### A MODEL FOR PREDICTING AIR QUALITY ALONG HIGHWAYS

by

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Virginia Highway Research Council (A Cooperative Organization Sponsored Jointly by the Virginia Department of Highways and the University of Virginia)

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#### ABSTRACT

The subject of this report is an air quality prediction model for highways, AIRPOL - Version 2, July 1973. AIRPOL has been developed by modifying the basic Gaussian approach to gaseous dispersion. The resultant model is smooth and continuous throughout its entire range, which adds mathematical credence to its applicability.

AIRPOL has the capability to model a wide variety of real-world highway pollution problems. It can handle elevated, depressed, and at-grade roadways. It can be used to analyze any number of lanes for divided or undivided highways as well as ramps and service roads. AIRPOL is even capable of making an analysis of concentrations upwind from a pollution source.

Field studies have been initiated to verify AIRPOL – Version 2 and to provide empirical information should future modifications be necessary. The limited test data available so far indicate a satisfactory correlation between observed and predicted CO levels.

The computer program AIRPOL has been structured such that it can easily be modified to accept upgraded data on emission factors for CO, HC, and  $NO_x$  as they become available. Furthermore, should future modifications to the model be necessary, the modular design of AIRPOL will simplify the transition from Version 2 to Version 3.

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### HISTORY

The Federal Highway Act of 1970 requires an environmental impact statement for each federally funded highway project. The statement must include a quantitative analysis of the impact of the highway on the air quality in the area of the proposed project.

1.1 In the fall of 1971, the Council was requested by the Department to initiate the development of a dispersion model to comply with the requirements of the 1970 act. The result of this initial attempt was a method essentially similar to, but without the refinement and sophistication of, the APRAC Model, which was then still under active development by the Stanford Research Institute. This method was abandoned in favor of AIRPOL – Version 1, which was prepared by the Research Council and submitted to the Department in September, 1972. Since that time, research has continued on the AIRPOL project and an upgraded model, AIRPOL – Version 2, July 1973, has been developed and submitted. This report explains the development and application of AIRPOL – Version 2, July 1973.

#### MATHEMATICAL DEVELOPMENT

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1.0

A survey of the literature and inquiries to other highway departments revealed that the classical Gaussian dispersion process was considered to be the most promising basis for a general highway dispersion model. (1, 2, 3, 4)The Gaussian process was initially conceived as a model of downwind concentrations from a point source. Since modeling of emissions from a highway requires some sort of line source model, it was felt an integration of the Gaussian process should be suitable. However, the equations for the Gaussian point source model are not directly integrable in the general case. Furthermore, because of the interdependence of the variables in the Gaussian model and the complexity of the integration, numerical techniques were considered too inefficient an approach to solving the line source problem. Therefore, AIRPOL employes the simplified technique of finding a point source equivalent to a given highway line source and then using a Gaussian point source process to determine concentrations.

The remainder of this section outlines the mathematical philosophy in progressing from the basic Gaussian technique to the final AIRPOL model. Article 2.1 describes the fundamental Gaussian process for point source emissions.

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Articles 2.2 and 2.3 discuss the method of establishing the source strength and location of a point source equivalent to a given highway source. In articles 2.4 and 2.5 the geometric arguments for finding downwind travel distances and vertical and horizontal offsets to enable calculation of concentration profiles are presented. Article 2.6 develops the extension of the basic model to the stage necessary to model the depressed roadway situation. In article 2.7 the model is further extrapolated to encompass upwind as well as downwind concentration profiles. Article 2.8 concludes the mathematical development with the presentation of the terminal AIRPOL equations in their complete form.

2.1

The basic Gaussian model for point source emissions assumes (see Figures 1 and 2) that gaseous concentrations will be normally distributed about the centerline of a plume in both the vertical and horizontal directions and that the standard deviations of these distributions, SZ\* and SH\*, will be functions of travel distance and atmospheric stability (see Figures 3 and 4). Furthermore (see Figure 5), the model assumes that the ground acts as a perfect reflector of gaseous pollutants, thus producing a concentration increase due to the summation of actual and virtual source emissions. Thus, the concentration, CO, at any observer point (X<sub>O</sub>, Y<sub>O</sub>, Z<sub>O</sub>) from a source point (X<sub>S</sub>, Y<sub>S</sub>, Z<sub>S</sub>) with the wind parallel to the X axis will be

$$CO^{\mathbf{C}} \left(\frac{Q_{p}}{WS}\right) \sim \left(\frac{e^{-\frac{1}{2}\left(\frac{Y_{s}-Y_{0}}{SH}\right)^{2}}}{SH}\right) \sim \left(\frac{e^{-\frac{1}{2}\left(\frac{Z_{s}-Z_{0}}{SZ}\right)^{2}} + e^{-\frac{1}{2}\left(\frac{Z_{s}-Z_{0}}{SZ}\right)^{2}}}{SZ}\right) \dots \dots (1)$$

where:

 ${\rm Q}_p$  is the point source emission strength (mass/time) WS is the wind speed (length/time)

- SH and SZ are the dispersion parameters (length), and are functions of  $X_s - X_0$  and atmospheric stability (see sections 2.4 and 2.5)
- CO is the observed concentration (mass/length<sup>3</sup>)

Now, suppose a technique could be established for determining the location and emission strength of a point source equivalent to a given highway line source, then one would be able to apply the basic Gaussian model to predict highway proximity concentrations. The California Division of Highways, Department of Materials Research has provided curves (approved by the EPA) for determining Q, the line-source emission strength, (mass/length  $\cdot$  time) as a function of vehicle mix, vehicle speed, traffic volume, and roadway type (see Figures 6 through 21). (These curves have been computerized for use in the AIRPOL model.) Now, if Q is multiplied by some appropriate roadway length, LFACTR, then the product would be equivalent to a point source,  $Q_p$  (units of mass/time).

\*Throughout the text of this report, variable names given in all capitals refer directly to the variables in the program, AIRPOL – Version 2, July 1973. (See Appendix A-1.)



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### Vertical Dispersion Parameter, S&,Meters

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Figure 3. Vertical dispersion parameters.





Horizontal Dispersion Parameter, SH, Meters.

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Figure 5. Influence of a virtual point source due to reflection.

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Figure 6. Emission factors for carbon monoxide vs. average route speed on freeways -5% heavy duty vehicles.

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Figure 7. Emission factors for carbon monoxide vs. average route speed on freeways - 10% heavy duty vehicles.

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in 0°94



Figure 8. Emission factors for carbon monoxide vs. average route speed on freeways -15% heavy duty vehicles.



Figure 9. Emission factors for carbon monoxide vs. average route speed on freeways - 20% heavy duty vehicles.

y 0°96



Figure 10. Emission factors for carbon monoxide vs. average route speed on city streets -5% heavy duty vehicles.



Figure 11. Emission factors for carbon monoxide vs. average route speed on city streets - 10% heavy duty vehicles.

v 0°98



Figure 12. Emission factors for carbon monoxide vs. average route speed on city streets - 15% heavy duty vehicles.

v 0°99



Figure 13. Emission factors for carbon monoxide vs. average route speed on city streets - 20% heavy duty vehicles.



Figure 14. Emission factors for hydrocarbons vs. average route speed on freeways -5% heavy duty vehicles.



Figure 15. Emission factors for hydrocarbons vs. average route speed on freeways -10% heavy duty vehicles.

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Figure 16. Emission factors for hydrocarbons vs. average route speed on freeways -15% heavy duty vehicles.

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Figure 17. Emission factors for hydrocarbons vs. average route speed on freeways - 20% heavy duty vehicles.



Figure 18. Emission factors for hydrocarbons vs. average route speed on city streets - 5% heavy duty vehicles.



Figure 19. Emission factors for hydrocarbons vs. average route speed on city streets -10% heavy duty vehicles.

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Figure 20. Emission factors for hydrocarbons vs. average route speed on city streets — 15% heavy duty vehicles.



Figure 21. Emission factors for hydrocarbons vs. average route speed on city streets - 20% heavy duty vehicles.

2.2 To determine LFACTR, consider that it must be a function of two factors, LENGTH (see Section A 2.7.10), the upwind roadway length, and ALPHA (see Section A 2.7.7), the acute angle of intersection between the roadway and the wind direction. (LENGTH and ALPHA are data inputs to the program AIRPOL.) LFACTR should obviously be a monotone increasing and continuous function of LENGTH and should be a monotone decreasing and continuous function of ALPHA, since larger angles imply smaller effective upwind roadway lengths. Furthermore, the functional dependence of LFACTR on LENGTH should be such that the rate of change of LFACTR with LENGTH is inversely proportional to LENGTH. An illustrative example of the need for this type of dependence is:

> Suppose LENGTH = 400 feet and is increased by 400 feet. Then intuitively one would expect a substantial increase in LFACTR; however, if LENGTH = 4,000 feet and is increased by 400 feet, one would expect only a small change in LFACTR and consequently in CO.

This required functional dependence on LENGTH can be achieved by taking the geometric mean of 1 meter and LENGTH; i.e.,  $\sqrt{\text{LENGTH} \cdot 1}$ .

The dependence of LFACTR on ALPHA should be such that LENGTH is an important parameter when winds are parallel to the roadway but negligible when the winds are perpendicular. The reason for this dependence is that in the parallel case the winds are capable of carrying emissions from a long stretch of roadway to the observer whereas in the perpendicular case the length of roadway is unimportant (as long as it is greater than 400 feet). The dependence on ALPHA should obviously be triginometric in nature, should vary between 0 and 1 and should have a small derivative near  $90^{\circ}$  but a large derivative near  $9^{\circ}$ . The function 1-sin (ALPHA) satisfies all of these criteria. Thus, we have

LFACTR = 
$$K_1 + (\sqrt{\text{LENGTH} \cdot 1}) \circ (1 - \text{Sin}(\text{ALPHA}))/K_2$$
 .....(2)

The constant  $K_1$  is used to account for the case ALPHA = 90°, in which case the wind blows across the road. The value assumed by  $K_1$  is 24 meters, the approximate width of the mechanical mixing cell <sup>(4)</sup> (see Figure 22). The constant  $K_2 = 2$  and has been assigned empirically to produce a well behaved function in agreement with the limited data available.

When LENGTH is given in feet, as in the AIRPOL program, the complete expression for LFACTR becomes (see Figure 23).

 $LFACTR = 24 + .552088 \cdot \sqrt{LENGTH} \cdot 1 \cdot (1-Sin(ALPHA))/2 \dots (3)$ 

where:

 $.552088 = \sqrt{.304801}$  meters/foot is used to convert feet to meters.



Figure 22. The mechanical mixing cell.

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2.3 Thus, an equivalent point source has been established which has an emission strength  $Q_p = Q \cdot LFACTR$ . To determine the effective source point location, EFSP, one simply reasons that it must be offset upwind from the observer point in such a manner that the change in offset with LENGTH is inversely proportional to LENGTH, which, as was explained above, can be accomplished with a square foot function. Furthermore, the location of the effective source point must move closer to the observer point on the roadway as the winds approach the perpendicular, ALPHA = 90°, to produce results consistent with the premise that LFACTR was a montone decreasing function of ALPHA. Furthermore the derivative near 90° should be relatively large. Thus, the upwind offset, in feet, along the roadway when LENGTH is in feet and the geometric mean is taken with respect to 1 foot is (see Figure 24):

Knowing EFSP, D (see Section A 2.7.17), the observer distance off the roadway which is an AIRPOL data input, and ALPHA, a simple geometric argument produces the parameters necessary to find SZ and SH. These in turn allow calculation of the vertical and horizontal concentration profiles (see Figures 1 and 2). SZ and SH, as stated earlier, are functions of atmospheric stability, and DIST, the downwind travel distance. DIST is defined to be that distance, measured along a wind vector, W, from the effective source point to the intersection of W with a line through the observer and perpendicular to W. Referring to Figure 25, it is obvious that

and that

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2.5

DIST = cos (GAMMA) 
$$\cdot \sqrt{D^2 + EFSP^2}$$
 .....(6)  
(see Figure 26)

The program AIRPOL contains two subprograms, SIGMAZ (DIST, ICLASS) and SIGMAH (DIST, ICLASS), which determine SZ and SH in meters based on (4) and (5) when given DIST, in feet, and ICLASS (see Section A2.7.5), the Turner modified Pasquil - Guifford atmospheric stability class (ICLASS is an AIRPOL program data input.)

To determine the actual concentration profiles, one furthermore needs to know the vertical and horizontal offsets of the observer from the centerline of the plume (see Section 2.1). Referring again to Figure 25, one sees that P, the horizontal offset, is simply

$P = tan (GAMMA) \circ$	DIST	•	0	c	•	• •	•	o	•	<b>e</b> o	•	0	0	• •	) e	0	• 0	 6	o	0 4	 •	•	•		0	•	•	0	. (	7)	)
(see Figure 27)																															



Figure 24. EFSP vs. ALPHA and LENGTH.

Location of Effective Source Point, EFSP, feet

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Figure 25. Determination of downwind travel distance, DIST, and horizontal offset, P.



Note: Curves were calculated with LENGTH = 5,000 feet.







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The vertical offset is found by taking the relative difference |H - Z|where H = HEIGHT when  $HEIGHT \ge 0$  and H = 0 when  $HEIGHT \lt 0$ . HEIGHT(see Section A 2.7.9) and Z (see Section A 2.7.8) are AIRPOL program data inputs. HEIGHT is the elevation (+ or -) of the roadbed relative to the surrounding terrain and Z is the elevation (+ only) of the observer relative to the surrounding terrain.  $HEIGHT \ge 0$  is used whenever the roadbed is at or above grade. HEIGHT < 0 is used only when the road and the observer are both in a cut, in which case Z must be input as the elevation of the observer relative to the roadbed. Whenever the roadway is in a cut but the observer is not, AIRPOL requires that HEIGHT = 0 (see Figure 28). The rationale behind this convention is that in the equilibrium case the cut will be "full" of gaseous emissions. Thus, a mass balance indicates that the amount of gaseous matter "generated" at the top of the cut will be identical to that actually generated on the road at the bottom of the cut. Therefore, the observer will be cognizant of only a virtual source at the "overflow" point, the top of the cut.

Equation 1 can now be rewritten in the following manner (see Figures 29 through 32):

YFACTR = exp 
$$(-\frac{1}{2} (\frac{P}{SH})^2)$$
 .....(8)

ZFACTR = exp 
$$(-\frac{1}{2} (\frac{Z-H}{SZ})^2) + exp (-\frac{1}{2} (\frac{Z+H}{SZ})^2)$$
 ....(9)

2.6

Equation 10 will suffice for most cases but does not yet fully explain the cut situation; i. e., the case with the road and the observer both in a cut. For this situation, it must be noted that gaseous concentrations within a cut are substantially higher due to the confining properties of a valley. The concentration increase observed within a cut must obviously be a function of the cut geometry, i. e., CWIDTH (see Section A 2.7.14), the width of the cut, CHT, the depth of the cut, and CLENGH (see Section A 2.7.15), the upwind length of the cut. The variables CLENGH and CWIDTH are data inputs to the program AIRPOL and CHT is determined from HEIGHT such that CHT = |HEIGHT| when HEIGHT < 0, i. e., in the cut case, and CHT = 0 when HEIGHT  $\geq 0$ . Examination of the limiting conditions will give valuable insight into the influence of cut geometry on concentration.

When CWIDTH is very large, it is obvious that the cut will have little influence. In fact, when CWIDTH  $\rightarrow \infty$ , the cut situation reverts to an at-grade situation. When CHT = 0 or is close to 0, the cut situation will again revert to the at-grade case. Also, when CLENGH = 0 or is small, the cut case will be identical to the level case. In fact, preliminary data indicate that CLENGH <200 feet produces a relatively small effect on the cut concentration. Furthermore, as was the case with LFACTR and EFSP, the incremental influence of CLENGH should diminish as CLENGH increases. Also, there should be an interdependence between the effects produced by the cut geometry. The concentration within the cut should increase as the ratio of CHT to CWIDTH increases and as the ratio of (CHT · CLENGH) to CWIDTH increases.


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Thus, if the geometry factor

GFACTR = (2-exp(-CHT · CLENGH/(200 · CWIDTH))) · exp(2 · CHT/CWIDTH), ...(11) (see Figure 33)

then all of the above limiting conditions will be realized and will provide for the increased concentrations in a cut.

Notice that the restrictions on CHT are such that GFACTR = 1 for an atgrade or elevated roadway and  $GFACTR \ge 1$  when the roadway and the observer are both in a cut.

2.7 One final aspect of the prediction problem must now be considered. An observer may be either downwind, CASE = 1, or upwind, CASE = 2 (see Section A 2.7.6), from a highway (see Figure 34). (The variable CASE is received by AIRPOL as data input.) Intuitively, the concentration at any distance, D, off the roadway for CASE = 2, (CO)<sub>2</sub>, should be less than or equal to the concentration at D for CASE = 1,  $(CO)_1$ . Consideration of the mechanical mixing cell concept (see Figure 22) will show that at D = 0, i.e., at the edge of pavement,  $(CO)_1 = (CO)_2$ , since the concentration in the mechanical mixing cell is approximately uniform across the roadway. Furthermore, it should be noted that at  $ALPHA = 0^{\circ}$ , i.e., in a parallel wind condition, that  $(CO)_1 = (CO)_2$ , since either side of the roadway may be considered as the upwind side. Thus, the case factor, CFACTR, appears to be a function of only D and ALPHA. The assumption has been made that the decrease in  $(CO)_2$  with respect to  $(CO)_1$  should be a negative exponential in D and ALPHA. The limited data available suggest that the actual dependence on D should be such that  $\sqrt{D/K_3}$  controls CFACTR where D is in feet and K<sub>3</sub> = 10 feet. Thus, the function CFACTR is given as:

> CFACTR = exp  $(-\frac{1}{2} \cdot \text{Sin} (\text{ALPHA}) \circ (\sqrt{(\text{CASE-1}) \circ D/10} + \text{CASE-1}))$  .....(12) (see Figure 35)

Equation 1 can now be rewritten to include all of the above considerations and thus produce the final model.

$$CO \quad \text{@} \quad \frac{Q \cdot LFACTR \cdot YFACTR \cdot ZFACTR \cdot GFACTR \cdot CFACTR}{WS \cdot SH \cdot SZ} \quad \dots \dots (13)$$

The AIRPOL program further contains two empirical variables used to scale CO to agree with the available data. The constant multiplier, KFACTR, has been set equal to 4.5, and the angle correction factor, AFACTR, has been set equal to 0.4. Thus, the final equations in the AIRPOL model are as follows (see Figures 36, 37, and 38):

$$CO = \frac{2.23693 \circ 0.155159 \circ 870 \cdot QCO \circ LFACTR \circ YFACTR \circ ZFACTR}{GFACTR \circ CFACTR \circ KFACTR}$$

$$CO = \frac{GFACTR \circ CFACTR \circ KFACTR}{WS \circ SHM \circ SZM \circ AFACTR}$$
.....(14)



Note: Curve was calculated with LENGTH = 5,000 feet, = 200 feet, and = 1,800 feet.

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Figure 34. Distinction between CASE = 1 and CASE = 2.

Figure 35. CFACTR vs. D and ALPHA.







LENGTH

TFVOL





Figure 37. CO vs. D and H for  $ALPHA = 45^{\circ}$ .

60 mph 5% hdv 200 feet 1,800 feet 5 mph  $\begin{array}{rcl} \text{CWIDTH} &= \\ \text{CLENGTH} &= \\ \text{ULENGTH} &= \\ \text{WS} &= \\ \end{array}$ H II TFSPD TFMIX = D
= 5 feet
= 5,000 feet
= 5,000 vph = Freeway = 1975Prediction Year Stability Class Z Source Type LENGTH TFVOL





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$$HC = \frac{2.23693 \cdot 0.155159 \cdot 1530 \circ QHC \circ LFACTR \cdot YFACTR \cdot ZFACTR \circ}{WS \circ SHM \circ SZM \circ AFACTR} \dots (15)$$

where:

2.23693 mile/hour = 1 meter/sec.
1 ppm (carbon monoxide) = 870 gm (CO)/m<sup>3</sup>.
1 ppm (hydrocarbon methane equivalents) = 1530 gm (HC)/m<sup>3</sup>.
0.155159 = 1/(2 π).
QCO is the source emission strength (gm (CO)/m-sec).
QHC is the source emission strength (gm (HC)/m-sec).
LFACTR has units of meters.
YFACTR, ZFACTR, GFACTR, CFACTR, KFACTR, and AFACTR are dimensionless.
WS (see Section A 2.6.4) is the wind speed (mile/hour).
SHM and SZM are SH and SZ respectively converted to meters.

Thus, CO has the units of ppm (CO) and HC has the units of ppm (HC).

#### ASSUMPTIONS AND LIMITATIONS

- 3.0 The AIRPOL model has been developed from theoretical, idealized considerations. It is dependent on (1) the assumption of steady state conditions, (2) the reliability of the stability class and mixing cell concepts, (3) the quality of emission factor data, and (4) the validity of the basic Gaussian model.
- 3.1 The steady state assumptions manifest themselves in several ways.
- 3.1.1 Assume that vehicular traffic on the roadway under consideration constitutes a continuous, uniform line-source for the time period of interest.

This assumption is valid for relatively heavy traffic conditions where the time period is short (on the order of one hour). As the traffic volume decreases, the assumption deteriorates because the inter-vehicular gaps enhance the discrete nature of the pollutant sources, and localized turbulences are more able to effect dispersion. Thus, the model will tend to overpredict pollutant concentrations as the traffic diverges from the steady state. When longer time intervals

and

(greater than one hour) are used, the steady state assumption will most likely be violated since traffic volumes are generally not uniform over long time spans. Thus, it is recommended that for long time analyses the higher traffic volumes for the time interval be used to make predictions. This will, in general, cause the concentration estimates to be greater than actual conditions, but it is felt that this conservative estimate will be in the best interest of the public.

3.1.2 Assume that wind speed and direction are uniform over the time of interest.

This assumption is, in general, valid only for time spans on the order of minutes. Employment of this assumption will cause concentration estimtes to be on the conservative side since it neglects concentration decreases due to unsteady state conditions. However, since this assumption is necessary to produce an efficient model and since it is a conservative assumption, it has been incorporated in AIRPOL.

3.1.3 Assume that localized turbulence and wind shear may be neglected.

This is a simplifying assumption which is rarely realized in actual observations. However, it is a conservative assumption since it neglects concentration decreases which would be caused by these wind conditions.

3.2 References 4 and 5 discuss the techniques for determining atmospheric stability classes and the inherent variabilities that may be noticed. Incorrect determination of stability class can easily cause errors of estimation on the order of 20%. Furthermore, the Turner modified Pasquill - Guifford stability curves are empirically defined only for downwind distances greater than 0.1 km (about 328 feet). This is very significant in light of the fact that pollutant concentrations in the neighborhood of a highway drop off to background levels within about 200 to 400 feet off the roadway. Reference 4 discusses the extrapolation of these curves down to 1 meter by employing the mixing cell concept. Application of these extended curves and the mixing cell concept produces very reasonable results in the AIRPOL model but it must be remembered that they have not had extensive empirical vertification.

3.3 The AIRPOL model is directly dependent on the vehicle emission factors used in determining concentrations. These factors have been provided by the California Division of Highways <sup>(4)</sup> and are recognized as only approximations. However, they are hopefully conservative estimates which will thus lead to conservative predictions.

- 3.4 The Gaussian model itself has several inherent shortcomings which affect the predictions made by AIRPOL.
- 3.4.1 The model assumes that dispersion, not diffusion, is the predominant gaseous transport mechanism.

At wind speeds in excess of 1.5 meter/sec. (about 3 mph), this assumption is reasonable and its validity increases with wind speed. However at calm or near calm wind conditions gaseous diffusion and thermal convection are the predominant transport mechanisms. Under these conditions, the model will seriously overpredict concentration levels because it considers only the dispersion mechanism. Therefore, AIRPOL is not recommended for wind speeds less than 3 mph and preferably not less than 4 mph.

3.4.2 The basic Gaussian approach assumes that concentrations are normally distributed in the vertical and horizontal directions about the centerline of the plume.

This assumption is really valid only for neutral atmospheric conditions (stability Class D). (5) For unstable atmospheric conditions (stability Class A), (5) where the unsteady state predominates, this assumption can be responsible for either under-or overprediction of instantaneous concentrations, depending on the time variation of the plume. However, over a period of about one hour, the time average concentrations predicted should be relatively reliable. For stable atmospheric conditions (stability Class F), this assumption can be responsible for slight underpredictions due to the tendency of the pollutants to concentrate near ground level. However, this problem is not very serious since the model tends to be conservative in other respects.

3.4.3 The Gaussian model is limited by the assumption that pollutants are completely free to disperse in the vertical direction. (Note: AIRPOL does consider the "canyon" effect in which pollutants are constrained in the horizontal direction.)

> This assumption is valid for most conditions, but fails when an atmospheric inversion exists close enough to ground level to trap pollutants. Under such circumstances, AIRPOL will underestimate pollutant concentrations. However, such situations are relatively rare in Virginia. If it is necessary to make an analysis under inversion conditions

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(or, for instance, an anlyais of concentrations in a tunnel), a "box" model and mass balance equations for a steady state environment can be employed to predict concentration levels.

What is perhaps the most serious limitation associated with AIRPOL is the inability of the model to yield a prediction of the expected or average CO level. The problem here is not with AIRPOL per se but rather is a result of not being able to define those weather conditions which produce the expected or average CO level. The current state of the art allows one to define the most likely or prevailing weather type which will in turn yield a most likely or prevailing CO level. However, the probability of occurrence of this most likely weather condition is generally on the order of 1%. Therefore, even though AIRPOL does predict the most likely CO concentration, it cannot, without exhaustive examination of all weather conditions, forecast the expected CO level. This matter is further considered in Section 4.3.

#### **RECOMMENDATIONS AND FUTURE WORK**

Neither AIRPOL — Version 1 nor Version 2 has had extensive field verification. However, Version 2 offers more user flexibility and ease of operation, as well as a substantially sounder mathematical basis, than Version 1. Therefore, it is recommended that the Department employ the upgraded model, AIRPOL — Version 2, July 1973, until further field data can be collected.

AIRPOL, Phase II, the field verification of the AIRPOL model, was initiated in June 1973. It is anticipated that at least one year will be required to obtain enough field data to warrant any further alterations to AIRPOL. When sufficient data are available, a reevaluation and possible upgrading of AIRPOL will be made. At that time a report covering the findings of the field study and recommendations for either continued use or modification of the AIRPOL will be issued.

4.3

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4.2

AIRPOL, Phase III, a project to develop a technique for finding expected concentrations and concentration probability distributions for short-term and long-term analysis periods, will begin in September 1973. The findings of Phase III should allow removal of a great deal of uncertainty and enable AIRPOL to make accurate predictions of expected concentration levels.

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#### ACKNOWLEDGEMENTS

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#### APPENDIX 1

#### A1.0 AIRPOL Program Listing

A1.1 This Appendix contains a listing and sample output of the computer program AIRPOL - Version 2, July 1973, in a Fortran 2.3 configuration for use on a CDC 6400 computer under the control of a SCOPE 3.3 operating system. AIRPOL is used in this form at the Virginia Highway Research Council on the University of Virginia's CDC 6400 computer. It requires approximately 8 k words of main memory to process.

There is also an IBM configuration of AIRPOL for general use within the Virginia Department of Highways. It is written in Fortran IV (level G or H) for an IBM 370/155, running under an OS 21.7 operating system with HASP.

The IBM configuration requires approximately 15 k bytes of main memory to process.

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	PROGRAM AIRPOL (INPUT.DUTPUT.TAPE5=INPUT.TAPE6=OUTPUT.TAPE9)	AIRP	0.0
C		C	
C	**** *** ***** **** *	Ċ	
C	· · · · · · · · · · · · · ·	C	
C	* * * * * * * * *	C	
C	***** * ***** ***** * *	C	
<u> </u>		<u> </u>	
C C	* * *** * * * * ****	G	
C	VERSION 2 JULY 1973	C	
<u> </u>			
C++++	• • • • • • • • • • • • • • • • • • • •	** * * 6	
C++		**C	
G++	AIRPOL PROVIDES AN ESTIMATE **AND ONLY AN ESTIMATE** OF THE	++C	
C++	AIR QUALITY, IN TERMS OF CO AND HC CONCENTRATIONS IN PPH, IN	**C	
_C++	THE REGION OF AN EXISTING OR PROPOSED HIGHWAY FACILITY.	**C	
C++		++C	
_C**	AIRPOL IS THE PROPERTY OF AND WAS DEVELOPED FOR THE VIRGINIA	++C	
C**	DEPARTMENT OF HIGHWAYS BY:	++C	
C**		**C	
C**	WILLIAM A. CARPENTER	**C	
_ <u>C</u> #+	HIGHWAY RESEARCH ENGINEER	**C	
C**		**C	
<u>C++</u>	JERRY L. KORF	## <u>C</u>	
C##	RESEARCH ASSISTANT	++C	
C++		++C	
C**	HAROLD R. SHERRY	**C	
<u>C++</u>	RESEARCH_ASSISTANT	<u>**C .</u>	
C++		++C	
0##	UTCHING MATEDIAN C DESCADON ANALVET	##0	<u></u>
0**	NIGHWAT NATEKIALS RESEARCH ANALISI	**0	
C##	OF THE DATA SYSTEMS AND ANALYSTS SECTION OF THE VIDCINIA	##0	
0**	UT THE UNIA STSTERS AND ANALISIS SECTION OF THE VIRGINIA Highway descaded connect. D.o. Boy 3417. Intredetty station.	**0	
 C##	CHAPLATTESVILLE, VIPCINIA 22903.	##C	
C##		++C	
C++	THE AUTHORS AND THE STATE OF VIRGINIA WISH TO ACKNOW FORE	##G	
C++	THE VERY SIGNIFICANT ASSISTANCE. BOTH THEORETICAL AND	++C	
C##	EMPIRICAL, OF THE MATERIALS AND RESEARCH DEPARTMENT OF THE	*+C	
C**	CALIFORNIA DIVISION OF HIGHWAYS. SACRAMENTO. CALIFORNIA. AND	++G	
C++	IN PARTICULAR THE ASSISTANCE OF ANDREH RANZIERI AND MARCO	##G	
C##	FARROCKHROOZ (CDH).	++C	
C++		**C	
C++	AIRPOL IS BASED ON A MODIFIED VERSION OF THE STANDARD	**C	
C++	GAUSSIAN DISPERSION MODEL FOR POINT SOURCE EMISSIONS,	**C	
C++	QUASI-INTEGRATED TO OBTAIN A LINE-SOURCE MODEL, WHICH	#+G	
C**	IS A STANDARD APPROACH. HOWEVER, IN THIS PROGRAM, THE	**C	
<u>C++</u>	GAUSSIAN MODEL HAS BEEN FURTHER MODIFIED. IT IS HOPED THE	++C	
C++	RESULT, WHICH IS ONLY A BEGINNING, WILL SERVE AS A VIABLE	++C	
C++	RESEARCH TOOL, **AIRPOL**.	**C	
C##		**C	
C++++	***************************************	++++C	
C+++4		+ <b>+ + + C</b>	

.

C	**** DESCRIPTION OF VARIABLES ****
<u> </u>	
C	•
<u> </u>	NDATA INTECED INDUT (I2) COLUMNS 5 - 7
с С	THE NUMBER OF DATA CARDS IN THIS DATA SET
С.	THE NUMBER OF DATA VARUE IN THIS DATA SET
c	ALE(5) ALPHA INPUT (5410) COLUMNS 8 - 57
C	DESCRIPTIVE INFORMATION TO BE USED AS A HEADDING FOR THE OUTPUT.
Č .	
C	WSIN(6) REAL INPUT (F3.1, 5(1X, F3.1)) COLUMNS 58 - 80
C	THE WIND SPEEDS, IN MPH, TO BE USED IN THIS ANALYSIS. AS MANY AS
C	SIX OR AS FEW AS ONE WIND SPEED MAY BE USED. IF ALL WSIN(I) ARE
<u>C</u>	LE. O OR BLANK THEN THE PROGRAM WILL ANALYZE THE DATA USING WIND
Ç	SPEEDS OF 4.0, 7.0, AND 10.0 MPH.
<u> </u>	NOTEL AIRPOL IS NOT VALID FOR WIND SPEEDS .LT. 3 MPH.
C C	
. ч С	A FOUR CHARACTER DESTENATION FOR THE STTE RETNE ANALYZED
ĉ	A FOOR CHARACIER DESIGNATION FOR THE SITE DEING ANALTZED.
C	SOURCE ALPHA INPUT (A1) COLUMN 11
č	= C IF SOURCE IS A CITY STREET.
C	= F IF SOURCE IS A FREEWAY.
C	NOTE: CITY STREET / FREEWAY IS DETERMINED BY THE EXTENT OF STOP
C	AND GO TRAFFIC WITHIN ABOUT 400 FEET OF THE OBSERVER.
<u>C</u>	
C	YEAR INTEGER INPUT (I2) COLUMNS 13 - 14
C	THE YEAR FOR NHICH THE PREDICTION IS BEING MADE, YEAR SHOULD BE
	•6E• 72 ANU •LE• 99•
С С	CLASS on AL PHA on TNDUT (A1) on COLUMN 16
ĉ	THE PASSIEL - ETEROD ATMOSPHEDIC STARTITIV CLASS (A. R. C. D. E.
C C	OR F), STARTITTY CLASS A IS THE LEAST STARLE ATMOSPHERIC
Č	CONDITION, AND CLASS F IS THE MOST STABLE.
C	
C	CASE INTEGER INPUT (I1) COLUMN 18
C	= 1 IF WIND REACHES ROADWAY BEFORE REACHING THE OBSERVER.
C	= 2 IF WIND REACHES ROADWAY AFTER REACHING THE OBSERVER.
C	
<u> </u>	ALPHA REAL INPUT (F2.0) COLUMNS 20 - 21
	THE AGUTE ANGLE, IN DEGREES, BETWEEN THE SOURCE RUADWAY AND
և Ր	INE MIND DIRECIIUNA
č	NOTER CLASS, CASE, ALPHA, AND HIND OPED SHOLLD DE OPTATHED FROM
<u>с</u>	THE DUTPUT OF ETTHER PROCRAM WADDAS AD DOALDAM STADS AS DEVELODED
č	BY MARCO FARROCKHROOZ (CDH) WHEN ANALYZING THE MOST PROBABLE
Č.	METEOROLOGICAL CONDITION. FOR AN ANALYSIS OF THE WORST CASE
Ċ	CONDITION, THE CONSTRUCTION PLANS MUST BE CONSULTED.
C	
C	Z REAL INPUT (F3.0) COLUMNS 23 - 25
C	VERTICAL DISPLACEMENT, IN FEET, OF THE OBSERVER ABOVE THE
Ç	SURROUNDING TERRAIN. IN THE CASE OF A DEPRESSED ROADWAY, Z IS
C	TO BE TAKEN AS THE HEIGHT OF THE OBSERVER ABOVE THE ROAD SURFACE.
U	
	MELGHI KEAL INPUT (P4.0) GULUMNS 27 - 30 Nedtical disdiacement in sect of the doadham of Attue to the
<u>ь</u>	SUPPOINDING TERRATE IN TE THE ROADWAY TO ELEVATED THEN HETCHT MUST
č	RE SEA AN TETHE POADWAY TO DEDDECCED, HETCHT MHOT DE LE A

0~37

# • 0~38

C	IF THE ROADWAY IS AT GRADE, HEIGHT MUST BE EITHER BLANK OR .EQ. 0.
<u> </u>	NOTE: THE DEPRESSED ROADHAY CONDITION IS TO BE USED **ONLY** HHEN
C	THE THE OBSERVER **AND** THE ROADWAY ARE **BOTH** IN A GUT.
<u> </u>	
C	LENGTH REAL INPUT (F5.0) COLUMNS 32 - 36
<u> </u>	THE MAXIMUM STRAIGHT LINE DISTANCE, IN FEET, THAT THE ROADWAY
U O	EXTENDS IN THE UPWIND DIRECTION. FOR ALPHA .EQ. 90 DEGREES,
<u> </u>	EITHER DIRECTION MAY BE CONSIDERED AS THE UPWIND DIRECTION.
U O	
<u> </u>	17  VOL = -  Real = -  INPOT (75.0) = -  COLOMNS 38 = .42
	NETTE FOR THE FOR THE RUADWAY ELEMENT BEING ANALYZED, IN
	VEHICLES PER HUUR.
	TESDD DEAL TNOUT (52 A) COLUMNS (1) - C
_ <u>k</u>	$\frac{1175PU}{2} = \frac{1172}{10} = \frac{1172}{10} = \frac{1172}{10} = \frac{10}{10} = \frac{10}{1$
5	AVERAGE RUUIE SPEED, IN MPN.
<u>с</u>	TENTY INTEGED INDUT (12) COLUMNS 47 - 48
C C	$\frac{1}{1} \frac{1}{1} \frac{1}$
C	TERDERT OF TERVIL TETTOLE TRAILING (2) TUS 125 UK EU
õ	NOTE: FOR DUAL DIVIDED HIGHWAYS, THE THO TRAFFTC DIRECTIONS
<u> </u>	**NUST** RF ANALYZED AS SEPERATE SOURCES AND THE PESUITS
č	SUPERIMPOSED TO OBTAIN THE TOTAL FEECT OF THE FACTURE. ENTRANCE
C	AND EXIT RAMPS MUST ALSO BE TREATED AS INDEPENDENT SOURCES WITH
č	SUPERPOSITION EMPLOYED TO FIND TOTAL CONCENTRATIONS. A GIVEN
C	SOURCE MAY **NEVER** CONTAIN MORE THAN THREE TRAFFIC LANES.
Ĝ	THEREFORE. IT MAY EVEN BE NECESSARY TO DIVIDE A STAGLE TRAFFTC
C	DIRECTION INTO THO OR MORE INDEPENDENT SOURCES. TO TREAT THO OR
Č	MORE ROADWAY ELEMENTS INDEPENDENTLY. TRAFFIC AND GEOMETRIC DATA
C	FOR THE VARIOUS ELEMENTS MUST BE AVAILABLE.
C	
C	CWIDTH REAL INPUT (F4.0) COLUMNS 50 - 53
<u> </u>	THE AVERAGE CUT WIDTH, IN FEET, MEASURED AT A HEIGHT OF 1/2 THE
C	DEPTH OF THE CUT. IF THE CUT SITUATION IS NOT APPLICABLE, THEN
_C	CWIDTH SHOULD BE LEFT BLANK.
C	
<u> </u>	CLENGH REAL INPUT (F4.D) COLUMNS 55 - 58
C	THE DISTANCE, IN FEET, MEASURED ALONG THE ROADWAY IN THE UPWIND
<u> </u>	DIRECTION, TO THE POINT WHERE THE CUT DEPTH .EQ. 1/2 THE DEPTH AT
C	THE OBSERVER. IF THE GUT SITUATION IS NOT APPLIABLE, THEN LEAVE
	ULENUT BLANKS
C	AN NITRIT CONTROL PARAMETER
C O	TE SHOHT = $T_{\rm e}$ then the factors in the calculations of the co
C C	AND HE LEVELS ARE DISPLAYED ALONG WITH THE DESULTS.
č	IF SHOWIT = .F. OR BLANK THEN ONLY THE RESULTS ARE DISPLAYED.
C	NOTE: FOR NORMAL OPERATION, SHOWIT SHOULD BE LEFT BLANK.
Č _	
C	DIN(5) REAL INPUT (5(1X, F3.0)) COLUMNS 61 - 80
<u>C</u>	THE PERPENDICULAR DISTANCES, IN FEET, FROM THE OBSERVER TO THE
C	SOURCE (NEAREST EDGE OF NEAREST TRAFFIC LANE OF ROADWAY ELEMENT
C	UNDER CONSIDERATION). AS MANY AS FIVE OR AS FEW AS ONE DISTANCE
C	MAY BE USED. IF ALL DIN(I) ARE .LE. O OR BLANK THEN THE PROGRAM
<u>C</u>	WILL ANALYZE THE DATA USING A DISTANCE OF 50 FT.
C	
C	KFACTR REAL CONSTANT
C	AN EMPIRICAL FACTOR, DIMENSIONLESS, CURRENTLY = 4.5
<u> </u>	

· 0~39

C	AFACTR REAL CONSTANT
C	AN EMPERICAL ANGLE FACTOR, DIMENSIONLESS, SURRENTLY = 0.4
C	
C	CEACTR REAL CALCULATED
C	THE CASE FACTOR, DIMENSIONLESS. MONOTONE DECREASING FROM 0 TO 90
C	DEGREES.
C	
Ċ	LFACTR REAL CALCULATED
C	THE LENGTH FACTOR TO REFLECT THE EFFECTIVE LENGTH OF THE
č	UPHIND ROADWAY, IN METERS, MONOTONE DECREASING FROM 0 TO 94
0	DEGEFES.
č	
Č.	
č	THE VEDTICAL DISDEDING FACTOR, DIMENSION ESS. (75ACTR / 57M TS
<u> </u>	THE COMPLETE VERTICAL DESCENTION FACTOR AND USE DEVENTION 4 / M)
č	THE CONFLETE VERIFICAL DISPERSION FACTOR AND TAS DIMENSION 1 / HJ.
0	THE LATERAL DECENSION SACTOR DEMENSION COOL AVENOTO A CUM TO
	THE COMPLETE & ATERAL DISPERSION FACTOR AND AND STATISTICS AND IS
U C	THE CUMPLETE LATERAL DISPERSION FACTOR AND HAS DIMENSION 1 / M).
<u> </u>	MONOTONE INCREASING FROM 0 TO 90 DEGREES.
C	
C	CA REAL CALCULATED
C	CA = COSINE (ALPHA).
C	
C	SA REAL GALCULATED
C	SA = SINE (ALPHA).
C	
. C	EFCO REAL CALCULATED
C	THE EMISSION FACTOR, IN GM / MILE, FOR CARBON MONOXIDE.
C	
C	EFHG REAL CALCULATED
C	THE EMISSION FACTOR. IN GM / MILE. FOR HYDROCARBONS (BASED ON CH4
C	EQUIVALENT UNITS).
C	
C	QCO REAL CALCULATED
Č	SOURCE EMISSION STRENGTH. IN GM (CO) / M-SEC.
G	
č	OHC REAL CALCIU ATED
<u> </u>	SOURCE EMISSION STREATED, IN GM (HC) / M-SEC.
c 0	Contra theorem distributing the one that / H-SEQI
<u> </u>	DTST REAL CALCULATED
č	THE DISTANCE. IN EEST, AT HUTCH STOMALT AND STOMALH ADD COMPUTED
r	DIST CHANCES SUNCTIONALLY FOOD DIST - FRIENCIAL AUDIA DINA AT A
	DIST UTMHULS FUNUTIONALLT FRUM DIST = F(LENGIM; ALPHA; UIN) AT U DECREES TO DIST - DIN AT ON DECREES
	UEGKEES IN NIST = NIN AT 90 DEGKEES.
U A	
U .	H KEAL UALGULAIEU
نا م	THE HEIGHT, IN FEET, OF THE EFFECTIVE SOURCE $\neq$ 6 FT. Above Road.
<u> </u>	
C	CHT REAL CALCULATED
	THE DEPTH, IN FEET, OF THE CUT BEING ANALYZED.
C	
C .	EFSP REAL CALCULATED
C	THE DISTANCE, IN FEET, TAKEN ALONG THE ROADWAY IN THE UPWIND
C	DIRECTION, TO THE EFFECTIVE SOURCE POINT LOCATION.
C	
<u>C</u>	SZ REAL CALCULATED
C	HEIGHT OF THE DISPERSION CURVE, IN FEET.
C	

C	SZH REAL CALCULATED	
<u>C</u> .	HEIGHT OF THE DISPERSION CURVE. IN METERS.	
C	• • •	
C	SH REAL CALCULATED	
C	WIDTH OF THE DISPERSION CURVE, IN FEET.	
C	-	
C	SHH REAL CALCULATED	
C	WIDTH OF THE DISPERSION CURVE, IN METERS.	
C		
C	CO REAL CALCULATED	
C	THE CARBON MONOXIDE CONCENTRATION, IN PPM.	
C		
C	HC REAL CALCULATED	
<u>C</u>	THE HYDROCARBON CONCENTRATION, IN PPM.	
C		
C		
C		
C	FORMATS FILE 5 = CARD READER.	
C		
5000	FORMAT (5X, 12, 5A10, 5(F3, 1, 1X), F3, 1)	AIR
5010	FORNAT (5X,A4,1X,A1,1X,I2,1X,A1,1X,I1,1X,F2,1X,F3,1X,F4,1X,F5,	AIRF
	-1X,F5,1X,F2,1X,I2,1X,2(F4,1X),L1,5(1X,F3))	AIR
C		
C	· · · · · · · · · · · · · · · · · · ·	
C		
<u>C</u>	FORMATS FILE 6 = LINE PRINTER.	
C		
6000	FORMAT (+1+10X+SITEID+25X,5A10,25X+SITEID+/	AIRF
	-12X,A4,102X,A4//64X*UPWIND*43X*DIST*/* WS *3X*SOURCE*4X*YR*4X *	AIRF
	-CLASS*4X*CASE*3X*ALPHA*4X*0BS.*3X*SOURCE*2X*SOURCE*2X*TFV0L*3X*TFS	AIRE
	-PD+3X+TFHIX+3X+CHIDTH+2X+CLENGTH+2X+FROH+5X+CO+6X+HC+/	AIRF
	-* (MPH) *3X*TYPE*	AIR
	-28X+DEG.+5X+HT+6X+HT+4X+LENGTH+2X+(VPH)+3X+(NPH)+4X+(PC)+4X+(FT)+	AIRF
	-4x+(F1)+3x+Source+3x+(PPM)+2x+(PPM)+/49x,3(+(F1)+4x),40x+(F1)+//)	AIRF
6010	FORMAT (1X, F4, 1, 5X, A1, 7X, I2, 6X, A1, 7X, I1, 7X, F2, 5X, F3, 5X, F4, 3X, F5, 3X	AIRF
	-,F5,5X,F2,6X,12,5X+NONE+4X+NONE+5X,F3,2(3X,F5.1))	AIRF
6020	FORMAT (1X,F4,1,5X,A1,7X,I2,6X,A1,7X,I1,7X,F2,5X,F3,5X,F4,3X,F5,3X	AIRF
6030		AIRF
6030		AIRF
0040		AIKP
	-KFAGIR*/10X;/(E13.0;2X)/14X*LFAGIR*9X*GFAGIR*9X*GFAGIR*10X*S2H*	AIRP
6050	FIANALAUR THA SHATTAN F DATA HAS BEEN BOOLSSED SND OF ATODOL	AIKF
0090	FURNAL ("I ALL AVAILABLE DATA HAS BEEN PROGESSED END OF AIRFUL ANALVSTS	AIRP
0		ATVL
c C		
<u>с</u>		
c		
с		
c c	4444 FND OF POFI THTHADY THEODMATTON 4444	
<u>.</u>		
č		
<del>т</del>	TANT START OF ATPROL CODE TANK	
č	START OF ALLE VOUL	
C		
č		
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****		****C	
**		##C	
<b>. .</b>	NOTICE	**0	
	#¥14#	440	
		***	
	THE DEMANNED OF THES PROCEAN TO PREVENT ACCOUNTS AND	<u></u>	
	THE REMAINDER OF THIS PROGRAM IS PRIVILAGED INFORMATION.	++6	
	IT SHOULD NOT BE RELEASED OR SHOWN TO PERSONNEL OUTSIDE THE	••[	
÷44 • •	DEPARTMENT WITHOUT APPROPRIATE AUTHORIZATION.	++C	
**	· · · · · · · · · · · · · · · · · · ·		
<b>.</b>		#*C	
		** * + G	
****1	, ** * * * * * * * * * * * * * * * * *	++++C	
	· · · · ·		
	LOGICAL SHOWLT, DIEST, WSTEST	ATRE	21
	DEAL KEACTD, IFNCTH, IFACTD, DIN(5), MSTM(5)	ATO	22
	THECED STEED, SLASS CASE TENTY YEAR SUBSE ALE (E)		·
	ANTEVER STIETAS CHASSE CHASES IT MARS IEARS SUURVES ALP 157	MIKP	20
	UMIM KEMUIKS AFAUIK /4009 U04/	ATK	24
	READ NDATA, HEADDING INFORMATION, AND WIND SPEEDS.		
	CHECK FOR END OF FILE.		
	READ (5. 5000) NDATA. ALF. WSIN	ATR	25
	TE (E0E.5) 98.2		26
· · ·	<u>e </u>		
	DO VALIDITY CHECK-CORRECT ON WSIN.		
	WSTEST = .F.	AIRF	27
	$D0 \ 3 \ J = 1.6$	AIRF	28
	IF $(\text{WSIN}(J) = GT_{0} = 0, 0)$ WSTEST = $T_{0}$	AT95	20
	CONTINUE		5 3 A
	TE (USTEST) ON TO 4	MAKE	24
	15 (NJILJI) UU IU 4 Metalal - 4 a	A1K1	. JT.
		AIRF	32
	NOTN(2) = (0)	AIRP	53
	MSIN(3) = 10.0	AIRF	54
	DO 90 I = 1. NDATA	AIRP	35
	PROCESS THE NDATA DATA CARDS IN THIS DATA SET.		
	The second the mental entry engage and they write date		
• •	PEAR & DATA CARD, CHECK END ON OF STIE AND VEDTER THE DATA		
	NEAR A VALM VARVE VALVA FUR EAV VETILEE AND VERTELIAE VALA.		
			70
	READ 129 20101 STIELDS SUUKUES TEAKS GLASSS GASES ALPHAS ZS	ALKE	30
-	TELENI, LENGIN, ITVUL, ITSPU, ITMIX, GWIDTH, CLENGH, SHOWIT, D	HN AIRP	37
	1F (EUF ; 5) 98; 7	AIRP	38
	WRITE THE HEADDING FOR THE PRINTER OUTPUT.		
	WRITE (6, 6000) ALF, SITEID, SITEID	AIRP	39
	DO VALIDITY CHECK-CORRECT ON SOURCE.		

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	TE (SOURCE	ATOD	400
	SOURCE = 1HF	AIRP	410
C			
_C			
C	DO VALIDITY CHECK-CORRECT ON YEAR.		
10	IF (YEAR $17, 72$ ) YEAR = 72	AIRP	420
_C			
C			
<u>C</u>	DO VALIDITY CHECK-CORRECT ON CLASS.		
C			
	IF IGLASS FO. 1HD OP. CLASS FO. 1HE OP. CLASS FO. 1HE) OF TO 20	AIRP	430 668
	CLASS = 1H0	AIRP	450
C			
_C			
C	DO VALIDITY CHECK-CORRECT ON CASE.		
<u> </u>	TE (CASE EQ. 2) CO TO 70	ATOD	
20	CASE = 1	AIRP	400 470
C			
C			
C	DO VALIDITY CHECK-CORRECT ON ALPHA.		
C		4700	
30	ALPHA = ABS(ALPHA) $YALPHA = ALPHA$	AIRP	40U 400
C		AARF	4.20
Č			
C	DO VALIDITY CHECK-CORRECT ON Z.		
C			
C	Z = ABS(Z)	AIRP	500
<u> </u>			
č	DO VALIDITY CHECK-CORRECT ON HEIGHT.		
C			
	H = 6,0	AIRP	510
	CHT = ABS(HEIGHT)	AIRP	520
	H = H + CHT	ATOD	<u>230</u> 540
	CHT = 0.0	AIRP	554 554
C		·	•
<u>C</u>			
C	DO VALIDITY CHECK-CORRECT ON LENGTH.		
<u> </u>	LENGTH = ABS (LENGTH)	ATOD	560
70	$_{\rm IF}$ (LENGTH .LT. 400.0) LENGTH = 400.0	AIRP	570
	XLEN = LENGTH	AIRP	580
<u> </u>			
C .	DO WALTDITH OUFOR CODDECT ON TENC		
<u> </u>	DU VALIDITY UNEUK-GUKKEUT UN TRVUL.		
v	TEVOL = ABS (TEVOL)	AIRP	590
C		<b>8</b> 121 (	•
C	DO VALIDITY CHECK-CORRECT ON TFSPD.		
<u> </u>		ATOO 4	6.0.0
	$IF (TFSPD \ LT \ 10.0) \ TFSPD = 10.0$	ATOD 4	510 510
		MARE C	4 A 4

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 $0.0^{+}43$ 

С	$1\mathbf{F} (1\mathbf{F}\mathbf{S}\mathbf{P}\mathbf{U} \cdot \mathbf{G}1 \cdot \mathbf{G}\mathbf{U} \cdot \mathbf{U} 1 1\mathbf{F}\mathbf{S}\mathbf{P}\mathbf{U} = \mathbf{G}\mathbf{U} \cdot \mathbf{U}$	AIRP	620
C			
C	DO VALIDITY CHECK-CORRECT ON TEMIX.		
C			
	IFMIX = ((IABS(IFMIX) + 4) / 5) + 5	AIRP	63ù
	IF (TFMIX .GT. 20) TFMIX = $20$	AIRP	64 ù
	$IF (IFMIX \bullet Li \bullet 5) IFMIX = 5$	AIRP	651
¥ C	DO VALITATTY CHECK-COPPECT ON CHITA		
	bo WREIDIN UNEUR OURREUT UN UNIDIN.		
	IF (CWIDTH * CHT .LE. 0.0) CWIDTH = 1E300	AIRP	660
<u>C</u>			
0			
2	DO VALIDITY CHECK-CORRECT ON CLENGH.		
)			
	IF (CLENGH $\mathbf{*}$ CHT .LE. $(0, 0)$ CLENGH = $(0, 0)$	AIRP	670
<u>.</u>	DO VALITATTY CHECK-COPPECT ON DIN		
2	DO AMPIDITI OUGOV-OOKKEDI ON DINO		
	DTEST = .T.	AIRP	680
	DO 50 J = 1, 5	AIRP	691
	IF (DIN(J) .GT. 0.0) DTEST = .F.	AIRP	700
50	CONTINUE	AIRP	711
	IF (DTEST) DIN(1) = 50.0	AIRP	720
2	IF (DTEST) DIN(1) = 50.0	AIRP	721
C	IF (DTEST) DIN(1) = 50.0	AIRP	720
	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS	AIRP	720
2 2 2 60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS	AIRP	720
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = ICNVRT(CLASS)	AIRP	720 730
2 2 2 60 2	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = ICNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS	AIRP • AIRP	720 730
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = ICNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS	AIRP	720
5 5 60 5	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = ICNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA	AIRP AIRP	72J 730 740
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA)	AIRP AIRP AIRP AIRP	72J 730 740 750
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRI(GLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA)	AIRP AIRP AIRP AIRP AIRP	720 730 740 750 760
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA)	AIRP AIRP AIRP AIRP AIRP	72J 730 740 750 76U
	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS.	AIRP AIRP AIRP AIRP AIRP	72J 730 740 750 760
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA GA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS.	AIRP AIRP AIRP AIRP AIRP	72J 730 740 750 760
	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRI(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA GA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET	AIRP AIRP AIRP AIRP AIRP	72J 73J 740 750 76U
	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRI(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA GA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS.	AIRP AIRP AIRP AIRP AIRP	72J 73J 740 750 76U
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS IGLASS = IGNVRI(GLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA GA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS.	AIRP AIRP AIRP AIRP AIRP	720 730 740 750 760
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS IGLASS = IGNVRT(GLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 FESP = SORT(ARS(CA * LENGTH) * 1.0)	AIRP AIRP AIRP AIRP AIRP	72J 730 740 75J 76U
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRI(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRT(ABS(CA * LENGTH) * 1.0) EFGC = EFERVE(VERN) * 1.0)	AIRP AIRP AIRP AIRP AIRP AIRP AIRP	72J 730 740 75J 76J 76J
60	IF (DTEST) DIN(1) = 50.0 GALGULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS IGLASS = IGNVRI(GLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA GA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRI(ABS(GA * LENGTH) * 1.0) EFGC = EFGRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHG = LEFGRVH(YEAR, TFMIX, TESPD, SOURCE)	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	72J 730 750 750 760 770 780 790 800
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS IGLASS = IGNVRI(GLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRI(ABS(CA * LENGTH) * 1.0) EFGO = EFGRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHG = LFGRVH(YEAR, IFMIX, TFSPD, SOURCE)	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	720 730 750 750 760 770 780 790 800
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS IGLASS = IGNVRI(GLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRT(ABS(CA * LENGTH) * 1.0) EFGO = EFGRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHC = LFGRVH(YEAR, TFMIX, TFSPD, SOURCE)	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	720 730 750 750 760 770 780 790 800
	IF (DTEST) DIN(1) = 50.0 GALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRT(ABS(CA * LENGTH) * 1.0) EFCO = EFCRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHC = LFCRVH(YEAR, IFMIX, TFSPD, SOURCE) EFHC = LFCRVH(YEAR, IFMIX, TFSPD, SOURCE)	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	720 730 750 750 760 770 780 790 800
	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRT(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRT(ABS(CA * LENGTH) * 1.0) EFCO = EFCRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHG = LFGRVH(YEAR, IFMIX, TFSPD, SOURCE) EFHG = LFGRVH(YEAR, IFMIX, TFSPD, SOURCE)	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	720 730 740 750 760 770 780 790 800
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS IGLASS = IGNVRI(GLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRI(ABS(CA * LENGTH) * 1.0) EFCO = EFGRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHC = LEFGRVH(YEAR, IFMIX, TFSPD, SOURCE) EFHC = LEFGRVH(YEAR, IFMIX, TFSPD, SOURCE) EFHC = LEFGRVH(YEAR, IFMIX, TFSPD, SOURCE) CALCULATE FACTORS FOR FINAL EQUATIONS. 1.726025E-7 CONVERTS GM / MILE-HOUR TO GM / M-SEC.	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	720 730 750 750 760 770 780 790 800
	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = IGNVRI(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRT(ABS(CA * LENGTH) * 1.0) EFCO = EFGRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHC = LFGRVH(YEAR, IFMIX, TFSPD, SOURCE) EFHC = LFGRVH(YEAR, IFMIX, TFSPD, SOURCE) CALCULATE FACTORS FOR FINAL EQUATIONS. 1.726025E-7 CONVERTS GM / MILE-HOUR TO GM / M-SEC. QCO = (1.726025E-7) * TFVOL * EFCO	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	720 730 740 750 760 760 770 780 790 800 800
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS IGLASS = IGNVRI(GLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRT(ABS(GA * LENGTH) * 1.0) EFCO = EFGRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHC = LFGRVH(YEAR, TFMIX, TFSPD, SOURCE) CALCULATE FACTORS FOR FINAL EQUATIONS. 1.726025E-7 CONVERTS GM / MILE-HOUR TO GM / M-SEC. QCO = (1.726025E-7) * TFVOL * EFCO QHC = (1.726025E-7) * TFVOL * EFCO	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	720 730 740 750 760 760 770 780 790 800 800 810 820
60	IF (DTEST) DIN(1) = 50.0 CALCULATE PRELIMINARY VARIABLES AND PERFORM NECESSARY CONVERSIONS ICLASS = ICNVRI(CLASS) 0.0174533 CONVERTS DEGREES TO RADIANS ALPHA = .0174533 * ALPHA CA = COS(ALPHA) SA = SIN(ALPHA) 0.304801 CONVERTS FEET TO METERS. 0.552088 = (0.304801)**.5 AND CONVERTS EFFECTIVE LENGTH IN FEET TO EFFECTIVE LENGTH IN METERS. LFACTR = 24.0 + 0.552088 * SQRT(LENGTH * 1.0) * (1.0 - SA) / 2.0 EFSP = SQRT(ABS(CA * LENGTH) * 1.0) EFCO = EFCRVC(YEAR, TFMIX, TFSPD, SOURCE) EFHC = LFCRVH(YEAR, TFMIX, TFSPD, SOURCE) EFHC = LFCRVH(YEAR, TFMIX, TFSPD, SOURCE) EFHC = LFCRVH(YEAR, TFMIX, TFSPD, SOURCE) CALCULATE FACTORS FOR FINAL EQUATIONS. 1.726025E-7 CONVERTS GM / MILE-HOUR TO GM / M-SEC. QCO = (1.726025E-7) * TFVOL * EFCO QHC = (1.726025E-7) * TFVOL * EFCO QHC = (1.726025E-7) * TFVOL * EFCO	AIRP AIRP AIRP AIRP AIRP AIRP AIRP AIRP	720 730 740 750 760 760 770 780 790 800 800 800 810 820 830

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с.	DO 80 J = 1, 5	AIRP 850
C C	PERFORM THE ANALYSIS FOR UP TO FIVE OFF THE ROAD DISTANCES.	
	O = OIN(J)	AIRP 860
	IF (D .LE. 0.0) GO TO 80	AIRP 870
	DIST = D	AIRP 880
	P = 0.0	AIRP 890
	IF (XALPHA .GT. 89.0) GO TO 70	AIRP 900
	GAMMA = ATAN (D / EFSP) - ALPHA	AIRP 910
	XGAMMA = GAMMA / .0174533	AIRP 920
	DIST = COS(GAMMA) + SORT(D + 2 + EFSP + 2)	AIRP 93U
	P = TAN(GAMMA) * DIST	AIRP 940
70	SZM = SIGMAZ(DIST. ICLASS)	AIRP 954
	SHM = SIGMAH(DIST, ICLASS)	AIRP 960
C		
C C	3.28083 CONVERTS METERS TO FEET.	
	SZ = 3.28083 + SZM	AIRP 970
	$SH = 3 \times 28083 + SHM$	AIRP 980
	CFAGTR = EXP(-0.5 * SA * (SQRT(ABS((CASE-1) * D / 10.0)) + -CASE = 1))	AIRP 990
	ZFACTR = EXP(-0.5 * ((Z - H) / SZ)**2) + EXP(-0.5 * ((Z + H) /	AIRP101J
	-SZ) **2)	AIRP1020
C	YFACTR = EXP(-0.5 + (P / SH) + 2)	AIRP1030
C	2.23693 CONVERTS HOUR / MILE TO SEC / M.	
Č	0.159155 = 1 / (2 + PIE)	
C		
-	R = 2.23693 * 0.159155 * 7FACTR * YFACTR * KFACTR * (FACTR *	ATRP1040
	-CFACTR * GFACTR / (SZM * AFACTR * SHM)	AIRP1050
C		
C	870.0 CONVERTS GM (CO) / M**3 TO PPM (GO).	
C	1530.0 CONVERTS GH (HC) / H**3 TO PPM (HC).	
C		
	COMS = 870.0 + 0CO + R	ATRP1060
	HCWS = 1530.0 + GHC + R	A18P1070
C		
C		
Č	CALCULATE THE CARBON MONOXIDE AND HYDROCARBON LEVELS.	
C C	PRINT OUT THE RESULTS AND THE INPUT DATA.	,
C	DO 71 K = 1, 6	AIRP1080
C	PERFORM THE ANALYSIS FOR UP TO SIX WIND SPEEDS.	
C		ATOPAGOG
	TE (HC ) C 0) CO TO 74	ATODAAOO
	CO = CONS / NS	ATOD4440
	UC - UCUS / US	ALKP111U
	THE CHETCHE CE O AN HETTE (6 6040) HE CONDOS VEAD CHACT	ATOD44 20
	IF INCLURE USES USED ARTICLES OF DUIUS HOS SUURGES TEARS GLASSS	ALKP113U
C	-VANES VERLING TO DETAILS VEEKS ILANES ILANES ILUTYS AS PAGES	AIR#1140
	IF (HEIGHT .LT. 0.0) WRITE (6. 6020) WS. SOURCE. YEAR. CLASS.	AIRP1150
	-CASE, XALPHA, Z, HEIGHT, XLEN, TEVOL. TESPD. TEMIX. CWIDTH.	AIRP1160
<u>.                                    </u>	-CLENGH, D, CO, HC	AIRP1170
C		
C	END OF WIND SPEED LOOP.	

		0~45
<u> </u>	CONTINUE	AIRP1180
C	IF (SHOWIT) GO TO 78 WRITE (6, 6030) GO TO 80	AIRP1190 AIRP1200 AIRP1210
C C C	PRINT OUT THE FACTORS USED IN THE CONCENTRATION EQUATIONS.	
	HRITE (6, 6040) P, XGAMMA, QCO, QHC, ZFACIR, YFACTR, KFACTR, -LFACTR, CFACTR, GFACTR, SZM, AFACTR, SHM, DIST	AIRP1220 AIRP1230
C	END OF OFF THE ROAD DISTANCE LOOP.	
80 C	CONTINUE	AIRP1240
C C	END OF NDATA LOOP.	
C 90 C	CONTINUE	AIRP1250
C C	RETURN FOR THE NEXT DATA SET.	<u></u>
С	GO TO 1	AIRP1260
C C	TERMINATION OF AIRPOL ANALYSIS	
2 98	WRITE (6, 6050) Stop End	AIRP1270 AIRP1280 AIRP1290
		·
	•	
		• 
		<u></u>

## ••• 0°\*46

	INTEGER FUNCTION ICNVRT (CLASS)	ICNV	<u>_ u ŭ</u>
C			
C	ICNVRT CONVERTS STABILITY CLASSES FROM ALPHA TO INTE	GER BY TAKING	
C		•	
<u> </u>			
C	B 10 2	•	
<u> </u>		· · · · · · · · · · · · · · · · · · ·	
С	E TO 6	······································	• •
с С	F IU D		
č	DESCRIPTION OF PARAMETER		:
č			-
C	· · · · · · · · · · · · · · · · · · ·		
C	CLASS INTEGER		
C	THE HOLLERITH CODED STABILITY CLASS.		•
C			
C	NOTE THE MAIN PROGRAM ALLOWS ONLY VALLU GLASSES T	D ENTER IGNVRT	
6	TNTECED CLASS	TONV	4.0
	IE (CLASS .NE. 1HA) GO TO 1	TCNV	20
	TCNVRT = 1	TCNV	30
	RETURN	ICNV	4.1
	1 IF (CLASS .NE. 1HB) GO TO 2	ICNV	50
	ICNVRT = 2	ICNV	60
	RETURN	ICNV	70
	2 IF (CLASS .NE. 1HC) GO TO 3	ICNV	81
	ICNVRT = 3	ICNV	90
	RETURN	ICNV	100
	3 IF (CLASS .NE. 1HD) GO TO 4	ICNV	110
	ICNVRT = 4	ICNV	120
	RETURN	ICNV	130
	4 IF (CLASS .NE. 1HE) GO TO 5	ICNV	140
	ICNVRT = 5	ICNV	150
	RETURN	ICNV	160
	5 ICNVRT = 6	ICNV	17:0
	RETURN	ICNV	180
	ENO	TONV	1 0.0

	DEAL PUNCTION SECONCLIVEAD MTY ODEED TADEAN	EECO	л
	KEAL FUNULIUN EFURVU(ITEAK, MIX, SPEEU, IAKEA)	LFUU	
•	EFCRVC CALCULATES THE EMISSION FACTOR FOR CARBON MONOXIDE IN		
	GM/MILE. EFCRVC IS BASED ON INFORMATION SUPPLIED BY CALIFORNIA		
	AND THE EPA.		
	DESCRIPTION OF PARAMETERS		·
	IYEAR INTEGER		
	THE PREDICTION YEAR (72 TO 99).		-
	e in a second		
	MIX INTEGER		
	THE PERCENT OF HEAVY DUTY VEHICLES (5 TO 20).		
	SPEED REAL		
	IME AVERAGE RUUIE SPEED IN MPM (10.0 IV DU.U).		
	TAPEA INTECEP		
	- AND EAD CITY STDEETS		
	NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER		
	FECRYC.		
	DIMENSION FACTOR(64.3).LOOP(2.4.8)	EFCO	1
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP /	EFC0 EFC0	1
	DIMENSION FACTOR(64,3),L00P(2,4,8) DATA L00P / - 1. 3. 3*1. 3. 2*1. 2*3. 3*1. 3. 4*1. 3. 2*1. 3. 2*1. 3. 2*1.	EFCO EFCO	1
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2,	EFCO EFCO EFCO EFCO	1234
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 /	EFCO EFCO EFCO EFCO EFCO	12345
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32)/	EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32)/ - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - $B^{+1}$ / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - $8^{+1}$ / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 3 4 5 6 7 8 9
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - $8^{+1}$ / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9 1 0 11
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - $8^{+1}$ / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9 1 0 11 1 2
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32)/ - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 6 7 8 9 1 0 11 12 13
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - $8^{+1}$ / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9 10 11 12 13 14
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACIOR(I),I=33,64)/	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACIOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACIOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64) / - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32)/ - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.000000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00, - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 9 6 7 8 9 10 11 12 13 14 15 16 17 18
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACIOR(I),I=33,64)/ - 1.95818E02, 1.44506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00, - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E=5, 0.00000E00, - 1.60159E02, 1.30365E02, 6.34737E01, 3.13966E01,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	$ \begin{array}{r} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\$
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32)/ - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACIOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00, - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 1.60159E02, 1.30365E02, 6.34737E01, 3.13966E01, - 1.51934E01, 4.94393E-5, 1.68292E-5, 0.00000E00,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.000000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00/ DATA (FACTOR(I),I=33,64)/ - 1.95818E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00/ - 5.87395E02, 1.30365E02, 6.34737E01, 3.13966E01, - 1.51934E01, 4.94393E-5, 1.68292E-5, 0.00000E00/ - 5.72436E02, 4.21772E02, 1.73348E02, 5.81926E-5,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1 2 3 4 5 6 7 8 9 10 11 12 3 14 15 16 7 18 9 21 2 2 2 2 2
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.46118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64) / - 1.95818E02, 1.44506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00/ DATA (FACTOR(I),I=33,64) / - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00/ DATA (FACTOR(I),I=33,64) / - 1.95818E02, 1.30365E02, 6.34737E01, 3.13966E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00/ - 5.72436E02, 1.30365E02, 1.73348E02, 5.81926E-5, - 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00/	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	12 34 67 89 10 112 34 56 7 89 10 112 34 56 7 89 0 12 21 22 22 22 22
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.000000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00/ - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 1.60159E02, 1.30365E02, 6.34737E01, 3.13966E01, - 1.51934E01, 4.94393E-5, 1.68292E-5, 0.00000E00, - 5.72466E02, 4.2772E02, 1.73348E02, 5.81926E-5, - 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00/ DATA (FACTOR(I),I=65,96)/	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	12 34 56 78 90 112 13 15 67 89 01 12 13 15 67 89 01 12 22 22 24
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32)/ - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00/ DATA (FACTOR(I),I=33,64)/ - 1.95818E02, 4.37954E02, 1.85211E02, 4.17647E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 5.72436E02, 4.2772E02, 1.73348E02, 5.81926E-5, 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00/ DATA (FACTOR(I),I=65,96)/ - 6.53565E-1, -6.74530E-2, -3.49186E-1, -3.85910E-2,	EFC0 EFC0 EFC0 EFC0 EFC0 EFC0 EFC0 EFC0	12 34 56 78 90 112 134 156 78 90 112 134 156 78 90 122 22 22 22 22 22 22 22 22 22 22 22 22
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32)/ - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 4.4187E-5, 2.50182E-5, 0.00000E00, - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 5.72436E02, 1.30365E02, 6.34737E01, 3.13966E01, - 1.51934E01, 4.94393E-5, 1.68292E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.73348E02, 5.81926E-5, 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 5.72436E02, 4.21772E02, -3.49186E-1, -3.85910E-2, - 2.91528E-2, -4.04148E-3, -1.10431E-3, 0.00000E00,	EFC0 EFC0 EFC0 EFC0 EFC0 EFC0 EFC0 EFC0	12 34 56 7 8 9 0 112 34 112 112 112 112 112 112 112 112 112 11
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.000000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64) / - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E01, 4.43688E-5, 0.00000E00, - 5.972436E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 5.972436E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.73348E02, 5.81926E-5, - 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.73348E02, 5.81926E-5, - 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.73348E02, 5.81926E-5, - 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 6.93394E-1, -7.53674E-1, -7.22738E-2, -3.80191E-2, - 6.93394E-1, -7.53674E-1, -7.22738E-2, -3.80191E-2,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1234 3490 11234 1901 1234 1900 1222 2222 2222 2222 2222 2222 2222
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.7952E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.7952E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.46118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64) / - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.66270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 5.72436E02, 1.30365E02, 6.34737E01, 3.13966E01, - 1.60159E02, 1.30365E02, 1.68292E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.7334E02, 5.81926E-5, - 2.16513E-5, 3.91489E-5, 1.68292E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.7334E02, 5.81926E-5, - 2.91528E-2, -4.04148E-3, -1.10431E-3, 0.00000E00, - 6.93394E-1, -7.53674E-1, -7.22738E-2, -3.85910E-2, - 2.91528E-2, -4.04148E-3, -1.10431E-3, 0.00000E00, - 6.93394E-1, -7.53674E-1, -7.22738E-2, -3.80191E-2, - 5.04023E-2, -5.76866E-1, -1.01110E-3, 0.00000E00,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	1234 3490 11234 1901 1234 1900 1222 2222 2222 2222 2222 2222 2222
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, - 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56307E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64)/ - 1.95818E02, 1.41506E02, 2.17730E02, 1.17670E02, - 9.65348E01, 1.44070E11, 4.43688E-5, 0.00000E00/ - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 1.51934E01, 4.94393E-5, 1.68292E-5, 0.00000E00, - 1.51934E01, 4.94393E-5, 1.68292E-5, 0.00000E00, - 5.72436E02, 4.27772E02, 1.7348E02, 5.81926E-5, 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 5.72436E02, 4.27772E02, 1.7348E02, 5.81926E-5, 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 5.72436E02, 4.27772E02, 1.7348E02, 5.81926E-5, - 2.00000E00, - 5.72436E02, 4.27772E02, -3.49186E-1, -3.85910E-2, - 2.91528E-2, -4.04148E-3, -1.10431E-3, 0.00000E00, - 6.93394E-1, -7.53674E-1, -7.22738E-2, -3.80191E-2, - 5.04023E-2, -5.76866E-1, -1.01110E-3, 0.00000E00, - 6.95107E-1, -6.96526E-1, -5.75480E-1, -4.69673E-2, - 5.04023E-2, -5.76866E-1, -1.0110E-3, 0.00000E00, - 6.95107E-1, -6.96526E-1, -5.75480E-1, -4.69673E-2, - 5.04003E-2, -5.75480E-1, -5.75480E-1, -4.69673E-2, - 5.04003E-2, -5.76466E-1, -5.75480E-1, -4.69673E-2, - 5.04003E-2, -5.76466E-1, -5.75480E-1, -4.69673E-2, - 5.04003E-2, -5.76466E-1, -5.75480E-1, -4.69673E-2, - 5.04003E-2, -5.7646E-1, -5.7	EFC0 EFC0 EFC0 EFC0 EFC0 EFC0 EFC0 EFC0	123456789011234567890112345678901123456789012234567890012234567890012234567890012234567890012222222222
	DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / - 1, 3, 3*1, 3, 2*1, 2*3, 3*1, 3, 4*1, 3, 2*1, 3, 2*1, 3, 2*1, 3, 1, 3, 2*2, 3, 1, 5*3, 2*2, 3, 1, 2, 3, 2, 3, 7*2, 1, 2, - 8*1 / DATA (FACTOR(I),I=1,32) / - 5.65752E02, 1.44214E02, 2.02540E02, 3.60333E01, - 1.32453E01, 2.71779E-5, 1.08973E-5, 0.00000E00, - 5.79521E02, 5.39790E02, 9.83709E01, 3.21637E02, - 1.48568E01, 1.48118E01, 1.00008E-5, 0.00000E00, - 5.29352E02, 4.50980E02, 2.39046E02, 2.65299E02, - 1.34966E01, 4.55117E00, 1.19887E-5, 0.00000E00, - 5.87595E02, 3.87147E02, 2.27269E02, 8.56507E-5, - 1.74364E01, 7.78920E00, 4.89085E03, 0.00000E00/ DATA (FACTOR(I),I=33,64) / - 4.95818E02, 1.441506E02, 2.17730E02, 1.17670E02, - 6.24130E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 5.72436E02, 4.37954E02, 1.85211E02, 4.17487E01, - 2.06270E01, 4.01187E-5, 2.50182E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.73348E02, 5.81926E05, - 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.73348E02, 5.81926E-5, - 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 5.72436E02, 4.21772E02, 1.73348E02, 5.81926E-5, - 2.16513E-5, 3.91489E-5, 1.04089E-5, 0.00000E00, - 6.93394E-1, -7.53674E-1, -7.22738E-2, -3.86191E-2, - 2.91528E-2, -4.04148E-3, -1.10431E-3, 0.00000E00, - 6.93394E-1, -7.53674E-1, -7.22738E-2, -3.86191E-2, - 2.42488E-2, -5.76866E-1, -1.01110E-3, 0.00000E00, - 6.95107E-1, -6.96573E-2, -2.42488E-2, -2.70245E-2, -1.21267E-3, 0.00000E00, - 6.95107E-1, -4.69573E-2, -2.42488E-2, -2.70245E-2, -1.21267E-3, 0.00000E00, - 6.95107E-1, -4.69573E-2, -2.42488E-2, -2.70245E-2, -1.21267E-3, 0.00000E00,	EFCO EFCO EFCO EFCO EFCO EFCO EFCO EFCO	11111111112222222222230

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	3.93008E-2,	-3.06201E-2,	-4.30624E00,	0.00000E00/	EFC0 320
	DATA (FACTOR(I).I	= 97,128)/	· · · · · · · · · · · · · · · · · · ·		EFC0 330
	7.20767E-2,	-6.61371E-2,	-4.66178E-1,	-3.81762E-1,	EFCO 34U
	5,95946E-1,	-5.91702E-2,	-4.57976E-3,	0.000Q0E00,	EFC0 350
	7.27895E-1,	-6.47426E-1,	-3.42860E-1,	-5.38272E-2,	EFC0 360
	4.99514E-2,	-6.03031E-3,	-2.87828E-3,	0.00000E00,	EFC0 370
	6.87518E-2,	-6.87243E-2,	-5.92993E-2,	-5.58030E-2,	EFCO 38J
	5.81366E-2,	-5.23564E-3,	-1.84937E-3.	0.00000E00,	EFC0 390
	7.14979E-1,	-6.76193E-1,	-3.99664E-1,	-1.01025E-2,	EFC0 400
	6.11127E-3,	-5.96172E-3,	-2.48989E-3,	0.00000000/	EFC0 410
	DATA (FACTOR(I),I=	129,160)/		an an ar ar an	EFC0 420
	1.05638E01,	2.43131E01,	-2.55637201,	1.74736E01,	EFCO 430
	- 1.65955E01,	1.32091E00,	1.12417E00,	1.05000E01,	EFCO 440
	7.32925E00,	-1.15817E00,	2.01528E01.	-2.56637E02,	LFC0 450
	- 1.60387E01,	1.28750EU1,	1.05024E00,	8.8000ûEûu,	EFC0 460
	6.77248E00,	-5.66273E00,	-5.49700E00,	-2.04077E02,	EFC0 470
	- 9.89953E00,	1.02718E01,	9.744052-1,	7.00000E00,	EFC0 480
	9.01798E00,	-1.68359ED1,	-1.28138E01,	1.65925E00,	EFC0 490
	- 7.78475E00,	6.77010E00,	6.9997JED0,	5.20000E00/	EFCO 500
	DATA (FACTOR(I),I	=161,192)/			<u>EFC0 510</u>
	- 2.95037E01,	2.69009E01,	-7.13429E00,	-3.80564E00,	EFCO 520
	- 8.54834E00,	1.40436E01,	<u>1.23041E00</u>	1.20000E01,	EFCO 530
	1.73067E00,	-3.58023E00,	-2.205//EU1,	1.85445E01,	EFC0 540
	- <u>1.5459UEU1</u> ,	1.32264E00,	1.14029E00,	1.05000E01,	EFCO 550
	- 2.92566E01,	2.73362E01,	2.28356E01,	1.99599601,	EFCO 560
	- 1.65533EU1,	1.24425E00,	1.05046500.	8.80000E00,	<u>EFGO 570</u>
	3.27971EUU,	-1.85205E00,	-1.25300201,	1.61996EUU,	EF60 580
	- 1.38115EUU,	1.20506200,	9.91989==1,	/.00000200/	EFG0 590
	11 = 1	• • • •			EFCO SUU
	IF (IAKEA.EQ.IHU)	1 = 2		· · · · · · · · · · · · · · · · · · ·	EFUU 610
	$12 = (29 - 11 \times 1/9)$				EFCU 620
	13 = (11EAR - 70172)	- 0	· · · · · · · · · · · · · · · · · · ·		
	T/ - 70#T1+0#T0+T3	- 6 0			5500 658
	A = EACTOD(T(-4))	- + U	······································		
	A = FACTOR(14)1) $B = FACTOR(14)2)$				EFC0 600
	D = FACTOP(T4,3)				EFCO 680
	i = 100P(11, 12, 13)			• •	EFC0 698
	60 TO (1.2.3)	······································	· · · · · · · · · · · · · · · · · · ·		EFC0 760
4	FEGRAG = A+SPEED++i	8+0		•	EFC0 710
	RETURN	×	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	EFC0 720
2	FEGRVG = 10.44(A+S)	PEED*SPEED+R*SP	PEED+C)		EFC0 730
···· · · · · · · · · · · · · · · · · ·	RETURN			· · ·	EFCO 74a
3	EFCRVC = A*EXP(B*S	PEED) + C			EFCO 750
	RETURN		· · · · · · · · ·	· · · · ·	EFCO 760
	END			·	EFCO 770

m 0~49

EFCRVH CALCULATES EFCRVH IS BASED O	THE EMISSION F		CADDONS TH CHANT	-
EFCRVH IS BASED O		AVIVE LVK HIVKU	UNROUND IN UN/ MIL	t.
	N INFORMATION S	UPPLIED BY CALI	FORNIA AND THE EP	'A.
	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	
DESCRIPTION OF PA	RAMETERS			
······	· · · · · · · · · · · · · · · · · · ·	<u> </u>		
THEAD - THITECED				
THE DEDICTION VE	AP (72 TO 00)	· · · · · · · · · · · · · · · · · · ·		
THE PREDICTION TE	AK (12 10 39).			
MTX INTEGER	,			· · · · · · ·
THE PERCENT OF HE	AVY DUTY VEHICL	ES (5 TO 20).		
				······································
SPEED REAL			·	
THE AVERAGE ROUTE	SPEED IN MPH (	10.0 TO 60.0).		
	• • • • • • • • •	and the second	· · · · · · · · · · · · · · · · · · ·	
IAREA INTEGER				
= 1HC FOR C	LIT SIREEIS.	- / <b>k</b>	· · · · · · · · · · · · · · · · · · ·	·
- TUL LAK L	REEMAIJO	na series de la companya de la comp		
NOTE THE MATN	PROGRAM ALLONS	ONLY VALTO DADAL	FTERS TO ENTER	
EFCRVH				
DIMENSION FACTOR(	64,3),LOOP(2,4,	8)		EFHC 10
DATA LOOP /	· •••• • •			EFHC 20
12*1, 3, 3*1,	2*3, 2, 2*3, 1	, 2*3, 2, 3, 2,	3, 2, 3, 1, 3,	EFHC 30
4+2, 1, 3, 2,	<u>3, 2, 1, 2+2,</u>	1, 2*2, 3, 4*1,	2*2, 10*1 /	EFHC 40
1 E0162502	1=1,32)/ 6 700/0E04	9 64740500		EFHC 50
4,25668F=5,	2.323625-5.	<u>0.01310500</u>		EPHC DU
1.58421602.	7.05582E01.	1.05499F+4.	5-341845+5	EFHC A
3.97580E-5,	2.50334E-5.	1.79543200.	0.00000E00.	EFHC 94
1.13877E02,	1.40835E01.	6.02771E00.	5.94814E-5.	EFHC 100
1.84650E00,	1.44452E00,	9.20128E-6,	0.00000E00.	EFHC 110
1.05965E02,	4.58494E01,	6.13075E00.	7.01075E00.	EFHC 120
5.62009E-5,	3.09698E-5,	3.78380E+1,	0.00000E0J/	EFHC 130
DATA (FACTOR(I),I:	=33,64)/	· · · · · · · · · · · · · · · · · · ·		EFHC 140
1.51138E02,	5.35004E01,	8.98436E00,	4.69481E00,	EFHC 150
	3.25151EUU,	7.89525E00,	<u>    0.0000000</u> ,	EFHC 160
	4 •/ U704EU1; 3 00504E-5	7.51/35200g		EFHC 170
1.27860F02-	3.92126F01	1.64742504	2.97939508	EFHU 180
1.06608E00-	2.73313F=5-	3.643076-6-	2.577332009 A.AAAAAFAA.	EFRC 200
1.14499E02.	4.23883E01-	5.55750F00.	2.26058F00.	FFHC 210
9.61940E-1.	4.10527E-1.	5.46212E-1.	0.00006E00/	EFHC 22a
DATA (FACTOR(I),	I=65,96)/	······································		EFHC 230
-8.79538E-1,	-6.16078E-1.	-4.83220E-2.	-7.95623E-3,	EFHC 240
-5.05007E-3,	-2.84130E-3,	-3.67339E00,	0.00000E00,	EFHC 250
-9.58843E-1,	-7.61681E-1,	-1.28116E-2,	-6.63754E-3,	EFHC 260
-4.47777E-3,	-2.70661E-3,	-1.30047E00,	0.00000E00,	EFHC 270
-8.98129E-1,	-6.53162E-2,	-5.76682E-2,	-6.70283E-3,	EFHC 280
-2.19467E-1,	-7.09649E-1,	-9.86269E-4,	0.00000E00,	EFHC 290
<u>-9.39551E-1,</u>	-7.02790E-1,	-6.90627E-2,	-5.86071E-1,	EFHC 300
-D.(27)U/L-3, DATA /EACTOD/T)	-2.04000E-3,	-7.714422-1,	U.00000E00/	EFHC 310
	IYEAR INTEGER THE PREDICTION YE MIX INTEGER THE PERCENT OF HE SPEED REAL THE AVERAGE ROUTE IAREA INTEGER = 1HC FOR C = 1HF FOR F NOTE THE MAIN EFCRVH. DIMENSION FACTOR( DATA LOOP / 12*1, 3, 3*1, 4*2, 1, 3, 2, DATA (FACTOR(I), 1.50162E02, 4.25668E-5, 1.58421E02, 3.97580E-5, 1.58421E02, 3.97580E-5, 1.13877E02, 1.84650E00, 1.05965E02, 5.62009E-5, DATA (FACTOR(I),I 1.51138E02, 5.86606E-5, 1.25860E02, 4.45306E-5, 1.27860E02, 1.06608E00, 1.14499E02, 9.61940E-1, DATA (FACTOR(I),I 1.547777E-3, 8.98129E-1, -2.19467E-1, 9.39551E-1, -6.25507E-3, 9.39551E-1, -6.25507E-3, 1.27607E-3, 1.27607E-3, 1.27607E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-3, 1.2767E-1, 1.2767E-1, 1.2767E-3, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-3, 1.2767E-1, 1.2767E-3, 1.2767E-3, 1.2767E-1, 1.2767E-3, 1.2767E-1, 1.2767E-3, 1.2767E-1, 1.2767E-3, 1.2767E-3, 1.2767E-3, 1.2767E-1, 1.2767E-3, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-3, 1.2767E-3, 1.2767E-1, 1.2767E-3, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-1, 1.2767E-3, 1.2767E-1, 1.2	IYEAR INTEGER THE PREDICTION YEAR (72 TO 99). MIX INTEGER THE PERGENI OF HEAVY DUTY VEHICL SPEED REAL THE AVERAGE ROUTE SPEED IN MPH ( IAREA INTEGER = 1HC FOR CITY STREETS. = 1HF FOR FREEWAYS. NOTE THE MAIN PROGRAM ALLOWS EFCRVH. DIMENSION FACTOR(64,3),LOOP(2,4, DATA LOOP / 12*1, 3, 3*1, 2*3, 2, 1, 2*2, DATA (FACTOR(I),I=1,32)/ 1.50162E02, 6.39940E01, 4.25668E-5, 2.32362E-5, 1.58421E02, 7.05582E01, 3.97580E-5, 2.50334E-5, 1.684550E00, 1.44452E00, 1.05965E02, 4.58494E01, 5.62009E-5, 3.09698E-5, DATA (FACTOR(I),I=33,64)/ 1.51138E02, 5.35004E01, 5.62009E-5, 3.09698E-5, DATA (FACTOR(I),I=33,64)/ 1.55160E02, 4.70564E01, 5.62009E-5, 3.09698E-5, DATA (FACTOR(I),I=33,64)/ 1.05965E02, 4.70564E01, 5.62009E-5, 3.09698E-5, DATA (FACTOR(I),I=33,64)/ 1.05965E02, 4.70564E01, 5.62009E-5, 3.99596E-5, 1.27860E02, 3.92126E01, 1.05608E02, 4.70564E01, 5.62009E-5, 3.99596E-5, 1.27860E02, 3.92126E01, 1.05608E02, 4.70564E01, 4.45306E-5, 3.25151E00, 1.25860E02, 4.70564E01, 5.65007E-3, -2.84130E-3, -5.05007E-3, -2.84130E-3, -5.05007E-3, -2.84130E-3, -5.05007E-3, -2.84130E-3, -5.05007E-3, -2.84130E-3, -5.05007E-3, -2.84430E-3, -5.05007E-3, -2.844068E-3, .219467E-1, -7.09649E-1, -5.0507E-3, -2.844068E-3, .219467E-1, -7.09649E-1, -5.2507E-3, -2.844068E-3, .219467E-1, -7.02790E-1, -6.25507E-3, -2.844068E-3, .219467E-1, -7.02790E-1, -6.25507E-3, -2.844068E-3, .219467E-1, -7.02790E-1, -6.25507E-3, -2.844068E-3, .219467E-1, -7.02790E-1, -6.25507E-3, -2.844068E-3, .219467E-1, -7.02790E-1, .219467E-1, -7.02790E-	IYEAR INTEGER THE PREDICTION YEAR (72 TO 99). MIX INTEGER THE PERCENT OF HEAVY DUTY VEHICLES (5 TO 20). SPEED REAL THE AVERAGE ROUTE SPEED IN MPH (10.0 TO 60.0). IAREA INTEGER = 1HC FOR CITY STREETS. = 1HF FOR FREEWAYS. NOTE THE MAIN PROGRAM ALLOWS ONLY VALID PARAM EFGRVH. DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / 12*1, 3, 3*1, 2*3, 2, 1, 2*2, 1, 2*3, 2, 3, 2, 4*2, 1, 3, 2*1, 2*3, 2, 1, 2*2, 1, 2*2, 3, 4*1, DATA (FACTOR(1),I=1,32)/ 1.50162E02, 6.39940E01, 8.61310E00, 4.25668E-5, 2.32362E-5, 4.23919E02, 1.58421E02, 7.05582E01, 1.05499E-4, 3.97580E-5, 2.50334E-5, 1.79543E00, 1.13877E02, 1.4*035E01, 6.02771E00, 1.64650E00, 1.4*4452E00, 9.20128E-6, 1.05565E02, 4.58494E01, 6.13075E00, 5.86606E-5, 3.25151E00, 7.89525E00, 1.27860E02, 4.70564E01, 7.87525E00, 5.86606E-5, 3.925151E00, 7.89525E00, 1.27860E02, 4.73313E-5, 3.64307E-5, 1.45336E-5, 3.925151E00, 7.89525E00, 1.27860E02, 4.73543E01, 1.64742E01, 1.27860E02, 4.73542E01, 1.64742E01, 1.647336E-1, -4.10527E-1, 5.46212E-1, DATA (FACTOR(I),I=5,96)/ 278538E-1, -5.16078E-1, -4.83220E-2, -5.05007E-3, -2.84130E-3, -3.67339E00, 9.61940E-1, 4.10527E-1, 5.46212E-1, DATA (FACTOR(I),I=65,96)/ 879538E-1, -7.061681E-1, -1.28116E-2, -4.4777FE-3, -2.74661E-3, -3.67339E00, 9.61940E-1, 4.10527E-1, 5.46212E-1, DATA (FACTOR(I),I=65,96)/ 8.79538E-1, -7.0608E-1, -3.64307E-5, 1.4499E02, 4.23883E01, 5.5750E00, 9.61940E-1, 4.10527E-1, 5.46212E-1, DATA (FACTOR(I),I=65,96)/ 8.79538E-1, -7.0608E-1, -9.86269E-2, -2.19467E-1, -7.02790E-1, -6.90627E-2, -5.05007E-3, -2.844068E-3, -3.67339E00, -8.98129E-1, -7.02790E-1, -9.86269E-4, -9.39551E-1, -7.02790E-1, -6.90627E-2, -5.05007E-3, -2.84068E-3, -7.71442E-1, PATA (FACTOR(I),I=0,-1,02790E-1, -6.90627E-2, -6.25507E-3, -2.84068E-3, -7.71442E-1,	IYEAR INTEGER THE PREDIOTION YEAR (72 TO 99). MIX INTEGER THE PERCENT OF HEAVY DUTY VEHICLES (5 TO 20). SPEED REAL THE AVERAGE ROUTE SPEED IN MPH (10.0 TO 60.0). IAREA INTEGER = 1HG FOR CITY STREETS. = 1HF FOR FREEMAYS. NOTE THE MAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER EFCRVH. DIMENSION FACTOR(64,3),LOOP(2,4,8) DATA LOOP / 12°1, 3, 3*1, 2*3, 2, 2°3, 1, 2*3, 2, 3, 2, 3, 2, 3, 1, 3, 4*2, 1, 3, 2*1, 2*3, 2, 2°3, 1, 2*2, 3, 4*1, 2*2, 10*1 / DATA (FACTOR(1),I=1,32)/ 1.50162E02, 6.33940E01, 8.61310E00, 6.42102E-5, 4.25668E-5, 2.32362E-5, 4.23919E02, 0.00000E00, 1.1387TE02, 1.40835E01, 6.13075E00, 6.9940UE-5, 3.97500E-5, 2.05034E-5, 1.79543E00, 0.00000E00, 1.1387TE02, 1.40835E01, 6.13075E00, 7.01075E00, 5.6209E-5, 3.0969E-5, 3.78380E-1, 0.00000E00/ 1.5965E02, 4.58494E01, 6.13075E00, 4.69481E00, 5.6209E-5, 3.0959E-5, 3.78380E-1, 0.00000E00/ 1.2556502, 4.70564E01, 7.8725E00, 4.00000E00/ 1.25660E02, 4.70564E01, 7.89525E00, 4.00000E00/ 1.25660E02, 4.70564E01, 7.89725E00, 4.05274E00, 4.69481E00, 5.85095E-5, 3.26395E-5, 3.78380E-1, 0.00000E00/ DATA (FACTOR(1),I=33,64)/ 1.5113802, 5.35004E01, 8.98436E00, 4.69481E00, 5.6209E-5, 3.9295E-5, 3.78380E-1, 0.00000E00/ 1.27660E02, 4.7313E-5, 3.64307E-1, 0.00000E00/ 1.27660E02, 4.7313E-5, 3.64307E-1, 0.00000E00/ 1.27660E02, 4.7313E-5, 3.64307E-5, 0.00000E00/ 1.27650E02, 4.23835E01, 1.64742E01, 2.97939E00, 1.26058E00, 2.7313E-5, 3.64307E-5, 0.00000E00/ DATA (FACTOR(1),I=55,96)/ -A.79538E-1, -6.16078E-1, -4.83220E-2, -7.95523E-3, -5.05007E-3, -2.84130E-1, -4.83220E-2, -7.95523E-3, -5.05007E-3, -2.84130E-1, -4.83220E-2, -7.95523E-3, -5.0507E-3, -2.84130E-1, -1.28116E-2, -6.53754E-3, -4.47777E-3, -2.70664E-1, -3.67339E00, 0.00000E00, 3.61340E-1, -7.01649E-1, -1.28116E-2, -5.663754E-3, -4.4777E-3, -2.70664E-1, -3.67339E00, 0.00000E00, -3.9551E-1, -7.01649E-1, -3.67339E00, 0.00000E00, -3.9551E-1, -7.01649E-1, -3.67339E00, 0.00000E00, -3.9551E-1, -7.01649E-1, -1.28116E-2, -5.663754E-3, -4.4777E-3, -2.70664E-3, -7.71442E



	9.36764E-1, -6.38365E-1, -5.36549E-2	2, -4.36695E-2,	EFHC 33			
	7.83860E-32.12653E-11.64584E01	0.00000E00.	EFHC 34			
	8.76247E-1, -5.91357E-1, -5.18047E-2	2, -4.77457E-2,	EFHC 350			
	6.24072E-3, -4.47006E-3, -1.17976E01	0.00000E00.	EFHC 36			
	8.94419E-1, -5.67329E-1, -3.45940E-1	-4.68316E-2.	EFHC 37			
	4.25428E-23.46216E-33.61439E-3	3. 0.00006E00.	EFHC 38			
	8.97727E-16.20300E-15.20706E-2	-3.73075E-2.	EFHC 390			
	5.35122E-25.86501E-22.35268E-1	L. 0.00000E0U/	EFHC 400			
	DATA (FACTOR(I), I=129, 160)/		EFHC 41			
	- 3.68365E00. 1.51557E00. 4.90833E00	8.77041E-1.	EFHC 420			
	- 5.89877E-1, 3.88288E-1, 1.39970E00	1.2200UE0U.	EFHC 430			
	- 3.58287E00. 2.55537E00. 1.05719E00	7.75740E-1.	EFHC 440			
	- 4.96152E-1. 3.02329E-1. 1.19908E00	. 1.10006Eúu.	EFHC 45t			
	- 2.78890E00. 4.65367E00. 3.71103E00	6.81801E-1.	EFHC 460			
	- 1.16289E00, 1.29847E00, 5.52793E-2	9.20000E-1.	EFHC 470			
	- 2.31976E00. 1.11239E00. 2.91433E00	1.58217EQU.	EFHC 480			
	- 3.10573E-1, 1.02729E-1, 8.25721E-1	. 7.60000E-1/	EFHC 49			
	DATA (FACTOR(I), I=161,192)/		EFHC 500			
	- 3.31365E00, 1.69508E00, 4.04226E00	3.15840E00.	EFHC 510			
	- 6.95542E-1. 6.78304E-1. 1.61718E00	1.40000E00.	EFHC 520			
	- 2.76034E00. 9.46851E-1. 3.84516E00	2.97917Edd.	EFHC 53			
	- 6.01738E-1. 3.94201E-1. 1.36425E00	1.23000E00.	EFHC 540			
	- 3.18944E00, 1.08558E00, -7.22235E-2	2.83371E00.	EFHC 550			
_	- 2.20101E00. 3.11847E-1. 1.58901E-1	1.05000E00.	EFHC 56			
1	- 2.50732E00, 1.04220E00, 3.29389E00	2.43898E04.	EFHC 570			
	- 1.83758E00. 1.35177E00. 7.81921E-1	8.80000E-1/	EFHC 580			
	I1 = 1	· · · · · · · · · · · · · · · · · · ·	EFHC 590			
	IF (IAREA.EQ.1HC) $I1 = 2$		EFHC 600			
	I2 = (25 - MIX) / 5		EFHC 610			
	13 = (1YEAR - 70)/2		EFHC 620			
	IF (I3 .GT. 8) I3 = 8		EFHC 630			
	I4 = 32 + I1 + 8 + I2 + I3 - 40	· · · · ·	EFHC 640			
	A = FACTOR(14,1)	- 10	EFHC 650			
	B = FACTOR(14,2)		EFHC 660			
	C = FACTOR(14,3)		EFHC 670			
	L = LOOP(I1, I2, I3)		EFHC 680			
	GO TO (1,2,3), L		EFHC 69			
	EFCRVH = A*SPEED**B+C		EFHC 700			
	RETURN		EFHC 710			
	EFCRVH = 10.** (A*SPEED*SPEED+B*SPEED+C)		EFHC 720			
	RETURN		EFHC 73			
	EFCRVH = A*EXP(B*SPEED)+C		EFHC 740			
	RETURN		EFHC 750			
	END		EFHC 760			
REAL FUNCTION SIGMAZ (DIST, IGRAPH)         SIG2 01           C         SIGHAZ CALCULATES THE STANDARD DEVIATION OF THE GAUSSIAN CURVE           C         FOR VERITCAL DISPERSION, IN HETERS. SIGMAZ IS BASED ON EMPTRICAL           C         RESULTS OF CALFORNIAN MORK.           C         DESCRIPTION OF PARAMETERS           G         DIST REAL           C         THE EFFECTIVE DOMNNIND DISTANCE, IN FEET.           C         IGRAPH INTEGER           C         IGRAPH INTEGER           C         IGRAPH INTEGER           C         INF THE HAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER           C         SIG2 10           G         NOTE THE HAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER           C         SIGAZ.           C         XNETER * .304501 * DIST + 4.00           GO IO (1, 2, 2, 3, 4, 5, 6), IGRAPH         SIG2 10           GO IO 10 (1, 2, 2, 3, 4, 5, 6), IGRAPH         SIG2 10           GO IO 10 (1, 2, 2, 3, 4, 5, 6), IGRAPH         SIG2 10           GO IO 10 (1, 2, 2, 3, 4, 5, 6), IGRAPH         SIG2 10           GO IO 10 (1, 2, 2, 3, 4, 5, 6), IGRAPH         SIG2 10           GO IO 10 (1, 2, 2, 3, 4, 5, 6), IGRAPH         SIG2 10           GO IO 10 (1, 2, 2, 3, 4, 5, 6), IGO IO 10         SIG2 10				∩ <sup>™</sup> 51		
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REAL FUNCTION SIGNAL TOTAL, INFARTO         SIGE         NUME           C         SIGHAZ CALGULATES THE STANDARD DEVIATION OF THE GAUSSIAN CURVE         C           C         SIGHAZ CALGULATES THE STANDARD DEVIATION OF THE GAUSSIAN CURVE         C           C         RESULTS OF CALIFORNIAS MORK.         SIGHAZ CALURATES THE STANDARD.         C           C         DESCRIPTION OF PARAMETERS         C         C           C         DIST REAL         C         C           C         DIST REAL         C         C           C         THE EFFECTIVE OOWNHIND DISTANCE, IN FEET.         C           C         THE PREVAILING STABILITY CLASS (FROM ICNWRT).         C           C         NOTE THE HAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER         SIGE 10           GO IO (1, 2, 3, 4, 5, 5), 5), 1GRAPH         SIGE 20         SIGE 20           IF (NHETER +LT. 40, 60 TO 10         SIGE 20         SIGE 20           IF (NHETER +LT. 40, 60 TO 20         SIGE 50         SIGE 70           GO IO 3         SIGE 70			DEAL FUNCTION STOMAT (DIST. TODADUS	<b>J</b>	6767	
SIGMAZ CALGULATES THE STANDARD DEVIATION OF THE GAUSSIAN CURVE           C         FOR VERTICAL DISPERSION, IN METERS. SIGMAZ IS BASED ON EMPIRICAL           C         RESULTS OF CALFFORNIAN MORK.           C         DESCRIPTION OF PARAMETERS           C         DIST REAL           C         THE EFFECTIVE DOMNMIND DISTANCE, IN FEET.           C         IGRAPM INTEGER           C         THE PREVAILING STABILITY CLASS (FROM ICNWRT).           C         NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER           SIGMAZ.         SIGZ 10           C         YMETER = .304801 * DIST * 4.0           GO TO 11, 2, 3, 4, 5, 5), IGRAPH         SIGZ 20           IF (XMETER = .1C. 0, 0C TO 18         SIGZ 30           IF (XMETER +LE, 170, 160 TO 19         SIGZ 40           IF (XMETER +LE, 170, 160 TO 19         SIGZ 40           IF (XMETER +LE, 170, 160 TO 19         SIGZ 40           IF (XMETER +LE, 170, 160 TO 19         SIGZ 40           GO TO 9         SIGZ 40           IF (XMETER +LE, 170, 160 TO 19         SIGZ 40           IF (XMETER +LE, 170, 160 TO 19         SIGZ 70           GO TO 9         SIGZ 100           B = -206404         SIGZ 100           GO TO 9         SIGZ 101           IG A * -			REAL FUNCTION SIGNAL (UISI: JGRAPH)	· · · · · · · · · · · · · · · · · · ·	2162	<u> </u>
C       FOR VERITAL DISPERSION, IN HETERS. SIGHAZ IS BASED ON EMPIRICAL         C       DESCRIPTION OF PARAMETERS         C       DESCRIPTION OF PARAMETERS         C       DIST REAL         C       THE EFFECTIVE DOWNNIND DISTANCE, IN FEET.         C       IGRAPH INTEGER         C       THE PREVAILING STABILITY CLASS (FROM ICNVRT).         C       NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER         SIGMAZ.       SIGZ 10         GO 10 (1, 2, 3, 4, 5, 5), 16RAPH       SIGZ 20         YNETER +.17. 40, 0G TO 18       SIGZ 20         I F (XMETER +LE. 170, 160 TO 19       SIGZ 40         I F (XMETER +LE. 170, 160 TO 19       SIGZ 70         GO TO 3       SIGZ 70         GO TO 9       SIGZ 70	c 0		STGNAT CALCULATES THE STANDARD DEVIATION OF THE GAUSSTA			· .
C       RESULTS OF CALIFORNIAS MORK.         C       DESCRIPTION OF PARAMETERS         C       OIST REAL         C       THE EFFECTIVE DOWNNIND DISTANCE, IN FEET.         C       IGRAPH INFEGER         C       THE PREVAILING STABLITY CLASS (FROM ICNVRT).         C       MOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER         C       MOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER         C       SIGHAZ.         C       VARTER = .304801 * DIST + 4:0         G       SIGZ 28         1 IF (XMETER +.LT. 40.) GO TO 18         SIGHAZ.       SIGZ 28         1 IF (XMETER +.LT. 40.) GO TO 18       SIGZ 28         1 IF (XMETER +.LT. 40.) GO TO 18       SIGZ 50         A = 1.78850       SIGZ 50         B = -2.60404       SIGZ 70         G O TO 9       SIGZ 100         G O TO 9       SIGZ 101         G O TO 9       SIGZ 101         G O TO 9       SIGZ 102         G O TO 9       SIGZ 100         G O TO 9       SIGZ 100         G O TO 9       SIGZ 102         G O TO 9       SIGZ 102         G O TO 9       SIGZ 102         G O TO 9       SIGZ 102 <tr< td=""><td>C</td><td></td><td>FOR VERTICAL DISPERSION. IN METERS. SIGNAZ IS BASED ON</td><td>ENPIRICAL</td><td></td><td></td></tr<>	C		FOR VERTICAL DISPERSION. IN METERS. SIGNAZ IS BASED ON	ENPIRICAL		
C         DESCRIPTION OF PARAMETERS           C         DIST REAL           C         THE EFFECTIVE DOMNNIND DISTANCE, IN FEET.           C         TGRAPM INTEGER           C         TGRAPM INTEGER           C         THE PREVAILING STABILITY CLASS (FROM ICNVRT).           C         NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER           SIGMAZ.         SIG2 10           C         XMETER = .304801 * DIST + 4.0           GO TO (1, 2, 3, 4, 5, 5), IGRAPH         SIG2 20           C         SIGMAZ.           C         SIGMAZ.           C         SIGMAZ.           C         SIGZ 20           XMETER = .304801 * DIST + 4.0         SIGZ 20           GO TO (1, 2, 3, 4, 5, 5), IGRAPH         SIGZ 20           IF (XMETER .LE. 170.1 GO TO 19         SIGZ 40           IF (XMETER .LE. 170.1 GO TO 19         SIGZ 70           GO TO 9         SIGZ 70           GO TO 9         SIGZ 70           GO TO 9         SIGZ 100           B & = .35374         SIGZ 100           B = .36937         SIGZ 130           GO TO 9         SIGZ 130           GO TO 9         SIGZ 130           GO TO 9         SIGZ 140 <td>_ Č</td> <td></td> <td>RESULTS OF CALIFORNIAS WORK.</td> <td></td> <td>· . · ·</td> <td></td>	_ Č		RESULTS OF CALIFORNIAS WORK.		· . · ·	
C       DESCRIPTION OF PARAMETERS         C       THE EFFECTIVE DOMNWIND DISTANCE, IN FEET.         C       IGRAPH INTEGER         C       THE PREVAILING STABILITY CLASS (FROM ICNVRT).         C       NOTE THE MAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER         C       SIGAZ.         C       XMETER = .304801 * DIST + 4.0         G       SIGZ 10         GO 01 (1, 2, 3, 4, 5, 5), IGRAPH       SIGZ 20         1       IF (XMETER .LE. 174.1) GO 10 19       SIGZ 40         IF (XMETER .LE. 174.1) GO 10 19       SIGZ 50         A = 1.78053       SIGZ 60         B = -2.68404       SIGZ 70         GO TO 9       SIGZ 100         B = -60937       SIGZ 100         GO TO 9       SIGZ 120         B = .09249       SIGZ 120         GO TO 9       SIGZ 140         SIGZ 140       SIGZ 140         A = 1.5633       SIGZ 140         A = .6250	C					
C       DIST REAL         C       DIST REAL         C       THE EFFECTIVE DOWNWIND DISTANCE, IN FEET.         C       IGRAPH INFEGER         C       THE PREVAILING STABILITY CLASS (FROM ICNNRT).         C       NOTE THE MAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER         C       SIGMAZ.         C       SIGMAZ.         C       SIGMAZ.         C       SIGMAZ.         C       SIGE 28         IF       (METER = .304801 * DIST + 4.0         GO TO (1, 2, 3, 4, 5, 5), JGRAPH       SIGE 28         1 IF       (XMETER .LE. 170.1 GO TO 18         IF (XMETER .LE. 170.1 GO TO 20       SIGE 30         IF (XMETER .LE. 170.1 GO TO 20       SIGE 50         A = 1.73953       SIGE 70         GO TO 9       SIGE 70         GO TO	<u>C</u>		DESCRIPTION OF PARAMETERS			
G       DIST REAL         THE EFFECTIVE DOWNWIND DISTANCE, IN FEET.         G         IGRAPH INTEGER         G       THE PREVAILING STABILITY CLASS (FROM ICNVRT).         G       THE PREVAILING STABILITY CLASS (FROM ICNVRT).         G       NOTE THE HAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER         SIGMAZ.       SIG2 10         G       SUBTION OF ALLOWS ONLY VALID PARAMETERS TO ENTER         C       SIGMAZ.         C       NHETERTHE HAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER         C       SIGMAZ.         C       SIGE 20         XMETER = .304801 * DIST + 4.0       SIGZ 10         GO TO (1, 2, 3, 4, 5, 5), IGRAPH       SIGZ 20         IF (XMETER .LE. 170.1 GO TO 13       SIGZ 140         SIGE 70       SIGZ 70         G TO 9       SIGZ 100         GO TO 9       SIGZ 120         B =264804       SIGZ 120         GO TO 9       SIGZ 120         G TO 9       SIGZ 120         B =264804       SIGZ 120         GO TO 9       SIGZ 120         GO TO 9 <td< td=""><td>C</td><td></td><td></td><td></td><td></td><td></td></td<>	C					
G       DLSI REAL         C       THE EFFECTIVE DOWNWIND DISTANCE, IN FEET.         C       THE PREVAILING STABILITY CLASS (FROM ICNWRT).         C       NOTE THE MAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER         SIGMAZ.       SIGZ 10         C       SIGMAZ.         C       SIGMAZ.         C       SIGMAZ.         C       SIGZ 20         SIGMAZ.       SIGZ 20         C       SIGZ 20         C       SIGZ 20         SIGMAZ.       SIGZ 20         C       SIGZ 20         C       SIGZ 20         SIGZ 20       SIGZ 20         SIGZ 20       SIGZ 20         C       SIGZ 20         SIGZ 20       SIGZ 20         SIGZ 20       SIGZ 20         A = 1/206804       SIGZ 70         GO TO 9       SIGZ 100         B = -60337       SIGZ 100         B = -60337       SIGZ 122         B = -60337       SIGZ 122         B = -6034       SIGZ 122         GO TO 9       SIGZ 122         SIGZ 130       SIGZ 140         SIGZ 140       SIGZ 140         B = -60337       SIGZ 140	<b>C</b>					· · · · · · · · · · · · · · · · · · ·
L       INFECTIVE DUMMINIAU DISTANCE, IN FEET.         C       IGRAPH INTEGER.         C       THE PREVAILING STABLIITY CLASS (FROM ICNVRT).         C       NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER         SIGMAZ.       SIG2 10         G       SIGMAZ.         C       NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER         SIGMAZ.       SIG2 10         G       SIGMAZ.         C       NETER = .304801 * DIST + 4.0         GO TO 11, 2, 3, 4, 5, 5), JERAPH       SIG2 20         IF (XMETER -LT. 40.0 O TO 10       SIG2 40         IF (XMETER ALE. 170.1 GO TO 19       SIG2 50         A = .127853       SIG2 50         B = -2.66404       SIG2 70         GO TO 9       SIG2 100         B = .60937       SIG2 100         GO TO 9       SIG2 120         A = .6525       SIG2 120         GO TO 9       SIG2 120         GO	C C		DIST REAL			
C       IGRAPH INTEGER         C       THE PREVAILING STABILITY CLASS (FROM ICNWRT).         C       NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER         SIGMAZ.       SIGZ 10         G       SIGMAZ.         C       SIGMAZ.         C       SIGMAZ.         C       SIGZ 10.         G0 10 (1, 2, 3, 4, 5, 5), IGRAPH       SIGZ 20.         1 IF (METER .LT. 40.) GO TO 18       SIGZ 30.         IF (METER .LT. 420.) GO TO 20       SIGZ 50.         A = 1.728963       SIGZ 60.         B = -2.66404       SIGZ 100.         GO TO 9       SIGZ 101.         19 A = .35374       SIGZ 100.         B = .60937       SIGZ 120.         GO TO 9       SIGZ 120.         GO TO 9<	L		INE EFFECIAVE DURNMIND DISIRNUE, IN PEEL.			
C       THE PREVAILING STABILITY CLASS (FROM ICNVRT).         C       NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER         SIGMAL.       SIGE 10         C       SIGMAL.         C       SIGMAL.         C       SIGMAL.         SIGMAL.       SIGE 10         SIGMAL.       SIGE 10         GO 10 (1, 2, 3, 4, 5, 5). JGRAPH       SIGE 20         1 IF (XMETER +LT. 40.) GO TO 10       SIGE 40         JF (XMETER +LT. 40.) GO TO 20       SIGE 50         A = 1.728653       SIGE 60         B = -2.68404       SIGE 70         GO TO 9       SIGE 100         B = -2.68404       SIGE 70         GO TO 9       SIGE 100         B = -2.68404       SIGE 70         GO TO 9       SIGE 100         B = -2.68404       SIGE 70         GO TO 9       SIGE 110         JA = .655       SIGE 120         B = .09249       SIGE 120         GO TO 9       SIGE 140         SIGE 140       SIGE 140         JA = .6556       SIGE 160         JA = .6565       SIGE 150         JA = .65266       SIGE 120         JA = .62506       SIGE 210         JA =	č		IGRAPH INTEGER			
C         NOTE THE MAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER           C         SIGMAZ.           C         XMETER = .304801 * DIST + 4.0         SIGZ 20           1         GO 10 (1, 2, 3, 4, 5, 5), IGRAPH         SIGZ 30           1         IF (XMETER .LT. 40.) GO TO 18         SIGZ 30           1         IF (XMETER .LT. 40.) GO TO 19         SIGZ 50           1         IF (XMETER .LT. 420.) GO TO 20         SIGZ 50           A = 1.78953         SIGZ 70         SIGZ 70           B = -2.66404         SIGZ 70         SIGZ 100           GO TO 9         SIGZ 100         SIGZ 100           GO TO 9         SIGZ 100         SIGZ 100           GO TO 9         SIGZ 120         SIGZ 120           GO TO 9         SIGZ 120         SIGZ 120           GO TO 9         SIGZ 120         SIGZ 120           B = .09249         SIGZ 120         SIGZ 120           GO TO 9         SIGZ 120         SIGZ 120           B = .09249         SIGZ 120         SIGZ 120           GO TO 9         SIGZ 120         SIGZ 120           J A = 1.0603         SIGZ 120         SIGZ 120           A = .65206         SIGZ 120         SIGZ 220           J A = .33099	C		THE PREVAILING STABILITY CLASS (FROM ICNVRT).			
C       NOTE THE MAIN PROGRAM ALLONS ONLY VALID PARAMETERS TO ENTER         C       SIGMAZ.         C       SIGMAZ.         C       SIGMAZ.         C       SIGMAZ.         C       SIGZ 10         SIGMAZ.       SIGZ 10         C       SIGZ 10         SIGMAZ.       SIGZ 10         C       SIGZ 20         1 IF (XMETER -LT. 40.) GO TO 18       SIGZ 40         IF (XMETER -LT. 40.) GO TO 19       SIGZ 40         SIGZ 50       SIGZ 50         A = 1.78963       SIGZ 70         GO TO 9       SIGZ 100         GO TO 9       SIGZ 120         GO TO 9       SIGZ 120         GO TO 9       SIGZ 120         SIGZ 140       SIGZ 120         GO TO 9       SIGZ 120         SIGZ 140       SIGZ 140	C				÷	
C       SIGHAZ.         C       SIGZ         XMETER = .304801 * DIST * 4.0       SIGZ 10         60 T0 (1, 2, 3, 4, 5, 6), IGRAPH       SIGZ 28         1 IF (XMETER .LT. 40.) GO TO 18       SIGZ 50         IF (XMETER .LT. 40.) GO TO 19       SIGZ 64         0 TF (XMETER .LT. 40.) GO TO 20       SIGZ 50         A = 1.72863       SIGZ 64         B = -2.66404       SIGZ 70         GO T0 9       SIGZ 100         GO T0 9       SIGZ 100         B = .60937       SIGZ 100         GO T0 9       SIGZ 120         B = .60937       SIGZ 120         B = .09249       SIGZ 140         SIGZ 160       SIGZ 120         B = .09249       SIGZ 120         B = .09249       SIGZ 120         GO T0 9       SIGZ 120         B = .01024       SIGZ 120         B = .02655       SIGZ 101         SIGZ 120       SIGZ 120         B = .02656       SIGZ 120         GO T0 9       SIGZ 120         A = .52506       SIGZ 120         B = .00051       S	C		NOTE THE MAIN PROGRAM ALLOWS ONLY VALID PARAMETERS T	DENTER		11
C       SIG2         XMETER = .304801 * DIST + 4.0       SIG2 10         GO TO (1, 2, 3, 4, 5, 5), IGRAPH       SIG2 30         I IF (XMETER .LT. 40.) GO TO 18       SIG2 30         IF (XMETER .LT. 40.) GO TO 19       SIG2 40         IF (XMETER .LT. 40.) GO TO 20       SIG2 50         A = 1.78963       SIG2 64         B = -2.66404       SIG2 70         GO TO 9       SIG2 64         18 A = .35374       SIG2 100         B = .60937       SIG2 100         GO TO 9       SIG2 120         B = .09249       SIG2 120         GO TO 9       SIG2 140         SIG2 140       SIG2 140         Co TO 9       SIG2 140         SIG2 150       SIG2 140         GO TO 9       SIG2 140         SIG2 140       SIG2 140         SIG2 150       SIG2 140         B = .09249       SIG2 140         SIG2 150       SIG2 140         GO TO 9       SIG2 160         GO TO 9       SIG2 160         GO TO 9       SIG2 120         A = .62506       SIG2 120         B = .00061       SIG2 210         GO TO 9       SIG2 230         B = .1.44088       SIG2 2	<u> </u>		SIGNAZ.	· · · · · · · · · · · · · · · · · · ·		:
C       XMETER = .304801 * DIST + 4.0       SIGZ 10         G0 I0 (1, 2, 3, 4, 5, 6), IGRAPH       SIGZ 20         1 IF (XMETER .LT. 40.) GO TO 18       SIGZ 40         IF (XMETER .LT. 40.) GO TO 19       SIGZ 40         IF (XMETER .LT. 420.) GO TO 20       SIGZ 50         A = 1.73963       SIGZ 60         B = -2.668404       SIGZ 60         GO TO 9       SIGZ 10         GO TO 9       SIGZ 60         B = -355       SIGZ 10         GO TO 9       SIGZ 100         GO TO 9       SIGZ 100         GO TO 9       SIGZ 100         B = .09249       SIGZ 120         B = .09249       SIGZ 140         CO TO 9       SIGZ 140         20 A = 1.6683       SIGZ 140         CO TO 9       SIGZ 160         B =01474       SIGZ 160         GO TO 9       SIGZ 160         SIGZ 160       SIGZ 160         B =00061       SIGZ 210         A = .38154       SIGZ 230         B = .400061       SIGZ 240         GO TO 9       SIGZ 230         B = .400061       SIGZ 230         B = .4144088       SIGZ 230         B = .41.5370       SIGZ 230	Ç					
AMELIER = -304001 * 0131 + 4.0       SIG2 10         GO TO (1, 2, 3, 4, 5, 5, 6), IGRAPH       SIG2 20         1 IF (XMETER .LT. 40.) GO TO 18       SIG2 30         IF (XMETER .LT. 40.) GO TO 20       SIG2 50         A = 1.78953       SIG2 60         B = -2.66404       SIG2 70         GO TO 9       SIG2 60         B = .2665404       SIG2 70         GO TO 9       SIG2 60         B = .60937       SIG2 100         GO TO 9       SIG2 120         GO TO 9       SIG2 120         GO TO 9       SIG2 120         B = .09249       SIG2 120         GO TO 9       SIG2 140         CO TO 9       SIG2 140         SIG2 140       SIG2 140         A = 1.0663       SIG2 140         GO TO 9       SIG2 140         A = .62506       SIG2 140         GO TO 9       SIG2 120         A = .62506       SIG2 120         B = -00061       SIG2 201         B = -00061       SIG2 201         B = -1.44086       SIG2 230         B = -1.44086       SIG2 240         SIG2 240       SIG2 240         A = .32099       SIG2 230         B = -1.44086 <tds< td=""><td><u> </u></td><td></td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td></td></tds<>	<u> </u>			· · · · · · · · · · · · · · · · · · ·		
1       1			XMETER = .304801 + DIST + 4.0		SIGZ	10
1       1F       XMETER       1C. 1. 420. ) GO TO 19       SIG2       30         1F       XMETER       1.1. 420. ) GO TO 20       SIG2       50         A       1.7. 420. ) GO TO 20       SIG2       50         A       1.7. 420. ) GO TO 20       SIG2       50         A       1.7. 420. ) GO TO 20       SIG2       50         A       1.7. 420. ) GO TO 20       SIG2       50         A       1.7. 420. ) GO TO 20       SIG2       50         B       -2. 68404       SIG2       50         GO TO 9       SIG2       SIG2       60         B      60937       SIG2       100         GO TO 9       SIG2       SIG2       101         9.4       = .60937       SIG2       100         60 TO 9       SIG2       SIG2       101         9.4       = .6055       SIG2       130         60 TO 9       SIG2       SIG2       130         9.0       SIG2       150       SIG2       150         9.1       SIG2       150       SIG2       150         9.1       IF (XMETER .6E. 100. ) GO TO 10       SIG2       150         9.1       IF		1	90 IU (18 28 38 48 29 D) 19 19 19 19 19 19 19 19 19 19 19 19 19	•	STET	20
1F (XHETER .LT. 420.) 60 TO 20       SI62 50         A = 1.78953       SI62 60         B = -2.66404       SI62 60         18 A = .35374       SI62 60         B = -2.66404       SI62 70         GO IO 9       SI62 60         B = -2.66404       SI62 70         GO TO 9       SI62 100         GO TO 9       SI62 100         GO TO 9       SI62 110         19 A = .655       SI62 120         B = .09249       SI62 130         GO TO 9       SI62 140         20 A = 1.0683       SI62 150         B =81474       SI62 150         GO TO 9       SI62 161         JF (XHETER .LE. 100.) GO TO 10       SI62 161         GO TO 9       SI62 120         A =62506       SI62 200         B =00061       SI62 220         GO TO 9       SI62 220         10 A = .33099       SI62 230         B = -1.44088       SI62 260         GO TO 9       SI62 260         11 A = 1.15870       SI62 260         B = -1.44088       SI62 260         GO TO 9       SI62 280         JF (XHETER .LE. 150.) GO TO 13       SI62 280         JF (XHETER .LE. 150.) GO TO 14<		•	TE (INFTER .I.F. 170.) CO TO 19		STG7	
A = $1.73963$ SIG2 60         B = $-2.68404$ SIG2 70         GO IO 9       SIG2 90         B = $.60937$ SIG2 100         GO TO 9       SIG2 124         B = $.60937$ SIG2 124         B = $.609249$ SIG2 124         B = $.09249$ SIG2 144         20 A = $1.0663$ SIG2 150         B = $81474$ SIG2 160         GO TO 9       SIG2 161         21 F (XMEIER .LE. 100.) GO TO 10       SIG2 170         2 IF (XMEIER .LE. 100.) GO TO 11       SIG2 180         IF (XMEIER .GE. 500.) GO TO 11       SIG2 210         A = .52506       SIG2 220         B =00061       SIG2 220         GO TO 9       SIG2 220         IA = 1.15870       SIG2 220         B =58754       SIG2 220         IA = 1.15870       SIG2 220         IA = 1.15870       SIG2 220         IA = 1.15870       SIG2 220         IF (XMEIER .LE. 150.) GO TO 13       SIG2 220         IF (XMEIER .LE. 150.) GO TO 14       SIG2 310         A = .52996			IF (IMETER .LT. 420.) 60 TO 20		SIG7	50
B = -2.68404       SIGZ 70         GO IO 9       SIGZ 64         18 A = .35374       SIGZ 90         B = .60937       SIGZ 101         GO TO 9       SIGZ 124         19 A = .655       SIGZ 124         B = .02249       SIGZ 124         20 A = 1.0663       SIGZ 150         B =01474       SIGZ 150         GO TO 9       SIGZ 164         20 A = 1.0663       SIGZ 170         B =01474       SIGZ 170         GO TO 9       SIGZ 170         2 IF (XMETER .LE. 100.) GO TO 10       SIGZ 170         IF (XMETER .GE. 500.) GO TO 11       SIGZ 200         A = .62506       SIGZ 210         B =00061       SIGZ 220         GO TO 9       SIGZ 220         10 A = .33099       SIGZ 220         B = .1.44086       SIGZ 220         GO TO 9       SIGZ 220         11 A = 1.15870       SIGZ 220         12 F (XMETER .LE. 150.) GO TO 13       SIGZ 220         13 IF (XMETER .LE. 150.) GO TO 13       SIGZ 220         14 A = .1.5870       SIGZ 230         A = .62296       SIGZ 230         3 IF (XMETER .LE. 150.) GO TO 13       SIGZ 230         A = .62298       SIGZ 330<			A = 1.78963		SIGZ	60
GO TO 9         SIGZ 64           18 A = .35374         SIGZ 90           B = .60937         SIGZ 101           GO TO 9         SIGZ 110           19 A = .655         SIGZ 120           B = .09249         SIGZ 130           GO TO 9         SIGZ 140           20 A = 1.0663         SIGZ 140           GO TO 9         SIGZ 140           20 A = 1.0663         SIGZ 150           B =01474         SIGZ 160           GO TO 9         SIGZ 170           2 IF (XMETER .E. 100.) GO TO 10         SIGZ 170           A = .62506         SIGZ 200           B =00061         SIGZ 200           GO TO 9         SIGZ 220           A = .33099         SIGZ 220           B = .54754         SIGZ 250           10 A = .33099         SIGZ 250           11 A = 1.15870         SIGZ 250           SIGZ 260         SIGZ 270           3 IF (XMETER .LE. 150.) GO TO 13         SIGZ 260           A = .5296         SIGZ 260           A = .62596         SIGZ 260           3 IF (XMETER .LE. 150.) GO TO 13         SIGZ 260           GO TO 9         SIGZ 260           3 IF (XMETER .LE. 150.) GO TO 14         SIGZ 370			B = -2.68404		SIGZ	70
18       A = .35374       SIGZ 90         B = .60937       SIGZ 100         GO TO 9       SIGZ 110         19       A = .655       SIGZ 124         B = .09249       SIGZ 130         GO TO 9       SIGZ 140         20       A = 1.0683       SIGZ 150         B =81474       SIGZ 160       SIGZ 170         C TO 9       SIGZ 170       SIGZ 170         2 IF (XMETER .LE. 100.) GO TO 10       SIGZ 180       SIGZ 180         IF (XMETER .GE. 500.) GO TO 11       SIGZ 100       SIGZ 210         A = .62506       SIGZ 220       SIGZ 220         B =00061       SIGZ 230       SIGZ 250         GO TO 9       SIGZ 260       SIGZ 220         10       A = .52596       SIGZ 220         GO TO 9       SIGZ 250       SIGZ 250         11       A = .15870       SIGZ 250         SIGZ 260       B = .1.44088       SIGZ 260         B = .07328       SIGZ 260       SIGZ 270         GO TO 9       SIGZ 260       SIGZ 270         GO TO 9       SIGZ 260       SIGZ 270         GO TO 9       SIGZ 270       SIGZ 270         GO TO 9       SIGZ 270       SIGZ 270      <			GO TO 9	· · · · · · · · · · · · · · · · · · ·	SIGZ	80
B = .60937       SIGZ 100         GO TO 9       SIGZ 110         19 A = .655       SIGZ 120         B = .09249       SIGZ 130         GO TO 9       SIGZ 140         20 A = 1.0663       SIGZ 150         B =81474       SIGZ 160         GO TO 9       SIGZ 160         J IF (XMETER .LE. 100.) GO TO 10       SIGZ 160         IF (XMETER .LE. 100.) GO TO 11       SIGZ 120         A = .62506       SIGZ 200         B =60061       SIGZ 220         IO A = .52506       SIGZ 220         IO A = .52506       SIGZ 220         B =60061       SIGZ 220         IO A = .52506       SIGZ 220         B = .58754       SIGZ 220         GO TO 9       SIGZ 220         10 A = .33099       SIGZ 250         SIGZ 250       SIGZ 250         11 A = 1.15870       SIGZ 250         SIGZ 260       SIGZ 260         B = .61.44088       SIGZ 260         GO TO 9       SIGZ 260         IF (XMETER .LE. 150.) GO TO 13       SIGZ 280         JI A = .2866       SIGZ 270         GO TO 9       SIGZ 280         JI A = .07328       SIGZ 320         GO TO 9 <td></td> <td>18</td> <td>A = .35374</td> <td></td> <td>SIGZ</td> <td>90.00</td>		18	A = .35374		SIGZ	90.00
GO TO 9       SIGZ 110         19 A = .655       SIGZ 124         B = .09249       SIGZ 130         GO TO 9       SIGZ 144         20 A = 1.0683       SIGZ 150         B =81474       SIGZ 140         GO TO 9       SIGZ 140         21 F (XMETER .LE. 100.) GO TO 10       SIGZ 170         2 IF (XMETER .LE. 100.) GO TO 10       SIGZ 180         IF (XMETER .GE. 500.) GO TO 11       SIGZ 190         A = .62506       SIGZ 200         B =00061       SIGZ 220         GO TO 9       SIGZ 220         10 A = .33099       SIGZ 220         B = .58754       SIGZ 220         GO TO 9       SIGZ 250         11 A = 1.15870       SIGZ 250         B = -1.44088       SIGZ 260         GO TO 9       SIGZ 260         3 IF (XMETER .LE. 150.) GO TO 13       SIGZ 260         I F (XMETER .LE. 150.) GO TO 13       SIGZ 260         J IF (XMETER .LE. 150.) GO TO 13       SIGZ 310         A = .52998       SIGZ 320         GO TO 9       SIGZ 320         J IF (XMETER .GE. 600.) GO TO 13       SIGZ 320         J A = .52998       SIGZ 320         J A = .52998       SIGZ 330         J			B = .60937	•••	SIGZ	100
13 A = .022       3162 124         B = .0229       S162 130         G0 T0 9       S162 144         20 A = 1.0663       S162 150         B =61474       S162 144         C0 T0 9       S162 144         21 F (XMETER .1E. 100.) G0 T0 10       S162 140         A = .62506       S162 140         B =00061       S162 120         B =00061       S162 220         B =62506       S162 220         10 A =6270       S162 220         10 A =6270       S162 220         11 A = 1.15870       S162 250         11 A = 1.15870       S162 250         11 A = 1.15870       S162 260         B =67328       S162 260         3 IF (XMETER .LE. 150.) GO TO 13       S162 260         IF (XMETER .LE. 150.) GO TO 13       S162 310         A =6298       S162 310         A =6298       S162 310         B =		4.0			SIGZ	110
B = -0.052.53 $SIG2 150$ $GO TO 9$ $SIG2 150$ $B =81474$ $SIG2 150$ $GO TO 9$ $SIG2 150$ $GO TO 9$ $SIG2 160$ $CO TO 9$ $SIG2 160$ $IF (XMETER .LE. 100.) GO TO 10$ $SIG2 180$ $IF (XMETER .GE. 500.) GO TO 11$ $SIG2 120$ $B =00061$ $SIG2 200$ $B =00061$ $SIG2 220$ $IO A = .33699$ $SIG2 220$ $IO A = .33699$ $SIG2 220$ $IO A = .33699$ $SIG2 250$ $B = .00061$ $SIG2 250$ $B = .58754$ $SIG2 250$ $GO TO 9$ $SIG2 270$ $GO TO 9$ $SIG2 300$ $A = .52996$ $SIG2 310$ $A = .62996$ $SIG2 320$ $GO TO 9$ $SIG2$		14		·	5162	120
20       A = 1.0683       SIGZ 150         B =81474       SIGZ 160         GO TO 9       SIGZ 170         2 IF (XMETER .LE. 100.) GO TO 10       SIGZ 170         P       IF (XMETER .LE. 100.) GO TO 11       SIGZ 180         A = .62506       SIGZ 200         B =00061       SIGZ 210         GO TO 9       SIGZ 220         10       A = .62506         B =00061       SIGZ 220         GO TO 9       SIGZ 220         10       A = .33099         B = .58754       SIGZ 250         11       A = 1.15870         B = -1.44088       SIGZ 250         11       A = 1.15870         GO TO 9       SIGZ 250         11       A = 1.15870         GO TO 9       SIGZ 250         SIGZ 280       SIGZ 280         GO TO 9       SIGZ 280         J F (XMETER .LE. 150.) GO TO 13       SIGZ 280         J F (XMETER .LE. 150.) GO TO 13       SIGZ 310         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 330         13       A = .2866       SIGZ 350         GO IO 9       SIGZ 350			6 TO 9		5162	144
B = -, B1474       SIG2 160         GO TO 9       SIGZ 170         2 IF (XMETER .LE. 100.) GO TO 10       SIGZ 180         IF (XMETER .GE. 500.) GO TO 11       SIGZ 190         A = .62506       SIGZ 200         B =00061       SIGZ 220         GO TO 9       SIGZ 230         B = .58754       SIGZ 240         GO TO 9       SIGZ 220         10 A = .33099       SIGZ 230         B = .58754       SIGZ 240         GO TO 9       SIGZ 270         11 A = 1.15870       SIGZ 270         GO TO 9       SIGZ 270         II A = 1.44088       SIGZ 270         GO TO 9       SIGZ 270         J IF (XMETER .LE. 150.) GO TO 13       SIGZ 280         IF (XMETER .GE. 600.) GO TO 13       SIGZ 308         A = .52998       SIGZ 310         B = .07328       SIGZ 330         13 A = .2866       SIGZ 340         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         I3 A = .2866       SIGZ 350         SIGZ 350       SIGZ 350         GO TO 9       SIGZ 350         GO TO 9       SIGZ 350         GO TO 9       SIGZ 350         GO TO 9 <td></td> <td>20</td> <td>A = 1.0683</td> <td>•. • ·</td> <td>SIGZ</td> <td>150</td>		20	A = 1.0683	•. • ·	SIGZ	150
GO TO 9SIGZ 1702 IF (XMETER .LE. 100.) GO TO 10SIGZ 180IF (XMETER .GE. 500.) GO TO 11SIGZ 190A = .62506SIGZ 200B =00061SIGZ 210GO TO 9SIGZ 230B = .58754SIGZ 230B = -1.44088SIGZ 250GO TO 9SIGZ 25011 A = 1.15870SIGZ 250B = -1.44088SIGZ 250GO TO 9SIGZ 280SIGZ 280SIGZ 2803 IF (XMETER .LE. 150.) GO TO 13SIGZ 290IF (XMETER .GE. 600.) GO TO 13SIGZ 300A = .52998SIGZ 310B = .07328SIGZ 320GO TO 9SIGZ 33013 A = .2866SIGZ 350GO TO 9SIGZ 35014 A = .89825SIGZ 350SIG A = .94982SIGZ 370SIGZ 380SIGZ 350SIGZ 380SIGZ 350SIGZ 380SIGZ 350SIGZ 380SIGZ 350SIGZ 350 <td></td> <td></td> <td>B = -, 81474</td> <td>••••</td> <td>SIGZ</td> <td>160</td>			B = -, 81474	••••	SIGZ	160
2       IF (XMETER .LE. 100.) GO TO 10       SIGZ 180         IF (XMETER .GE. 500.) GO TO 11       SIGZ 190         A = .62506       SIGZ 2010         B =00061       SIGZ 220         GO TO 9       SIGZ 230         B = .58754       SIGZ 250         10 A = .33099       SIGZ 250         B = .58754       SIGZ 250         11 A = 1.5870       SIGZ 250         11 A = 1.44088       SIGZ 270         GO TO 9       SIGZ 280         3 IF (XMETER .LE. 150.) GO TO 13       SIGZ 290         IF (XMETER .LE. 150.) GO TO 13       SIGZ 300         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 320         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 350         GO TO 9       SIGZ 350         13 A = .2866       SIGZ 350         GO TO 9       SIGZ 350         SIGZ 350       SIGZ 350         GO TO 9       SIGZ 350			GO TO 9		SIGZ	170
IF (XMETER .GE. 500.) GO TO 11SIGZ 190 $A = .62506$ SIGZ 200 $B = .00061$ SIGZ 210 $GO TO 9$ SIGZ 22010 $A = .33099$ SIGZ 230 $B = .58754$ SIGZ 250 $GO TO 9$ SIGZ 25011 $A = 1.15870$ SIGZ 250 $B = -1.44088$ SIGZ 270 $GO TO 9$ SIGZ 2803 IF (XMETER .LE. 150.) GO TO 13SIGZ 290IF (XMETER .LE. 150.) GO TO 13SIGZ 290IF (XMETER .GE. 600.) GO TO 14SIGZ 310 $A = .52998$ SIGZ 310 $B = .07328$ SIGZ 320GO TO 9SIGZ 32013 $A = .2866$ SIGZ 340 $B = .6029$ SIGZ 35014 $A = .89825$ SIGZ 370 $B =94982$ SIGZ 370		2	IF (XMETER .LE. 100.) GO TO 10		SIGZ	180
A = .62506       SIGZ 200         B =00061       SIGZ 210         GO TO 9       SIGZ 230         10 A = .33699       SIGZ 230         B = .58754       SIGZ 240         GO TO 9       SIGZ 240         GO TO 9       SIGZ 250         11 A = 1.15870       SIGZ 250         8 = -1.44088       SIGZ 250         GO TO 9       SIGZ 260         8 = -1.44088       SIGZ 260         GO TO 9       SIGZ 260         3 IF (XMETER .LE. 150.) GO TO 13       SIGZ 280         JF (XMETER .LE. 150.) GO TO 13       SIGZ 280         GO TO 9       SIGZ 308         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 330         13 A = .2866       SIGZ 350         GO TO 9       SIGZ 350         GO			IF (XNETER .GE. 500.) GO TO 11		SIGZ	190
$B =00061$ $SIGZ 220$ $GO TO 9$ $SIGZ 220$ $10 A = .33099$ $SIGZ 230$ $B = .58754$ $SIGZ 24\mu$ $GO TO 9$ $SIGZ 250$ $11 A = 1.15870$ $SIGZ 250$ $B = -1.44088$ $SIGZ 270$ $GO TO 9$ $SIGZ 28\mu$ $3 IF (XMETER .LE. 150.) GO TO 13$ $SIGZ 298$ $IF (XMETER .LE. 150.) GO TO 13$ $SIGZ 308$ $A = .52998$ $SIGZ 310$ $B = .07328$ $SIGZ 320$ $GO TO 9$ $SIGZ 330$ $13 A = .2866$ $SIGZ 330$ $B = .6029$ $SIGZ 350$ $GO TO 9$ $SIGZ 330$ $13 A = .2866$ $SIGZ 370$ $B = .6029$ $SIGZ 370$ $GO TO 9$ $SIGZ 370$ $B = .6029$ $SIGZ 370$ $GO TO 9$ $SIGZ 370$ $B = .6029$ $SIGZ 370$ $GO TO 9$ $SIGZ 360$ $SIGZ 370$ $SIGZ 370$ $B = .994982$ $SIGZ 370$			A = .62506	• · · · · · · · · · · · · · · · · · · ·	SIGZ	200
10       A = .33699       S162 230         10       A = .33699       S162 230         B = .58754       S162 24u         GO TO 9       S162 250         11       A = 1.15870       S162 250         B = -1.44088       S162 270         GO TO 9       S162 280         3       IF (XMETER .LE. 150.) GO TO 13       S162 298         JF (XMETER .LE. 150.) GO TO 13       S162 308         A = .52998       S162 310         B = .07328       S162 320         GO TO 9       S162 330         J3       A = .2866       S162 330         GO TO 9       S162 350         GO TO 9       S162 350         J4       A = .89825       S162 370         B = .994982       S162 330			B = -, UUUb1		SIGZ	210
10 $A = -3.3039$ SIG2 230         B = $-58754$ SIG2 244         G0 TO 9       SIG2 250         11 A = 1.15870       SIG2 250         B = $-1.44088$ SIG2 270         GO TO 9       SIG2 280         3 IF (XMETER .LE. 150.) GO TO 13       SIG2 290         IF (XMETER .LE. 150.) GO TO 13       SIGZ 300         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 350         GO TO 9       SIGZ 350         SIGZ 350       SIGZ 350         GO TO 9       SIGZ 350         SIGZ 350       SIGZ 350         SIGZ 370       SIGZ 350         SIGZ 370       SIGZ 350         SIGZ 370       SIGZ 370         B =94982       SIGZ 380		10	A - 77600		516Z	220
GO TO 9       SIGZ 250         11 A = 1.15870       SIGZ 260         B = -1.44088       SIGZ 260         GO TO 9       SIGZ 280         3 IF (XMETER .LE. 150.) GO TO 13       SIGZ 290         IF (XMETER .GE. 600.) GO TO 14       SIGZ 300         A = .52998       SIGZ 310         B = .07328       SIGZ 330         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 350         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         14 A = .89825       SIGZ 374         B = .94982       SIGZ 380		TO	N - 133037 N = 58754		S162	244
11 A = 1.15870       SIGZ 260         B = -1.44088       SIGZ 270         GO TO 9       SIGZ 280         3 IF (XMETER .LE. 150.) GO TO 13       SIGZ 295         IF (XMETER .GE. 600.) GO TO 14       SIGZ 308         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 320         13 A = .2866       SIGZ 350         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         14 A = .89825       SIGZ 374         B = .94982       SIGZ 374			60 TO 9		SIG7	250
B = -1.44088       SIGZ 270         GO TO 9       SIGZ 280         3 IF (XMETER .LE. 150.) GO TO 13       SIGZ 295         IF (XMETER .GE. 600.) GO TO 14       SIGZ 302         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 340         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         14 A = .89825       SIGZ 374         B = .94982       SIGZ 374		11	A = 1.15870		SIGZ	260
GO TO 9       SIGZ 280         3 IF (XMETER .LE. 150.) GO TO 13       SIGZ 295         IF (XMETER .GE. 600.) GO TO 14       SIGZ 300         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 340         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         II A = .89825       SIGZ 370         B = .94982       SIGZ 380			B = -1.44088	•	SIGZ	270
3       IF (XMETER .LE. 150.) GO TO 13       SIGZ 290         IF (XMETER .GE. 600.) GO TO 14       SIGZ 300         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 330         13       A = .2866         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         II A = .89825       SIGZ 374         B = .94982       SIGZ 374			GO TO 9		SIGZ	280
IP (XMETER .6E. 600.) 60 TO 14       SIGZ 300         A = .52998       SIGZ 310         B = .07328       SIGZ 320         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 340         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         GO TO 9       SIGZ 350         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         B = .6029       SIGZ 350         GO TO 9       SIGZ 350         SIGZ 360       SIGZ 370         SIGZ 370       SIGZ 370         B = .994982       SIGZ 380		3 -	IF (XNETER .LE. 150.) GO TO 13		SIGZ	290
A = .72995       SIGZ 310 $B = .07328$ SIGZ 320         GO TO 9       SIGZ 330         13 A = .2866       SIGZ 340         B = .6029       SIGZ 350         GO TO 9       SIGZ 360         14 A = .89825       SIGZ 370         B =994982       SIGZ 380			<u>LF (XMELER .6E. 600.) 50 TO 14</u>	····	SIGZ	300
GO TO 9       SIGZ 330         13 A = .2866       SIGZ 340         B = .6029       SIGZ 350         GO TO 9       SIGZ 360         14 A = .89825       SIGZ 370         B =994982       SIGZ 380			A = 47270 D = 47220		SIGZ	310
13 A = .2866       SIGZ 340         B = .6029       SIGZ 350         GO TO 9       SIGZ 360         14 A = .89825       SIGZ 370         B =94982       SIGZ 380			CO TO 9	-	S162	324
B = .6029       SIGZ 350         GO TO 9       SIGZ 360         14 A = .89825       SIGZ 370         B =94982       SIGZ 380		13	A = .2866	· .·	SIGZ -	340
GO TO 9         SIGZ 360           14 A = .89825         SIGZ 370           B =94982         SIGZ 380			8 = .6029	•	SIGZ	350
14 A = .89825 SIGZ 370 B =94982 SIGZ 380			GO TO 9	· ·	SIGZ	368
B = -, 94982 SIGZ 380		14	A = .89825		SIGZ	370
			B = +, 94982		SIGZ	380

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	GO TO 9	SIGZ 3
4	IF (XMETER .LE. 200.) GO TO 7	SIGZ 4
	IF (XMETER .GE. 700.) GO TO 8	SIGZ 4
	A = .39114	SIGZ 4
	B = .27167	SIGZ 4
	GO TO 9	SIGZ 4
7	A = .24566	SIGZ 4
	B = _60644	SIGZ 4
	GO TO 9	SIGZ 4
8	A = •65722	SIGZ 4
	B = -• 48534	SIGZ 4
	GO TO 9	SIGZ 5
5	IF (XMETER .LE. 300.) GO TO 15	SIGZ 5
	IF (XMETER .GE. 700.) GO TO 16	SIGZ 5
	A = .32309	SIGZ 5
	B = .32004	SIGZ 5
	GO TO 9	SIGZ 5
15	A = .20969	SIGZ 5
	B = .60094	SIGZ 5
	GO TO 9	SIGZ 5
16	A = .57403	SIGZ 5
	B = 39391	SIGZ 6
	GO TO 9	SIGZ 6
6	IF (XMETER .LE. 600.) GO TO 17	SIGZ 6
	IF (XMETER .GE. 2000.) GO TO 21	SIGZ 6
	A = .35366	SIGZ 6
	B = •09885	SIGZ 6
	GO TO 9	SIGZ 6
17	A = .17052	SIGZ 6
	B = .60763	SIGZ 6
	GO TO 9	SIGZ 6
21	A = .58496	SIGZ 7
	B =66469	SIGZ 7
	SIGMAZ = 10, ** (A*ALOG10 (XMETER)+B)	SIGZ 7
	RETURN	SIGZ 7
	END THE REPORT OF THE	SIGZ 7

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•	REAL FUNCTION SIGMAH (DIST, IGRAPH)	SIGH DO
C	OTCHAN ON AND THE OTANDADD OCHTATTON OF THE CANDOTAN ANDRE	-
C	FOR HORIZONTAL DISPERSION. IN METERS, SIGNAM IS BASED ON	
C	EMPIRICAL RESULTS OF CALIFORNIAS WORK.	
C		
<u> </u>	DESCRIPTION OF PARAMETERS	· · · ·
C		
	DIST REAL	
C	THE EFFECTIVE DOWNWIND DISTANCE. IN FEET.	
C		· · · · · ·
<u> </u>	IGRAPH INTEGER	
C C	THE PREVAILING STABILITY CLASS (FROM ICNVRT).	· · · · · · · · · · · · · · · · · · ·
C	NOTE THE MAIN PROGRAM ALLOWS ONLY VALID PARAMETERS TO ENTER	
	SIGMAH.	······································
C C		
	XMETER = .304801 * DIST + 4.0	SIGH 10
	GO TO (1, 2, 3, 4, 5, 6), IGRAPH	SIGH 20
1	IF (XNETER .LE. 800.) GO TO 10 months and a start of the second s	SIGH 30
<u> </u>	IF (XMETER .GE. 3000.) GO TO 11	SIGH 40
	$A = \frac{1}{200}$	SIGH 50
	GO TO 9	SIGH ZA
10	A = .49024	SIGH 80
	B = .90626	SIGH 90
	GO TO 9	SIGH 100
11	A = .92995	SIGH 110
	B =40203	SIGH 120
2	IF (XMETER .LE. 700.) GO TO 12	SIGH 140
	IF (XMETER .GE.2000.) GO TO 13	SIGH 150
	A = .62374	SIGH 160
	B = .389	SIGH 170
12	60 10 9	SIGH 180
16	B = .89869	SIGH 190
	GO TO 9	SIGH 210
_13	A = .87506	SIGH 220
	B =44063	SIGH 23J
	<u>GO TO 9</u> TE (YNETER LE 600 ) CO TO 4/	SIGH 240
J .	IF (INFIER	SIGH 250
	A = .59454	SIGH 270
	B = .33345	SIGH 280
	GO TO 9	SIGH 290
_14	A = .39049	SIGH 300
	р - •јуџијс GO TO 9	516H 310 STG4 320
15	A = .84836	SIGH 330
	B = -, 47272	SIGH 340
	GO TO 9	SIGH 350
	4 IF (XMETER .LE. 700.) GO TO 7	SIGH 360
	Δ = _61908	STCH 370

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	B = .12580		SIGH 390
	<u> </u>		SIGH 400
	7 A = .34588		SIGH 410
	B = .90309		SIGH 424
	GO TO 9		SIGH 430
	8 A = .81104	· · ·	SIGH 440
	8 = 48388		SIGH 450
	GO TO 9	· · · · · · · · · · · · · · · · · · ·	SIGH 460
5	IF (XNETER .LE. 500.) GO TO 16		SIGH 470
<u>,</u>	IF (XMETER .GE. 2000.) GO TO 17		SIGH 480
	A== .50445	and the second	SIGH 490
	B = .36181		SIGH 500
	GO TO 9	$(a_1, \ldots, a_n) = (a_1, \ldots, a_n) = (a_1, \ldots, a_n) = (a_1, \ldots, a_n) = (a_1, \ldots, a_n)$	SIGH 510
16	A = .30471	·····	SIGH 520
	B = .90091	and the second	SIGH 530
	GO TO 9		SIGH 540
17	A = .82732		SIGH 550
	B = -,70399		SIGH 560
	GO TO 9	10 I I I I I I I I I I I I I I I I I I I	SIGH 570
6	IF (XMETER .LE. 500.) GO TO 18		SIGH 580
	IF (XMETER .GE. 5000.) GO TO 19		SIGH 590
	A = .57675		SIGH 600
	B = .04271		SIGH 610
	GO TO 9		SIGH 620
18	A = .24912	and the second	SIGH 630
	<u>B = .92697</u>		SIGH 640
	GO TO 9		SIGH 650
19	A = .89701		SIGH 66a
	B = -1.14191		SIGH 670
9	SIGMAH = 10. ** (A*AL 0G10 (XMETER) +	-8) and the second s	SIGH 680
-	RETURN		SIGH 690
	END		SIGH 700

	,				ł			1 E			. *	÷	1	
	HC (PPN)	+ •	<u>ه</u>	<b>19</b>	- 2				•					
9 <b>x</b>	CO (PPM)	1.1	<b>.</b>	ę.	+ •	. M •								
SITE 1.	DIST FROM Source (FT)	88	138	188	288	<b>36</b> <b>3</b>								
	CLENGTH (FT)	NONE	NONE	NONE	NONE	NONE	F							
	CHIDT4 (FT)	NONE	NONE	. NONE	NONE	NONE								
	TFMLX (PC)	<b>1</b>	10	10		10								
4	1F SPD (MPH)	57	25	21	23	21			-					
IEST SITE	TFVUL (VPH)	3580	358 u	3580	3580	3580								
AIRPOL	UPMIND Source Lengih (FT)	3960	3960	396ú	3966	3960	-							1
YSIS OF	SOURCE HI (FT)	0-	9	•	0	9								-
ANA	08S. HI (FT)	ũ	ى ا	<b>.</b>	5	S				-				
	ALPHA DEG.	6û	6	6ú	Ç Ç	60								
	CASE	4												
	CLASS	æ	•	m	ß	۵								
	Ϋ́	73	13	73	73	73								
14+I	SOURCE TYPE	L.	L.	L.	u.	tu.								
	HS CMPH)	5.6	5.6	9 - 2	5.6	5.6								

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5.6 F 73 5.6 F 73 5.6 F 73 5.6 F 73					ALKFUL	1EST 511	-	-				LEID	
5.6 F 73 5.6 F 73 5.6 F 73 5.6 F 73	ASS CASE	AL PHA Deg.	08S. HI (FT)	SOURCE HI (FT)	UPWIND Source Length (FT)	TFVOL (VPH)	TF SP ( (MPH)	TFMIX (PC)	CMIDIH (FT)	CLENGTH (FT)	DIST FROM SOURCE (FT)	CO (PPN)	HC (PPM)
5.6 F 73 5.6 F 73 5.6 F 73		Û Û	n.	0	3960	2580	60	10	NONE	NONE	12	1.3	•
5.6 F 73		60	ŝ	0	3960	2580	61	10	NONE	NONE	62	6•	•
5.6 F 73	-	60	s	9	3960	2580	61	10	NONE	NONE	112	, T	
and and an a second of the second s	-	99	L.	0	3960	2580	60	10	NONE	NONE	212	÷.	
5.6 F 73	8	60	S		3960	2580	09	10	NONE	NONE	312	יי •	•
			•										

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	(MPR)	M -		-	•	:: •				•	. ບບ0≊5'
- EIO	(PPH)	٠.	m •	-	•						
TA TA	DIST FROM SOURCE (FT)	18	68	118	500	30 c	s.,	: {			
	CLENGTH (FT)	NONE	NONE	NONE	NONE	NONE			•	:	
	CMIDTH (FT)	NOND	NONE	NONE	NONE	NONE					
	TFHIX (PC)	10	16		10	<b>7</b>				r 	
- <b>н</b>	IF SPU (MPH)	25	57	57	57	22					
TEST SIT	TFVOL (VPH)	358 u	3580	3580	3580	3580					
AIRPOL	UPWIND Source Length (FT)	396ù	396 <i>u</i>	3964	3960	3964					
LYSIS OF	SOJRGE HT (FT)	9-	0-	7	<b>0</b> -						
ANA	085. HT (FT)	S	s.		S	. <b>.</b> .	- <b>1</b> 6				
	AL PHA DEG.	60	66	68	60	60					
	CASE	8	2	~	2	2					
	CLASS	8	60	-	8						
9 H	X	73	73	73	73	73					
SITE 1A-	SOURCE TYPE	L.	LL.	Ŀ	Ŀ	tu					
	us (MPH)	5.6	9 ° 8	5.6	5.6	5.6					

9

	HC (PPH)			3	•	•
EIU -E	со (рғн)		•	9	•	>
SLT 1A	DIST FRUM Source (FT)	4 0	144	194	276	376
	CLENGTH (FT)	NONE	NONE	NONE	NONE	NON
	CHIDTH (FT)	NONE	NONE	NONE	NONE	NON
	TFHIX (PC)	10	10	10	10	10
	TF SPD (MPH)	60	66	60	60	9
TEST SIT	TF VOL (VPH)	2580	2580	2580	2580	5580
AIRPOL	UPHIND Source Length (FT)	3960	3960	39 60	3960	3960
YSIS OF	SOURCE HI (FI)	C) I	0		0	-
ANA	08S. HT (FT)	in j	Ś.	a la	2	<b>G</b>
	AL PHA Deg.	60	60	<b>P</b>	09	60
	CASE	N	2	N	5	7
	CLASS	œ	æ		œ	
0	ΥR	73	73	73	73	73
SITEI 1A-E	SOURCE TYPE	LL.	L.		La.	La.
	(HPH)	<b>9</b> 2	۵ ۹	5.6	5.6	5 a b

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	CASE	ALPHA	085.	SOURCE	UPMIND	TFVOL	TF SP 0	TFMIX	CWIDTH	CLENGTH	DIST FROM	5T1. 60	1
		0EG.	HI (FT)	HT (FT)	LENGTH (FT)	(HAN)	(Heh)	(PC)	(FT)	(FT)	Spukce (FT)	(HAA)	
	1	45	5	0-	3960	2600	56	20	NONE	NONE	89	1.3	
	÷ +	1 A	n i		3960	2640	58	24	NONE	NONE	88	• 8	
-		4 1 1	ע אנ ו		3960	2600	50 U	000	NON	NON	99 99 9	.7	
		12 A	שו ע		3960	2600	500	202	NONE			t t •	
		45	S	0	3960	2600	5	50	NONE	NONE	99 99 -		
											·*		
1		6 H J	4	1	1965	2010	58	20	NONE	NONE	138	- - -	
	-1	11 N 1- 1-	U IU		096C	2640	2 C 2 C		NON	NONE	138		
		5	5	-	3960	2600	8	20	NONE	NONE	138	•••	
	-	45	5	0-	3960	2600	58	20	NONE	NONE	138	•	
1		45	5	0-	3960	2600	58	20	NONE	NONE	136	• 5	
đ	-	4	Ľ	9	305.	26.00		40	NONE		9	3	
	• •	1 1 1	l u		396.0	2600		200			001	•	
		45	n in	1	3960	2600		000	NONF	NONE	486		
~	-1	45	5	0-	3960	2600	28	20	NONE	NONE	188		
		4 1 1 1	5		3960	2600	99 199	20	NONE	NONE	188		
	•	<b>;</b>	•	7	200 C		8	5			001	•	
	1	ţŞ			3960	2600	58	20	NON	MONE	288		
8	÷	45	ŝ	0	3960	2600	58	50	NONE	NONE	288		
n.	4	45	 	8	3960	2600	58	20	NONE	NONE	288	2.	
~ ~		1 1 1 1 1 1 1	<b>ה</b> ה	 	3960 3960	2600	9 9 9 9 9	20	NONE	NONE	288	•	
	<b>H</b>	45	2	-	3968	2600	58	20	NONE	NONE	268		
1													
		45	2	1	3960	2600	58	20	NONE	NONE	388	M.	•
	-	10 i	ŝ	ī	3960	2600	58	20	NONE	NONE	386	2. •	
1		1 1 1	5	-	3960	2600	8	50	NONE	NONE	368	~	
0 00	-	11 N 12 T	ה ני	3 6	1966	2600	2	20	NONE	NONE			
_	+		•				•	}					

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	SITE IST	10				ANA	ILYSIS OF	AIRPOL	TEST SITE		• •			511 12	'LID	
MS (MPH)	SOURCE TYPE	YR	CLASS	CASE	AL PHA DEG.	085. HT (FT)	SOURCE HT (FT)	UPHIND Source Length (FT)	TFVOL (VPH)	IF SP() (MPH)	TFHIX (PC)	CHIDTH (FT)	GLENGTH (FT)	DIST FROM SOURCE (FI)	60 (PPM)	нс (ррн)
4 - 0	Li. Li	73	60.0	<del>. 1</del> •	42 4	un u		3960	6320	8 2 2	15	NON	NONE	12	5 . 	5.1
	- 14 1	21	6 20 1		1 22 A	n 10		3960	6320	0 0 0 0	11 15	NONE	NONE	15	t 9 • •	2 <b>-</b> 1 1
12.0	L. L.	23	<b>co co</b>	<del>-</del> 1 +-	ი 4 4	<b>ທ</b> ທ		3960 3960	6320	5 9 9 9 9 9 9 9	15 7	NONE	NONE	12	0 U  	~ ~
18.0	L	73			45	5		3960	6320	28	15	NONE	NONE	112	1.1	ŝ
	-2.89.	73226E+01	-3.22	2297E+01	2.9856	) 39E-02	7.42985	5E-03	ZFACTR 1.945603E	00	YFACTR 9.536398E-	.4 10.	KFACIR 5.0000E-0			
		FACTR	10 1	FACTR	GFAC	DIR.	HZS		AFACTR		SHM		1210	1		
4.0	د ۶۰. ۲	8/866+41 73	- T - E	00005+00 1	1.0000	JUE+00 5	1.00682	2E+01 396ü	4.000000E	-01 58	2.862051E- 15	- U1 4.1	590279E-U Nome	1 2 2	2.5	4. f
7.0	Ŀ	73	60	<b>1</b>	45	S	91	3960	6320	58	15	NONE	NONE	62	2.0	6
8	LL L	73.	<b>a</b> (	4.	÷5	un s	-	3960	6320	58	15	NONE	NONE	62	1.8	. 8
12.0	- L	57		-1 -	10 U 17 4	μ Lin Li		3960	6320	9 G 1	12 7	NONE	NONE	95	1.2	ι.
10.0	4 44	22		4 -4	t U	N IO	77	3960	6320	0 00	15	NONE	NONE	979		• •
		٩	64	AMMA	000		OHC		ZFACIR		YFACTR		KFACIR	<b>,</b>		
	6.42 L1	3071E+00 FACTR	4 • 51 S	9560E+00 FACTR	2.98563 GFAC	39E-02 STR	7.42985	5E-03	1.959840E1 AFACTR	-00	9.984599E- SHM	-01 4.	SUQUGGE 0 DIST	0		
	2.90	3786E+01	1.000	000E+00	1-0000	00+30C	1.17604	1E+01	4.000000E	-01	3.526174E+	01 8.	125814E- 0	1		
4.0	u. u	73	<b>a</b> a a		1 1 1	נהי	•	3960	6320	80	15	NONE	NONE		2.7	1.2
	- 4	5 E 2	n a		t 1 t	n un	 	3960 3960	6320 6320	0 0 0 0	15	NONE	NONE	112	1. 7.1	• •
12.0	<b>ند</b> (	73	8	-4	45	5	9 1	3960	6320	58	15	NONE	NONE	112	6.	*
13.0	<b>14</b> 1	73	<b>6</b> 0 (		<b>t</b> 5	5	-	3960	6320	58	15	NONE	NONE	112		*
1.6.0	4	5 4	8	1 1 mma	45 000	5	- 0 0HC	3960	6320 7FACTD	58	15 VEACTD	NONE	NONE	112	<b>9</b> •	m.
	4.17	7840E+01	1.971	1076E+01	2.98563	59E-02	7.42985	5E-û 3	1.967343E	00	9.5204795-		5.000LE-0			
		FACIR	5	FACTR	GFAC	IR	SZM		AFACIR		NHS		ISIO			
4	2.901	8786E+01	1.000	0000E+00	1.00000	10E+00	1.30664	4E+01	4.00000E-		4.061960E+	-01 1.	166135E+0	2	•	1
7.0	L 14.	23	0 00		42 42	N 15	7 7	1965	0360	0 0 0 0	15	NUNE	NON	212	0 0 -	
8.0	L.	73	- 60	• ••	42		• •	3960	6320	80	15	NONE	NONE	212		• •
12.0	<b>LL</b> LI	73	co a	•• <b>1</b> •	10 U	<b>נ</b> ה נ	-	3960	6320	5 G	15 1	NONE	NONE	212	ູ	<b>N</b> .
18.0	4 44-	73		•-•	<del>1</del> 5	ų iv	-	3960	6320	58	15	NONE	NONE	212	•	2
•		٩.	6	AMMA	000	-	QHC		ZFACTR		YFACTR		KFACTR			1
	1.12 <sup>1</sup>	4891E+02 -ACTR	3•096 GF	8500E+01 Factr	2.98563 6FAC	59E-02	7.42985	5E-03	1.975415E	00	7.850837E- Shm	.4 10.	5000006+0 DTST	3		
	2.90	3786E+01	1.000	0000E+00	1.00000	10E+00	1.509010	6E+01	4.000000E-	-01	4.928733E+	61 1.4	973242Er u	2		
4	<b>u</b>  1	73	<b>e</b>	-	45	2	-	3960	- 632ŭ	58	. 15 -	NONE	NONE	- 312	1.0	4.0
0 • V	4- LA	21	æ a	-1 -	t S U	5		3960	6320	<b>8</b> 1 1	1 1 1	NONE	NONE	312	<b>.</b>	~
12.0		27	- 	• •	₽ <b>1</b> 2	הנו ה	-	3960	6320	0 00	15	NONE	NONE	312		
13.0	L	73	8	-	45	2	7	3960	632 u	28	15	NONE	NONE	312	- M	
18.0	Ľ	D 73	8	1 Imma	45	ŝ	0-	3960	6320 75ACTO	58	15 vearte	NONE	NONE	312	. 2.	
	1.831	947E+02	3.537	7399E+01	2.98563	19F-02	7.42985	6F = 0.3	1 . 9798275-	00	6.122770F-	0.4 4.6	SCOUDER O	2		
		ACTR	5	ACTR	GFAC	IR	SZH		AFACTR		SHM	10	DIST	2	-	
	2.90	3786E+01	1.000	0000E+00	1.00000	0E+00	1.66773	5E+01	4.00000E-	-01	5.637355E+	01 2.	58ú349É-Ű	12	-	

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Sounder         Nr. Luss         Gamma, Gran         Gran <thgran< th="">         Gran         Gran<th>Source ITPE         TALPHA         OBS.         Source ITP         FULL           TTPE         T3         B         1         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           Calma         -         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           F         73         &lt;</th><th></th><th></th><th></th><th></th><th></th><th>-</th></thgran<>	Source ITPE         TALPHA         OBS.         Source ITP         FULL           TTPE         T3         B         1         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           Calma         -         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           F         73         B         1         45         5         2         3960         6320           F         73         <						-
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	(F)       (F)       (F)       (F)       (F)       (F)         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         -2.90576Full       -3.5297Full       2.99539Full       2.99539Full       2.995364       2.742955Full       2.64042         2.90576Full       -7.22957Full       2.995595Full       2.99555Full       2.64042       2.64010         7       2       1       45       5       20       3960       6320         7       2       3760       37000005Full       1.0000005Full       1.00000570       1.00000270       1.0000005         7       1       45       5       20       3960       6320       6320         7       2       3760       5       20       3960       6320       6320         7       2       3760       5       20 </th <th>FVOL TESPO</th> <th>TFMIX CH</th> <th>IDTH CLENGT</th> <th>DIST H FROM</th> <th>CO</th> <th>ų P</th>	FVOL TESPO	TFMIX CH	IDTH CLENGT	DIST H FROM	CO	ų P
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{bmatrix} & 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & F & 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & F & 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ -2.693226F+01 & -3.22397E-01 & 2.99597E-02 & 2.966678-03 & 2.4608218 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & 112.099216+01 & 1000002+00 & 1.000002+00 & 1.9000025 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\ 74 & 73 & B & 1 & 45 & 5 & 20 & 3960 & 6320 \\$	(HAN) (HAA	()	F1) (F1)	SOURCE (F1)	(Hdd)	(Hdd)
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	6320 58	15 N	ONE NONE	12	3.7	1.6
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	F         73         B         1         45         5         20         3960         6320           -2.093226E*01         -3.00000E*01         -40         5         3960         6320           -2.093226F*01         -3.00000E*01         -3.00000E*01         -3.00000E*01         -4608225*01         -4608225*01           2.900766*01         1.00000E*01         1.00000E*01         1.00000E*01         1.00000E*01         -4608225*01           7         3         1         45         5         20         3960         6320           7         3         1         45         5         20         3960         6320           7         3         1         45         5         20         3960         6320           7         3         1         45         5         20         3960         6320           7         3         1         45         5         20         3960         6320           7         4         45         5         20         3960         6320         20           6.4230715*00         4.1000005*00         1.1000005*00         1.1760445401         4.000005         20         3960         6320 </td <td>6320 58</td> <td>2 I I</td> <td>ONE NONE</td> <td>12</td> <td>- <b>2</b> -</td> <td>ອງ: •</td>	6320 58	2 I I	ONE NONE	12	- <b>2</b> -	ອງ: •
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	F         73         B         1         45         5         20         3960         6320           -2.6932266+01         -3.2222976+01         2.9955396-02         7.4*29556-01         3960         6320           -2.6932266+01         -3.2222976+01         2.9955395-02         7.4*29556-01         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1 </td <td>6320 58</td> <td>2 Z</td> <td>ONE NONE</td> <td>4 C 7 5</td> <td>1.2</td> <td>0 UN</td>	6320 58	2 Z	ONE NONE	4 C 7 5	1.2	0 UN
F         73         B         73         B         73         B         740         S         200         5401         7501         610         7601         7	F         73         B         45         5         20         3960         6320           7-000000000000000000000000000000000000	6320 58	15 N	ONE NONE	12	1.1	
-2.097266401       -2.097266401       -2.097266401       -2.097266401       -2.097266401       -2.090266401       -2.0002664	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	6320 58	15 N	ONE NONE	12	<b>.</b>	*
Construction         Construction<	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	LEAUR	O EZEZORCOLA	KFACIK A Coooce	Ģ		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	AFACTR	SHN	DISIO			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	F         73         B         4         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           6-w23071E+00 $+519566$ 0         520         3960         6321           6-w23071E+00 $+519566$ 0         1         45         5         20         3960         6320           6-w23071E+00 $+51956336$ 0         1 $45$ 5         20         3960         6320           2.003766E+01         1.00000E+00 $1.06000E+00$ $1.06000E+00$ $1.050000000$ 6320           F         73         B         1 $45$ 5         20         3960         6320           F         73         B         1 $45$ 5         20         3960         6320           F         73         B         1 $45$ 5         20         3960         6320           F         73         B	00000E-01	2.862051E+01	4.596279E	.01		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           6.4230716+00         4.5195066+00         2.996366+01         2.996366+01         1.966446+01         4.506446           6.4230716+01         4.517604+0         2.996366+01         1.000006         3200         6320           6.4230716+01         4.51766+01         2.996366+01         1.000006         3200         6320           7         B         1         45         5         20         3960         6320           7         B         1         45         5         20         3960         6320           7         3         B         1         45         5         20         3960         6320           7         3         B         1         45         5         20         3960         6320           7         4         45         5         20         3960         6320	632ù 58	15 N	ONE NONE	- 62	2.9	2.04
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	6320 58	2 : 5 : 7	ONE NONE	62	1.7	2.
F         73         8         1         45         5         73         9         15         16         17         16         17         16         17         16         17         16         17         16         17         16         17         16         15         17         16         16         17         16         16         17         16         16         17         16         17         16	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		2	ONE NONE	95	<b>1 • †</b>	<u>م</u> .
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \left[ \begin{array}{cccccccccccccccccccccccccccccccccccc$		2 7 7 7	UNE NUNE	20		* -
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	5220 58		ONE NONE	20	•	* *
6.453071£*00         4.51950£*02         2.995535£*03         1.2964.75         1.2964.75         1.2964.75         1.2964.75         1.2964.75         1.2964.75         1.20000£         1.1764.15         1.12 <th1.12< th="">         1.12         1.12<td><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td><td>ZFACIR</td><td>YFACTR</td><td>UNL NUNE KFACTR</td><td>9</td><td>•</td><td>•</td></th1.12<>	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	ZFACIR	YFACTR	UNL NUNE KFACTR	9	•	•
2.900706001     1.00000000     1.1.5000     500     500     500     500     1000     112       7     1     1     1     1     1     1     1     112       7     1     1     1     1     5     20     3960     6320     50     15     NONE     NONE     112       7     1     1     1     5     20     3960     6320     50     15     NONE     NONE     112       7     1     1     1     5     20     3960     6320     50     15     NONE     NONE     112       7     1     1     1     5     20     3960     6320     50     15     NONE     NONE     112       1     1     1     5     20     3960     6320     50     15     000     112       1     1     1     1     1     1000000000000000000000000000000000000	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	586479E-00	9.9845995-01	4.500006	- 00		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	AFACTR		ISIO			
$ \left[ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	447984441 64298	3.7601/4E+U1	8.129814E DME NOME	· Ul	, ,	•
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	6320 58	1 1	ONE NONE	114	2.4	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	5320 58	15 N	ONE NONE	112	-	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	F         73         B         1         45         5         20         3960         6320 $1, 73040$ E+01         1.971076E+01         2.906539E-02         7.429655E-03         1.6566368 $1, 73040$ E+01         1.971076E+01         2.906539E-02         7.429655E-03         1.6566368 $1, 73040$ E+01         1.000000E+01         1.000000E+01         1.000000E+01         4.000000E $2.900766$ E+01         1.000000E+00         1.000000E+01         1.000000E+01         4.000000E $73$ B         1         45         5         20         3960         6320 $73056946101         1.000000E+01         2.00000E+01         2.00000E         2.00000E         2.00000E         2.000000E           730606066401      $	632U 58	15 N	ONE NONE	112	~	N.
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	5320 58	15 N	ONE NONE	2112	2.	» ۳
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	5320 58	15 N	ONE NONE	112	ŝ	•
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	LEAGIR       CFACIR       GFACIR       SZM       AGAIR $7.3$ B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         LEACIR       LAGIR       45       5       20       3960       6320         L       F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5 <t< td=""><td>SSASAF - 00</td><td>9-5204795-1</td><td>A-F 0.0 F</td><td></td><td></td><td></td></t<>	SSASAF - 00	9-5204795-1	A-F 0.0 F			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	AFACIR	Several SHR	DIST			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	000000E-01	4.061960E+01	1.166135E	+02		
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F         73         B         1         45         5         20         3950         6320         50         15         NULL         NULL         212           1.124091E+02         3.096500E+01         2.995639E-02         7.429655E-03         1.735949E+00         7.850837E-01         4.5000UE-0U         212           1.124091E+02         3.096500E+01         2.995639E-02         7.429655E-03         1.735949E+00         7.850837E-01         4.5000UE-UU         212           1.124091E+02         3.096500E+01         2.995639E-02         7.429655E-03         1.735949E+00         7.850837E-01         4.5000UE-UU         212           2.908766E+01         1.000000E+00         1.5090100E+01         4.509010E-01         4.9203732E+01         1.873242E         02           7         B         1         45         5         20         3950         6320         58         15         NONE         312           7         B         1         45         5         20         3950         6320         58         15         NONE         NONE         312           7         3         B         1         45         5         20         3950         6320         58         15	F     73     B     1     45     5     20     3950     6320       1.124991E+02     3.096506E+01     2.995639E-02     7.429655E-03     1.7359496       1.124691E+02     3.0965061E+01     2.995639E-02     7.429655E-03     1.7359496       2.906766E+01     1.0000000E+00     1.0000000E+01     4.600000     4.600000       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F	5320 58	12 12	DNE NONE	212	<b>.</b> ک	2
P         GAMA         QCO         QHC         COUL         CALT         YEACT	P         GAMA         QCO         QHC         CASTR           1.124091E+02         3.090500E+01         2.905539E-02         7.429655E-03         1.735949E           EAGTR         2.908566+01         1.000000E+00         1.000000E+00         1.735949E           Z*908766E+01         1.000000E+00         1.000000E+00         1.509016E+01         4.000000E           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F	2320 EB		UNE NUNE		1 t	
1.124091E+02       3.096502E+01       2.905539E-02       7.429655E-03       1.735949E+00       7.850637E-01       4.50000E-0         LEACIR       CFACIR       6FACIR       524       324       0 <t< td=""><td>1.124091E+02       3.096500E+01       2.905639E-02       7.429655E-03       1.735949E         2.9008766E+01       1.00000E+00       1.00000E+00       1.735949E       AFAGTR         2.9008766E+01       1.00000E+00       1.00000E+00       1.735949E       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20</td><td>ZFACTR</td><td>YFACTR</td><td>UNL NUNE</td><td>545</td><td>•</td><td>•</td></t<>	1.124091E+02       3.096500E+01       2.905639E-02       7.429655E-03       1.735949E         2.9008766E+01       1.00000E+00       1.00000E+00       1.735949E       AFAGTR         2.9008766E+01       1.00000E+00       1.00000E+00       1.735949E       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20       3960       6320         F       73       B       1       45       5       20	ZFACTR	YFACTR	UNL NUNE	545	•	•
LEACTR         CFACTR         SZM         AFACTR         SM         DIST           2.990766F401         1.000000E+00         1.509016F401         4.00000E+01         4.00000E+01         4.00000E+01         4.00000E+01         4.00000E+01         4.00000E+01         4.00000E+01         4.00000E+01         4.00000E+01         1.673242L         0.2           F         7.3         B         1         45         5         20         3960         6320         58         15         NONE         NONE         312           F         7.3         B         1         45         5         20         3960         6320         58         15         NONE         NONE         312           F         7.3         B         1         45         5         20         3960         6320         58         15         NONE         312           F         7.3         B         1         45         5         20         3960         6320         58         15         NONE         NONE         312           F         7.3         B         1         45         5320         58         15         NONE         312           F         7.3	LFACTR         CFACTR         GFACTR         SZH         AFACTR           2.9987665+01         1.0000005+00         1.0000005+00         1.0000005+01         4500005         52000005           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           1         45         5         20         3960         6320         3500         520         520           F         73         B         1         45         5<	735949E-00	7.850837E-01	4.530000E	- 84		
Z-9908766E+01       1.000000E+00       1.5090466E+01       4.000000E-01       4.926873E+41       1.873242E       02         7       73       8       1       45       5       20       3960       6320       58       15       NONE       312         7       3       8       1       45       5       20       3960       6320       58       15       NONE       312         7       3       8       1       45       5       20       3960       6320       58       15       NONE       312         7       3       8       1       45       5       20       3960       6320       58       15       NONE       312         7       3       8       1       45       5       20       3960       6320       58       15       NONE       NONE       312         7       8       1       45       5       20       3960       6320       58       15       NONE       NONE       312         7       8       1       45       5       20       3960       6320       58       15       NONE       NONE       312 <td< td=""><td>Z*9987665+01     1.0000005+00     1.0000005+00     1.0000005       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F</td></td<> <td>AFACTR</td> <td>HHS</td> <td>DISIO</td> <td>1.</td> <td></td> <td></td>	Z*9987665+01     1.0000005+00     1.0000005+00     1.0000005       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F     73     B     1     45     5     20     3960     6320       F	AFACTR	HHS	DISIO	1.		
F         73         B         1         45         5         20         3960         632u         58         15         NONE         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           1.831997E+02         3.537399E+01         2.9965639E-03         1.7807135+00         6.122770E-01         4.500400E+00         4.500400E+00           2.930639E+01         1.000000E+00         1.65677355+01	F         73         B         1         45         5         20         3960         632u           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           f         73         B         1         45         5         20         3960         6320           f         1.65         5         20         3955         6320         520           f         1.631976         0.00         2	00J000E-01	4.928733E+01	1.873242E	02		
F         (3         B         1         45         5         20         3960         6320         58         15         NONE         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           F         73         B         1         45         5         20         3960         6320         58         15         NONE         312           1.8319976+02         3.5373996+01         2.9965656-03         1.7807135+00         6.1227706-01         4.5000006+00         312           1.8319976+01         1.000006+00         1.667036566-03         1.7807135+00         6.1227706-01         4.5000006+00           2.900786610         1.0000006+00         1.667037856+01         0.563373555+01         0.563373555+01         0.563373555+01 </td <td>F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           1.8379975+02         3.5373995+01         2.9956395-02         7.4298555-03         1.781735</td> <td>532u 58</td> <td></td> <td>DNE NONE</td> <td>312</td> <td>6.</td> <td>40</td>	F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           1.8379975+02         3.5373995+01         2.9956395-02         7.4298555-03         1.781735	532u 58		DNE NONE	312	6.	40
F         73         B         1         45         5         20         3950         6320         58         15         NUNE         NUNE         312           F         73         B         1         45         5         20         3950         6320         58         15         NONE         312           F         73         B         1         45         5         20         3950         6320         58         15         NONE         312           1.831997E+02         3.537399E+01         2.995539E-02         7.429855E-03         1.780713E+00         6.122770E-01         4.50000E+00           2.90078E601         1.00000E+00         1.6677355+01         4.500700E+01         5.6373555+41         2.63033400E+00	F         73         B         1         45         5         20         3950         6320           F         73         B         1         45         5         20         3950         6320           F         73         B         1         45         5         20         3950         6320           1         45         5         20         3950         6320         5320           1         8         GANNA         45         5         20         3950         6320           1         8         GANNA         000         200         000         3500         520           1         8         GANNA         000         2         74013         101013136	5320 58	15	ONE NONE	312	• 5	2.
F         73         B         1         45         5         20         3950         6320         58         15         NONE         312           F         73         B         1         45         5         20         3950         6320         58         15         NONE         312           F         73         B         1         45         5         20         3950         6320         58         15         NONE         312           1.83197E402         3.537399E401         2.9955639E-02         7.429855E-03         1.760713E+00         6.122770E-01         4.50000E+00           1.543078         0.67018         0.67018         0.537355+01         5.6373555+01         0.6373555+01         2.630330.6702           2.900786601         1.000000E+00         1.66773555+01         4.600000E+00         1.66733555+01         2.6333555+01         2.6333555+01         2.6333555+01	F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           F         73         B         1         45         5         20         3960         6320           I         45         5         20         3960         6320         320           I         45         5         20         3960         6320         320           I         83         000         2000         2000         2600         3500         3500           I         83         956396-92         7.4296556-03         1.76073136         3107736	55U 20	27 27	ONE NUNE	312	t (	2.
F         73         B         1         72         5         20         3950         6320         56         15         NUME         NUME         312           F         P         B         45         5         20         3960         6320         58         15         NONE         NUME         312           1.831997E+02         3.537399E+01         2.995639E-02         7.429655E-03         1.760713E+00         6.122770E-01         4.500000E+00           1.831997E+01         2.900708E+01         2.900708E+01         5.637355F+01         5.637355F+01         2.64027	F 73 8 1 45 5 20 3960 6320 1.83197E+02 3.53739E+01 2.985639E-02 7.429655-03 1.760735	03ZU 50	212	ONE NONE	312		7.
P         GAMMA         GCO         CHC         SCU         DOC         DOC <thdoc< th=""> <thdoc< th=""> <thdoc< th=""></thdoc<></thdoc<></thdoc<>	P GANNA 000 040 040 040 040 040 040 040 040 04	20CN 20		UNE NONE	312	•	
1.831997E+02 3.537399E+01 2.985639E-02 7.429855E-03 1.780713E+00 6.122770E-01 4.500000E+00 LFACTR CFACTR 0.66ACTR 52M 52M 7.667735E+01 4.000000E-01 5.637355E+01 2.58034.0E+02	1.831997E+02 3.537399E+01 2.985639E-02 7.429655E-03 1.780713E	7FACTR	T2 T2	UNE RUNE	210	•	•
LFAGTR CFACTR 0FACTR 0LACTR 0LACTR 1.66A77355+01 4.0000005+01 2.6373555+01 2.5803405+02		780713E+00	6.122770E-01	4.500000E	- 90 -		
2.9U0786E401 1.000000E+00 1.000000E+00 1.667735E401 4.000000E+01 5.637355F+01 2.530349F.02	LTAUIK UTAUIK VLAUIK XZN ATAUIK	AFACIR	SHM	ISIO			
	2.948786E+01 1.600000E+00 1.600000E+00 1.667735E+01 4.800000E	100000E-01	5.637355E+81	2.5803495	r ü2		

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Willing         <																	
	(HdH)	SOURCE TYPE	YR	CL ASS	CASE	ALPHA Deg.	08S. HT (FT)	SOURCE HT (FT)	UPMIND Source Length (FT)	TF VOL (VPH)	TF SPD (MPH)	TFHIX (PC)	CWIDTH (FT)	CLENGIH (FT)	DIST FROM Source (F1)	со (ррн)	(Hea)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	4.0	Ŀ	73	đ	1	4 D	ŝ	-20	3960	6320	58	15	20C	1800	12	9•5	4.1
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	7.0	۱.	73	8	4	4 D	5	-20	3960	6320	58	15	201	160 U	12	5.4	2.4
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	8.0	ا <b>بعا</b>	73	60	4	45	ۍ ۱	-20	3960	6321	58	15	2u .	1840	12	1 . 4	2.1
	12.0	L. L	73	<b>co</b> a	•1 •	- - -	נה נו	- 20	3960	6320	89	15	200	1800	75	3•2 3	4 t 1
	1 A . O	- - -	22	<b>n</b> a	•	1 1 1	n u	- 20	2060	6320		12	20.0	1800		<b>C</b> •2	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		-	2	9 9	MMA	acc	` ~	OHC		ZFACTR	5	YFACTR	202	KFACTR	<b>J T</b>	4 9 9	•
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		-2-893	226E+01	-3.222	297E+01	2.9856	39E-02	7.42985	5E-03	1.945603E	+ 00	9.536398E-	·01 4.	500000E-1	0ú		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			ACTR	CF.	ACTR	GFAL	CIR	NZS		AFACTR		SHH		ISIO			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	• •	2.908 E	786E+01	1.000	000E+30	1.9462	20E+00	1.00682	2E+01	4.000000c	-01	2.862051E1	-01 4.	590279E	61. 	0	~
$ \begin{array}{ccccccc} 1 & 7 & 7 & 7 & 7 & 7 & 7 & 7 & 7 & 7 &$	-	4	2 2	•	•	43 - U	n u		0002	0220	22	12	200	100		0.0	204
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		L LL	0 M	0 0	-4	11 A 12 A 12 A	ה ת	121	1055	0320	0 e	1 4	20.0	1001 1807	0 C	t № • •	
11         73         8         1         45         72         3960         6323         55         200         1000         622         211         73           P         P         AMMA         Common and the stand and the stan	12.0	. LL	M L		•	1	<b>,</b> 0	- 20	3960	6320	58	15	200	1800	62		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	13.0	. LL	23	. 8	• • •••	5	, iù	-20	3960	6320	60	15	20.	1800	29	2.1	6.
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	18.0	LL.	73	8	-	4 U	5	-20	3960	632ŭ	89 5	15	200	1800	62	<b>1.</b> 5	2.
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			٩	GA	MMA	001		OHC		ZFACTE		YFACTR		KFACIR			
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i

ALL AVAILABLE DATA HAS BEEN PROCESSED -- END OF AIRPOL ANALYSIS.

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- A1.28 -

### APPENDIX 2

### A User's Guide to AIRPOL

This Appendix contains a detailed description of the philosophy and techniques employed in using AIRPOL. Figure A2-1 shows a data input sheet for AIRPOL and should be referred to throughout the following discussion.

A2.2

A2.3

A2.0

A2.1

AIRPOL has been designed to minimize the influence of subjective judgements on the part of the user in order to obtain defensible predictions. However, some decisions must necessarily be made when employing any predictive scheme.

As a general guide in the use of AIRPOL, the conservative decision should be made whenever there is question about application of the model. This approach should not be considered a liability, but rather an exercise in responsible judgement with the additional benefit of allowing the user to state, with a high degree of confidence, that actual levels should be less than or equal to the predicted levels.

AIRPOL has been designed to analyze the impact on air quality of a roadway consisting of three or fewer lanes. If an anlysis of a larger facility is desired, the highway must be broken into two or more lane groups, each consisting of three or fewer lanes. Furthermore, entrance ramps, exit ramps, and service roads must all be treated as distinct lane groups and not part of a lane group which includes travel lanes. Each lane group should then be analyzed as a separate roadway having its own geometric and traffic data. (Weather data will be the same for all lane groups constituting a given highway.) The total effect of the facility on the environment is then found by superimposing the effects of the several lane groups.

For instance, a dual, divided, four-lane highway having a 50-foot median, 12-foot traffic lanes, and 8-foot safety lanes (no ramps or service roads nearby) would be divided into two lane groups of two lanes each. Then, to get an analysis for the entire facility at 100 feet from the downwind guardrail, one would analyze the near lane group for a distance of 108 (100 + 8 = 108) feet from the nearest edge of the nearest traffic lane and the far lane group for a distance of 198 (100 + 8 + 12 + 12 + 8 + 50 + 8 = 198) feet, using directional traffic and geometric data. The two CO levels thus found are then added together to get the total CO level at 100 feet from the downwind guardrail.

A2.4

AIRPOL is designed to accept two types of input cards—header cards and data cards. (See Figure A2-1.) A header card followed by from one to ninety-nine data cards constitute a data set. AIRPOL will accept any number of data sets as input. Multiple data sets are simply placed one after the other to make up an input data deck for an AIRPOL run.

		PROJECT CHARGE NO: CO. ROUTE CITYCO SECT. TYPE ACT.	WS-6 (mph) 78 - 80			VOTE: AS A GENERAL GUIDE, USE NO DECIMAL FRACTIONS.)	D-5 (f1.)	78-80			_					
0			WS-5 (mph) 74 - 76		use only		D-4 (ft.)	74-76	-	-	-				_	
PAGE	OM NO.		WS-4 (mph) 70 - 72		research		0-5 (11.)	70-72								
			WS-3 (imph) 66 - 68		DATA CARDS		D-2 (f t.)	66-68				_		-		
	PHONE EXT: RO		WS-2 (mph) 62 - 64				D-1 (f t.)	62-64		-				-	-	
			COMMENTS MS-1 Momble the centered in these 50 columns) S-57 S-60				ν10 <b>3</b> -+-	3								
							CLENGTH (ft.)	55-58								
GHWAYS							CWIDTH (ft.)	50-53		-						
VIRGINIA DEPARTMENT OF HI AIRPOLVERSION 2 DATA PROCESSING INPUT JULY 1973							T M (%)	47-48	_			-	-	-		
							TS (mph)	4445	-	-	-			-		
							TFVOL (v ph)	38-42								
							UPWIND SOURCE LENGTH (ft.)	32-36								
							SOURCE HT (ft.)	27-30								
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GRANN RO	COMPUTER JOB NUMBER					NOTE: KEYPUNCH COMPUTER JOB NO. AND										

Figure A2.1

- A2.2 -

## ····0~64

The first five columns of every card in an AIRPOL data deck contain special information for use by the Data Processing Division (DPD). This information is not integral to the AIRPOL model. Columns 1-3 of each card must contain a three digit number assigned by the DPD for accounting purposes. This number will remain unchanged for a given AIRPOL run and must appear on every card in the input data deck. Columns 4-5 of each card must contain a two digit number identifying a data set. These numbers are assigned by the user. Each data set should have a unique number assigned to it and that number should appear on every card in the data set. Typically a user will number the data sets sequentially starting with 01.

A2.6 <u>The Header Card</u>

The first card of every data set is a header (or comment) card. It contains information relevant to all the data cards in the set. This common information will remain unchanged until a new data set is encountered. A header card is structured as follows:

A2.6.1 Accounting Information:

Columns 1-5 (see Section A2.4), Format (I3, I2).

A2, 6, 2 Number of Data Cards:

Columns 6-7, Format (I2).

This data field contains the number of data cards constituting this data set. The number of data cards following this header card must correspond to the number in this field.

Only right-justified, positive integers may appear in this data field.

A2.6.3

Descriptive Information (Comments):

Columns 8-57, Format (5A10).

This data field is used for descriptive information about the data set. This information is displayed as a heading on the printer output. It is suggested that the descriptive information be centered in this field to achieve reportquality output. For instance, the heading "ANALYSIS OF I99, WILLIAM COUNTY, VA.", which contains 36 characters, should begin in Column #15.

<sup>\*</sup>For the reader who is unfamiliar with data processing terminology, right justification signifies that the rightmost character must appear in the rightmost column of a data field and there may be no blanks between non-blank characters.

Any combination of letters, digits, symbols, blanks, or punctuation may appear in this data field.

A2.6.4

Wind Speeds:

Columns 58-80, Format (F3.1).

These six data fields contain the wind speeds to be used in analyzing each data point (data card) in the data set. From one to six wind speeds may be input. If fewer than six wind speeds are desired, the excess data fields should be left blank. If all six fields are blank (or equal to zero, or negative), the program will analyze the data set using wind speeds of 4.0, 7.0, and 10.0 mph.

The user may sometimes find it advantageous to use wind speeds of 4.0, 7.0, 8.0, 12.0, 13.0, and 18.0 mph. These are the ranges the Virginia Department of Highways generally uses when preparing impact statements, since they are the ranges contained in the weather data used by the Department.

The prevailing CO level is predicted by using the prevailing stability class (see Section A2.7.5), the prevailing wind direction within that class (see Section A2.7.7), and the prevailing wind speed (or range) within that direction. To predict the worst case CO levels, use class E or F, parallel winds and the prevailing wind speed within that class and direction. Prevailing weather data may be obtained from the output of either program WNDROS or program STAROS (4).

Only right-justified, positive decimal fractions or blanks are allowed in these fields. If no decimal point is punched in a field, the program will insert one between the second and third digits of the field. If a decimal point is punched, the decimal fraction so designated will be input. Thus one may input twelve mph as either <u>120</u> (implied decimal point will be inserted by the program) or <u>12</u>. (actual decimal point noted and used by the program). Wind speeds less than 3.0 mph should not be used (see Section 3.4.1).

A2.7

#### The Data Cards

Each data set has from one to ninety-nine data cards following the header card. Each data card constitutes a data point (more accurately, a data matrix) to be analyzed. The information on a data card, together with the common data set information on the header card, provides all the necessary inputs to analyze a data point. The structure of a data card is:

A2.7.1

Accounting Information:

Columns 1-5 (see Section A2.4), Format (I3, I2).

Columns 6-9, Format (A4).

This field contains a four character designation for the site and lane groups being analyzed. This identifier may be assigned in any systematic manner deemed appropriate by the user. For example, one method which can be employed is to use columns 6, 7, and 8 to identify the site and to use column 9 to identify the source lane group. (See Section A2.3.)

Any combination of letters, digits, symbols, blanks, or punctuation may appear in this data field.

A2.7.3

A2.7.4

Source Roadway Type:

Column 11, Format (A1).

This column contains a code to identify the type of roadway (lane group) being analyzed.

The codes are:

C = city streetF = freeway

If anything other than a C or an F appears in this field, the program assumes the analysis is for a freeway.

Whenever there is a stop sign, signal light, or other traffic obstruction within about 400 feet up or down the roadway from the observer, the roadway should be designated as a city street. In all other cases, i.e., quasi-free-flow traffic, the roadway should be designated as a freeway.

Only a C or an F should appear in this data field.

Prediction Year:

Columns 13-14, Format (I2).

This field contains the last two digits of the year for which the prediction is to be made. The program will perform an analysis for any year from 1972. to 1999 inclusive. If the year input is less than 72 the program will default to an analysis for 1972. For any analysis beyond 1999, use 99 for year. This will give consistent results since the program assumes that emission levels will be constant from 1986 on. (4)

Only right-justified, positive integers are allowed in this field.

### A2.7.5

### Stability Class:

Column 16, Format (A1).

This data field contains the Turner modified, Pasquill-Guifford atmospheric stability class (4,5) for which this analysis is to be performed. The classes are A, B, C, D, E, and F, where A is the least stable condition, D is neutral, and F is the most stable. If an invalid symbol appears in this field, the program will default to an analysis for stability class D.

When AIRPOL is used to predict CO levels at prevailing weather conditions, the output of either program WNDROS or program STAROS <sup>(4)</sup> should be consulted to find the prevailing stability class. When AIRPOL is being used to estimate the "worst-case" conditions, current thinking is to use stability class F for rural areas and stability class E for urban areas.

Only an A, B, C, D, E, or F should appear in this column.

A2.7.6

Case:

Column 18, Format (I1).

This field contains a code indicating whether the analysis should be performed for an observer downwind (wind reaches road before reaching observer) or upwind (wind reaches road after reaching observer) of the source lane groups. (See Section 2.7.)

The codes are:

1 = downwind2 = upwind

If an invalid code appears in this column the program will default to an analysis of the downwind case.

Only a 1 or a 2 should appear in this data field.

A2.7.7

Wind Angle (Alpha):

Columns 20-21, Format (F2.0).

This data field is used to specify the acute (between  $0^{\circ}$  and  $90^{\circ}$ ) angle, in degrees, between the wind direction and road direction. This angle should be determined by passing a wind vector through the point where a line through the observer perpendicular to the roadway intersects the road and measuring the acute angle between this vector and the lane group being analyzed. (See Figure A2-2.)

- A2.6 -





To obtain an estimate of the expected or prevailing CO levels, use the prevailing wind direction and wind speed for the prevailing stability class. This information is contained in the outputs of either program WNDROS or program STAROS.<sup>(4)</sup> To obtain an estimate for the "worst" case, use stability class E or F and parallel  $(0^{\circ})$  wind with its prevailing wind speed.

Only right-justified, positive integers should appear in this data field.

A2.7.8 Observer Height:

Columns 23-25, Format (F3.0).

This data field is used to specify the observer height, in feet, above the surrounding terrain. In the special case of a depressed\* roadway, this height must be given as the elevation of the observer above the road surface. (See Section 2.5.)

Only right-justified, positive integers should appear in this field.

Source Height:

Columns 27-30, Format (F4.0).

This field is used to specify the elevation, in feet, of the road surface relative to the surrounding terrain. This value should be negative for a depressed\* roadway, positive for an elevated roadway, and zero for an atgrade roadway. (See Section 2.5.)

Only right-justified integers (positive, negative, or zero) should appear in this field.

A2.7.10

A2.7.9

Upwind Source Length:

Columns 32-36, Format (F5.0).

This data field is used to specify the length, in feet, of the source lane group in the upwind direction. This length is measured by taking the maximum distance that the roadway extends in a straight line from the point where a line through the observer perpendicular to the roadway intersects the roadway (see Figure A2-4). This distance will rarely exceed 5000 feet. When the wind intersects the roadway at exactly 90°, the "upwind" direction may be taken as either roadway direction since both (or neither, depending on your point of view) directions are "upwind".

Only right-justified, positive integers should appear in this field.

<sup>\*</sup>The depressed roadway condition may be used only when the observer and the lane group are both in the cut. Otherwise the at-grade condition must be employed. (See Figure A2-3.)







Roadway in a cut but observer outside the cut

Figure A2.3. Comparison of an observer in a cut to an observer outside a cut.

### vu0~72

A2. 7.11 Traffic Volume:

Columns 38-42, Format (F5.0).

This field is used to specify, in vehicles per hour, the total traffic volume for the lane group being analyzed.

Only right-justified, positive integers should appear in this data field.

A2.7.12

Traffic Speed:

Columns 44-45, Format (F2.0).

This data field is used to specify the average traffic speed, in mph, for the lane group being analyzed.

Only right-justified, positive integers should appear in this field.

A2.7.13 Traffic Mix:

Columns 47-48, Format (I2).

These columns are used to specify the traffic mix, in percent of heavy duty vehicles, for the lane group being analyzed. Busses, trucks, etc. are considered heavy duty vehicles.

Only right-justified, positive integers may appear in this data field.

A2.7.14

Cut Width:

Columns 50-53, Format (F4.0).

This field is used to specify the width, in feet, of the cut in which both the lane group being analyzed and the observer are located. This width should be measured as the average cut width at one-half of the cut depth. If the cut situation is not applicable, this field should be left blank.

Only right-justified, positive integers should be used in this data field.

A2.7.15

Cut Length:

Columns 55-58, Format (F4.0).

This field is used to specify the upwind length, in feet, of the cut in which both the lane group being analyzed and the observer are located. This distance should be measured in the upwind direction (see Section A2.7.10)

along the roadway from the point where a line through the observer perpendicular to the roadway intersects the road to that point at which the cut depth equals one-half the depth at the observer. If the cut situation

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Only right-justified, positive integers should appear in this field.

is not applicable, this field should be left blank. (See Figure A2-4.)

A2.7.16

Showit:

Column 60, Format (L1).

The contents of this field are used to signal the program to display intermediate calculations. A "T" in this column turns on the display control for the current data point only. This feature is intended for research purposes only and offers the general user no pertinent information. In the default mode the display control is always off.

For normal operation, this field should be left blank.

A2.7.17

Observer Distances:

Columns 61-80, Format (F3.0).

These five fields contain the perpendicular distances, in feet, from the observer to the nearest edge of the nearest lane of the lane group being analyzed. These distances should be measured perpendicular to the roadway and horizontal to the earth. They should not follow the contour of the ground.

From one to five distances may be specified. If fewer than five distances are desired, the excess fields should be left blank. If all five fields are either negative, zero, or blank, the program will default to a single analysis at 50 feet.

Only right-justified, positive integers should appear in these data fields.

A2.8

The use of superposition with AIRPOL was introduced in Section A2.3 to illustrate how a roadway of more than three lanes should be analyzed. Superposition also has other applications with respect to AIRPOL. Concentration levels near an intersection can be found by using this technique. Short segments of roadway, such as ramps, can be analyzed by judicious application of this principle to an imaginary 5000 foot long segment appended to the existing one. Superposition may, in fact, be used with CO concentration levels under any circumstances since CO levels are directly additive. Thus this principle may be applied whenever necessary.



-A2.12-