF ACCIDENTS AT MAJOR INTERSECTIONS
REGION I

<u>INTERSECTION</u>	<u>BASELINE</u>	<u>REGION I A</u>	<u>REGION I B</u>
	July-August	September-October	November-December
629 & King Highway	0	0*	0
Beacon Hill Rd & Quander Rd	0	0*	0
Popkins & Davis Street	0	1*	0
Rebecca Dr & White Oak Dr	0	1*	0
Francis Dr & Boswell Ave	0	0*	0
Woodley Dr & Mt Zepher Dr	0	0	0*
Rt I & Lukens Lane	3	4	1*
Mt Vernon Memorial Highway	0	0	0*
Old Mill Rd & Patton Blvd	0	0	0*
Rt I & Pohick Rd	0	2	2*
TOTAL	3	8	3

*Saturation Patrol in Effect

e. Cost Effectiveness

Fairfax County Police were paid \$9.50 per hour for saturation and other ASAP patrols. The total hours spent on saturation patrol were 2,720. One hundred and fifty-five DWI arrests were made at an approximate cost of \$166.70 per arrest. Although this compares favorably to the cost per ASAP arrest in 1975, \$200, it nevertheless strongly suggests that this type of patrol is not economically feasible.

4. CONCLUSION

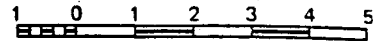
Area saturation patrols as a technique to increase DWI arrests in a cost effective manner appear to be unfeasible. The geography of suburban areas makes them unsuited for a crisscross type patrol. The use of access highways around residential area appears to encourage drivers to take alternate routes and does not deter drunk driving.

Costs increased when compared to baseline data, and although the number of contacts and warnings appear to be higher than during regular patrols, the resulting number of arrests do not appear to have increased.

APPENDIX A

NORTHERN VIRGINIA AREA MAP

SCALE IN MILES



EXIT NO. 15 EXIT 1

MILEAGE RINGS COMPUTED FROM PENTAGON

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Region II Area A

Jan. - Feb.

Region II Area B

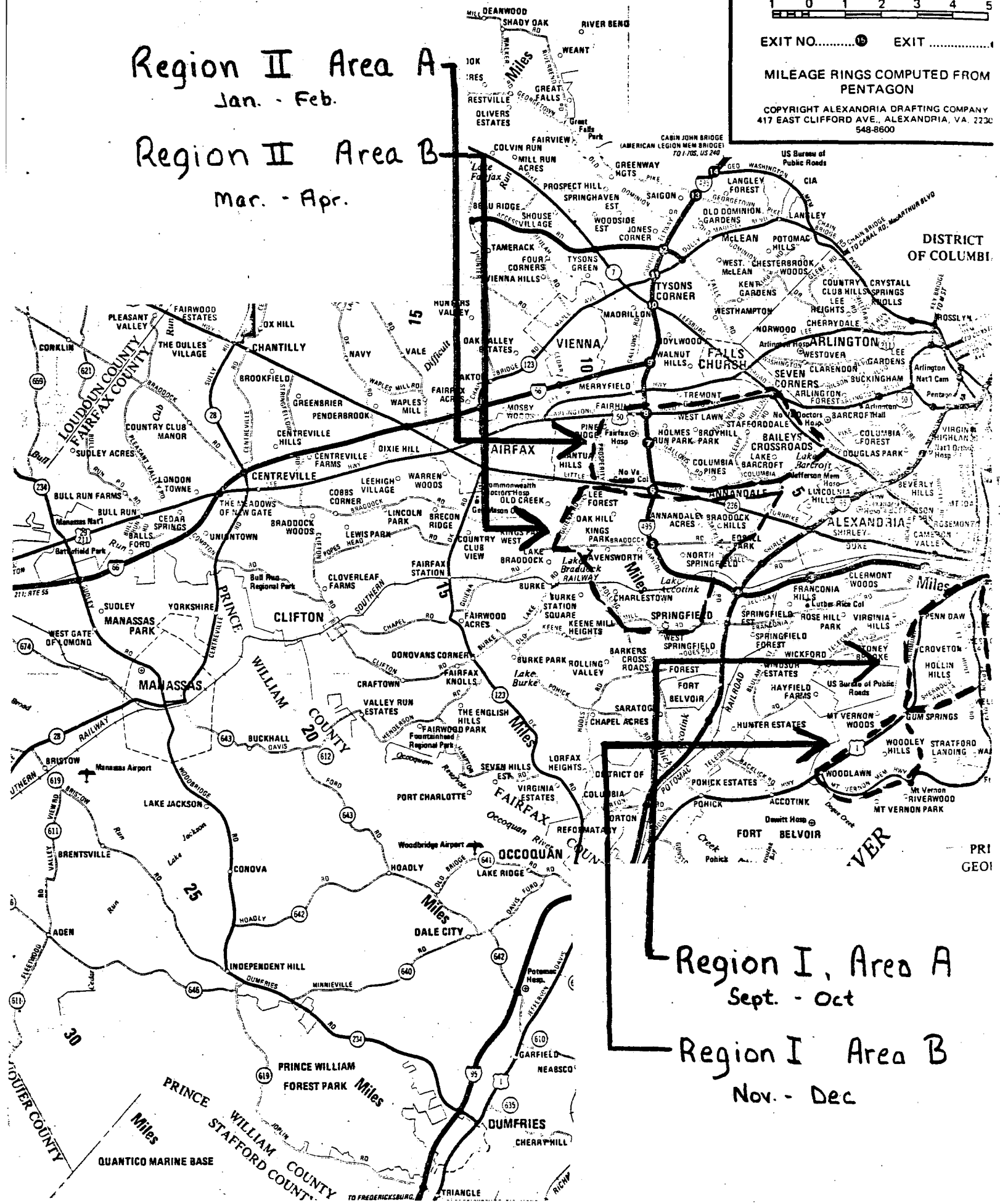
Mar. - Apr.

Region I, Area A

Sept. - Oct

Region I Area B

Nov. - Dec





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