New Jersey Institute of Technology Digital Commons @ NJIT

### Dissertations

**Electronic Theses and Dissertations** 

Spring 5-31-1974

# Effect of gas temperature gradients and radiant heat transmission on kinetic model behavior

Richard W. J. Robertson New Jersey Institute of Technology

Follow this and additional works at: https://digitalcommons.njit.edu/dissertations

Part of the Chemical Engineering Commons

### **Recommended Citation**

Robertson, Richard W. J., "Effect of gas temperature gradients and radiant heat transmission on kinetic model behavior" (1974). *Dissertations*. 1298. https://digitalcommons.njit.edu/dissertations/1298

This Dissertation is brought to you for free and open access by the Electronic Theses and Dissertations at Digital Commons @ NJIT. It has been accepted for inclusion in Dissertations by an authorized administrator of Digital Commons @ NJIT. For more information, please contact digitalcommons@njit.edu.

# **Copyright Warning & Restrictions**

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted material.

Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a, user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use" that user may be liable for copyright infringement,

This institution reserves the right to refuse to accept a copying order if, in its judgment, fulfillment of the order would involve violation of copyright law.

Please Note: The author retains the copyright while the New Jersey Institute of Technology reserves the right to distribute this thesis or dissertation

Printing note: If you do not wish to print this page, then select "Pages from: first page # to: last page #" on the print dialog screen



The Van Houten library has removed some of the personal information and all signatures from the approval page and biographical sketches of theses and dissertations in order to protect the identity of NJIT graduates and faculty.

### **INFORMATION TO USERS**

This material was produced from a microfilm copy of the original document. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the original submitted.

The following explanation of techniques is provided to help you understand markings or patterns which may appear on this reproduction.

- The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting thru an image and duplicating adjacent pages to insure you complete continuity.
- 2. When an image on the film is obliterated with a large round black mark, it is an indication that the photographer suspected that the copy may have moved during exposure and thus cause a blurred image. You will find a good image of the page in the adjacent frame.
- 3. When a map, drawing or chart, etc., was part of the material being photographed the photographer followed a definite method in "sectioning" the material. It is customary to begin photoing at the upper left hand corner of a large sheet and to continue photoing from left to right in equal sections with a small overlap. If necessary, sectioning is continued again beginning below the first row and continuing on until complete.
- 4. The majority of users indicate that the textual content is of greatest value, however, a somewhat higher quality reproduction could be made from "photographs" if essential to the understanding of the dissertation. Silver prints of "photographs" may be ordered at additional charge by writing the Order Department, giving the catalog number, title, author and specific pages you wish reproduced.
- 5. PLEASE NOTE: Some pages may have indistinct print. Filmed as received.

Xerox University Microfilms 300 North Zeeb Road Ann Arbor, Michigan 48106

### 75-12,795

11

ROBERTSON, Richard Walter J., 1943-EFFECT OF GAS TEMPERATURE GRADIENTS AND RADIANT HEAT TRANSMISSION ON KINETIC MODEL BEHAVIOR.

New Jersey Institute of Technology, D.Eng.Sc., 1974 Engineering, chemical

Xerox University Microfilms, Ann Arbor, Michigan 48106



RICHARD WALTER J. ROBERTSON

ALL RIGHTS RESERVED

PLEASE NOTE:

· •

Page 100, not available for photography.

UNIVERSITY MICROFILMS

### EFFECT OF GAS TEMPERATURE GRADIENTS

AND RADIANT HEAT TRANSMISSION ON

### KINETIC MODEL BEHAVIOR

by

### RICHARD W. J. ROBERTSON

A DISSERTATION

### PRESENTED IN PARTIAL FULFILLMENT OF

### THE REQUIREMENTS FOR THE DEGREE

OF

### DOCTOR OF ENGINEERING SCIENCE IN CHEMICAL ENGINEERING

AT

#### NEWARK COLLEGE OF ENGINEERING

This dissertation is to be used only with due regard to the rights of the author. Bibliographical references may be noted, but passages must not be copied without permission of the College and without credit being given in subsequent written or published work.

Newark, New Jersey

1974

### APPROVAL OF DISSERTATION

EFFECT OF GAS TEMPERATURE GRADIENTS AND RADIANT HEAT TRANSMISSION OF KINETIC MODEL BEHAVIOR

ΒY

RICHARD W. J. ROBERTSON

FOR

DEPARTMENT OF CHEMICAL ENGINEERING

NEWARK COLLEGE OF ENGINEERING

ΒY

FACULTY COMMITTEE

APPROVED:

\_\_\_\_\_, CHAIRMAN

NEWARK, NEW JERSEY

MAY, 1974

#### ABSTRACT

### EFFECT OF GAS TEMPERATURE GRADIENTS AND RADIANT HEAT TRANS-MISSION ON KINETIC MODEL BEHAVIOR

by

Richard W. J. Robertson

Satisfactory methods to predict radiant heat transmission in enclosures containing a radiating gas at uniform temperature are available. These methods have been traditionally used in solutions of kinetic models.

Kinetic models are strongly temperature dependent with a difference of 10°K able to double the reaction rate. In the present investigation, calculation techniques which make allowance for the non-uniformity of gas temperatures in an en losure are applied to the kinetic models. The furnace problem considers only the radiation section with the assumption that detailed knowledge of combustion and fluid flow pattern within the enclosure is available.

If the gas space in the enclosure and the bounding walls are divided into zones, a zone being taken small enough so that it may be considered isothermal, then for steady-state operation one can write an energy balance on each zone. For any specific problem, every term in these equations with the exception of the net wall fluxes may be written as a function of unknown temperatures only; furthermore the number of equations is exactly equal to the number of unknown temperatures and wall fluxes so that a solution is possible, though exceedingly difficult due to the existing non-linearities.

The net wall fluxes are calculated by the kinetic model, the flux at any point being a function of the overall heat transfer coefficient, the extent of reaction, and the temperature of the reacting gases, each of which in turn is a complex function of reaction gas composition and velocity.

The chief problem of this investigation was one of evaluating the emission from both a gas zone and a surface zone and the radiant interchange between all zones, making due allowance for absorption along every path from one zone to another.

The primary result of this dissertation has been the application of radiant dominant heat transmissions in enclosures (which make allowances for temperature nonuniformity in gas mass) to a pyrolysis reactor. The result of this reactor-furnace hybrid model is the ability to determine optimum tube placement, furnace size, and fuel consumption, while accounting for the effect of carbon deposition in the reactor.

The methods developed in this dissertation were instrumented on an IBM 370-15 computer. This machine made it possible to make parametoric studies which predict the effect of changing furnace and reactor variables.

The high severity steam cracking furnace results in the greatest production per pound of fuel consumed. A yield of 73% represents maximum fuel economy. However, the associated problems of coke formation and high tube metal temperature must first be overcome **before** these yields can be realized.

### Acknowledgements

The author wishes to take this opportunity to express his gratitude to all the individuals whose cooperation enabled him to produce this dissertation.

He wants to thank his advisor, Dr. E. C. Roche for his contribution of advice, exhortation, time and effort on the author's behalf.

The author's thanks are also due to the staff of the N.C.E. Computer Center.

The author includes a special thanks to his wife, Linda, for her assistance throughout the period of the writing of this dissertation and for her many hours of typing! He also wishes to thank his sons, Donald and David, for their good behavior while the thesis was being written and typed.

5

vi

### Table of Contents

Title Pagei
Approval Pageii
Abstractiii
Acknowledgementsvi
Table of Contentsvii
List of Figuresxi
List of Tablesxii
Chapter I - Summary1
Chapter II
1. The Furnace Model
A. Introduction14
B. Fundamental Laws Governing Surface and
Gas Radiation
1. Radiation from Solid Surfaces
2. Radiation from Gases15
C. Techniques Available for Predicting
Radiant Heat Interchange in Furnace
Enclosures16
<ol> <li>Interchange in Gray Enclosures Contain- ing Non-Absorbing Media</li></ol>
2. Interchange in Gray Enclosures Contain- ing a Gray Isothermal Gas Mas
D. Allowance for a Real Gas19
E. Limitations on the Calculational Techniques21

	F.	Methods Used to Solve Furnace Model	26
2.	The	Reactor Model	28
	Α.	Introduction	28
	B. 1	Pyrolysis of Ethane Process	29
	с. (	Carbon Deposition	30
	D.	Chemistry of Pyrolysis	31
3.	The	Mapping Function	34
	Α.	Temperature Variations Along Reactor Length	36
	в.	Mapping the "Plane" Into a Reactor Tube	38
	с.	Placement of the Reactor Tube	40
	D.	End Effects	42
Chal	oter	III- Procedures Used In Solution of the	
		Zoned Furnace-Reactor Model	46
1	. Th	ne Furnace Model	46
	A,	Mergy Balances on the System	47
	В,	. Radiant Interchange in a Black Enclosure	
		Containing a Gray Gas	51
		1. Emission from a Volume of Gas	52
		2. Emission from a Surface Area	53
		3. Interchange Between Two Surfaces	54
		4. Interchange Between a Volume of Gas	54
		and a Bounding Surface	54

•

,

5. Interchange Between Two Gas Volumes.....65

	C. Calculation of Direct Energy Transfer	67
	D. Allowance for Grayness of Walls	69
	i. Original Emitter is a Gas Zone	72
	ii. Original Emitter is a Surface Zone	76
	E. Allowance for a Real Gas	77
	F. Encesy palance of the Cas Volumes	82
	G. Energy Balance on Surface Area	91
	i. The Source Term	92
	ii. Radiant Energy Term	92
	iii. Convective Heat Transfer	93
	iv. Net Heat Absorbed by a Surface	94
2.	The Kinetic Model	96
	A. Description of Reactor	96
	B. The Material Balance	<b>97</b> .
	C. Calculation of Incremental Conversion	. <b></b> 98
	D. Calculation of Pressure Profile	100
	E. Calculation of Temperature Profile	101
	F. Calculation of Overall Heat Transfer	
	Coefficient	102
3.	The Mapping Models	<u>. 1</u> 06
	A. Furnace Model to Reactor Model	106
	E. Reactor Model to Furnace Model	108
4.	Calculation "Flow"	. 113
	A. Introduction	. 113

-

4 2 1

	B. The WHFlown
Chapter	IV - Results and Conclusions119
l. Ve	erification of Results120
2. Fi	Irnace Temperature Driving Force
3. C	onvected Heat Transfer in the Radiant Section
to	f the Furnace
4. O <u>r</u>	otimization of the Furnace-Reactor as a Function
to	f Fuel Rate
Chapter	V - Recommendations
Referenc	es
Appendix	c A
Appendix	c B

### List of Figures

ŝ,

Figure	1.	Temperature of Reactor Wall as "Viewed"
		From Furnace and "Used" by Kinetic Model
Figure	2.	Front and Side View of a "Zoned" Furnace with
		Three Subsections
Figure	3.	Top View of Furnace-Reactor Showing Isotherm
		Zone Placement
Figure	4.	Results of Integrating F'(UK)
Figure	5.	Mapping the Reactor Temperature Profile Into
		An Isotherm Surface Area
Figure	6.	Typical Temperature Driving Forces as "Viewed"
		by a Furnace Subsection
Figure	7.	Temperature Profile in Furnace Subsection
Figure	8°c.	Effect of Wall to Wall Separation on Ethylene
		Yield (Radiant Effect Isolated - No
		Adjustment of Gas to Wall Heat Transfer
		Coefficient)12 <sup>8</sup>
Figure	<u>8</u> :.	Effect of Wall Separation on Ethylene Yield
		(Heat Transfer Adjusted)128

1

 $\mathbf{T}$ 

Figure <sup>10</sup>	Ethylene Yield as a Function of Heat
	Availability
Figure 11.	Optimization of Furnace Based on Fuel
	Economy
Figure 1 <sup>2</sup> .	Effect of Ethylene Yield on Rate of Coke
	Buildup in Reactor Tube

•

.

### List of Tables

- Table 2 . Effect of Wall Separation on Reactor Yield Radiation Effects Isolated by Using Uncorrected Surface to Gas Heat Transfer Coefficient. 127

### Chapter I

### SUMMARY

An increased understanding of the basic principles underlying heat transfer processes has forced a realization of the importance of radiation as the dominant mode of heat transfer in high-temperature industrial furnaces. It is, therefore, desirable to be able to predict rates of radiant dominant heat transmission with confidence for both design and performance calculations. Methods which predict the net interchange between a radiating gas at a uniform temperature ( a one gas zone furnace) with the walls forming the enclosure are available in the literature.

For many industrial furnaces, however, it is not permissable to assign a uniform temperature to the radiating gas, particularly when the distribution of heat flux within the enloure as well as the over-all performance is desired. When endothermic fluid phase reactions take place within the process fluid of the reactor a detailed knowledge of the local temperature gradient on the tube wall becomes important in that it affects the extent of reaction. The relatively large deviation from the true temperature profile produced by assuming one zone furnace

1

results in solutions which, though valid, are poor in engineering application. In the present investigation, therefore, the work of applying calculational techniques for predicting radiant dominant transmission has been continued, with the specific aim of making allowance for the non-uniformity of gas temperature in a fixed reactor. It was decided to limit the scope of the project by focusing attention on the radiation section of the fired heater problem and assuming that a description of the other phenomena necessary to the formulation, namely fuel-air combustion and internal flow patterns are available for use.

If the gas space in the enclosure and the bounding walls are divided up into zones, a zone being 'taken small enough so that it may be considered isothermal, then for steady-state operation it is possible to write an energy balance for each zone. For a gas zone the sum of the radiant energy received from all zones in the system (both gas and surface) plus the net convection to it from adjacent gas or surface elements plus the net enthalpy flux (chemical and sensible) to it due to bulk flow must equal the radiant energy originating within the gas zone. Similarly, for a surface, the sum of the radiant energy

2

received from all zones (gas and surface) plus the net convection to it must equal the emission from the surface plus the net flux through the surface. Every term in these equations with the exception of the net wall fluxes may be written as a function of unknown temperatures only and the number of equations is exactly equal to the number of unknown temperatures and wall fluxes. A solution of a set of these non-linear equations, once written for each zone in the enclosure, would yield the desired distribution of temperature and energy flux throughout the system.

One problem of this investigation, therefore, was one of evaluating the emission from either a gas zone or a surface zone and the radiant interchange between any two of these zones, making due allowance for absorption along every path from one zone to another and for partial diffuse reflection of every path at every surface ad infinitum. The furnace was subdivided into a set of isothermal zones. Each zone extended the entire length of the furnace and end effects were neglected. Sets of these furnaces can be set up one next to the other to produce a three-dimensional furnace of any degree of complexity. Some error will result due to the assumption that no interaction takes place between any furnace and its neighbor. The results produced, however, are still an improvement over most computational techniques.

A computational technique developed by Cohen <sup>(18)</sup> is able to handle zoning along the length of the reactor as well as across and vertically. His methods, however, were principally graphic, and do not lend themselves to the digital computer.

The emission rate from a gas volume of Area A is given by the following equation:

$$\mathbf{E}_{g} = 4(\mathbf{kL}) \quad (\mathbf{A}) \quad \boldsymbol{\phi} \quad \boldsymbol{\sigma} \quad \mathbf{T}_{g}^{4} \tag{1-1}$$

where E is the rate of emission in energy per unit time, g kL is the absorption coefficient of the gas times its path length, and  $\phi$  is the fraction of the energy originating within the volume which leaves the boundaries of the volume. The escape factor,  $\phi$ , is a function of kL only and has been obtained by multiple numerical integrations as described in a later Chapter.

The emission rate from a surface area of Area A is given by:

$$\mathbf{E}_{s} = \boldsymbol{\xi}_{s} (A) \quad \boldsymbol{O} \quad \mathbf{T}_{s}^{4} \tag{1-2}$$

where  $\boldsymbol{\xi}_s$  is the emissivity of the surface.

4

The interchange between any two zones in the system is more complex, involving not only the direct radiant flux between the two zones, but also the sum of the infinite number of reflected beams within the enclosure due to energy originating at either of the zones under consideration with due allowance for multiple attenuation. It is profitable to consider first only the direct interchange between the two zones; i.e. the interchange in a blackwalled system.

The one-way radiation flux - surface to surface, surface to gas, gas to surface, and gas to gas respectively may be written as:

$$q_{ss}^{\prime} (\sigma T_{s}^{4}) = ss$$
 (1-3)

$$q_{sg}^{\prime} / (\sigma T_{s}^{4}) = sg$$
 (1-4)

$$q_{gs} / (\sigma T_{g}^{4}) = gs$$
 (1-5)

$$q_{gg}^{\prime} ( \mathcal{O} T_{g}^{4} = gg \qquad (1-6)$$

where the terms ss, sg, gs, and gg, designated as direct interchange factors, also termed in the literature as interchange areas due to the dimensional units. These factors may be thought of as the product of a radiation

factor f, having any of the subscript combinations indicated on the right-hand sides of equations (1-3) through (1-6) with the first subscript representing the source of the energy and the second the receiver, which represents the fraction of the energy originating in any zone in the enclosure which reaches and is absorbed by any other zone, and a radiating-ability factor, (area) • (emissivity) for a surface zone and 4 X (volume) X (absorption coefficient) for a gas zone. Values of these radiation factors have been evaluated. These factors are functions of the path length and k, where k is the absorption coefficient of the gas. It is to be noted that these factors have been evaluated assigning a uniform k to each characteristic gas. a characteristic gas being a mathematical representation of a gas, which, in conjunction with other characteristic gases predicts the properties of gases in the system. The details of this technique, involving evaluation of determinants of order equal to the number of surface zones and of volume zones in the system, are given in Chapter 3.

With all the interchange factors for the system evaluated, it is possible to return to the original energy balances and solve for the temperature and flux distribution in the "two-dimensional enclosure." It will be recalled that the details of the fuel-air combustion, convection, and internal flow patterns are assumed known so that all terms in the energy balances have been evaluated and only temperatures or net wall fluxes appear as unknowns. Unfortunately, the set of equations contains unknown temperature in mixed first and fourth powers. For obtaining numerical solutions, these equations were linearized in  $T^4$  by forcing the convection and enthalpy flux terms into a fourth-power law; this technique necessitates an iterative solution since the coefficients on the convection and enthalpy flux terms are now strong functions of temperature. The sets of equations are solved iteratively until the assumed values are verified.

The use of the digital computer enables a parametoric study of furnace conditions and designs criterions. The results were an optimization of a pyrolysis reactor which maximizes the ratio of product to fuel consumption. The results are given in Chapter (4).

The over-all performance of the furnace (i.e., the total amount of energy transferred from the gas) as calculated by the method presented in this thesis was found to give good agreement with the performance as calculated by existing techniques in the literature. <sup>(49)</sup> The distribution of the heat flux within the enclosure, however, was found to be very different.

The technique developed in this dissertation is capable of giving far more detailed information as to the radiant interchange within the enclosure than has been possible up to the present time. Its chief weaknesses are:

- Finite sized zones, assumed to be isothermal, have been chosen so as to facilitate numerical solutions.
- It has been assumed that detailed knowledge of the combustion and mixing pattern is available. This is not actually the case for most enclosures.
- 3. It has been assumed that no interaction takes place between furnace subsections along the reactor length.
- The furnace is assumed to be of infinite length.
   This assumption can be eliminated with moderate additional complexity.

The furnace model was used in connection with a reactor model. The reactor model is able to handle large numbers of interrelated chemical reactions. The model is set up to accept any set of reactions so long as the kinetic data of reactions and the physical properties of the components are known.

From this initial data, the heat of reaction, heat of formation and the equilibrium constants are defined as functions of temperature. These functions are later evaluated to give point conditions in the reaction fluids.

The reactor is sectioned off into increment sections. Simultaneous material, momentum, and energy balances are performed on each section.

The temperature, pressure and composition of reaction fluids at the inlet of an incremental section are known from previous calculation. The temperature of the outside of the reactor wall is supplied by the furnace model. A temperature, pressure and composition are assumed at the end of the increment. A better estimate is made by calculating the reaction rates at the two ends and averaging the result. This procedure is continued until agreement is reached between two successful estimates.

The increment of heat flow to the reactor is calculated by summing the sensible heat gain of the reaction mass and the heat of reaction of each competing reaction. This must equal the net heat flux through the walls. The increment heat flux is then summed over the length of each reactor section.

The reactor model also calculates the coke buildup as a function of reaction rates. The reaction rates are assumed to be invariant over the time span during which the carbon is deposited. New reactor conditions are then used during each additional time span of carbon deposition. The coke's chief effect on reactor conditions is a decrease in overall reaction rate due to the Following effects:

- 1. A decrease in the net heat flux through the wall of the reactor due to the presence of a coke layer.
- A reduction in reactor volume and hence, reactor mean residence time.
- 3. A larger pressure drop throughout the reactor length necessitating a higher inlet pressure, adversely affecting equilibrium.

The reactor model results in a new temperature profile for the reactor. The new profile is then mapped into three corresponding process temperature profiles which is then transferred into the furnace model.

The furnace model and the reactor model are solved repeatedly until good agreement is reached between assumed and calculated temperature profiles. The net heat flux through the wall is also forced to converge. The net heat flux into the reactor is solved by the relationship

$$Q = UA \Delta T$$
 (1-7)

The overall heat transfer coefficient ( $U_R$ ) used by the reactor model, is a function of the thickness of the reactor wall, the thicknesss, if any, of the coke layer and the inside film coefficient (H). H is in turn a function of the reaction mixture velocity, thermal conductivity and composition.

The overall heat transfer coefficient used by the furnace model  $(U_F)$  to calculate the outside wall temperature from the known temperature of the process fluid must be mapped into the tube plane. The mapping is necessary due to the pseudo two dimensional nature of the furnace model. The mapping is done through a net heat flux balance on the reactor wall. The value of  $U_F$  is thus mapped by forcing agreement between the overall heat flux calculated by the furnace model and the heat flux calculated by the reactor model.  $U_F$  does not correspond with U calculated by the reactor model.

Since both the reactor and furnace models were set up in a computer program it was possible to make a parametoric study on the complete system. Thus the effect of tube placement, oil fired rate, furnace dimensions, reactor length, reactor composition can be correlated to design a furnace of optimum yield with minimum fuel consumption. One of the major contributions of this thesis is to correa late these quantities to predict optimum furnace and reactor design.

#### CHAPTER II

### 1. The Furnace Model

### A. Introduction

This analysis depends on the development of two unrelated, but interdependent models. These two models are then coupled together and form an effective method to predict optimum furnace design.

Une model, the furnace model, will be discussed is Chapter II-1. The other model, the kinetic model, will be discussed in Chapter II-2. The coupling model is then explained in Chapter II-3.

An increased understanding of the basic principles underlying heat transfer processes has forced a realization of the inportance of thermal radiation as the dominant mode of heat transfer in high temperature industrial furnaces. High installation and maintenance **costs** as well as the competitive market of today call for the design of furnaces or heaters which will perform efficiently and economically. Furthermore, because of variations in process conditions one would like to be able to predict the effect of such variations on furnace operation. To these ends, therefore, considerable effort has been extended to put the calculation and prediction of radiant heat interchange on a firm engineering basis. The model makes use of work done by Comm (18) and Roche (63) which allows for the non-uniformity of gas temperatures in an enclosure.

## B. Fundamental Laws Governing Surface and Gas Radiation

### 1. Radiation from Solid Surfaces

All solids, at any temperature other than absolute zero, emit and absorb radiant energy. Both the magnitude of the emission and its quality (i.e., its spectral distribution) depend primarily on the temperature of the material, but also, to a lesser extent, on the particular nature of its surface. The rate of emission from a perfect radiator (defined as a black body) is given by the familiar Stefan-Boltzmann Law: the emitted flux (energy per unit time per unit area) is proportional to the fourth power of the absolute temperature. The spectral distribution of black-body radiation is a function of temperature only and is given by Planck's Law. Any real surface always emits less than black-body radiation, and if its spectral distribution is the same as the Planck distribution, the body is said to be gray. The ratio of the energy emitted by any gray body at a fixed temperature to blackbody emission at the same temperature is termed the

emissivity; by the very nature of its definition, numerical values of emissivity must always lie between zero and unity.

For a further review of surface emissivities and radiation from solids  $Jakob^{(36)}$ , McAdams<sup>(49.)</sup> and Hottel and Sarofim<sup>(33)</sup> or other standard references on heat transfer may be consulted.

### 2. Radiation from Gases

In addition to surfaces, certain gases absorb and emit energy when heated. Of greatest interest to the furnace designer are water vapor and carbon dioxide, the primary products of combustion. Data on the radiating and absorbing characteristics exist for both carbon dioxide and water vapor. (32), (35), (49) Somewhat more limited data are available for carbon monoxide, sulfur dioxide and (16), (26), (59), (88)

Gas radiation differs from surface radiation in one important respect. Gas radiation is by no means gray, rather these gases exhibit very strong emission and absorption bands in certain spectral regions and are practically transparent in others. This non-grayness of real gases leads to enormous complications in furnace design calculations if it is to be allowed for rigorously. Fortunately, approximation techniques exist for handling the real-gas case; they will be discussed in later sections of this chapter.

# C. <u>Techniques Available for Predicting Radiant</u>

### Heat Interchange in Furnace Enclosures

The calculation of the radiant interchange in a furnace enclosure may be resolved into three different, though not completely separable, problems:

- 1. Allowance for the geometry of the system.
- Emission of radiation from the gas and its absorption and/or reflection at the various surfaces.
- 3. Absorption by the gas of radiation emitted by or reflected at the different surfaces.

A little thought will show that a completely rigorous calculation of the interchange in an enclosure would be exceedingly complex, and, in fact, a perfectly rigorous solution appears to be almost impossible to attain. One of the most important reasons for this complexity is the fact that in a radiating system, what goes on at any point is influenced by every other point in the system. That is, one must write an integral equation to express the heat transfer rates everywhere, instead of a differential expression expressing the local rate dependent only upon local conditions, as is possible for convective and conductive heat transfer. For this reason certain simplifications have been made which have enormously decreased the complexity of the calculations but which nevertheless yield answers for certain cases of sufficient accuracy for engineering use. A brief review, without any derivations or elaborate explanations, of the methods presently available for calculating radiant heat transfer appears below.

A. Interchange in Gray Enclosures Containing Non-

### Absorbing Media

The radiant interchange in a gray furnace enclosure, of any degree of complexity so long as it does not contain any absorbing gas, is calculable by the method presented by Hottel<sup>(46)</sup>. The net transfer by radiation between any two surfaces such as  $A_1$  and  $A_2$  is given as:

$$q_{A_1 \to A_2} = A_1 \neq_{12} \delta \left( T_1^4 - T_2^4 \right)$$
 (2-1)

(A portion of the enclosure may be grouped together as a surface, e.g.,  $A_1$ , when it has a substantially uniform temperature and when all portions of it have substantially the same "view" of the remainder of the enclosure.) The term  $A_1$  12 is dependent upon the geometry of the entire system as well as the emissivities (equal to the absorptivities for a gray system) of all surfaces, but it is not a function of the temperatures of any surfaces so a long as their emissivities are themselves independent of temperature.
# B. Interchange in Gray Enclosures Containing a Gray Isothermal Gas Mass

If now, the enclosure is filled with a gray gas of uniform temperature, the interchange between the gas and any surface or between any two surfaces separated by gas, may be calculated by a slight nodification of the above method. Gas-surface interchange is defined by the following equation:

$$9_{G_1} \rightarrow A_1 = A_1 \neq_{1G} \sigma(T_G^{+} - T_1^{+})$$
 (2-2)

The surface-to-surface heat transfer is exactly the same as given in equation (2-1) with the modification, however, that the interchange factor  $A_1 \neq _{12}$  has been adjusted so as to allow for the fact that on each pass from surface A 1 to surface  $A_2$ , directly or via any surface forming the enclosure, a portion of the energy is absorbed by the gas.

The interchange factors for this case, as before, are dependent upon the geometry of the entire system as well as the emissivities of all surfaces, and in addition are dependent upon the gas emissivity. For opaque surfaces, the emissivity is equal to the absorptivity and the complement of the reflectivity: that is  $\mathcal{E} = \mathcal{A} = (-\mathcal{P})$ They are not functions of any temperature in the system, so long as the emissivities of the system, both gas and surface, are independent of temperature.

# D. Allowance for a Real Gas

Non-luminous gas radiation, particularly radiation from carbon dioxide and water vapor, which are of greatest importance to the furnace designer, is not gray. The transmissivity of such a gas is not only a function of the gas properties, but is also very markedly influenced by the spectral distribution of the energy which is being absorbed. For example, the absorption of very high-temperature radiation by carbon dioxide, with its strong absorption bands in the long wavelength region would be very low because the source of radiation would be predominantly of short wavelength; but the absorption of lower temperature gray radiation, with a consequent larger fraction of the incident energy in the same spectral region as the gas absorption bands, would be much higher. In the treatment of the gray gas system mentioned in subsection 2, it was assumed that the absorptivity of the gas for surface radiation was independent of the quality of that incident radiation, and for this reason the gray-gas formulation is in error if applied directly to a real system.

Hottel and Sarofim<sup>(33)</sup> have shown it is possible to

approximate very closely real-gas radiation, without losing the mechanics of the gray-gas formulation. Since for the gray gas the transmittance of a gas beam of length x with a gas pressure P<sub>c</sub> is given by:

$$Y_{\chi} = e^{-\kappa' P_{c} \chi} \qquad (2-3)$$

where k' is the absorption coefficient of the gas and is independent of wavelengths, the emissivity and absorptivity are equal and may be expressed as:

$$E_{x} = a_{x} = 1 - T_{x} = 1 - e^{-K^{T} R_{x}} (a - 4)$$

1 ...

It is, of course, possible to fit the  $\mathcal{L}_x = \mathcal{F}(\mathbf{r}_G \mathbf{x})$  curve for a real gas to any degree of precision by a series of exponential type terms such as:

$$E_{\chi} = a e^{-K_{\alpha}} P_{c} X + b e^{-K_{b}} P_{c} X + C e^{-K_{c}} P_{c} X$$

This equation indicates that the transmissivity of a real gas may be thought of as a weighted sum of a number of graygas transmissivities, each applicable over a different spectral region. The sum of the weighting factors, a,b, c,.... must be unity, since the emissivity of a gray gas having no thickness (x=0) must be unity. The interchange in an enclosure, therefore, can be thought of as equivalent to the sum of the interchanges of a number of gray-gas systems each weighted in porportion to that fraction of the spectral region over which it acts. It is to be noted that the gray gas in each region has a different absorption coefficient and hence a different emissivity.

In the limit. as one considers an infinite number of spectral regions each obeying the gray-gas formulation, the answer of course, must be exact. For engineering calculations, however, this type of approach would be extraordinarily complex if one had to consider a large number of zones. Numerical analysis of typical problems has indicated, fortunately, that if the  $\mathcal{C}^{-k'X}$  curve is to be fitted anew for each numerical problem, it is in general sufficient to consider only two spectral regions, a and b, where the fraction "a" consists of a gray gas with a finite absorption coefficient k<sub>a</sub> and the fraction "b" (the complement of "a") consists of a gas with a zero absorption coefficient (i.e., a clear gas which neither absorbs nor emits). Again, space limitations prohibit a more adequate discussion of this problem and, for details, the reader is referred to Hottel<sup>(49)</sup> and Hottel and Sarofim.<sup>(33)</sup>

E. Limitations on the Calculational Techniques

Recapitulating, it has been shown that one is able to handle satisfactorily an enclosure made up of any number of gray surfaces and fidled with a real isothermal gas mass. In actual practice it may be difficult to obtain a numerical solution for a very complicated case; however, the principles governing the interchange in such enclosures and the technique for obtaining solutions have been formulated and are generally available.

Perhaps the most servious limitation to the calculational methods outlined above is the fact that the gas temperature and composition have been assumed to be uniform throughout the enclosure. Obviously, this assumption is never completely true for any industrial furnace, and in a good many cases it may be very seriously in error. If the furnace chamber is roughly cubical in shape, and if turbulence and mixing are present to a high degree, then the gas temperature will be nearly uniform and equal to the temperature of the exit gas so that the above methods apply directly. Even if these conditions apply only approximately, that is, if the gas temperature and composition at the inlet and outlet of the furnace are not too different from each other, then some mean of the two temperatures ought to give a reasonably accurate answer. UUnfortunately, few industrial furnaces fall in this category.

If, on the other hands, the furnace is very long compared to the dimensions of the cross-section normal to the direction of gas flow, and if combustion is rapid at the furnace entrance; the temperature of the gas falls continu-

ously as it passes through the furnace. In the limiting case of a furnace with length infinitely great relative to the transverse dimensions, allowance for this drop in gas temperature can be made by calculating local heat transfer rates at several points and graphically integrating along the furnace length. Long furnaces have been handled adequately by this technique, which in effect ignores rediant flux in the direction of gas flow, as long as there is a definitive negative temperature gradient from the botton of the combustion chamber to the top. This tedious process, which applies only to one very special type of furnace, has been performed for a wide range of furnace variables, and a simplified method of predicting a mean gas temperature to give the answer in a single step is available. (17) (49)

In this thesis a furnace model of the infinite length relative to the transverse dimension is considered. However, the model incorporates radiant flux consideration in both transverse directions. Radiant flux along the infinite axis is also calculated, but ignores end conditions along the infinite axis. This makes it possible to section the model along the long axis and consider each section independently of the others. Some error is introduced

in that the model can not show any net heat flux between adjacent sections despite the existence of temperature gradients between sections. The errors thus generated are minimal due to the relatively small difference of temperature and the low value of the heat transfer due to eddy diffusion.

While one is able to handle the two limiting cases of furnaces mentioned above quite simply, it is rather unfortunate that most industrial furnaces fall into a category somewhere in between them. At the present time, only the method developed by Cohen<sup>(18)</sup> allows one to take into account the fact that in actual furnaces, very substantial gas temperature gradients exist, both in the direction of gas flow and transverse to it. The method, however, is very tedious, and does not easily lend itself to computer calculations due to the graphical techniques or methodology employed.

Simply to illustrate the magnitude of the temperature gradients, a few numerical examples will be given.

 Data obtained by Smith<sup>(73)</sup> and reported by Cohen<sup>(18)</sup> on a scaled-down model of a steelreheating furnace, using premixed air and gaseous fuel, have indicated that a drop of about 300-400 Centigrade degrees between the gas temperature near the refractory roof and the cool floor sink, a total distance of about one foot in his equipment, is not at all unusual.

2. The large-scale furnace (about 6 feet by 6 feet by 20 feet) used by the International Flame Radiation Research Committee, and fired with either gaseous or liquid fueld in a burner jet, has shown temperature drops between the hot combustion zone near the center of the flame and the refractory wall of as much as 600 Centigrade degrees in a distance of about three feet.

These figures have been quoted merely for illustrative purposes. However, when one considers that gas emission is roughly proportional to the second or third power of absolute gas temperature, it seems likely that the consequences of these large gradients might be extremely important.

It is possible for one to handle rigorously the simplest possible case of allowing for temperature non-uniformity in the gas. This method has been presented by  $Hottel^{(49)}$  for the case of energy reception by a black wall adjacent to a gas mass having a known one-dimensional temperature gradient.

#### F. Methods Used to Solve Furnace Model

There are, of course, two fundamentally different approaches that one might use in attacking this problem. The first is completely theoretical and involves the development of calculational techniques to enable the prediction of the effect of temperature gradients on radiant heat interchange. Since basically the processes occuring within a furnace are determined solely by the fundamental laws of heat transfer, fluid flow, and combustion kinetics, the problem reduces itself to one of expressing the interrelationships of the various mechanisms interacting with one another in such a way that it becomes possible to obtain a numerical solution. The second technique would be to determine experimentally heat transfer rates under a wide variety of conditions with the hope of obtaining some sort of correlation which would enable one to predict the operation of furnaces other than those studied.

The first method of attack was felt to be the more profitable one in this case, and accordingly a purely calculational approach was used. The advent of the high speed digital computer has allowed implementation of this approach to handle far more complex systems than heretofor have been attempted. The speed of computation also allows

for solution of many furnace models with the ultimate objective of being able to simplify the result into some generalized empiricle relationship. The solution has been to set up in the most general terms possible, that is, in such a form that if one had specific knowledge of combustion and mixing, he would be able to incorporate such information directly into the recommended technique.

In all fairness to the reader, it must be pointed out that the combination of processes occuring in a furnace is extremely complex. The extent to which the method developed in this dissertation might be used by an engineer is dependent solely upon the amount of time which he is justified in spending on any particular problem. For one wishing only an approximate answer, it would be uneconomical to go through the costly and involved processes described later. On the other hand, if it is really important that one has the right answer, the author sees no alternative to following the methods recommended in this dissertation or Their use to prove the validity of their equivalent. engineering shortcuts is an interesting application, but not the subject of this dissertation. The use of the computer in handling the model will make it feasible for an investigator to find such simplified approaches.

#### 2. The Reactor Model

#### A. Introduction

To perform an **d**ptimization one needs some sort of plant description to form an objective function such as production rate or profit margin which must be optimized in terms of the independent variables.

Historically, plant data were used in deriving mathematical models by regression analysis. Some plants had even been deliberately disturbed in order to obtain enough data to determine the independent variables into which the plant was being fitted.

This method has many drawbacks such as noise in the plant data causing unreliability in the reading and a limited range of conditions under which the data is collected. Conditions outside of the range of those specifically studied must be calculated by the relatively unreliable method of extrapolation.

An alternative method is to simulate the plant based on the physical and chemical conditions. This simulated model can then be perturbed to determine the effect on the function to be optimized.

In order to describe plant conditions as thoroughly and accurately as possible, a model should consider the entire plant, including recycle streams, separators and peripheral equipment. as well as the reactor. This is not

the intent of this study.

It was decided that the optimization of fuel consumption would be most meaningful and would give optimum conditions close to the optimum based on an overall profit objective function.

The purpose of this disseration is to develop an algorithm which successfully predicts the behavior of a reactor-furnace. In order to be able to verify the results a reaction system was chosen which has been extensively reported in the literature. The reaction system thus decided upon was the cracking of ethane to form ethylene.

### B. ryrolysis of Ethane Process

Ethylene is a basic raw material used in the manufacture of polyethylene and polyethylene copolymers and as an intermediate in the synthesis of many organic compounds, with plant sizes ranging between 50 to 250 million pounds per year. The pyrolysis of ethane is very profitable becuase the raw material, ethane, would have a minimum value as a fuel gas. Ethylene is produced by "cracking" of the feed stock in fired reactors at temperatures up to 1250°K.

Almost all larger petrochemical facilities have several

furnaces which operate with different feed stocks, notably various proportions of ethane, propane, butane and "haphtha". The reactor pressure and temperature profiles and feed rates are also varied. The products from these different streams are generally combined into one stream after "quenching" to terminate the production of unwanted byproducts.

The reactor model is able to handle each set of feed stocks independently and perform separate optimizations for each furnace. In this study, the cases of pure ethane, propane, and combinations, each mixed with steam, were considered. The steam provides a chemical mechanism to minimize the rate of coke deposition. The model is also capable of optimizing the production of acetylene by increasing the residence time.

#### C. Carbon Deposition

Carbon is one of the byproducts of the pyrolysis reactions. Carbon is deposited on the wall of the reactor and results in a continuously decreasing reactor radius. This results in larger pressure drops occuring within the reactor tube. Eventually the pressure drop reaches a value which is too high to keep the system operating, and the reactor must be shut down for cleaning. Another effect of the carbon deposition is to reduce the overall heat

heat transfer coefficient making the fired heater less efficient.

An increase in reactor outlet temperature increases both the yield of ethylene and the rate of carbon deposition, hence causing an increase in the frequency of reactor shutdown for cleaning. As fuel consumption in the furnace increases, so does the reactor yield. The function of reactor yield divided by fuel consumption plotted against fuel consumption goes through a maximum which represents an optimum operating condition for any given set of furnace and reactor parameters, i.e.

Yield/Fuel Consumption = f(reactor parameters, furnace parameters)/fuel consumption (2-4)

The reactor-furnace model developed in this dissertation is able to determine this ideal operating point for most existing furnaces. The model also lends itself to the determination of the optimum design of most new furnacereactor systems.

D. Chemistry of Pyrolysis

The chief products from thermal cracking furnacesreactors vary from feed to feed. For the feed considered in this study, the chief products were ethane, ethylene, acetylene, methane, propane, propene, hydrogen and coke. Small amounts of aromatics were also formed. As an approximation these were defined to have the properties of C4's and C6's alpha olefins.

The eight equations considered in this study are: (71)

	Order Forward	0rder	Reverse
$C_2H_6 \leftarrow C_2H_4 + H_2$	1	1-1	(2-5)
$C_{26}^{H} \stackrel{\leftarrow}{=} CH_{4}^{H} + \frac{1}{2}C_{2H}^{H}_{4}$	1	1-1	(2-6)
$C_2H_4 \stackrel{\bullet}{=} C_2H_2 + H_2$	1.	1-1	(2-7)
$C_2H_2 \stackrel{2C+H_2}{\rightleftharpoons} H_2$	2	1-1	(2-8)
$2C_{2}H_{2} = C_{4}H_{4}$ (i.e.) C4's	1	1	(2-9)
$C + H_2 0 \rightleftharpoons CO + H_2$	1-0	1-1	(2-10)
$C_{38} \xrightarrow{C} C_{36} + H_{2}$	1	1-1	(2-11)
$C_{3}H_{8} \xrightarrow{C} C_{3}H_{4} + CH_{4}$	1	1-1	(2-12)

A detailed explanation of the kinetic reactor model can be found in the M.S. Thesis of Robertson. (62) It was necessary to modify Robertson's model in order to incorporate the calculation of the net heat flux through the wall of the reactor when the details of the pointwise temperature distribution are known.

Further detail may be found in the following toos references:

- Use of computers in pyrolysis see Reference Numbers (3, 9, 12, 23, 25, 44, 45, 53, 60, 62, 65, 68, 69, 70, 86, 95)
- 2. Chemistry of Pyrolysis (2, 38)
- 3. Reaction Rate (80, 81)
- 4. Equilibrium Rate (40)
- 5. Heat of Reaction (74)
- 6. Heat Transfer (13, 76)
- 7. Carbon Deposition (10, 14, 20, 28, 55, 57, 82)
- 8. Furthace Construction (15, 37, 48, 67, 74, 78)
- 9. Supersonic Oxidative Pyrolysis (90)
- 10. Sub-sonic Oxidative Pyrolysis (89)
- 11. Pyrolysis of Heavy Feed Stock (79, 86)

#### 3. The Mapping Function

The development of the kinetic model and the furnace model are independent of each other. In order to make the two models interdependent it was necessary to develop a third model which could communicate between the first two models. This third or mapping model is the author's specific contribution in this dissertation. It was utilized to investigate the product yield, fuel consumption geometry and tube placement of the reactorfurnace. The firing patterns produced by different tips on the burners can also be studied with the idea of designing a firing tip which would yield an optimum firing pattern.

The mapping model has to take into account a number of inconsistencies which include:

- 1. The furnace model assumes that there is no variation in temperatures along its infinite axes. The kinetic model, however, shows a continuous increase in temperature as the reaction mass flows through the reactor tube, which has vertical as well as longitudinal variations in geometry.
- 2. The furnace model "views" the furnace wall as a continuous semi-porous plane, a pprtion of which

is a heat sink to the ambient (through the insulating walls of the furnace). The kinetic model considers itself a discreet section of tubing with a radial uniform outside surface temperature.

- 3. The furnace model was picked to have a height of 28' feet. The reactor model was 400 feet long. This made it necessary to fold the reactor tube into a series of "u" bends which run up and down along the wall of the furnace.
- 4. The furnace model considered fitself infinitely
  long with no end effects due to the presence of
  walls at both ends of the furnace. The reactor
  model was clearly finite in length.

Methods used to handle each of these inconsistencies will be discussed later in this section.

In order to make the models compatable, both temperature and net heat flux profiles through the reactor wall had to be in agreement. As each of these quantities is calculated independently by both models, a trial and error type of solution was developed.

The temperature profile of the outer reactor wall was assumed. With this assumed profile, the kinetic calculations were completed. The kinetic calculations included a reactor fluid temperature profile and a net heat flux. The furnace calculations were then performed and yielded a new outer reactor wall temperature profile and a net heat flux to the reaction fluids.

This new outer wall temperature profile was then used to repeat the kinetic calculations. This process was then repeated until the maximum difference between old and new reactor fluid temperatures was less than 1.25°K and the net heat fluxes calculated by the two models were within 2% of each other.

#### A. Temperature Variations Along Reactor Length

The temperature of the reaction fluids increases continuously as the reactions take place. The net heat flux into the reactor results in two net effects:

- 1. An increase in the temperature of the reaction mass due to a sensible heat gain.
- A change in reactor mass composition due to chemical change. (The principal reaction being endothermic).

In the initial stage of reaction the mixture has an insufficient temperature for any appreciable reaction to take place, hence, most of the heat flux results in a sensible heat gain. In a second portion of the reactor the reaction mass is at reaction temperature with large quantities of unreacted species present. A majority of the heat flux goes to supplying the reaction mass with the necessary heat of reaction, with some sensible heat gain still occurring.

A final portion of the reactor consists of an ever declining portion of the net heat flux contributing to the heat of reaction.

It becomes possible to take advantage of these tendencies by splitting the furnace into three zones. In the first zone there is considerable increase in the temperature of the reaction mass. This in turn results in rapidly changing wall flux. However, since in this section of the reactor little reaction takes place, an averaging technique of the the temperature flux along the infinite axis for each isothermal wall zone will not seriously affect the kinetic model.

In the second zone the kinetic model predicts large extent of reaction but only mild increasing temperatures. Again an averaging technique for each isothermal wall zone along the inifinite axis lives temperature distributions which can be used by the kinetic model, since only relatively small temperature differences exist.

In the third zone both relatively extensive amounts of reaction and foirly large reactor fluid temperature changes take place. By minimizing the size of this section, the averaging technique is again applicable.

The reader should note that considerable flue gas temperature gradients exist between each isothermal zone in adjoining sections. This would suggest that a subdivision of each section into two or more sub-sections would result in still more precise results. However, the additional computational time required by the computer for such an undertaking would be prohibitively large.

B. Mapping the "rlane Into A Reactor Tube

The furnace model views the wall of the furnace as a continuous plane with isotherms running along the horizontal and discreet temperatures of radiation running along the vertical. The plane is porous in that it "views" the furnace wall and reactor tubing simultaneously, differentiating between them as the ratio of their respective areas. The furnace model does not distinguish individual sections of tube and wall, rather "considers" the two as the wall of the furnace.

The kinetic model "uses" the outer skin temperature of the reactor to calculate the net heat flux to the reaction mixture. In a furnace tube there would be some radial temperature distribution since the side of the tube facing the wall of the furnace would have a lower temperature than the side facing the bulk of the hot flue gases. The net temperature difference is not too great since the major resistance to heat flow is the result of the inside film heat transfer coefficient. (The resistance to heat flow through the coke layer would also be large, but this quantity is a variable, depending on the length of time the coke has been forming and the particular location in the reactor tube). The ratio of heat resistance in the tube metal to that caused by the inside film coefficient is an order of magnitude greater than 10 to 1, as was calculated by Robertson.<sup>(62)</sup>

In order to make some allowance for this effect, the net heat transfer coefficient calculated from reaction mixture to outer tube wall temperature used by the furnace was adjusted in such a fashion that the net heat flux as calculated from the furnace equation was equal to the net heat flux as calculated from the reactor equations.

The net heat transfer coefficient found by the reaction equation was calculated from considerations of physical properties of the reactor tube, the thickness of the coke layer and the chemical composition and physical properties

of the reaction mass.(62)

C. Placement of Reactor Tube

The reactor being 400 feet of continuous tubing which is hung in the vertical direction (to avoid gradual bending of the tube near its center if the tube were placed in a horizontal position due to the excessive heat required for pyrolysis) would not fit into a furnace 20 feet in height. It was therefore placed in the furnace in a series of "U" bends running first from top to bottom and then bottom to top. A total of 14 such bends was required to accomodate the entire reactor length. A total of 14 such reactors can be placed in the 40 foot length of the furnace, seven on each side of the flame wall. The "U" bends provide mechanical support while allowing for thermal expansion.

Within the series of 14 "U" bends, the furnace was further subdivided into three distinct reactor zones discussed earlier in this Chapter. The mapping model had to be able to distinguish in which furnace zone the corresponding reactor segment lay. It is also necessary to know whether the tube was running up the furnace or down. The temperature profiles used by the furnace and the reactor are illustrated in Figure 1.



Distance from Top of Furnace (Feet)

41

The smooth curve shown in Figure 1 was calculated by fitting a fourth power polynomial of T - f (Z) =  $a + bZ + cZ^2 + dZ^3 + eZ^4$  using the midpoint of each discreet furnace zone temperature as calculated by the furnace model. These discreet temperature zones were adjusted at the end of each furnace calculation and smooth curves were refitted for each of the three furnace zones recalculated.

Figures 2 and 3 show the actual location of the tubing in the furnace as well as the placement of the isothermal zones. The bridge wall extends on half the distance along the top of the furnace, the remaining half being the opening into the convection section and the stack.

#### D. End Effects

The furnace model studied in this thesis was considered to be infinitely long and end effects were ignored. As the dominant mode of heat transfer is radiation, an estimate of the distance necessary to completely absorb all incident radiation was made for the gray gases consisting of the flow gas. It was determined that for beam lengths of 65 feet, less than one part per million of the original radiation was still present in the beam. The clear gas contribution was somewhat higher.

The furnace model was further complicated by assuming

subdivisions along the reactor length (See Figure 2). Each subdivision assumes that its unique properties exist unchanged through neighbor subdivisions in the horizontal plane. In the furnace model studied, which was 70 feet long, there occurred 21 subdivisions. There were, however, only three distinct furnace subdivisions which had to be calculated.

Figure 2 Front and Side View of a "Zoned" Furnace with 3 Subsections



44 44

Figure 3

Top View of Furnace-Reactor Showing Isotherm

Zone: Placement



#### Chapter III

#### Procedures Used in Solution of the Zoned Furnace-Reactor

#### Model

#### 1. The Furnace Model

This Chapter will discuss in detail the mechanism used in the solution of each of the problems handled in this study. The furnace model will be discussed in Chapter III-1, the kinetic model in Chapter III-2, and the mapping model in Chapter III-3. In addition, Chapter III-4 will show the computational procedure used in order to arrive at the solution which comprises this study. In the remainder of this dissertation, all discussion will be limited to steady-state conditions in an enclosure.

In this study the furnace was zoned into isothermal gas volumes and surfaces areas. The volumes run through the entire tength of the furnace and are in fact treated as infinite in length; the height and width of each of these zones being finite. Likewise the surface areas are infinite in length and finite in width if in the horizontal plane, or in height if in the vertical plane. The model does not consider any plane or volume which is not either mutually parallel or perpendicular to the infinite axis (see Figures 2, 3, 4). These limitations should be kept in mind for all future references to surface are<sup>a</sup> and gas volumes.

The furnace was further subdivided along the infinite axis in order to make allowance for the nonuniformity along that axis. However, for the calculation, each subdivision is treated as if those conditions in that subdivision existed along the entire length of the furnace. This precedure allows the handling of each subdivision as an independent calculation, greatly reducing the complexities of the calculation procedure.

The general approach to be used consists of dividing the space enclosed and the bounding surfaces into zones, each zone being taken small enough so that it may be considered isothermal.

An energy balance may be written for each zone in the system, and when this is done it will be found that the series of equations contains only gas temperatures, surface temperatures or wall fluxes as unknowns. Futhermore, the number of unknowns will be found to equal exactly the number of equations. In principle then, one can solve either for the temperature at any given point in the system or the flux through the wall.

A. Energy Balances on the System

Consider the enclosure to be made up of isothermal volumes of space containing a gray gas, and designated as

- 47

 $g_1, g_2, g_3$  ..... and isothermal areas of bounding surface (either heat sinks or refractory) designated as  $s_1, s_2, s_3$ ..... The surface areas will coincide exactly with the gas volumes that touch them.

The conventions of naming the various surfaces and gas volumes used in this dissertation are as follows: (Refer to Figure 2, cross section view).

1. The gas volumes are numbered from left to right, starting in the upper left hand corner and working down as each row is completed. Hence the first gas volume in the upper left hand corner would be  $g_1$ . 2. The surface areas are numbered from left to right along the floor of the furnace. The sides of the furnace are then enumerated from top to bottom going down the right wall, then from top to bottom going down the left wall. Hence the last surface area, number 22, would be on the bottom of the right side of the vertical wall of the furnace and would be called  $s_{22}$ .

Since the temperature of the gas in any volume g (a volume defined as fixed in space) will remain unchanged once steady state has been reached, an energy balance on any volume such as  $g_1$  may be written as follows:

Total outward Radiation absorbed Radiation abby g, from all volumes radiation in sorbed by volume both direct and by all directions = +g, from **a**11 through the multiple reflections surface elements, bounding walls at the walls both direct and of volume g<sub>1</sub> by multiple reflections

1

Net energy to volumeNet energy to+ g, by bulk transport+ volume g, byof the flowing gasconvection fromstreamadjacent gas vol-umes or surface

elements

Rewriting in terms of symbole, where the various terms correspond directly:

 $E_{g_1} = \sum_{i=1}^{n} q_{i} q_{i} + \sum_{i=1}^{n} q_{i} q_{i} + q_{i} q_{i} + q_{e_{g_1}} (3-2)$ 

In the above and all subsequent equations a double set of subscripts such as gg, gs or ss indicates the direction of the energy transfer, the first subscript denoting the source of the energy and the second the receiver. Subscripts on the last 2 terms refer to bulk transport B or convection C, with an additional subscript to indicate which single gas or surface element is involved.

Similarly, writing an energy balance on any surface s: 1

(3-1)

Total outward radiation in all directions from surface s <sub>1</sub>	H	Radiation absorbed by s from all + volumes both direct and by multiple reflections at the walls.	Radiation ab- sorbed by surface from all surface elements both di- rect and by mul- tiple reflections.
	+	Net energy to sur- face s by convec tion from adjacent gas cubes	Energy flux through wall s 1
		-	(3음3)

Rewriting again in symbols:

ł

$$E_{SI} = \sum_{i}^{S} q_{ji} S_{i} + \sum_{j}^{S} q_{Sj} S_{i} + q_{C_{S_{j}}} - q_{W_{S_{j}}}$$
(3-4)

A little consideration of equations (3-2) and (3-4)will show that all the terms with the exception of wallflux  ${}^{q}W_{s_{1}}$  may be written as functions of temperatures, the coefficients on the temperature terms being functions of the geometry, heat capacities, flow rates and emissivities (and absorptivities) of the system. If it may be assumed that these temperature coefficients can all be evaluated at some mean temperature for the system, then there will result a total of g + s equations on g unknown gas temperatures and s unknown wall temperatures or wall fluxes.

It is to be noted at this point that, most unfortunately, the resulting series of simultaneous equations is

neither linear in temperature nor in any power of temperature. If one is willing to assign to the temperature coefficients mean values for the system then the radiation terms will be proportional to the fourth power of temperature while the convection and bulk flow terms are proportional to the first power of temperature. In order to simplify the final solution of the equations. it is advisable to linearize them by forcing the convection and bulk flow terms into a fourth power law. It would also be possible to force the radiant terms into the first power law. However, this alternate procedure does not reflect the radiant dominant nature of the fired heater or furnace. Using the first method means that the coefficients on these terms are very strong functions of temperature and hence of the solution to the equations, necessitating an iterative procedure in solution. Details of this technique will be presented later in this section.

# B. <u>Radiant Interchange in a Black Enclosure</u> Containing a Gray Gas

To simplify the problem of determining the radiant interchange factors in the most general case, it was decided to determine them first for this simple case: An enclosure containing black walls (and thus no multiple

reflections) and filled with a gray gas. In the case of a single-temperature gas zone as was described in Chapter 2, it was found possible to build up the interchange factor which allows for multiple reflections from the much simpler one of direct interchange only; a similar situation is found in the multi-gas zone cases. Futhermore, the technique for allowance for a real gas as the weighted sums of a number of gray gases also applies. For these reasons, the direct interchange factors for the gray-gas case will be evaluated first; then the method of building up solutions to the more complex situation of gray walls and a real gas will be indicated.

### 1. Emission from a Volume of Gas

The rate of emission of energy from an isothermal gas volume, if there were no attenuation of radiation within the volume, would be equal to the gas emissivity per unit volume multiplied by the volume and by "black body" emission at the same temperature:

$$E_{g}^{*} = V \cdot V_{g} \cdot \sigma T^{4}$$
(3-5)

where E \* is the rate of emission if no attenuation g occurs

 $\mathcal V$  is the gas emissivity on a volume base

is the volume of the gas

V

g

**d**T<sup>4</sup> is the Stefan-Boltzmann Constant times the temperature to the fourth power

Since the gas volume is infinite in length, some distance (such as the actual length of the furnace) is used in calculating this volume.

It may readily be shown that the gas emissivity on a volume basis is equal to 4k, where k is the absorption coefficient for a characteristic gas such that the gas emissivity, g, is equal to  $(1 - e^{-kx})$ . (18) (33)

Since for any restricted volume of gas there will be attenuation of energy originating within the volume, the actual emission will be less than that given by equation (3-5).

## 2. Emission from a Surface Area

There is no problem involved in the formulation of the total rate of energy emission from a surface which is simply equal to the surface emissivity multiplied by black radiation at the temperature of the surface. The values of emissivity for a wide variety of materials encountered in industrial practice are available in the literature.<sup>(34, 45)</sup>
# 3. Interchange Between Two Surfaces

The one-way radiation from surface  $s_1$  to surface  $s_2$ is given by the following equation which may be considered a definition of the factor  $f_{s_1s_2}$ :

$$9_{s_1} s_2 = f_{s_1} s_2 A_{s_1} \sigma T_{s_1}^{4}$$
 (3-6)

The factor  $f_{s_1s_2}$  plainly represents the fraction of the energy leaving surface  $s_1$  that is intercepted by surface  $s_2$  and is a function of the areas and geometrical configurations of the two surfaces as well as the absorption coefficient of the intervening gas mass. For evaluation of the factors of the type  $f_{ss}$  it will be assumed that the intervening gas has constant absorption properties, that is, a constant absorption coefficient k, no matter how far apart the surfaces are. This is in accordance with an earlier statement that it is desirable to evaluate the coefficients on the temperature terms in the energy balances, equations (3-2) and (3-4) at some mean temperature for each isothermic gas volume.

Consider two differential areas  $dA_1$  and  $dA_2$  separated by distances  $\Delta x$ ,  $\Delta y$  and  $\Delta z$  measured on the three coordinate axes and therefore separated by a center-to-center distance r, where:

$$r = \sqrt{\Delta x^2} + \Delta \overline{y}^2 + \Delta \overline{z}^2 \qquad (3-7)$$

The one-way radiation between the two differential areas is plainly proportional to the areas of each as viewed from the other, inversely proportional to the square of the separating distance, and must be diminished by the transmissivity of the intervening gas of absorption coefficient k and path length r. Expressing this methematically and putting in the proportionality constant 1/1 which has been established elsewhere, <sup>(46)</sup> one obtains:

$$dq_{12} = \frac{dA_1 \cos \phi_1 \cdot dA_2 \cos \phi_2}{\pi r^2} \cdot e^{-\kappa r} \sigma T_1^4$$
(3-8)

It is now necessary to integrate this expression over the two finite areas  $A_{s_1}$  and  $A_{s_2}$  to obtain the interchange, and combining this result with equation (3-6) one can evaluate the factors  $f_{s_1s_2}$ . Due to the presence of both an exponential term and a polynomial it is not possible to integrate equation (3-8) analytically. At this point it is adequate to point out that two distinct cases of interchange between surfaces must be handled - surfaces in parallel planes and surfaces in perpendicular planes. Considering these two cases only for the parallel and

orthogonal cases, one arrives at the two following expressions to be numerically integrated to obtain the F<sub>88</sub>:  $F_{55} = \frac{9_{5_1} \rightarrow 5_2}{6 + 4} = F_{55}A_5$   $F_{55} = \int_{A_1} \int_{A_2} \frac{e^{-\kappa h}}{\pi n^2} \cos \phi_1 \cos \phi_2 \, dA_1 \, dA_2 \, (3-9)$ where r is the distance separating the incremental area dA and dA. For Orthogonal Pair X Z



$$\cos \phi_{1} = y/r \qquad \cos \phi_{2} = /r$$

$$dx_{1} = dy dz \qquad dA_{2} = dx dz$$

$$f_{55} = SSSS \xrightarrow{e^{-\kappa h}}_{PR} \frac{y_{1}}{r} \frac{y_{2}}{r} dZ_{R} dY_{1} dY_{2} dZ$$

$$oh \qquad (3-12)$$

$$f_{55} = \int_{0}^{L} \int_{y_{1}'}^{y_{2}''} \int_{y_{2}'}^{\infty} \int_{-\infty}^{\infty} \frac{e^{-\kappa r}}{r^{4}} y^{2} dZ_{R} dY_{1} dY_{2} dZ_{E}$$

$$(3-13)$$

Similar relationships exist for the other possible orientations, but will not be given here. It now becomes possible to perform numerical integration on equations (3-10) and (3-11) and any of the other required orientations.

The method of Gaussian quadratures was combined with Simpson's integration<sup>(1)</sup> to yield the numerical results.

All of the possible orientations were of the following # form:

$$f_{ss} = \int_{0}^{L} \int_{\varphi_{1}'}^{\varphi_{1}''} \int_{\varphi_{2}'}^{\varphi_{2}'} f(x, y) \int_{-\infty}^{\infty} \frac{e^{-\kappa \sqrt{u^{2} + z^{2}}}}{(u^{2} + z^{2})^{2}} dz_{R} d\varphi_{1} d\varphi_{2} dz_{E}$$

Where

 $U = \sqrt{X^2 + y^2}$ 

and f(x,y) takes into account the particular orientation being evaluated, the function can be brought outside of the two innter integrals because it is independent of z.

The limits of integration  $Q_1$  and  $Q_2$  are either both x, or both y, or x and y, again depending on the orientation of the surfaces under evaluation.

Evaluating the two indefinite integrals using Simpson's integration of the following form: (1)

$$\int_{a}^{b} f(x) dx = \frac{h}{3} \left[ f^{(a)} + 4f(a+b) + 2f(a+ah) + 4f(a+b) + 2f(a+ah) + 4f(a+ah) + 4f(a+ah) + 4f(b) \right]$$
(3-15)

where h = (b - a)/2m

the second state of the se

and m is the number of subdivisions used.

Considering the inner integral of (3-14) and allowing

$$U^{2} = \sqrt{x^{2} + y^{2}} \text{ and } r = \sqrt{x^{2} + y^{2} + z^{2}} \text{ results in:}$$

$$\int_{-\infty}^{\infty} e^{-kr} \frac{dz}{r^{4}} = \int_{-\infty}^{\infty} \frac{e^{-ku\sqrt{1 + \frac{z^{2}}{4}u^{2}}}}{\sqrt{4(1 + \frac{z^{2}}{4}u^{2})^{2}}} \frac{dz}{(3-16)}$$
Letting w = z/u or dz = udw yields:

$$\int_{-\infty}^{\infty} \frac{e^{-\kappa_{v}\sqrt{1+w^{2}}}}{V^{4}(1+w^{2})^{2}} = \frac{1}{V^{3}} \int_{-\infty}^{\infty} \frac{e^{-\kappa_{v}\sqrt{1+w^{2}}}}{(1+w^{2})^{2}} dw$$

$$= \frac{1}{V^{3}} \int_{-\infty}^{\infty} \frac{e^{-\kappa_{v}\sqrt{1+w^{2}}}}{(1+w^{2})^{2}} dw$$

$$= \frac{1}{V^{3}} \int_{-\infty}^{\infty} \frac{e^{-\kappa_{v}\sqrt{1+w^{2}}}}{(1+w^{2})^{2}} dw$$

Defining:

Î î

1

$$F(KU) = \int_{-\infty}^{\infty} \frac{e^{-KU\sqrt{1+w^2}}}{(1+w^2)^2} dW$$
(3-18)

Noting:

$$F(K_{U}) = 2 \int_{0}^{\infty} \frac{e^{-K_{U}} \sqrt{1+w^{2}}}{(1+w^{2})^{2}} dW$$
(3-19)

$$\sum_{0}^{40} \frac{e^{-K_{U}\sqrt{1+W^{2}}}}{(1+W^{2})^{2}} dW$$

Equation (3-19) can now be evaluated from equation (3-15).

The replacement of the upper limit in equation (3-19) to a value of 40 was justified by evaluating (3-19) for a value of KU = 0, since when this substitution is made, equation (3-19) can be evaluated analytically yielding a value of  $\pi/2$ .

$$F(o) = 2 \int_{0}^{\infty} \frac{dw}{(1+w^{2})^{2}}$$
  
=  $2 \left[ \frac{w}{2(1+w^{2})} + \frac{y_{2}}{2} \operatorname{Tan^{-1}(w)} \right]_{0}^{\infty} = \frac{11}{2}.$   
(3-20)

The numerical evaluation of (3-19) using the upper limit of 40 and using h = .05 i.e. evaluating 800 terms in the Simpson integration) resulted in a value of F(0) = 1.570795(-1)/2.

It is important to note that KU will always be positive, so that the evaluation of (3-19) by Simpson's Rule will result in numerical values smaller than for K = 0 (a clear gas).

Settong KU = 0 to evaluated F(KU) results in the largest numerical deviation from the correct value of the function.

The value of F(KU) can now be evaluated separately for various values of KU. This procedure was carried out for values of KU varying between 0 and 20, as shown on Figure 4. Above 20 the contributions of the terms constituting the numerical equivalent of the integral made no significant contribution to the calculation of the view factor and thus was taken as 0. This would correspond to a beam length of approximately 60 feet. The value being discarded results in an error less than one part in a million. Previous to this, graphical integration techniques could only yield results that were accurate to one part in a hundred.<sup>(18)</sup>

The function of F(KU) versus log (KU) was then fitted to a 7th order polynomial. In order to get the best possible fit, the function was broken down into four ranges, a separate polynomial being used for each interval. The results of these curve fits can be found in Appendix B which gives the Fortran listing of the calculation procedure. The results are shown in Function W.<sup>(19)</sup>

Once the value of F(KU) is determined, it is necessary to evaluate the rest of the equation (3-14). This is done by using Gaussian quadratures,<sup>(1)</sup> the relationship is:

$$\int_{-1}^{1} f(x) \, dx = \int_{i=1}^{\infty} w_i \cdot f(x_i)$$

$$(3-21)$$

Where W is the weight factor different from W i used by the Hermite integrations

> X is the associated value of the independent i variable

> > r



This relationship is applied twice to equation (3-14) to yield:

$$\mathbf{f}_{ss} = \sum_{i}^{r} W_{i} \sum_{s} W_{i} \mathbf{f}(\mathbf{x}_{i}, \mathbf{y}_{i}) \cdot \mathbf{F}(\mathbf{V}\mathbf{K})$$
(3-22)

In doing the calculation it was decided to use a value of 9 for N, resulting in 81 calculations for the determination of each  $F_{ss}$  term. The value of 9 for N was selected as a compromise between accuracy and time required to perform the calculation.

# 4. Interchange Between a Volume of Gas and a Bounding Surface

The defining equations for the one-way radiation, gas to surface or surface to gas, are as follows:

$$9_{sg} = A_{s} \cdot f_{sg} \cdot \sigma T_{s}^{4} \qquad (3-23)$$

$$9_{gs} = 4 K V_{g} \cdot f_{gs} \sigma T_{g}^{4} \qquad (3-24)$$

As T approaches T, that is as the temperatures of the s g, two elements approach each other, the values of q must likewise approach each other and it follows that:

$$A_{s}f_{sg} = 4KVg \cdot fgs \qquad (3-25)$$

Formerly, when the values of F were calculated by ss techniques with an estimated error in one part per hundred, the difference between the six values was small in comparison to the magnitude of the solution. By using the computer this problem has been eliminated, and the error reduced to approximately one part in a million.

In our two dimensional model the radiation entering and leaving the infinite areas can not be "viewed" by the surface. This means that only a total of four values of  $f_{ss}$  need to be calculated and summed together with the appropriate sign to yield the desired value of  $f_{sp}$ .

In instrumenting this procedure on the computer, great care must be taken in the determination of the correct orientation. Unce this is accomplished, it becomes possible to use the already existing procedures for the calculations of the values of  $f_{ss}$ . The reader is referred to the Fortran listing of the calculation procedures and specifically to FUNCTION SG, on page 96 of Appendix B.

5. Interchange Between Two Gas Volumes

The defining equation for this final case of oneway radiation exchange, that is the energy transfer from one volume to another in the system may be written as:

979 = 4KVg fgg · 6Tg

(3-26)

The meaning of this type of interchange areas, as before, is the fraction of the radiation originating in one element that reaches and is absorbed by any other in the system. If the two subscripts g refer to the same gas volume, q represents the radiation originating in the volume  $q_{gg}$  and absorbed by itself before reaching the boundary surface.

Once again the factor f is function of the geometry gg of the system and the absorption coefficient of the gas. Just as it was possible to obtain  $f_{sg}$  by properly adding up six values of f it is also possible to calculate f gg by the appropriate addition of six values of  $f_{gs}$  in a system where the gas volumes have finite length. Flainly, f must equal the sum of the f values to the near gg faces of the second volume, minus the sum of the f gs values seen dimly through the volume.

In the two dimensional model being developed in this study, only four values of  $f_{gs}$  need to be computed, the two edges at the end of the finite axis being unable to view each other.

The evaluation of  $f_{gs}$  again requires the evaluation of four f terms. This means for each f term ss calculated, a total of sixteen  $f_{gs}$  terms need to be evaluated. With the orientation determined, the evaluation of f is accomplished by using FUNCTION SG gg which in turn uses FUNCTION SS.

## C. Calculation of Direct Energy Transfer

It will be useful at this point to define a new type of inserchange factor - one that when multiplied by  $\mathcal{O}$  T<sup>4</sup> the black emissive power of a unit surface at the temperature of the radiating zone will yield directly the rate of energy absorption by any other zone in the system. Again the reacer is reminded that discussion is presently restricted to one in which all surfaces are perfect absorbers. These factors, in simplified nomenclature. will always be written as two letters - either ss, sg, gs or gg - where g and s stand for gas and surface respectively. Furthermore each of the letters will have a numerical subscript to identify which particular volume or surface is under consideration. For example the energy transferred from surface 2 to gas volume 4 is equal to s29, Ws2; similarly, the transfer from gas volume 4 to surface 2 is g<sub>4</sub>s<sub>2</sub>. Wg4, where W is equal to the rate of emission from unit area of a black body at a temperature

۰,

indicated by subscript (i.e. temperature of surface n). Since, as the temperature of the gas zone and the surface zone approach each other (i.e. as the values of W approach each other) the net transfer between the two zones must be zero; the only way that this can happen is for  $s_2g_4$  to equal  $g_4s_2$ , and thus, in this type of formulation the order in which two zones are mentioned is immaterial. This same reasoning applies to both surface-surface and gas-gas radiation.

The use of four symbols to describe interchange areas two to indicate the types of zones involved (gas or surface) and two to indicate the particular zones is a necessary consequence of having more than one gas zone in the enclosure.

It is noted that the total of all the interchange areas from any one zone to all other zones in the enclosure including itself must add up to the energy originating from that same area per unit emissive power. Expressed mathematically:

 $S_1 S_1 + S_1 S_2 + S_1 S_3 + + \cdots + S_1 9_1 + S_1 9_2 + S_1 9_3 + \cdots = A_{S_1}$  (3-27)

or

$$\sum_{i} S_{i} S_{i} + \sum_{i} S_{i} g_{i} = A_{S_{i}}$$
(3-28)

and  $9, 9, + 9, 9_{1} + 9, 9_{3} + 9, 9_{3} + \cdots + 9_{1} + 9, 5_{2} + 9, 5_{3} + \cdots$ 

$$= 4 K V_{g_1}$$
(3-29)  
or  $\sum_{i} g_i g_{ii} + \sum_{i} g_i S_{ii} = 4 K V_{g_1}$ (3-30)

#### D. Allowance for Grayness of Walls

The discussion which follows summarizes the work of (18) Hotte1<sup>(33  $\triangle$ )</sup> and Cohen

All discussion up to this point has been concerned with a system in which all walls were perfect absorbers so that any energy which reached a wall surface was not reflected back into the system, hence total or perfect absorption took place. In general, however, the walls of a furnace are not black but are capable of reflecting some of the a energy incident upon them. This reflected energy is distributed among all the gas and all the surfaces in accordance with the geometrical configuration of the various surfaces and the absorbing power of the gas; and that portion incident on the surface is again partially absorbed and partially reflected to repeat the process ad infinitum. The result is an extremely complex situation necessitating a condiseration of all possible beams of original energy and the results of an infinite number of reflections at the walls.

The technique for making allowance for this complicated problem to be given here is simply an extension of the one presented by Hottel<sup>(49)</sup> for the one-gas zone, multisurfaced enclosure. As in Hottel's treatment where the direct interchange between two zones was equal to  $A_1F_{1G}$ or  $A_1F_{12}$  multiplied by the difference in emissive powers, so in the present case it is equal to a factor  $g_1g_2$ ,  $s_2s_3$ , etc. Similarly, if one allows for the multiple reflections within the enclosure, defined as  $G_1G_2$ ,  $G_1s_1$  or  $s_1s_1$ , one can evaluate such factors as GS, GG, or SS from the direct factors gs, gg or ss. Note that the factors GG, GS, and SS like their lower-case counterparts all have the dimensions of area.

It is plain that the interchange area between any two zones in the enclosure cannot be a function of temperature as long as the physical properties of the system (emissivities and absorptivities) are independent of temperature. Therefore one is justified in evaluating the interchange areas at any convenient temperature and the results will be completely general. The problem of evaluating the interchange areas is very much simplified if one causes the temperature of <u>every surface and gas zone</u> <u>except one</u> to be maintained at absolute zero and as a consequence the emissive powers of every zone except one area are

all zero. This necessitates some sort of energy withdrawal from all zones, including the gas zones, by means unspecified but not interfering with transmission. Furthermore, one can let the temperature of the one emitting zone be such that its black emissive power is unity; i.e. such that  $\sigma$  T<sup>4</sup> is unity. As a result of maintaining the temperature at  $\mathbf{f} \mathbf{T}^4 = 1$  at the single surface or gas zone, there will be a radiant flux at and toward every surface in the system, and at and away from it as well due solehyetocoriginal emission from the one zone and to the multiple reflections within the enclosure. In a black system this reflected flux would, of course, be equal to zero. The terminology to describe this outgoing flux density will be R with a presubscript designating the original source of the energy and a final subscript, the reflecting surface. Thus if gas zone g were the only emitter in the system, the flux density at surfaces s<sub>1</sub>, s<sub>2</sub>,.... would be indicated by g1<sup>R</sup>s1, g1<sup>R</sup>s2,..... Similarly if surface s1 were the only original emitter the flux density at surfaces s2,s3,..... would be  $s_1^R s_2$ ,  $s_1^R s_3$ , .... but the flux density at surface s would be equal to  $\underset{1}{\operatorname{R}}$  due to reflections corrected for  $\xi_{s_1}$  to allow for original emission from the surface.

# i. Original Emitter is a Gas Zone

If, for example, gas zone  $g_1$  is the sole original emitter then the total radiant flux at and away from any surface such as  $s_1$  in the system is designated as  $g_1^R s_1 \cdot A_{s_1} \cdot \mathcal{O}^T^4$ . Since this is the reflected flux, if one multiplies it by the ratio of the absorptivity (equal to emissivity) of the surface to the reflectivity of the surface (the complement of absorptivity) the result will be the absorbed energy at the surface, and since the value of  $\mathcal{O}^T^4$  of the original emitter was made equal to unity, this must by definition be identical with the desired factor  $G_{1}s_1$ . Expressing this statement more generally by considering the i-th gas zone and the j-th surface zone:

$$G_i S_j = S_j G_i = g_i R_{sj} \cdot \frac{A_{sj} E_{sj}}{\Psi_{sj}}$$
 (3-31)

In order to determine the value of the reflected flux R at any surface one can write an energy balance on each surface. The total rate of energy impingement on surface s<sub>1</sub> is equal to the contributions from all the surfaces in the system including itself plus the energy it receives directly from the single gas zone which is the original emitter. If the sum of all these terms is then multiplied

by the surface reflectivity, then the result which is the reflected flux must be equal to  $\begin{array}{c} R_{s} & A_{s} \\ g_{i} \\ s_{i} \\ summation can be carried out for every surface in the$ system yielding a set of equations, one for each surface,as follows:

 $\left[S_{1}S_{1}\cdot g_{i}R_{s_{i}}+S_{1}S_{2}\cdot g_{i}R_{s_{2}}+\cdots g_{i}S_{i}\right]P_{s_{1}}-A_{s_{1}}g_{i}R_{s_{1}}$  $[3, 3_2 g_i R_{s_1} + S_2 S_2 g_i R_{s_2} + \cdots g_i S_2 ] R_{s_2} = A_{s_2} g_i R_{s_2}$ [5,53 gils, + 53 52.gils, +...gi 537453 AszgRsz (3-32)

It is apparent that the total number of equations in set (3-32) is exactly equal to the number of unknown reflected-flux densities R.

Expression (3-32) in matrix form:

$$|D| \cdot |g_i R_{s_L}| = |-g_i S_L|$$
 (3-33)

-9 <sup>;</sup> s1	<sup>g</sup> . <sup>s</sup> 2	€s!b		•	٠	٠	
			- <sup>-1</sup> s <sup>1</sup> c- '				
9.R <b>5</b> 1	<sup>g</sup> .Rs2	<sup>g</sup> .R <sub>3</sub>		•	•	•	
			, <sup>g</sup> . R L				
• • •	• •	/ Ps3		• •	ê 6 9	• •	
es Is	S <sub>2</sub> S <sub>3</sub>	s <sub>3</sub> s <sub>3</sub> - A <sub>s3</sub>		•	•	•	0
s1s2	s <sub>2</sub> s <sub>2</sub> - A <sub>s2</sub> /ρ <sub>s2</sub>		s <sub>2</sub> s <sub>3</sub>	•	•	•	(3-334
s <sub>1</sub> s <sub>2</sub> - A <sub>s1</sub> /o <sub>s1</sub>	s <sub>1</sub> s <sub>2</sub>	s1s3		•	•	•	_

.

= 0

Equation (3-33) can then be solved by taking the matrix inverse:

$$|g_{i}R_{s_{L}}| = |D|^{-1} \cdot |-g_{i}S_{L}|$$
 (3-34)

The reader is again referred to Apprendix B to SUBROUTINE INVERT Page 104 to get the details of the inversion procedure. The invert algorithm takes advantage of the fact that D is a diagonally dominant matrix.

From the values of the reflected flux density at the various surfaces it is also possible to calculate the total interchange factor between any two gas cubes. If gas zone  $g_1$  is the original emitter, then the total reception at any other gas zone  $g_2$  is equal to the direct radiation from  $g_1$  to  $g_2$  (equal to  $g_1g_2$ ) plus the sum of the products of the reflected flux at each surface in the system multiplied by the fraction of that flux which reaches and is absorbed by gas zone  $g_2$ . Again, since the blackbody emission from zone  $g_1$  has been set at unity this sum represents the desired factor  $G_1G_2$ . The general expression for this factor between any two gas zones m and n then becomes:

$$G_{m}G_{m} = g_{m}g_{m} + \sum_{i} (g_{m}R_{5i}) \cdot (s_{i}g_{m})(3-35)$$

## ii. original Emission in a Surface Zone

-----

In order to obtain the one remaining factor interchange between two surfaces - it is necessary to let one of the surface zones be at such a temperature that its black body emission would be equal to unity and to let all other surfaces as well as all gas zones be at absolute zero. Une can again write energy balances on each surface in the system, the only changes being that there will be no direct radiation from the gas and that the surface that is the original emitter will send out, in addition to the reflected flux term, an amount of energy permit area equal to its emissivity. The set of resultant equations for this case where surface s is 1 the sole original emitter is:  $[s_1 s_1 (g_1 R s_1 + E_{s_1}) + s_1 s_2 \cdot s_1 R_{s_2} + \cdots ]P_{s_1} = A_{s_1} g_1 R_{s_1}$  $[s_{1}s_{2}(s_{1}R_{s_{1}}+\varepsilon_{s_{1}})+s_{2}s_{2}'s_{1}R_{s_{2}}+\cdots]P_{s_{2}}=A_{s_{2}}S_{1}R_{s_{2}}$  $[s_1 s_3(s_1 R_{s_1} + \epsilon_{s_1}) + s_3 s_2 \cdot s_1 R_{s_2} + \cdots ] P_{s_3} = A_{s_3} \cdot s_1 R_{s_2}$ 

(3-36)

Just as before the total number of equations is equal to the total number of unknown reflected flux densities and the solution for any one of them may be written as:

$$\left|g_{i}R_{s}\right| = \left|D\right|^{-1} \cdot \left|S_{i}S_{l}\right| \qquad (3-37)$$

where D is exactly the same as the expression obtained earlier and given in equation (3-33).

Hottel<sup>(46)</sup> and Cohen<sup>(18)</sup> demonstrate that

$$S_{i} S_{j} = S_{j} S_{i}$$
 (3-38)

## **E.** Allowance for a Real Gas

It has already been shown in Chapter 2, that it is possible to approximate the behavior of a real gas in a system by considering it to be a weighted sum of gray gases and one clear gas, each weighted in proportion to the energy fraction of the spectrum that it occupies. Furthermore, since in most systems it is the first beam that is the important one all successive beams undergo double attenuation by the gas and the surface on each pass, an adequate approximation to the real gas is the simple sum of two characteristic gases - one having an absorption coefficient k and occupying the fraction "a" of the spectrum, the second being a clear gas (absorption coefficient equals zero) and occupying the fraction "1-a" of the spectrum.

One is cautioned that such an approximation would not be valid in a system where the **K**1 is solow that the gas transmissivity is very high and where the walls are highly reflective. For the single-gray + clear-gas case the emissivity and absorptivity are then related to the path length x as follows:

$$\xi_{\chi} = \alpha \left( 1 - e^{-\kappa \chi} \right) \tag{3-39}$$

If one then fits the above exponential to the actual emissivity versus path length curve for a real gas, at a path length equal to the primary path length for the system, and at twice this value, mathematical manipulation leads to the following expression for "a", the fraction of the spectrum occupied by the gray portion:

$$\alpha = \frac{\varepsilon_1^2}{2\varepsilon_1 - \varepsilon_2}$$
(3-40)

The value of ki for this case is then equal to:

$$KL = LN\left(\frac{\varepsilon_{I}}{\varepsilon_{2}-\varepsilon_{1}}\right) = LN\left(\frac{1}{1-\varepsilon_{1}/a}\right)$$
(3-41)

In both the above expressions  $\mathcal{E}_1$  refers to the gas emissivity evaluated at the characteristic path length for the system L, and  $\mathcal{E}_2$  is the emissivity evaluated at twice that path length.

Since  $\mathcal{E}_{x}$  is a function of temperature, it is now possible to find a series of " $\mathcal{E}$ " at different temperatures and calculate the corresponding values of "a". The resulting values of "a" can now be fitted to polynomials in temperature resulting in:

$$a = b_0 + b_1 T + b_2 T^2 + b_3 T^3 + b_4 T^4 + b_5 T^5$$
(3-42)

The value of  $\mathcal{E}_{x}$  was calculated from a regression fit of the emissivity data reported by Hottel in McAdams Chapter 4. (49) The regressed data fit considers carbon dioxide, sulfur dioxide and water vapor. The calculation procedures are presented in the Fortran program in Appendix B FUNCTION EMISS. The regressed curve fit takes into consideration the partial pressure of the components, the total pressure of the system and the temperature of the gas system being determined.

Once the value of "a" has been determined as a function of temperature it can be applied to the following equation:

$$SS = \alpha [SS]_{KL} + (I-\alpha) [SS]_{KL=0}$$
(3-43)

The value of  $\begin{bmatrix} ss \end{bmatrix}_{kL = 0}$  represents the value of the interchange area evaluated for a clear gas.

$$GS = \alpha \left[ GS \right]_{KL}$$
(3-44)

$$GG = \alpha \left[ GG \right]_{KL}$$
(3-45)

It is to be noted that, as a result of this real-gas approximation, several important changes have been made:

- In addition to the factos SS, SG and GG evaluated at kL by the methods of the previous sections, one must evaluate a new set of the SS-factors for the clear gas portion; i.e. at kL = 0.
- 2. As before, the sum of the total interchange factos from any surface to all surface and gas zones is

equal to the surface emissivity times the area. The sum of the factors from one gas zone to all zones, however, is now given by:

$$\sum_{j} G_{i}G_{j} + \sum_{j} G_{i}S_{j} = 4 Ka V_{g} \qquad (3-46)$$

The values of the partial pressure of  $C_{0}$ , so and 2,  $2^{\circ}$  and H 0 are calculated via a flue gas analysis. No attempt was made to calculate the values of partial pressure within each isotherm, the flow patterns being assumed known throughout the system.

In evaluating the total interchange areas within a given zone, each in turn was considered to be the original emitter. This enabled the evaluation of the set of factors at the KU of the emitting zone. This means that  $G_{12}^{G}$  no longer is equal to  $G_{21}^{G}$ , since each is now based on evaluations at different temperatures.

It was necessary first to estimate all the temperatures in the system and then, after the final solution to the problem, revise the estimates of temperature and repeat the computational procedure. This procedure was continued until the difference between the guessed values and the actual values was less than .5° Kankin. This procedure, however, is not completely rigorous since one should allow for that fact that the kL of the gas is constantly changing with path length. It is conceivable that one could, for each individual problem, start at the beginning and repeat the numerical integrations, allowing for the fact that the absorption coefficient was changing as one moved along a path length. It should be stated that the computer time involved in such a technique would be absolutely prohibitive for engineering calculations.

F. Energy Balance of Gas Volumes

The energy balance on the gas volumes and the surface area have been decoupled. This procedure has two chief advantages:

- 1. It reduces the computational magnitude of the energy balances to more manageable size.
- It takes advantage of wall temperature being relatively stable due to the presence of sinks (i.e. the reactor).

The disadvantage of the procedure is that the convergence procedure has to be repeated for the surface and volume energy balances.

The term q in the energy balance on a gas zone in equation (3-2) represents the net energy transferred to the mones by the bulk flow of the gas stream. It is equal to the total enthalpy above any arbitrary base temperature of all entering streams minus the total enthalpy above the same base temperature of all leaving streams. In order to formulate this enthalpy flux vorrectly, one would need to know the details of the gas flow pattern within the enclosure. Unfortunately, for most enclosures one does not have a detailed description of the flow pattern.

Some studies have been carried out utilizing the use of metal filings being introduced into the flow stream. Stop action photography techniques are then employed to determine actual flow distribution. The results of one such study were reported by Yeich<sup>(93)</sup> and are used in this study. The details of this flow pattern are presented in Appendix A.

The flow patterns were defined for an infinite furnace, hence no flow is permissable along the infinite axis. The flow in the plane perpendicular to the infinite axis was resolved into the flow along the other two mutually perpendicular directions. Flow from the eighteen gas volumes would thus be represented as  $(GM_{x_{1,0}}, GM_{y_{1,0}})$ .

A computational check was performed to verify that the gas volume had neither a positive or a negative accumulation term. It should be noted that  $GM_{ri}$  is a vector quantity

and is used in the same sense as are the gas volume orientations, as shown in Figure 2.

i.e. the coordinate system is:

,

It now becomes possible to write an energy balance on the gas volume:

Note the subscript I refers to inlet conditions

U refers to outlet conditions

Heat In - Heat Out + Sources = 0 (3-47)  

$$\begin{bmatrix} \text{Enthalpy}_{I} - \text{Enthalpy}_{O} \end{bmatrix}$$
Bulk Flow +  $\begin{bmatrix} \text{Heat}_{I} - \text{Heat}_{O} \end{bmatrix}$  Convection  
+  $\begin{bmatrix} \text{Radiant Energy}_{I} - \text{Radiant Energy}_{O} \end{bmatrix}$ + Heat Release  
by Combustion = 0 (3-48)

- ..

.....

Equation (3-48) can now be rewritten for gas volume i

$$\begin{bmatrix} GM_{x_{T}} \cdot H(T_{j}) - GM_{x_{T}} H(T_{j_{a}}) \end{bmatrix} + \begin{bmatrix} GM_{y_{T}} \cdot H(T_{j_{s}}) - GM_{y_{0}} H(T_{y_{1}}) \\ + \begin{bmatrix} h_{x_{2}} A_{x_{T}} (sT_{x_{1}} - T_{a}) - h_{x_{0}} A_{y_{0}} (T_{a} - sT_{x_{0}}) \end{bmatrix} \\ + \begin{bmatrix} h_{y_{1}} A_{y_{T}} (sT_{y_{T}} - T_{a}) - h_{y_{0}} A_{y_{0}} (T_{a} - sT_{y_{0}}) \end{bmatrix} \\ + \sigma \begin{bmatrix} z \\ z \end{bmatrix} G_{j} G_{j} G_{j} \cdot T_{j}^{\dagger} + z \\ z \end{bmatrix} S_{j} G_{a} \cdot T_{j}^{\dagger} - T_{a}^{\dagger} (z \end{bmatrix} G_{a} G_{j} \cdot g_{j} G_{a} \cdot S_{j} \end{pmatrix}$$

$$(3-49)$$

where

h<sub>X</sub><sub>I</sub>

H(T) is the enthalpy of the flue gas and is calculated by integrating  $C_r(T) = c_0 + c_1 T + c_2 T^2 + c_3 T^3$ between absolute 0 and T

$$H(T) = c_0 T + \frac{1}{2}c_1T^2 + \frac{1}{3}c_2T^3 + \frac{1}{4}T^4$$
(3-50)

- is converted heat transfer coefficient between the gas and the gas surface with contact area  $A_{X_{I}}$  and  $s_{S_{I}}^{T}$  is the surface temperature in contact with the volume.

Where  

$$a_{ii} = -6f \xi_{i} c_{i} c_{j} + \xi_{i} c_{j} s_{i}]$$
  
 $+ \frac{1}{4} [H_{x_{I}} A_{x_{I}} - h_{y_{I}} A_{y_{I}} - h_{x_{0}} A_{x_{0}} - h_{y_{0}} A_{y_{0}}] \frac{1}{T_{i}}$   
 $+ \frac{1}{4} [H_{x_{i}} A_{x_{i}} - h_{y_{i}} A_{y_{I}} - h_{x_{0}} A_{x_{0}} - h_{y_{0}} A_{y_{0}}] \frac{1}{T_{i}}$   
 $+ \frac{1}{4} [H_{x_{i}} A_{x_{i}} - h_{x_{i}} A_{y_{I}} - h_{x_{0}} A_{x_{0}} - h_{y_{0}} A_{y_{0}}] \frac{1}{T_{i}}$   
 $b_{i} s = f c_{i} c_{i}$ 

$$C_{\lambda} = \int -G_{3}^{Z} G_{\lambda} G_{3} \cdot T_{3}^{4} + (-h_{x_{I}} A_{x_{I}} \int_{x_{T}} -h_{y_{I}} A_{y_{I}} \int_{y_{I}} -h_{y_{0}} A_{y_{0}} \int_{x_{0}} -h_{y_{0}} A_{y_{0}} \int_{x_{0}} -h_{y_{0}} A_{y_{0}} \int_{x_{0}} -E_{T} \phi(x_{3}y) + d''_{+} \beta''' + \gamma'''_{+} \delta''' \int_{x_{1}}^{-3/4} \int d' T_{x_{1}} + d'' T_{\lambda} + \beta' T_{y_{I}} + \beta'' T_{\lambda} + \gamma'' T_{\lambda} + \gamma'' T_{\lambda_{0}} + \delta T_{\lambda} + \delta'' T_{y_{0}} \int_{x_{0}}^{+} + HT_{x_{1}}^{-T_{x_{1}}} + \gamma'' T_{x_{0}} + \delta T_{\lambda} + \delta'' T_{y_{0}} \int_{x_{0}}^{+} + HT_{x_{0}}^{-T_{x_{0}}} + \delta T_{\lambda} + \delta'' T_{y_{0}} \int_{x_{0}}^{+} + HT_{x_{0}}^{-T_{x_{0}}} + \delta T_{\lambda} + \delta'' T_{y_{0}} \int_{x_{0}}^{+} + HT_{x_{0}}^{-T_{x_{0}}} + \delta T_{\lambda} + \delta'' T_{y_{0}} \int_{x_{0}}^{+} + HT_{x_{0}}^{-T_{x_{0}}} + \delta T_{\lambda} + \delta'' T_{y_{0}} \int_{x_{0}}^{+} + HT_{x_{0}}^{-T_{x_{0}}} + \delta T_{\lambda} + \delta'' T_{y_{0}} \int_{x_{0}}^{+} + HT_{x_{0}}^{-T_{x_{0}}} + \delta T_{\lambda} + \delta'' T_{y_{0}} \int_{x_{0}}^{+} + HT_{x_{0}}^{-T_{x_{0}}} + \delta T_{\lambda} + \delta'' T_{\lambda} + \delta T_{$$

Where  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  are the bulk flow terms from the four sides of the isotherm under consideration.



;¥

The single prime on the bulk flow term indicates that there is a sensible heat flow from the facing isotherm. The double prime on the bulk flow term indicates the sensible heat flow from within the isotherm. The triple prime of the bulk flow term indicates the enthalpy gain within the isotherm.

The bulk flow terms are evaluated as follows: (3-51a)

 $GM_{X_{I}} \leq 0.0 \qquad GM_{X_{I}} = 0.0$   $d' = 0.0 \qquad d' = 0.0$   $d'' = GM_{X_{I}} \cdot C_{p}(T_{0_{A}}) \qquad d'' = 0.0$   $d''' = -GM_{X_{I}}(-H(T_{0_{A}}) - C_{p}(T_{0_{A}}) \cdot T_{0_{X_{I}}}) \quad d''' = 0.0$  d = d' + d''' + d'''

GMyt 70					
No Area Contact	Area Contact				
$\mathscr{B}' = \mathcal{G} \mathcal{M} \mathcal{Y}_{\mathbf{T}} \cdot \mathcal{C} \mathcal{P} (\mathcal{T}_{\mathcal{O} \mathcal{Y}_{\mathbf{T}}})$	B'= 0.0				
B"= 0.0	\$\$ *= 0.0				
$B''' = -GMy_{f} \left[ H(T_{O}y_{I}) - C_{P}(T_{O}y_{f}) \right]$	· To y_ B" GMy. H(TA)				
GMyI <0	GMyI = 0.0				
	B'= 0.0				
$F = GMY_{f} \cdot C_{\rho}(10_{A})$	B"=0.0				
$\Psi'' = -GM_{y_{T}} \cdot \left[ H(T_{o_{i}}) - Cp(T_{o_{i}}) \cdot T_{o_{i}} \right]$	\$ \$ 0.2				
B=B+B"+ B""					
GM X0 70 G	-M×0=0				
Y'=0	Y'=0.0				
Y"= GMy, · Cp(To;)	) <sup>~~</sup> = 0.0				
$\gamma''' = -GM_{y_{T}} [H(T_{o_{i}}) - C_{p}(T_{o_{i}}) \cdot T_{o_{i}}]$	ym= 0.0				

٩.

88

••,

GMy CO No Arés Contact

G-MX0 20 Area Contact

y'= 0.0 Y'= 0.0 y"= 0.0 )"= GMX . Cp (TOX) y": GMX (H(TFa)]  $y'' = GM_{X_0} \cdot \left[ H(T_{o_{X_0}}) - c_p(T_{o_{X_0}}) \right]$ Y= Y' + Y" + Y"

GMy0 70 GM yo CO Area Contact 8'=0 5= 0.0 5"= - GMX, Cp(Tox) 5"= 0.0  $\delta^{m} = G M_{X_{o}} \left[ H(T_{o_{X_{o}}}) \cdot T_{o_{X_{o}}} \right]$ S' -- G-My, H(TFa) GMyoCO GMyo=0 No Area Contact 5'= 00 5'=0.0 5"= - GMX0. Cp(Toxo) 5 = 0.0 5"= GMyo [H(Toyo)-Cp(Toyo).Toy] 5"=0.0 8 = 8' + 8" + 8""


Isotherm Under Consideration

The relationship used in equation (3-51) can be changed by reference to the above figure. The gas volume i has a temperature  $T_{0_i}$ . The temperature for the isotherm to the left is  $T_{X_{\tau}}$ . The subscript I refers to inlet temperatures in reference to positve X axis. Similarly, the 0 in  $T_{X_{i,i}}$ refers to outlet temperature. The  $T_{Y_T}$  and  $T_{Y_U}$  have similar meanings in reference to the positive Y area. The temperature T refers to the fuel-air temperature of the  $_{FA}$ incoming fuel. The reader should note that all possible burner locations are accounted for by the four special cases of area contact. To illustrate this point, consider and  $GM_{\chi}$  0. If  $GM_{\chi} = 0$ , no fuel-air the case for mixture could enter since no bulk flow term is present. Ιf GM 0 the bulk flow would have to go in the direction of the furnace wall and since the gas volume is in contact with the wall, there could clearly be no flow. Consideration of the other three cases leads to similar results.

Temperature terms which have a presubscript 5 such as  ${}^{T}_{X_{I}}$  would refer to a surface temperature of the enclosing furnace wall. The subscript X would have the same I meaning as previously discussed.

91

Equation (3-51) may now be written for every gas volume with the number of unknown gas volume temperatures equal to the number of equations. The matrix is again diagonally dominant and can be solved by the methods of Gauss-Jordan without double pivoting. The matrix contains surface area temperatures which are assumed constant in the solution of the gas volume temperature. In the next section the surface area temperature balance will be made assuming known gas volume temperature. This procedure allows for seperation of the surface energy balance from the gas volume energy balance.

The two energy balances are then solved repeatedly (adjusting the total interchange area for the newly calculated temperature) using the Newton-Raphson technique.

G. Energy Balance on Surface Area

The heat balance on the surface is expressed as:

Heat In - Heat  $\partial ut = 0$  (3-52)

Heat release due to combustion + Radiant Energy In -Radiant Energy Out + Heat Transfer In - Heat Transfer Out by convection - Heat Loss to Ambient surroundings = 0 (3-53)

The enthalpy consideration is zero as a result of considering heat transfer due to bulk flow to have occurred before flue gas has passed through the "porous membrane."

## i. The source Term

The source term accounts for burner heat crelease that is very near the furnace. It is assumed that the detailed information of such heat release is known. This term is presented as:

$$H_{5} = E_{T_{otol}} \Psi(x, y) \qquad (3-54)$$

where  $\Psi(X,Y) =$  fractions of total heat released at surface area.

#### ii. RadianttEnergy Term

The radiant energy term accounts for all radiation in the system. Radiant energy from all the surface zones and all of the gas volumes over surface i may be expressed as

 $R = \left[ \sum_{j} G_{j} G_{j} \sigma_{j}^{+} + \sum_{j} S_{j} \sigma_{j}^{+} \right]$ + [- E, S, G; 6T, + - E S, S; 6T, +] (3-55)

#### iii. Convective Heat Transfer

Convective heat transfer can take place in the bounding wall as well as internal heat transfer surface.

If the heat transfer takes place in the bounding wall, the net convected heat transfer becomes:

= he (TG-Ti)Ai - he (Ti - Tsink)Ai (3-56) - he (Ti - Tione) Ai

where

<sup>T</sup> G	is the temperature of the adjoining gas volume
T i	is the temperature of Area A i
T sink	is the temperature of ambient
T <b>p</b> roc	is the temperature of the process fluid
h c	is the adjusted overall heat transfer coefficient
	between surface i and the flue gas
h'c	is the adjusted overall heat transfer
	coefficient between the area A and the process i
	fluid

h'' is the adjusted overall heat transfer coefficient between the area A and the ambient temperature

The net convected heat transfer for internal surface becomes:

he (TG-Ti)Ai + he (TG-Ti)Ai - he (Ti-Time)Ai Losi Right (3-57)

Note internal surfaces always have a vertical orientation.

iv. Net Heat Absorbed by a surface

The net heat absorbed by a surface can be expressed as:

 $\left[E_{T_{otol}}\Psi(X,y)\right] + \left[h_{c}\left(T_{c}-T_{A}\right)A_{\lambda}\right]$ + [ E G; G; GT; + Z S; S; GT, - GT, ( E S; G; + E S; S; S; GT, - GT, ( E S; G; + E S; S; S; )]

The overall heat balance on surface zone i

 $E_{T} \Psi(x,y) + \sum_{i} G_{i} S_{i} GT_{i}^{4} + \sum_{i} S_{i} S_{i} GT_{i}^{4}$ - OT = [ = s, G; + E = s; ] + he (T\_G-T\_i) Ai - he (Ti-Tproc)Ai - he (Ti-Tsink) Ai

It is now possible to write (3-59) for each surface area and linearize it in terms of  $T^4$ . The resulting equation can be solved for  $T_i^4$  by assuming the gas volume temperature as constant. The equation has the form:

$$A_{ii}T_{i}^{+} + \sum_{j} b_{ij}T_{j}^{+} = C_{i}^{-}$$
 (3-60)

where

$$A_{i,i} = \sigma \left[ \frac{E}{s} s_{i} s_{i} - \frac{E}{s} s_{i} s_{i} - \frac{E}{s} s_{i} s_{i} \right] - \left[ ch_{c} + h_{c}^{c} + h_{c}^{c} \right] A_{i} + \frac{1}{T_{i}^{2}} \int \frac{1}{t_{i}^{2}} \int \frac{1}{t_{i}^{2}} \frac{1}{t_{i}^{2}} \int \frac{1}{t_{i}^{2}} \frac{1}{$$

$$B_{x'j} = \sigma S_{j} S_{j'}$$

$$C_{x'} = -\sigma \sum_{3} G_{j} S_{x'} T_{j}^{4} - (h_{c}T_{c} + h_{c}' T_{proc} + h_{c}'' T_{sink}) A_{j'}$$

$$-E_{T} \Psi(\alpha, y) + [(h_{c} + h_{c}' + h_{c}'') A_{x'} T_{x'}]^{-3} / 4$$

The reader should note that  $T_{i}$  is treated as a constant and the equation is then solved. The solution is then used to resolve the equation. This procedure is repeated until the maximum difference between two successive  $T_{i}$ 's is less than some abstract small quantity. 1<sup>o</sup> R was used as the criterion for convergence in this study.

#### 2. The Kinetic Model

The complete description of the kinetic model is given by Robertson<sup>(62)</sup> and will not be repeated here.

A brief discussion, however, will be presented and the method of incorporating the pointwise temperature distribution of the reactor wall will be explained.

#### A. Description of Reactor

The reactor is a tube 400 feet long placed in a furnace in a series of U bends. The tube runs up and down in the reactor to prevent bending of the tube in the center which would occur if it was strung out in an elongated position.

The tube itself is 3.640 inches in inside radius and the walls are .226 inches thick (a nominal four inch tube). The tube is assumed to have scale both on its inner and outer walls that add to the resistance of heat flow. The reactor tube was considered to be free of coke deposit. All initial design considerations did not consider the effect of coke on overall performance. However, a coke profile was calculated and later used to determine its effect on reactor yield.

The reactor inlet pressure was adjusted to give an

outlet pressure of two atmospheres. The initial reactor feed comsisted of steam, ethane and propane. It is possible to include other material as long as the various mechanisms of reaction are known. The user would have to input kinetic and thermo-dynamic data. These however, were not included as a part of this study.

B. The Material Balance

Considering any incremental length of reactor the material balance can be written as:

IN = OUT + Change By Reaction + Accumulation (3-61)

since steady state is assumed, the only accumulation term involved in this study was the deposition of carbon on the reactor wall. When (3-61) is rewritten in  $\sup_{x} \left[ N_{i} \right]_{X \cup Y} = \sum_{x} \left[ N_{i} \right]_{O \cap U \cap Y} + \sum_{y} A_{x} \sum_{x} N_{i} \sum_{x \mid V \cup Y} A_{x} \sum_{x \mid V \cup Y} A_{x$ 

where

- N = number of molar flow rate into incremental i reactor
- ij = stoichiometric coefficient of the i<sup>th</sup> chemical component in the j<sup>th</sup> reaction

(3-62)

Equation (3-62) can be written for the i<sup>th</sup> component to yield a component balance.

## C. Calculation of Incremental Conversion

For the plug flow reactor the space time is defined by

$$\gamma = \frac{1}{5} = c_{A_0} \int_{x_1}^{x_2} dx_A / - r_A$$
 (3-63)

where

$$Y = is the reactor space time =$$

$$dX_a = differential conversion of A component$$

$$-r_A = rate of reaction$$

$$CA_o = initial concentration of component A$$

$$V = reactor volume =$$

$$F_a = volumetric flow rate$$

$$S = space time$$

Considering finite differences in equation (3-63) and solving for  $X_a = X_2 - X_1$  results in:

AXA=-rAAY/CAD

(3-64)

Equation (3-64) can now be expressed in terms of flow rates:

$$\Delta X_{A} = \Pi R^{2} / F_{A_{o}} (- h_{A}) \Delta L \qquad (3-65)$$

Where **A**L = the incremental reactor length under consideration.

Defining the reaction rate  $(-r_A)$  in terms of the Arrhenius rate law:

 $(-V_{A}) = e^{-\frac{\pi}{A}/RT} \left[ \kappa_{0} T C_{A_{i}}^{A_{A_{i}}} - \kappa T C_{A_{i}}^{A_{A_{i}}} \right]$ 

Where

 $K_o =$  the Arrhenius frequency factor  $E_A^* =$  the Arrhenius energy of reactivation R = gas constant T = absolute temperature  $N_{A_i} =$  order of reaction j of the i<sup>th</sup> component K = equilibrium constant  $C_{a_i} =$  concentration of component

The reader should note  $\mathcal{T}_j$  refers to the Pi product of the concentration terms. The concentration terms can be calculated from the ideal gas law:

$$C_a = P_a / R' T \qquad (3-67)$$

where

P = Pressure of component a R' = Gas constant

## D. <u>Calculation of Pressure Profile</u>

In order to calculate the pressure at the end of the incremental reactor section a momentum balance was performed using the Bernouli equation.<sup>(51)</sup>

$$\Delta P = \left[ \frac{v_1 + v_2}{2} \right] F \Delta L / R + v_2^2 - v_1^2 \left[ \frac{2}{2} \right] (3-68)$$

where

**P** = **Pressure** drop

V1,V = Reactor gas velocity at inlet, outlet conditions
F = Friction factor

L/R = Incremental length of reactor radius ratio

g = Gravitational constant

#### E. Calculation of Temperature Profile

In order to calculate the temperature at the end of the reactor increment, a heat balance was performed on the incremental reactor segment.

Heat flux in = semisible heat gain + heat of reaction (3-69) $UAAT_{i} = \sum_{j} F_{j} C_{P_{j}} AT_{2} + \sum_{i} \Delta H_{i} F_{K(i)} \Delta X_{i}^{(3)}$ (3-70)

where

- U = to the overall heat transfer coefficient from reactor tube outer wall to reaction fluid
- A = the area through which heat flux is transmitted =
  2 R L
- T = The temperature between outside wall and 1 reaction fluid
- T<sub>2</sub> = Temperature difference between reaction fluid at Start of increment and end of increment

 $H_a =$  Heat of reaction

- F<sub>K(1)</sub> Molar flow rate of key component K(i) of the i<sup>th</sup> reaction
  - X = Extent of i<sup>th</sup> reaction between the start and end of reactor increment
- CP = Heat capacity of the j<sup>th</sup> component.

The reaction rate  $(-r_A)$  was determined by calculating its value at both ends of the incremental portion of the reactor and averaging the results. The average value was then used to recalculate the reactor conditions at the far end of the increment. This procedure was repeated until good values were obtained between the assumed end conditions and the actual end conditions. Thus an implicit method of solving differential equations was combined with Euler's method.

The convergence of reaction rate  $(-r_A)$  took place simultaneously with convergence of the pressure profile. The concentration profile and the temperature profile converged through repeated applications of momentum, component, overall material and energy balances.

F. Calculation of Overall Heat Transfer Coefficient

The previous discussion has been condensed; readers who are interested in more details are again referred to (62) Robertson .

However, more detailed information will be given on the calculation of U the overall heat transfer coefficient, as the concept was not fully developed in Robertson's work. The overall heat transfer coefficient from outer wall to reaction mass can be defined as:

$$\frac{1}{VA} = \sum_{i}^{\infty} R_{i} = \frac{R_{o}}{A_{o}} + \frac{\Delta \chi_{ST}}{K_{SF}A_{SF}} + \frac{R_{T}}{A_{T}} + \frac{\Delta \chi_{c}}{K_{c}A_{c}} + \frac{1}{h_{2}A_{T}}$$
(3-71)

where

$$R_{1} = Resistance to heat flow$$

$$R_{0}, R_{I} = Scale resistance to heat flow on outside, and inside of reactor tube = .001  $\frac{hr. ft^{2} \circ F}{BTU}$ 
and inside of reactor tube = .001  $\frac{hr. ft^{2} \circ F}{BTU}$ 
.001 from Ludvig
$$X_{ST}, X_{C} = Thickness of heat resisting material$$

$$T = steel reactor tube thickness$$

$$C = coke thickness$$

$$K_{ST}, K_{C} = Thermal conductivity, BTU/hr. ft^{2}(^{0}F/ft.)$$

$$K_{ST} = 26., K_{C} = 2.90 \qquad (44-A)$$

$$A, A_{C}, A_{I} = Average area of heat transfer area$$

$$A_{ST} = 2 L (r_{0} - r_{1}) / \ln (r_{0}/r_{1})$$

$$A_{C} = 2 L (r_{I} - r_{C}) / \ln (r_{I}/r_{C})$$

$$A_{I} = 2 L r_{C}$$
and where
$$r_{0} = radius of reactor tube (center to outer wall)$$

$$r_{c} = radius of reactor tube (center to tube tube)$$

$$r_{c} = radius of coke deposit (center of tube to coke surface)$$$$

h = heat transfer coefficient from coke surface to I reaction fluid.

The value of h<sub>I</sub> is a function of reaction fluid temperature, pressure, composition, velocity and temperature and can be calculated from the Seiden Tate equation since the clow is maintained in the turbulent re to minimize residence time and product degradation via carbon deposition.

$$\frac{h_{o} D_{i}}{K} = 0.023 \left(N_{Re}\right)^{.8} \left(N_{Pr}\right)^{.13} \left(\frac{u}{u_{1}}\right)^{.14}$$
(3-72)

$$h = 0.023 \frac{K}{2h_{i}} \left(\frac{2h_{i}Vp}{M}\right)^{.6} \frac{(cpM)^{1/3}}{(K)} \frac{(M)^{.14}}{(K)} \frac{(m)^{.14}}{(K)} \frac{(m)^{.14}}{(K)} \frac{(m)^{.14}}{(K)}$$

where

V = velocity of reaction fluid P = density of reactor fluid = viscosity of reaction fluid # = viscovity of reaction fluid at wall temperature C<sub>p</sub> = heat capacity of reaction fluid K = thermal conductivity of the fluid N<sub>Re</sub> = Reynold's number N<sub>Pr</sub> = Prandtl's number D<sub>i</sub> = Diameter of the reactor radius after i increments of coke deposition The methods of calculating  $C_{P}$ , A, V and P are discussed in Robertson's Thesis<sup>(62)</sup>. However, the calculation of the thermal conductivity was not been discussed.

The Mason equation was used: (11, 91)

$$K_{m_{i}x} = \sum_{i} \frac{X_{i}K_{i}}{\sum_{j} X_{j} \phi_{i}} \qquad (3-74)$$

where

$$\phi_{ij} = \frac{1}{\sqrt{8}} \left[ \left( 1 + \frac{m_i}{m_j} \right) \right]^{-1/2} \left[ 1 + \left( \frac{m_i}{m_j} \right)^{1/2} \left( \frac{m_j}{m_i} \right)^{1/2} \right]$$

M = molecular weight of the compoent

X = mole fraction of the compositent

The value of  $K_{\lambda}$  was calculated from Eucken's <sup>(19-A)</sup> development of handling energy exchange in polyatomic gases and is given by

$$K_{\vec{x}} = (c_{\vec{p}_{\vec{x}}} + \frac{5}{4} + \frac{R'}{M_{\vec{x}}})M_{\vec{x}}$$
 (3-75)

The method used to calculate the viscosity utilizes the Lennard Jones equation, (11)

where

6, is the characteristic of collision diameter of the molecule

Au is a slowly varying function of the dimensionless temperature KT/C

 $G_A$  and K/gare commonly known as the Lennard Jones constants. The reader is referred to Robertson's Thesis (62) for the details of the evaluation of  $\Lambda_{H_A}$ . The reactor model now is able to calculate an increment of conversion but requires the outer tube metal temperature. This calculation procedure is repeated for the entire length of the reactor.

#### 3. the mapping models

#### A. Furnace Model to Reactor Model

The furnace model supplies the furnace plane wall temperature. This plane wall temperature is split into m isothermal temperature areas. In addition there were n sets of these isothermal zones, one for each subdivision of the furnace-reactor model.

It would be possible to use these discreet isothermal zones as the tube metal temperature used by the reactor. However, it was felt that a better approximation of the net heat flux could be obtained by considering the m isothermal temperatures as m points in a continuous curve. The location of each point would be the mid point of the isothermal zone. These points are then fitted to a fourth order polynomial in Y (the furnace height). The fit is accomplished by a linear less square fit (function fifth), which is given in appendix B. An actual fit is illustrated in Figure 2 of Chapter I.

This procedure is repeated for the other n-1 furnace subsections. In order to determine what the reactor tube wall temperature is at any point, all that is required is to determine which subsection of the furnace the reactor tube is located in, and what height that location lies relative to the furnace wall. This can be determined by the following relationship:

$$Y_{i} = \frac{2}{2} - Imtegen(\frac{2}{2}\frac{1}{L_{i}}) + \frac{1}{L_{i}}$$
(3-76)

where L, is twice the furnace height

Integer implies that the result of Z/56 is rounded off to the lower whole number. That is, the result of Integer (51.9971) 51

Z is the position of the reactor tube being i evaluated for the tube metal temperatures.

If the value of Y is greater than  $(L_1/2)$  Y is redefined in terms of the original Y by

the furnace subsection the tube is in is easily determined by knowing the length of each reactor subdivision.

The standard deviation of the temperature as function of wall height was approximately one half of a Farenheit degree. By using the method described, it is possible to take into account the fluctuation of temperature with wall height. Variations along the long axes are handled as a set of three discontinuous isotherms.

One method would entail the determination of some continuous and smooth functions which would yield the temperature as a function Y and Z, which is:

$$T = f(Y_{j}Z) \tag{3.78}$$

One such method would be to determine the best straight line, or the best second order polynomial through the three temperatures for the value of X and then determine the value for the particular location above the long or Z axis.

This procedure was not incorporated in this study, but it is recommended that consideration be given to it in any future refinement of this work.

B. Reactor Model to Furnace Model

It was necessary to map the reactor process fluid r temperature into a set of (n X m) isothermals. This was accomplished by considering each one of the n subdivisions seperately. The temperature of the reactor process fluid was recorded at m furnace height for every up and down passs of the reactor tube in the furnace. It then became possible to sum the temperatures for any given furnace height and average the result. Thus:

$$\overline{T_{PF_{i}}} = \frac{\sum_{i} (T_{PF_{i}})}{\eta}$$
(3-79)

Where T<sub>PF</sub> = average temperature of process fluid for isotherm at height Y

Referring to Figure 5 for example, to calculate the temperature of isothermal zone being in isotherm 4,  $X_4$  would result in:

$$\frac{1}{T_{\pm}(\mathbf{J}), +} = \frac{\sum_{i=1}^{5} (T_{\pm}(\mathbf{J}, 4))}{5} - \frac{T_{4} + T_{11} + T_{18} + T_{36} + T_{32}}{5}$$
(3-80)

In order to determine the value of  $\mathbf{J}(\mathbf{I},\mathbf{f})$  it was necessary to manually determine which temperature lay in which isotherm. This procedure was repeated for each of the furnace subsections under investigation. The temperature locations were then stored as a part of the computer program (Apprendix B).

Any further user who had a different set of furnace or reactor conditions or who desired to zone the furnace in a different way would have to redo these determinations and rewrite the main program. No changes in any subroutines or functions (with the exception of TEMP) would have to be performed.



# Figure 5

The average process temperature can thus be calculated from any set of isotherms for any furnace subsection.

The overall heat transfer coefficient from tube plane to process fluid plane will hot be the same coefficient calculated from outer tube wall to process fluid in the reactor model. This is due to the differences in geometry between the two models. It was decided to allow the models themselves to do the mapping between the two geometries.

This mapping was accomplished by calculating the net heat flux  $Q_R$  through the reactor tube via the method described in Chapter 1II-2 for each furnace subsection. The furnace model then uses a fuessed value for the overall heat transfer U<sub>F</sub> to calculate the net heat flux  $Q_F$  to the process fluid.

At the next repeat of the furnace calculation the value of the overall heat transfer is adjusted according to:

$$U_F = U_F (D + Q_R | Q_F) / (D + I.)$$
(3-81)

Where  $U'_F$  = former guessed value of the overall heat transfer coefficient

D = Damping factor

It was necessary to damp the change in the value of  $U_F$  as the undamped change i.e.:

UF= UP QR/QF (3-82)

results in divergent oscillation of the solution around the solution. The value of U was calculated independently F for each furnace subsection.

#### 4. Calculation "Flow"

### A. Introduction

This section is an attempt to give the reader a "feel" for the computational sequence. The reader is reminded that the calculations were carried out on a high speed computer so some references will be made to data "input" and "output".

It would be extremely complicated to give detailed calculations of each step. In order to avoid this difficulty, whole groups of calculations will be referred to by a few descriptibe words. It would also be difficult to give a "flow diagram" but reference will be made referring back to previous steps. This will be accomplished by numbering the various steps. B. "The "Flow"

- step 1. Input Furnace Data
  - 1. Total heat release distribution
  - 2. Fuel-excess air analysis
  - 3. Geometry of furnace
  - 4. Bulk flow pattern
  - 5. Furface properties
    - a. Transmissivity
    - b. \_\_missivity
    - c. Heat transfer coefficient
  - 6. Surface boundary conditions
- STEP 11. . reliminary Furnace Calculations
  - 1. Flue gas analysis
  - 2. pecific heat enthalpy data
  - 3. initial temperature profile (if not inputted)
  - 4. Characteristic flue gas by clear-gray gas

combintation. (isolate temperature dependence)

- STEP III. calculate Direct Interchange Area
  - 1. Jurface to surface ss (clear gas, gray gas(es))
  - 2. Jurface-gas/ gas-surface, sg, gs (gray gas(es))
  - 3. Gas gas gg (gray gas(es),

STE, IV. Account for surface Reflectivity

- Reflection with gas volume as the emitter. 1. Lolve for R (gray gas(es))
- Reflection with surface area as the emitter 2. Solve for R (gray gas(es)
- JTEr V. Calculate Total Interchange Area For a Characteristic Gas (Temperature Independent)
  - Gas to gas GG =  $gg + \sum_{g \in S} R = 2g$  (Gray gas(es) 1.
  - 2. Gas to surface/surface to gas

 $GS = \frac{R}{\alpha s} \cdot \frac{AE}{E}$  (Gray gas(es))

3. urface to Surface a.  $SS_c = {}_{S}R_{S_c} AE/P$ (Clear Gas) b. 55 = sRs AE/P

(Gray gas(es))

STEP V1. input keaction pata

- 1. Initial Tube Mall Lemperature (Guessed)
- 2. Description of Reactions
- 3. Description of Reactor
- Initial Reactant Concentration á.
- 5. hysical **p**ata
  - a. Heat Capacity
  - Arrhenius Kinetic Data Ъ.
  - c. Enthalpy
  - đ. Entropy

- e. Reaction Equilibrium
- f. Lenned Jones Constants
- 6. Miscellaneous Control Parameter
- STEP VII. Calculate Parameter Needed for Reactor Calculation as a function of Temperature
- STEP VIII. Output the Reaction System and Generate Parameters
- STEP IX. Calculate Reactor Pressure, Component, Temperature, Heat Flux and Carbon Deposition rrofiles
  - 1. Determine the Temperature rofiles for Each Furnace subsection
  - 2. Determine Rates for Beginning of Increment (4.11 Conditions Known)
  - 3. Guess or Update Temperature, Composition and Pressure at End of Increment and Determine Reaction Rates at End of Increment
  - 4. Calculate Average Reaction Rates
  - 5. Using Average Rates do:
    - A. Material Balance
      - i. Component Balance
      - ii. Fressure prop Calculation
      - iii. Material Balance
    - B. Heat Balance
      - i. Sensible Heat Gain

116

1 -

ii. Heat Flux Calculation Using T=f(z)

- 6. Compare End Conditions. (if in agreement with set used (go to step IX-7) otherwise (go to step IX-3)
- 7. Calculate Next Reactor increment Using End Conditions as initial Conditions
  - a. If Finished the Length of the κeactor, Go to \$tep X.
  - b. Otherwise \_tep 1X-3
- STEP X Using the Reactor Fluid Temperature Frofile, Calculated in Step IV, Calculate Isothermal Area Temperature for Each Isotherm in each Furnace Subsection.
- STEP XI Calculate New Surface and Gas Volume Temperatures Using the Isothermal Temperature Calculated in Step X or Step XI-3

1. Total interchange area for real gas (temperature dependent) 1 corrected for intermediate surface if any transmissivity

a. Surface to Gas 
$$SG = \begin{bmatrix} A_n & SG_n \end{bmatrix}$$
  
b. Surface to Surface  $SS = \begin{bmatrix} a_n & SG_n \end{bmatrix}$   
 $SS_n + (1 - \begin{bmatrix} a_n & SS_n \end{bmatrix}$ 

 Total interchange area for real gas (temperature dependent)
 Corrected for intermediate surface, if any transmissivity 117<sup>°°</sup>

a. Gas to Gas GG = 
$$\begin{bmatrix} \Sigma \\ n & GG \end{bmatrix}$$
  
b. Gas to Surface GS =  $\begin{bmatrix} \Sigma \\ n & GG \end{bmatrix}$ 

3. Gas Volume Heat Balance

a. Surface area temperatures are assumed constant

- b. Heat Balance
  - i. Bulk Flow
  - ii. Radiation
  - iii. Source
    - iv. Convection

c. Linear Heat Balance Equation Using Iterated Newton-Naphson

- d. Solve for T
- e. Update Gas Volume Temperature
- f. Test the Size of the Max T
- 4. Surface Area Heat Balance
  - a. Gas Volume Temperatures are Assumed Constant
  - b. Heat Balance
    - i. radiation
    - ii. Sources
    - iii. Convection
  - c. Linearize Heat Balance Equation Using Iterated Newton-Kaphson (as in Step X1-3c)

# Chapter IV Results and Conclusions

The calculation procedures described in the first three chapters were used to make a parameter study of a typical large scale industrial furnace producing ethylene and propylene (as a secondary product).

The chief parameters which were adjusted were the fuel rate and the wall to wall separation. The results obtained were compared with plant observations. It should be realized that an exact matching of the two is difficult in view of the errors in plant measurements and the uncertainties in the value of kinetic data, emissivities, and other physical properties of furnace and reactor.

The values of yeilds obtained have good agreement with data obtained with adjusted of the Arrhenius frequency factor  $(A_i)$ . As these adjustments were in the unimportant side reactions, it was decided to perform the optimization with the unadjusted constants.

Comparing the overall furnace performances was somewhat more difficult as these results are highly dependent on the physical properties of the furnace being studied. The author was unable to locate any data from industrial furnaces with sufficient amount of detail to duplicate the calculations. However, excellent agreement was found with general operating

conditions of industrial plants. The point of optimum operation determined in this study corresponds to actual operating conditions found in existing furnaces.

## 1. Verification of Results

The results from this study were compared with results reported by two other investigators, Shah(70) and Nelson(54)

Shah had simulated a reactor system using the method of Lobo<sup>(46)</sup> to calculate the outer tube wall temperature. Shah then adjusted the Arrhenius rate constant to force agreement of his results with data he had available.

Nelson reported data from a variety of industrial furnaces. As a result, the individual furnace characteristics are not available.

Table I shows a comparison of Shah, Nelson and results from this study. It should be noted that good agreement exists between Shah's results and the results reported in this study. There is some disparity in the reported outlet temperature. The two cases reported in this table represent different rates of firing. The two rates bracket the firing rates found in some industrial furnaces is in excellent agreement.

The operating point of the industrial furnaces as reported by Nelson was in agreement with the optimum operating report as developed in this study.

# TABLE I

COMPARISON OF RESULTS OF THIS STUDY WITH SHAH<sup>(70)</sup> AND

NELSON (54-)

	Shah's Results	Nelson Reports	Rob <b>ertso</b> n Case 1	Robertson Case 2
Heat Availability 10 <sup>6</sup> BTU/HrFoot Furnace	-	-	2.86	3.22
Total Feed (lb/ moles/hr/)	171	-	280	280
Steam-Feed Ratio	.363	.3 - 1.1	.35	.35
Inlet Pressure (atm.)	4.43		6.6	6.6
Outlet Pressure (atm.)	?	1.2 - 3	2.0	2.2
Reactor Length (feet)	394	-	400	400
Tube Radius (inches)	?	-	4	4
Gas Inlet Temperature <sup>O</sup> F	1010 <sup>0</sup>	-	1012 <sup>0</sup>	10 <b>12°</b>
Gas Outlet Temperature F	1400 <b>0</b>	1515-1525°	1544 <sup>0</sup>	1560 <sup>0</sup>
Mole % Ethylene Yield	47.6%	58 - 62%	52.48%	60.05%
Mole Ratio Methane/Ethane (+)	.0177	<b>.025</b> 067	.0142	.0157
Mole Ratio Acetylene/Ethane <sup>(+)</sup>	.00053	.0014	.00101	.00145
Thermo Efficiency Ratio BTU to Reacto BTU Fired	r/ -	-	.350	.315

-

i

#### 2. Furnace Temperature Driving Force

Figure 6 shows a typical temperature driving force calculated by the procedure outlined in this study.

It should be noted that fluctuations ranging up to 790°F are found between adjoining gas zone isotherms. Differences of 1100°F exist between the highest and the lowest isothermal temperature zones.

The large differences calculated are a strong justification for the use of this complex procedure, expecially when highly temperature dependent calculations are being used.

It is also interesting to note that the temperature driving force between the tube wall "plane" and the process "plane" is not constant, but is dependent on tube height.

Normally the process plane temperature would be nearly constant at the average temperature of the process fluid. However, in this example there is an increase near the bottom of the furnace due to an uneven number of tubes in this subsection.

Figure 7 is a numerical example of the temperature driving force in each of the three furnace subsections.



Distance From Top of Furnace

Each subsection represents only half of the plane of the furnace subsection (the missing half would be symmetrical to that shown).

Several interesting observations may be drawn from this figure:

1. Once again, considerable temperature differences exist between adjoining isothermal zones in different furnace subsections.

2. The temperature of the central isothermal zone shows only relatively small variation from subsection to subsection.

3. Considerably larger temperature fluctuations exist in those isotherms abutting the furnace wall. This is important as these isotherms act as the chief driving force for convective heat transfer. It has been generally accepted that radiation is the dominant mode of heat transfer in the fire box. The results of this study suggest that convection also plays a significant role. It should be given consideration in the design of an "optimum furnace."

The use of a single gas isotherm for the entire furnace zone would do a poor job at estimating the importance of the convected heat transfer.

	Su	
	Furnace	
	in	
7	Profile	
Figure	Temperature	

(<sup>0</sup>F)

bsection in


# 3. <u>Convected Heat Transfer in the Radiant Section of the</u> Furnace

In order to dramatize the effect of convected heat transfer, a series of calculations were made which varied the wall to wall separation. During the first set of calculations, no correction was made to the gas to surface heat transfer coefficient. (Normally as the walls of the furnace get closer together retaining the same fuel consumption rate, the convected heat transfer coefficient would increase according to the .8 power of the bulk flow rates.)

The result (See Figure 8 and Table 2) was an increase in reactor yield with increasing wall separation. The result is a representation of an isolation of the radiative heat transfer rate which would increase as the surface area is able to view larger sections of the flame boundary at less oblique angles.

If the distance separating the wall continued to increase, the rate would ultimately drop off as the area would "view" a line source of radiation.

In the second set of calculations, the surface to gas volume heat transfer coefficient was corrected for bulk flow consideration. (See Figure 9 and Table 3.) The results were reversed, with the closer the wall to wall separation, the higher the yield for the same amount of fuel fired.

## Table 2-2

Ċ.,

Effect of Wall Separation on Reactor Yield Radiation Effects Isolated by Using Uncorrected Surface to Gas Heat Transfer Coefficient

Heat Availability 2.142\*10<sup>6</sup> BTU/hr.-foot(furnace)

Wall-Wall Separation Feet	% Yield Ethylene	Uncorrected Heat Transfer Coefficient Area Base BTU/hr SE/ft
6	32.27	3.14
8	32.52	3.14
10	33.20	3.14
50	37.16	3.14

### Table 3

Effect of Wall Separation on Reactor Yield Using Corrected Surface to Gas Heat Transfer Coefficient

Heat Availability 2.142 \* 10<sup>6</sup> BTU/hr.-foot [furnace

Wall-Wall Separation Feet	% Yield Ethylene	Corrected Heat Transfer Coefficient (Area Bases) BTU/hr <sup>O</sup> F/ft
6	34.35	4.73
8	33.83	3.76
10	33.20	3.14
14	31.95	2.40
18	31.59	1.96



This would suggest that optimum furnace construction should have the walls as close as possible while allowing sufficient volume for the complete combustion of the fuel.

The above discussion did not allow for the introduction of more isothermol zones as the wall separation was increased. It is likely that if such a procedure had been followed, the effects would have been less pronounced, but still valid.

# 4. <u>Optimization of the Furnace-Reactor as a Function of</u> Fuel Rate

Several sets of calculations were performed varying the net heat availability (E<sub>t</sub>). The ethylene yield was then plotted as a function of net heat availability (Figure 9). The wall to wall separation was kept constant at 10 feet, 10 ft. separation being used as a basis for all variations.

Figure 10 and Table 4 predict the possibility of ethylene yields in excess of 70% per pass. There are, however, two main reasons why this yield is not practical.

The first reason is illustrated in Figure / which shows the rate of ethylene production in terms of pounds of ethylene produced/pound of fuel consumed versus net heat availability of the furnace. The plot goes through a

# Table 4

### Effect of Heat Availability on Reactor Yield for

Heat Availability BTU/hr, Foot Furnace X 10 <sup>6</sup>	% Ethylene Yield	Surface to Gas Heat Trans- fer Coefficient* Adjusted Area Bases BTU/hr. F/ft.
1.79	23.18	2.72
2.14	33.20	3.14
2.50	43.42	3.55
2,86	52.48	3.95
3.22	60.05	4.35
3.57	66.67	4.73
3,93	72.14	5.10

# 10 Foot Wall - Wall Separation

\*Adjustment takes into consideration increase in flue gas velocity due to increase in fuel fired.





## Figure 11





% Yield of Ethylene

maximum. The curve is flat near the top, however, and at first consideration it would be possible to assume yield of 65-70% would be possible. This would correspond with an optimum fuel economy of 5.4 pounds of ethylene/pound of fuel consumed.

Figure 112 however, shows that the rate of coke buildup in the pyrolysis tubes becomes very rapid when large yields of ethylene are desired. A yield of 65-70% would necessitate the cleaning of the reactor every 3-4 days. A 40% yield with a corresponding fuel economy of 4.1 pounds of ethylene/pound of fuel would result in a reactor requiring cleaning only every 18 - 20 days.

If a manufacturer wishes to obtain the higher fuel economy predicted in this study, clearly something would have to be done about the coke buildup. One possible solution lies in the supersonic oxidative pyrolysis of Vasil'ev (.90) or his subsonic oxidative pyrolysis <sup>(89)</sup> which incorporated the introduction of oxygen into the reactant stream. This resulted in a blocking of the coke reaction and 58% yields of ethylene.

#### Chapter V

#### Recommendations

The computational procedures developed in this study are very extensive, enabling the handling of complex furnace-reactor design. The furnace design utilizes the complex method of Hottel and Cohen in handling zoned furnaces. It incorporates several suggestions of Cohen, notably the evaluation of the gas emissivities and absorption at individual zone temperatures instead of a system mean temperature.

There are, however, important limitations:

1. The furnace was assumed to be infinite in length, thus no end effects were taken into consideration. The subdivision of the furnace into furnace subsections enabled the handling of variable wall fluxes, but allowed no interreaction between subsections.

2. The zones in the system have been assumed to be isothermal. The solution could only become exact as the size of the zones are shrunk to infinitessimal size.

3. The reactor model calculates coke deposit as a function of reaction rate. No mechanism was supplied to to allow a portion of the coke to be carried out of the furnace. The exact mechanism of coke formation is not known. It has been considered to be catalytic in nature.

This depends on whether sufficient deposition takes place on the bare metal of the reactor or on other coke deposits.

4. The reactor increments were to have uniform average properties. The solution could only become exact as the increments are shrunk to infinitessimal size.

It is therefore recommended:

1. To take end effect into consideration in order to make a "true" three dimensional model.

2. To determine the exact nature of the coke formation.

3. To apply the calculation procedure to a large variety of furnaces with the objective of formulating a general correlation which would allow for rapid estimation of design criterion.

4. To apply the calculation procedure to the optimization of existing furnace-reactor structures.

5. To design optimum furnace configurations by repeated application of the calculation procedures.

- Abramowitz, M. and Stegun, I., <u>Handbook of Mathematical</u> <u>Functions</u>. Dover Publications Inc., New York, 1965.
- <sup>2</sup>Amano, A. and Uchiyama, M., <u>Journal of Physical Chemistry</u>. Vol. 68, No. 5, 1964, pp. 1133-1137.
- <sup>3</sup>Andrews, A. J. and Pollock, L. W., "Tube by Tube Design of Light Hydrocarbom and Cracking Furnaces Using the Digital Computer", <u>Industrial and Engineering Chemistry</u>. Vol. 51, No.2, Feb., 1959, pp. 125 - 128.
- <sup>4</sup>Aris, R., <u>Introduction to the Analysis of Chemical Reactors</u>. Prentice-Hall, Inc., 1965, pp. 259 - 313.
- <sup>5</sup>Bird, Steward and Lightfoot, <u>Transport Phenomenon</u>. John Wiley & Sons, 1960, p. 23.
- <sup>6</sup>Bird, Steward and Lightfoot, <u>Transport Phenomenon</u>. John Wiley & Sons, 1960, p. 746.
- <sup>7</sup>Bird, Steward and Lightfoot, <u>Transport Phenomenon</u>. John Wiley & Sons, 1960, p. 257.
- <sup>8</sup>Bird, Steward and Lightfoot, <u>Transport Phenomenon</u>. John Wiley & Sons, 1960, pp. 744 - 745.
- <sup>9</sup>Bonner and Honeycutt, "The Use of the Digital Computer in Petroleum Refining", <u>Advanced Petroleum Chemical Refining</u>. Vol. 5, 1962, pp. 83 - 114.
- <sup>10</sup>Buckley, J. W. A., Edge, R. F. and Thompson, B. H., British

Patent #1,122,426 (CL-B-O1j), Aug. 7, 1968.

- <sup>11</sup>Buddenbury, J. W. and Wilke, C. R. <u>Industrial and Engineering</u> <u>Chemistry</u>. Vol. 41, 1947, pp. 1345 - 1347.
- <sup>12</sup>Burk, R. E., Laskowski, Lenoa and Lankelma, H. P., <u>Journal of</u> <u>the American Chemical Society.</u> Vol. 63, 1941, pp. 48 -50.
- <sup>13</sup>Butovskii, V. A., Feigin, E. A., Girsanov, I. V. and Platonov, V. M., "Mathematical Model of the Pyrolysis Process in Furnaces", <u>Khim. i Tekhnol.</u> Topliv. i Masel 10 (10), 1965, pp. 1 - 5.

- <sup>14</sup>Cahn, R. P., Kevlin, J. A. and Thurlow, D. K., U.S. Patent <sup>#</sup>3,365,387 (CL 208-48), Jan. 23, 1968.
- <sup>15</sup>Chukenov, Z. F. and Kobzev, Y. N., <u>High Speed Thermo</u> Decomposition of Gaseous and Vaporous Hydrocarbons. U.S.S.R. #197.064 (CL.C10g) May 31, 1967.
- <sup>16</sup>Coblentz, W. H. "Investigation of Infra-Red Spectra," Carnegie Institute, Washington, D.C., 1905.
- <sup>17</sup>Cohen, E. S., S. M. Thesis in Chemical Engineering, M.I.T., 1951.
- <sup>18</sup>Cohen, E. S., Sc.D. Thesis in Chemical Engineering, M.I.T., 1955, "Effect of Gas Temperature Gradients on Radiant Heat Transmission."
- <sup>19</sup>Crout. P. D., Trans. A.I.E.E., <u>60</u>, 1235 (1941).
- <sup>20</sup>Esso Research and Engineering, Unsaturated Hydrocarbon Furnaces. U.S. Patent #1,497,055 (CL.CO7) Oct. 6, 1967.
- 21 Eucken, A. Physik Z, 1913.
- - <sup>22</sup> Faust, et al., <u>Principles of Unit Operations</u>. Corrected Second Edition. John Wiley & Sons, pp. 157, 158.
  - <sup>23</sup>Faigin, E. A. et al., "Method for the Optimum Design of the Coil in the Pyrolysis Furnace", Khim. Prom. Vol. 5, July, 1963, pp. 19-26.
- 24 Forstall, W., Jr., and Shapiro, A. H., "Momentum and Mass Transfer in Coaxial Gas Jets", Project Meteor Report No. 39, M.I.T., July, 1949.
- <sup>25</sup>Frey, F. E. and Hepp, H. J., <u>The Science of Petroleum</u>. Oxford University Press, 1964, p. 19**9**4.
- <sup>26</sup>Guerrieri, S. A. Report on Research at Massachusetts Institute of Technology, 1933.
- <sup>27</sup>Guy, A. G., <u>Elements of Physical Metallurgy</u>. Second Edition. Addison & Wesley, 1960, p. 386.
- 28 Heicklen, J., Hudson, J. L. and Arma, L., "Theory of Carbon Formation in Vapor Phase Phyrolysis - Variable Concentration of Active Species", Carbon Vol. 7 No. 3, 1969, pp. 365 - 372.

1.

<sup>29</sup>Hennig, H., U. S. Patent #2,885,455, May, 5, 1959.

- 30 Himmelblau, <u>Basic Principles and Calculations of Chemical</u> Engineering. Prentice-Hall.
- 310 Homogenous Reactional Kinetics Pyrolysis of Aliphatic Hydrocarbons. National Bureau of Standards, National Research Council, pp. 507-517.
- 32 Hottel, H. C., and Egbert, R. B., Trans. A.S.M.E., <u>63</u>, 297 307 (1941).
- 33 Hottel, H. C., and Sarofim, <u>Radiative Transfer</u> McGraw-Hill.
- 34 Hottel, H. C., Williams, G. C. and Satterfield, C. N., "Thermodynamic Charts for Combustion Processes", John Wiley & Sons, 1949.
- 35. Hottel, H. C., Mangelsdorf, H. C., Trans. I.I.Ch.E., <u>31</u> 517-549.
- <sup>36</sup>Jakob, M. "Heat Transfer", Vol. 1. John Wiley & Sons, 1949. Chapters 4 and 7.
- 37 International Flame Radiation Research I. Jmuiden (Netherlands), Unpublished Date, 1954.
- <sup>38</sup> Kevorkian, V., "High Temperature Chemistry of Light Hydrocarbons", <u>Advanced Petroleum Chemical Refining</u>. Vol. 5, 1962 pp. 368 - 438.
- 39.7 Lapple, C. E., Fluid and Particle Mechanics. University of Delaware, March, 1966, pp. 51 - 58.
- 40 Lavrov, N. V, and Baklistskii, E. P., "Calculation of the Composition of the Equilibrium Mixture Obtained by the Oxidation Pyrolysis of Hydrocarbons", <u>Dokl. Akad. Nank</u> U.S.S.R. 20 (C), 1963, pp. 16 - 20.
- 41 Levenspiel, <u>Chemical Reaction Engineering</u>. John Wiley & Sons, P. 116.
- 42 Levenspiel, <u>Chemical Reaction Engineering</u>. John Wiley & Sons, p. 113.
- 43 Lichenstein, I., "Design Cracking Furnace by Computer", <u>Chemi-cal Engineering Progress.</u> Vol. 60, No 12, Dec., 1964.
   pp. 64 68.

44 Lindahl, A., "Improved Operation with Process Simulation", Chemical Engineering Progress. Vol. 61, No. 4, 1965. pp. 77 - 81. 45 Lindsay, H. F. and Wulzen, R., "Refinery Studies by Digital Computer", World Petroleum Congress, Proc. 5th N.Y. 1959 #3.251-60. 1960. 46 Lobo. W. W. et al. Transactions of the A&I.Ch.E., Vol. 31, 1939. p. 743. 47 Ludwig, E. E., "Applied Process Design for Chemical and Petrochemical Plants," Gulf Publishing Co. 48. Mamedov, A. M., Pogorelskii, A. N. and Alizade, N. A., Tubular Furnace. U.S.S.R. Patent #190,867 (CL.BOLj) Jan. 14, 1967. 49 <sup>5</sup>McAdams, W. H., "Heat Transmission", 3rd ed. McGraw-Hill, 1954. Chapter 4, "Radiant Heat Transmission" by H. C. Hottel. 50 McBird, Hermel, Ehlers, Gordon, "Thermodynamic Properties to 6000°K for 210 Substances Involving the First 18 Elements," N.A.S.A. SP-3001 1963. 51 McCabe and Smith, Unit Operations of Chemical Engineering. Second Edition, McGraw-Hill, p. 77. 52 Michaud, M., Sc.D., University of Paris, 1951. 53. Myers, P.S. and Watson, K.M., <u>Principles of Reactor Design</u>. Article No. 2 "Pyrolysis of Propane, National Petroleum News" Vol. 38, No. 18, May 1, 1946, pp. 9388-9442. 54 Nelson, Petroleum Refining Engineering, McGraw-Hill, Fourth Edition, 1958. **5**5, Noguchi, T., Suzuki, J. and Seki, M. Computer Control of Petroleum Refining. Sekiyu Gakkai, Shi 1969 12(2) 3 . . Japan, pp. 107 - 112. <sup>56</sup>Oliver, G. D. <u>Removal of Coke from a Thermal Cracker by</u> Intermittent Switch to Ethane Feed. U.S. 3,433,731 (LL 208-48;CIOg) March 18, 1969. <sup>57</sup>Palmer, H.B., "Kinetics and Mechanism of Carbon Deposition During Gaseous Pyrolysis", Fuel Society Journal 1962 pp. 13, 7 - 18.

58 Perry, J. H. (Editor). "Chemical Engineers' Handbook", 3rd ed. McGraw-Hill, 1950. Port, F. J., Sc.D. Thesis in Chem. Engineering, M.I.T., 1939. 60 المعنى "Pyrolysis of Ethane in a Tubular Reactor", Example Problem No. 116, Symposium University of Wisconsin, Katz, Editor. Use of Computers in Chemical Engineering. pp. 140 - 144. 61 Riviere, M., Journee Etudes Falmmes, June 1953. 62 Robertson, Richard W., "A Study of the Optimization of Ethylene Production in a Tubular Reactor". M.S. Thesis, Newark College of Engineering, 1982. 63, Roche, Edward C. Unpublished Work. <sup>64</sup>Rosendahl, Fritz. Chim and Ind. Paris, 1960 No. 84, DD. 357-374. 65 Rosier, G. O. and Watson, K. M. <u>National Petroleum News</u>. Technical Section, No. 38, April 3, 1946, p. 260. <sup>66</sup>Selected Values of Chemical Thermodynamic Properties. National Bureau of Standards, June 30, 1946. 67 Selected Values of Chemical Thermodynamic Properties. National Bureau of Standards, March 31, 1947, Series III Table 23. <sup>68</sup>Schneider, U. and Frolich, P. K., <u>Industrial and Engineering</u> Chemistry, No. 23, 1931, p. 1405. <sup>69</sup>Shah, J. Manesh. "Computer Control of Ethylene Production," Industrial and Engineering Chemistry, Vol. 59, No. 5, 1967, p. 74, <sup>70</sup>Shah, J. Manesh, "Computer Control of Ethylene Production," Industrial and Engineering Chemistry, Vol. 59, No. 5, 1967. p. 74. <sup>71</sup>Shah, J. Manesh, "An Approach to Model Simplification in Process of Optimization and Control" American Institute of Chemical Engineering - I Chemical Engineering Symposium No. 4, 1965, pp. 4:47-4:52. 72. Smith and Van Ness, Introduction to Chemical Engineering and Thermodynamics. McGraw-Hill, pp. 410-412.

73 Smith, D., University of Sheffield (England), Personal Communications 1953-55. (between E. S. Cohen and Smith) Manual Smolen, H., "Heating High Severity Pyrolysis Furnaces and Steam Reformers with Gas or Heavy Oil" Erdoel, Kohle, Erdgas, Petrochem 1969, 22(9) (Ger.) pp. 557-561. Spectra 70 Fortran IV Reference Manual. Radio Corporation of America, No., 1967. 76 Stepanov, A., "Heat Tranfer in a Tubular Pyrolysis Reactor", Konvektivryi - Teploobmen 1968 pp. 133 - 138. Stepanov, A.A., Stepanova, A. V. and Kostyuk, "Pyrolysis and Gas Compression in a High Pressure Reactor," Neft. 1 Gaz. Prom. Inform Mauchm-Tekkn. Sb. 1964 (3) Russian, pp. 56 - 58. <sup>78</sup>Stepanova, A. V. and Stepanov, A. A., "J-T Diagrams of the Pyrolysis of Ethane and Propane", Khim. i Tekhnol. Topliv i Masel 9 (6), 1964, pp. 10 - 14. <sup>79</sup>Steacie, E. W. R. et al., <u>Canadian Journal of Research</u>, Vol. 16B 1939, pp. 176, 360, 303, 411. 80 Swinbourne, E. S., Journal of the Chemical Society, 1960, pp. 231, 232. 81 Szepesy, F. S. and Simon, F., "The Use of Gas Chromatography in Gas Analysis", Magyar-Kim Folyrat 67, 1961 pp. 27-33. 82 "Tamai, Y., Nishiyama, Y. and Takahashi,"Effects of Solid Substances on the Thermo Decomposition of Hydrocarbons -Effects of Wall on the Carbon Deposition from Methane" Kogyo-Kagaku Zassni 70 (6) 1967, Japan, pp. 889-891. 83 "fayyabkhan, M. T., "Competitive Development in Computer Applications," Petro/Chem Engineering 38(10) Vol. 58, 1966 pp. 54-56. 84 Tmenov, D. N. and Mamedov, K. T., "Contract Pyrolysis of a Middle Straight Run Fraction of Petroleum in a Reactor with Rising Flow of Heat Carrier." Izv. Vyash. Ucheb. Zayed., Neft Gaz 15(5), 1969, (Russian) pp. 49-53. 85 Towle, W. L., Sc.D. Thesis in Cehmical Engineering, M.I.T., 1937.

<sup>86</sup> Towell, D. Gordon and Martin, J. Joseph, "Kinetic Data from Nonisothermal Experiments: Thermal Decomposition of Ethane, Ethylene and Acetylene," A. I. Ch. E. Journal, Vol. 7, No.4, Dec. 1961, pp. 693-698. 87 Tucker, W., "Conical Joint Between Hydrocarbon Cracking Zone Outlet and Heat Exchange to Minimize Coking," Fr. 1,522.833 (C1.Cl0g) April 26, 1968. 88 Jlrich, W., Sc.D. Thesis in Chemical Engineering, M.I.T., 1935. <sup>89</sup> Vasil'ev, S. F. and Lapides, N.A., "The Oxidative Pyrolysis of N-Butane in Industrial Conditions," Khim i Tekhnol. Smol Tern, Erzbotki Tuerd. Topliv, Akad. Nauk S.S.S.R., Inst. Goryuch. Iskop, 1965 (Russian) pp. 36 - 56. 90 Vasil'ev, S. F., Lapides, N.A. and Mosiv, A. N., "Oxidative Pyrolysis," <u>Sintez i Sovistvs</u>, Monomerov Akad. Nauk, S.S.S.R. Inst. Neftekhim Sinteza, Sb. Rabot 1201 (Dvenadtsatoi) Konf, Po. Vystokomolikuul Soldin. 1962 (Pub. 1964) (Russ.) pp. 12, 13. 91 Walker, H. M., "Advances in Heavy Liquid Cracking," Chemical Engineering Progress, 1969, 65(8), pp. 53 - 58. 92 Wilke, C. R., Journal of Chemical Physics, Volume 18, 1950, pp. 517 - 554. 9<u>3</u> Yeich, William Personal Communications to Roche. See Ref. 58.

#### APPENDIX A

### TABLE OF NOMENCLATURE

Area of a surface, square feet;  $A_1$ ,  $A_2$  area of a source-sink surface;  $A_{s_1}$ ,  $A_{s_2}$ , ..... area of surface zones  $s_1$ ,  $s_2$ , ....

AMWT Average molecular weight of reacting system

B Normal distance between differential radiating volume elements and a plane, feet

B(I,K) Coefficient of component in K<sup>th</sup> position I<sup>th</sup> reaction BB(I,K) Order of reaction of component in I<sup>th</sup> position K<sup>th</sup> reaction

C Convective-flux coefficient, square feet, C 8 evaluated at T, C evaluated at T g s s s

c Exponent on temperature ratio in obtaining G from dimensionless

c Heat capacity, B.t.u./1b.<sup>O</sup>F.

C(J) Concentration of J<sup>th</sup> component (lb. moles/ft.<sup>3</sup>)

CF Temporary constant used in calculating the product of concentration raised to order of reaction components in the forward direction

CLJ(J,1) Constant of Lennard and Jones - collision diameter (A) J<sup>th</sup> component

- Constant of Lennard and Jones /K-(°K)J<sup>th</sup> CLJ(J,2)component
- Heat capacity data for  $J^{th}$  component  $C_p = CP(J, 1) +$ CP(J,1-4) CP(J,2)\*T+CP(J,3)\*T<sup>2</sup>+CP(J,4)\*T<sup>3</sup> (BTU/1b. mole °F) Temporary constant used in calculating the products CR of concentration raised to the order of reaction of
- each reaction component in the reverse direction = C(J) (lb. moles/ft.<sup>3</sup>) СТ
- -MAX(ABS(DXA(I))) i.e. the max of the absolute D incremental change of reaction
- Basic determinant for the system of simultaneous D equations used to obtain total interchange factors Determinant formed by replacing the s,-column of D gi<sup>D</sup>s by a column of  $g_i$ -functions
- đ
- $\ln_{G}$  / ln PL, dimensionless  $DCP(I,1-4) = \frac{B(I,K)}{K=SF(I)+1} CP(I,1-4) = K=1$

$$(BTU/lb. mole °F) (1)$$

$$\frac{B(I,K)}{B(I,1)} CP(I,1-4)$$

(i.e.) Summation of heat capacity of products heat capacity of reactants

- DF(I) Summation of free energy of products free energy of reactants I reaction (BTU/1b. mole)
- DH(I) Summation of heat of formation of products heat of formation of reactants (BTU/1b. mole)
- DS(I) Summation of entropy of products entropy of reactants (BTU/lb. mole)
- EA(I) Arrhenius frequency factor of I<sup>th</sup> reaction
- EE(I) Arrhenius activation energy of I<sup>th</sup> reaction (cal/m)
   E Radiation-emission rate, energy per unit time;
   E Eg1, <sup>E</sup>g2, .... from surface zone s1, s2, ....
   E Eddy diffusivity, square feet per hour
- F View Factor = Fraction of radiation from one surface zone intercepted by another surface zone in the presence of a non-absorbing medium, dimensionless;  $F_{s_1s_2}$  from surface  $s_1 t_2 s_2$
- Fraction of energy from a point radiating source absorbed by a sphere of gas, dimensionless; F intercepted by a portion of spherical surface F<sub>2</sub> absorbed by a portion of a spherical shell fraction of radiation originating in one zone which reaches and is absorbed by another zone in a blackwalled enclosure, dimensionless; f between two

surface zones, f between two gas zones, f gg from a surface zone to a gas zone; f from a gas zone to a surface zone

- F(J) Factor by which the Arrhenius frequency factor is changed - assumed to be one
- FI(I) Constant of integration used in calculating the equilibrium constant

GĞ

G<sub>m</sub> Molal flow rate per unit area mols/hr. sq. ft.

Total interchange factor between any two gas zones including reflections at all surfaces, square ft.;

$$G_1G_2$$
 (  $G_2G_1$ ) is equal to  $q_{g_1g_2}/W_{g_1}$  or  $q_{g_2g_1}/W_{g_2}$ 

- GS Total interchange factor between any gas and surface zone including reflections at all suraces, square feet;  $G_{1}S_{1}$  ( $S_{1}G_{1}$ ) is equal to  $q_{g_1s_1}/W_{g_1}^{(i)}$  or  $q_{g_2g_1}/W_{s_1}$
- g Gas zone with a numerical subscript to designate the particular zone under consideration gg Direct interchange factor between any two gas zones, square feet;  $g_1g_2$  ( $g_2g_1$ ) is equal to  $(q_{g_1g_2})^{direct/W}$  or  $(q_{g_2g_1})^{direct/W} g_2$

A-4

gs	Direct inmerchange factor between any gas and surface
	zone, square feet; $g_{11}^s$ ( $s_{121}^s$ ) is equal to
	(q s) direct/W or (q <sub>s</sub> )direct/W g1 g1 g
H	Total enthalpy of entering fuel and air per unit time,
CA	B.t.u./hr.
H g	Enthalpy-flux coefficient evaluated at T , square ft.
h_, h_', h	'', h ''' Convective coefficient of heat transfer,
	B.t.u./hr. sq. ft. F
h	Enthalpy content, B.t.u./mol;h sensible enthalpy;
	h chemical enthalpy ch
HR	Number of hours in which carbon has been accumulating
HT(J)	Heat of reaction of the (J) component (BTU/1b. mole)
I	Temporary storage to denote I reaction
IA(I,K)	Used to identify J in the reaction species in the
	Ith reaction the K <sup>th</sup> position (i.e. J=IA(J,K)
IB	Number of increments the reactor will calculate
	before it is forced off
к,к'	Correction factors by which to multiply Tavg.,
	dimensionless.
k	Absorption coefficient of a gas, ft.
L	Mean beam length for gas radiation, feet.
P	Pressure, atmospheres; P partial pressure of water
	vapor; P <sub>c</sub> partial pressure of carbon dioxide;
	P <sub>G</sub> gas pressure

•

A-5

- P Dimensionless ratio r/g for evaluating  $f_p$
- P(J) Pressure of J component (at.)
- PD Pressure drop increment (in at.)
- PDIP Initial incremental pressure change used in convergence (at.)
- PI Pressure into reactor (at.)
- P OUT Pressure out of reactor (at.)
- PPI(J) Initial pressure of J<sup>th</sup> component (at.)
- Pr Prandtl Number /k, dimensionless
  Heat transfer rate, B.t.u. per hour; q<sub>12</sub> net between surfaces 1 and 2; q<sub>1</sub> G net between surface 1 and the gas; q<sub>g1g1</sub> one-way from g<sub>1</sub> to g<sub>1</sub>; q<sub>sjg1</sub> one-way from g<sub>1</sub> to g<sub>1</sub>; q<sub>B</sub> net to g<sub>1</sub> by bulk transport; q<sub>C</sub> net g<sub>1</sub> to g<sub>1</sub> by convection; q<sub>C</sub> net to s<sub>1</sub> by convection; q<sub>s1</sub>
  R Relative flux density, dimensionless; s<sub>1</sub><sup>R</sup>s<sub>2</sub>, flux
  - density away from s, due solely to radiation originating at s, and expressed as a ratio to  $W_{s}$ ;  $R_{s}$ , same, 1  $g_{1}$   $g_{2}$
  - but due to radiation originating in gas zone  $g_1$ .
- R Gas constant 1.987 cal/gram mole <sup>O</sup>K
- r Linear distance between two elements (feet)
- RA Rate of reaction

RAD Radius of the reactor (feet)

RADD(I)	Radius of reactor at 1% temporary storage
RADF(I)	Radius of reactor at 1% previously calculated
RADI(I)	Radius of reactor at 1% presently being calculated
RADU	Original radius of clean reactor (feet)
RAF	Original radius of clean reactor (feet)
RATE	Total rate of reaction
Re	Reynolds Number DG/ , dimensionless
SS	Total interchange factor between any two surface
	zones including reflections at all surfaces, sq. ft.
	$S_1G_1$ (GS) is equal to $q_{s_1g_1}/W_{s_1}$ or $q_{g_1g_1}/W_{g_1}$
8	Surface zone with a numerical subscript to designate
	the particular zone under consideration
sg	Direct interchange factor between any surface and
	gas zone, sq. ft; $s_{1g_1}$ ( $g_{1g_1}$ ) is equal to
	(q <sub>s1<sup>g</sup>1</sub> ) direct/W or (q <sub>g1<sup>g</sup>1</sub> ) direct/W <sub>g1</sub>
88	Direct interchange factor between any two surfaces,
	sq. ft.; s s ( s s ) is equal to (q 12 21 sl <sup>3</sup> 2) direct W 1
	or (q <sub>s2<sup>s</sup>1</sub> ) direct W <sub>s2</sub>

**A-**7

•

- SR(I) (Integer) number of components in I reverse reaction
- T Temperature,  ${}^{O}R$ ;  ${}^{T}g_1$ ,  ${}^{T}g_2$ , of gas zone  $g_1$ ,  $g_2$ , ...;  ${}^{T}g_1$ ,  ${}^{T}g_2$ ,  ${}^{T}g_2$ ,  ${}^{T}g_2$ , ...;  ${}^{T}g_2$ , ..
- T Temperature of reactor (any point) (<sup>O</sup>F)
- **TIN** Temperature of inlet conditions (<sup>O</sup>F)
- TMPH Total moles perwhour (1b moles/hour)
- TMPHI Initial molar flow rate (lb. moles/hour)
- Över-all coefficient of heat transfer through a wall,
   based on inside surface and outside air temperatures,
   B.t.u./hr. sq. ft.<sup>O</sup>F
- V Gas volume cubic feet
- VELI Velocity of gas at any point in reactor (ft/sec)
- VC(J,L) Concentration of component J at L% into reactor
- W Rate of emission from a unit area of a black-body at the temperature indicated by a subscript (W at the  $g_1$ temperature of  $g_1$ ), B.t.u./hr. sq. ft.
- WDZA(I,L) Rate of reaction I at distance L% into reactor
- WPJ(L) Pressure L% into reactor (At)
- WT(L) Temperature L% into reactor (<sup>o</sup>F)
- WTM(J,L) Total mole/hour of component J, L% into reactor

- WTMPH(L) Total mole/hour L% into reactor
- WVELI(L) Velocity ft/sec L% onto reactor
- WZIC(L) Length ft L% into reactor
- X Used as temporary in calculating heat of reaction, heat capacity
- XN Used to calculate temperature profile in reactor
- x<sub>1</sub>, x<sub>2</sub> Thickness of gas layers, feet.
- x,y,z Linear dimensions along the three coordinate axes, ft Absorptivity, dimensionless, GS of a gas for surface radiation; of a gas of path length x, of a surface.
- A,B,S,Y Positional parameter indicating the magnitude and direction of bulk flow heat exchange between gas volumes
  - Factor by which to multiply center-to-center distance between two zones to obtain correct mean beam length between them for radiation, dimensionless.

Emisston coefficient, sq. ft.  $\gamma_g$  = 4kaV<sub>g</sub>;

 $\gamma_{s} = \xi_{s} A_{s}$ 

Y

Δ

д ж Denotes a difference

Determinant formulation of energy balances Emissivity, dimensionless;  $\mathcal{E}_{s}$  of a surface;  $\mathcal{E}_{G}$  or  $\mathcal{E}_{g}$  of a gas;  $\mathcal{E}_{T_{avg}}$  evaluated at the arithmetic mean

of the gas and surface temperatures;  $\boldsymbol{\ell}_{\mathbf{x}}$  of path

A-9

length x;  $\boldsymbol{\ell}_1, \boldsymbol{\ell}_2, \ldots$  of a gas at PL, PL, ....

Overall interchange factor, dimensionless;  $\mathcal{F}_{1c}$  = radiation reaching gas and  $7_{12}$  radiation reaching surface A, due to original emission from A only, but including assistance given by reflection at all surfaces, expressed as a ratio to $\sigma$  T<sup>4</sup> Angle between line joining centers of two zones and the normal to a surface, radians. Angles used in evaluation of f, radians Viscosity, 1b/ft. hr. Emissivity of a gas on a volume basis, ft. Density, 1b/cu. ft. Reflectivity of a surface, dimensionless Stefan-Boltzmann constant = 0.1713 x 10<sup>-8</sup> B.t.u./hr. sq. ft.  ${}^{o}R^4$ Gas transmissivity, dimensionless; of path length x Escape factor for radiation from a cube of gas (ratio of energy leaving boundaries to energy originating

 $\Theta_{i}, \Theta_{d}$  Angles between radiant beam and normals to a surface, radians

within volume), dimensionless

W Solid angle, steradians

Q

 $\phi_1, \phi_2$ 

NN P PSO

Ψ

<u>Appendix B</u>

.

Computer Program

.

.

.

IV (VER LAS) SUJAGE LISTING         03/05/74         PAGE         OOM           PRIGRAM MAIN         MAIN 1         MAIN 2         MAIN 2           PRIGRAM MAIN         MAIN 1         MAIN 2         MAIN 2           COMMUNICALENTING         MAIN 2         MAIN 2           COMMUNICALENTROLOGIA         MAIN 2         MAIN 2           COMMUNICAL         MAIN 2         MAIN 2           COMUNICAL         MAIN 2         MAIN 2           COMUNICAL         MAIN 2         MAIN 2           COMUNICAL         MAIN 2         MAIN 2																												ann an an an an an an ann an ann an ann ann ann ann an a		
IV VER         UST SAUGE LISTINGI         03/05/74         PAGE           PFREGAM * AIN         CONMUNIATEDATO         MAIN           CONMUNIATIONATIONATIONATIONATIONATIONATIONATI	1000		r: 4	<b>ଜ</b> ନ୍ୟ	2~ 0	- o- c	110	64		110	21	23		62 26	27	29	31	25	5	35	20	1 ¢ 38	99	41	42	44	10. 5	40 7	48	55
IV (VER L43) SUBGE LISTING         03/05/74           FPRGRAM 'AIR         03/05/74           FPRGRAM 'AIR         03/05/74           COMMUNIATION FREIGNING         03/05/74           COMUNIATION FREIGNING         00/00/00/74           COMUNIATION FREIGNING         00/00/00/74           COMUNIATION FREIGNING         00/00/00/74 <t< td=""><td>PAGE</td><td>NIN</td><td>NIVH</td><td>NI VI VI VI VI VI VI VI</td><td>NIAN</td><td></td><td></td><td>HIM TOC</td><td>11710016</td><td>NIAIN NAIN</td><td>OF LLNAIN</td><td>NINH</td><td>EES-MAIN</td><td>5177 2175</td><td>NIME</td><td>NIAN</td><td>H I M M I M</td><td>RAIN</td><td>MAIN</td><td>MAIN</td><td>NIAH</td><td>MAIN Main</td><td>NIVIN</td><td>NIAN NIAN</td><td>NIAN-</td><td>NIAN</td><td>NIAN</td><td>NINU</td><td>N I M M I N</td><td>NIAN</td></t<>	PAGE	NIN	NIVH	NI VI VI VI VI VI VI VI	NIAN			HIM TOC	11710016	NIAIN NAIN	OF LLNAIN	NINH	EES-MAIN	5177 2175	NIME	NIAN	H I M M I M	RAIN	MAIN	MAIN	NIAH	MAIN Main	NIVIN	NIAN NIAN	NIAN-	NIAN	NIAN	NINU	N I M M I N	NIAN
	IV (VER L43) SUURCE LISTINGI 03/05/74	PRIGRAM MAIN Commentation	COMMANN/T-BEZ/IND/TX(100).GT(4).QFF CONMANN/ASOV1/TP1(60).TP2(60).TP3(60).T1(60).T2(60).T3(60)	1 #41(60)#42(60)#13(60) Fourted Z.ansey.co.v.ansex.t	DIMENSION ID(105),TXF(85),TXFULD(85),TXULD(85),2F(4)		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		5. 76,82,100,65,69,77,81,100,66,68,74,80,100,67,79,1	62100/ ERESET (2091.00.000) CALL ERESET (2091.00.000)	 TI TI T3 AFE THE THREE ASSUMED DUTER WALL REACTOR TEMPERATURE	REAU(5, 944) DTREC	-DTREC-45-145-CU14VERGENGE-CR11ERAM-EDR-THE-BEACTOR-14-KELV1M-DE	UND 1 No.:		CALL WRITE (3, 1TEH1 ), T1 (1), 60)	CALL WRITE(3*!15/2/#12/1)#60) CALL WRITE(3*!15/31/174(1)#60)	CALL RYWI	CALL REAP(2)'HCP THH(1),60)	CALL READ(2) 14CP 1) H3(1),60)	00 1000 1000El.13	4 Jel DT 10. 191955	TX-1[D([)=TX([) 	WALTE(6,901)TXF	X{100}=0.000000000000000000000000000000000	01 2 Je9.15	XI=0.	X2=0.	Ajev. DR 1 Kelis	J=J1+1

 $\frac{1}{2}$ 

.....

İ

05/74 PAGE 0002	441N 51	83 NIA 10 53			HAIN 59	AAIN 50		NAIN 55 NAIN 55		MAIN 69	MAIN 71		MAIN 74	MAIN 75 MAIN 76	AAIN 77 Main 78 Main 78	401 79 Adin 20	MAIN 83		TAN HA	00 NIAN 00 NIAN	16 NIVH	AIN 92 60 NICH 20 NICH	MAIN 95 MAIN 95	MAIN 97 MAIN 97	, MAIN 99 MAIN 100
VER L43) SUURCE LISTING: MAIN PROGRAM 03/	-10(J1+35)	[[]_NE.100)XI=XI+1.  12.NE.100)X2=X3+1.	[13.PF.]00)X3=X3+].		1(J)=TP1(J)/X1*1.8	<u>[{}+7}=FP_1</u> {}}	2(\+7)=TP2(\) 3()=TP3()/X3*1.8 	L #RITE(2)1TEMP()TP1(1),60)	■====================================	LL READ(2, TEMS1, T1(1),60)	<pre>([)#1i(])/1.8</pre>	ITE(6,909)1J,(T1(1),J=1,MSURE) LL %RITE(3,TEM1',T1(1),60)	L #KITE(2.1HCP 1.H2(1),60)	LL %FITE(2,1TE;1P1,TP2(1),60) 51(4)	ITE(6,902)1J,(TP2(1),J=1,NSURF) 1 euro:1	([])=2FF   Bealtrinettensi.to/.).40)	ITE(6,900)[J,(T2(1),1=1,NSURF)	LL WRITE(3011EN2191201) LL WRITE(2011ENP19723(1)260) L VETTE(2011ENP19723(1)260)	=1.41 =1.41 1ft (6.902)1J. (TP3(1).1c1.NSURF)	LL FURAI 1113-065	LL REA: (2, TEMS: +T3(1),60)	(1) + + + + + + + + + + + + + + + + + + +	LL #KITE(3,1TEM3',T3(1),60)	LL PYR31 101 151-22	(I)=T1(I)/1_6 (I)=T2(I)/1_8
A FORTRAN IV (	51 12	53 54	55 1 F	57	59 - Tp	61 19 61 19	63 TP	65 CA	67 CA 67 CA	69 CA	71 11 71	73 CA	74	75 CA 76 11	77 WR 78 CA	10 10 10 10	177 C.8	, 85 65 65		89 CA	16 10	93 13 13 94 13 13 94	95 70 70 70	97 98 01	99 T1 100 · T2

PAGE 0003	MAIN 101 Main 102	ADIN 103	MAIN 105	MAIN 107	MATN 109 Main 110	MAIN 111 Main 112	NAIN 113 Kain 114	MAIN 115	MAIN 117 MAIN 117 MAIN 118	MAIN 119 MAIN 120	MAIN 121 MAIN 121 MAIN 122	MATN 122 MATN 123	MAIN 125	MAIN 127	MAIN 128 Main 129	GMENTMAIN 130 Sain 131 351 - Main 132	121 123 123 124			D TKAMAIN 138	MAIN 140 ILS MMAIN 141 MAIN 172	AFTMAIN 143 AFTMAIN 143 MATE 144	UTSIOMAIN 145 WATN 145		MAIN 145
PRDGRAM 03/05/74																LTURE PROFILE FOR FURMACE SE 5%.6F15.1) Temberature ben-1151/20%.	DEDETLE EDE EURAVES SEGMENT	[5.1]) . TEMPERATURY BROEVELOOP		LE DID NOT CONVERGE AFTER 1	<u>3 K1/1 1,90(1-1)) 11</u> E CONVERGED AFTER1,13,17RA	ERENCE CALCULATED= 1,F16.3,	DEFICIENT PROCESS FLUID TO T	┙╔┉┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍┍	
CE LISTINGE MAIN			A A	++++++++++++++++++++++++++++++++++++++		(TP1(1),1=11,12)		J)	1 TD 6	1300.	)T(1)/(QF(1)#5./3.)	)T(3)/(0F(3)*5./3.)	(9) FH ( ( 6) ZH ( 6)		00,01	0X.J.SUREACE TEMPER -/20X.60(1-1)//(2) -/20X.60(1-1)//(2)	0///(25X,6F15,1))	(260(1-1))//(25X26F)	///(25x,6F15.1))	JE TEMPERATURE PROF	NTURE=1,E10+3,106( = TEMPERATURE PROF = 0,TECPERATURE - 1,E10 - 2	KIUM TEMPRATURE DIFI	FED HEAT THANSFER CO	5TAR 1 3UKMY (1) 400)	
I IV (VER L43) SUUR	T3(1)=T3(1)/1.8	IN0=2	ZIC=A*FL0AT(1)-	WRITE (6,903) TXF	N1=([]+)'S(0+]	WRITE(6,502)1J, DT=0.0	· 00 5 1 41,05	TXULU(1)	IF(DT+LT+L+2012EC) IF(DT+LT+1=0)60 CALL B72807703	WRITE (6, 507) UT		H3(1))=H3(1))#C	WRITE(6,908)H1(	UNRITE (6,905) DT	40 TU 7 WRITE(6,906)IO	CURMAT(///ILL L. ILO, DEG KI DEG KI, VILOEG KI	11),20X,10EG R1, EnemAT//20X,10	1, DEG P1,/20X	11),20X,10EG KI,	<pre>6 EDEMAT(2(3(7E)) 5 EDEMAT(1 105)]</pre>		7 FORMAT(20X,1MA)	B FORMAT( 10ADJUST	CALL WRITE (4.)	
A FORTRAN	101 101	103	105	107	109	111 3	113	115 5	01-1-	119	121	123	125	127 Jun 127	129 6	130 900 131	135 003	.135	137 30	130 901	141 900	143 90	145 901	147 7	141

\*

.

•

•

E 0004	YED 150	YRD 152	YED 154	YPD 157	YRU 158	YRD 160	YRU 162	YFU 167	YRU-105	720 157 780 168 761 169	YRD 170	YED 172		YRD 176	VKD 178	7450 180	YRU 182	74-D 184	781 186	2421 187 2480 188	27PD 189	PARD 191	9420 193 9420 193	9480 194 9460 195	РҮКО 196 РҮКО 197	РҮКП 198 РҮКЛ 199
IN IV (VER L43) SUURCE 'LISTINGS PAG	SUBROUTIME PYRD COMMUNIATUREIATS.KE2251.KR(251.A25110).BB(25.101.101.1A(2510) P	1, EA (25), EE (25), RAD, AU CHAMMAW/THAE, 2/TMM-TX(, 00)	COHMON/FYRU3/Z(11),ZTT+C(25),CP(25,4)	Сландонскот сотременат. Сландонское состат (25, с) - нт (25, с) - 57 (25) - 67 (25) - 67 (25) - 60 (25)	COMMUN/PU/P(25),UN/SAWT(25),CLJ(25,2),VI(25),AMWT,VEL1,HI COMMUN/PT2/TT.RN,-RN2-VTS	CONMIN/TH/THPHAKADI(100), DE(25), ZIC	DIMENSION DIALOGIALIZATION DIALOGIALIZATIO	IM(25,50), WUXA(25,50), RADD(100,50)	DATA DX4/25+0+/25+0+/25+0+/2400+0+0+0+240+		INTEGER IDATP(9)/IIN1,1201,13N1,14N1,15N1,16N1,1741,18N1,19N1/ P		IDATP(1)*IDATP(1)		F(10)=CHARGE IN ARRHENIUS FREQUENCY FACTOR FROM PUPITISHED DATA CHANGE IS MADE FOR CHENTAL SPECIES REATION ID P		IF(IU, EQ, 25)60 TU 100 60 TU :07	IR IS TOTAL NUHBER DF REACTIONS	00 READ(5,900,EWD=87)R+15	<u>.tratotal ulyper uf reactions.tsatotal number of chemical species f</u> icmu iread in mea data set	- 24 - 2451AIM PRESENT DATE SET READ IN HEW TEMPERATURE PRUFILE - E 2451AIM PRESENT DATE SET READ IN HEW TEMPERATURE PRUFILE - E 2451 New CASES DA TEMPERATURES TO FULLOW CHAPTITES STOPS - E		Z(II) TEMPERATURE PROFILE IN 10% INCREMENTS INCLUDING 0 AND 100 H Read(5-94-3)1604+(7(11)+11=)+11)	CARD CINITAINS UP TO 80 ALPHAJUMERIC IDENTIFATION OF SYSTEM BEING F Canciliated	READ(5,950)CARD 16 TIME INCREMENTS USED TO CALCULATE CARBON DEPOSITION (	IZZ MAX ALLAWABLE TRIALS FOR CONVERGENCE
A FURTRA	40	<b>m</b> 4		0 ~ a	٥ç	11	61	5.5	0	19 19	25	53	25 25	27	50 C	31 10	. 95 66	. 35 C	37 1(	1000		225	43 C 44	4 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4	47 48 C	49 C 50 C

PAGE 0005	PYRU 200 Pyru 201	PYRD 202	PYRU 204	PYED 206	PYRD 208	PYPD 210	PYSU 212	ΡΥΡΟ 214 4 ΡΥΕΟ 215	ΡΥΓΩ 216 ΡΥΡΩ 217	PYKU 218	PYRG 220	PVED 222	PYRU 224	ΡΥΕΩ 226 ΡΥΕΟ 226	PYRU 228	PYRU 230 PVRU 230 Pvon 231	ΡΥΚU 232 ΡΥΓΟ 233	PYFU 234	SES DEYG	PY40 238	PYED 239	ΡΥΚΟ 242 ΡΥΚΟ 242 Βνεη 343	PYRD 244	CAPYED 246	ΡΥR[] 248
IV (VER L43) SOURCE LISTING I PYRO SUBROUTINE 03/05/74 <sup>1</sup>	1 PLOT RESULTS DO NOT WRITE DETAILED CALCULATIONS 2 PLDT RESULTS WRITE OUT DETAILED CALCULATIONS	3 PLOT NUT DOVE WRITE OUT DETAILED CALCULATIONS A DUPT NOVE DOVE DO NOT JUITE DETAILED CALCULATIONS	READ(5,958)18,122,1PL0T * e friere timer i time	PT IS INITIAL PRESSURE AT STARTUP PT IS INITIAL PRESSURE AT STARTUP PDESS IS MAY ANNUARDE DEFERIDE AT 190 ET	POUT IS RESIRED PRESSURE AT OUTLET	ZT IS TUTAL REACTUR LENGTH FEET Di is tutbeuett de futh ised to calche beactur chunicitious	READ(5,919)T.PT.PRES.ZT.PL.PDUT NI SEAD(5,919)T.PT.PRES.ZT.PL.PDUT	TIM=T [Adiam)=idemitity of chemical species in chemical reaction position m	GC=1.3143 Ke(1) 15 NUNBER OF REACTANTS IN REACTION I	KR(I) IS NUMBER OF PRODUCTS IN REACTION I Beading of intrestity and iteration	00 1 1=1,16 11-12-	IA(I.M) REPRESENTS THE CHEMICAL SPECIES IA IN REACTION I Distribut M	READ(5,941)10,(IA(1,4),M=1,IT) TE (ID,045,1)40 TO 101	CONTINUE BRI.M)COPPEICTENT OF M CHEMICAL SPECIES IN REACTION I	DO 2 IeljIR Trucincoir	B(1,M) IS THE STUCIMETRIC COEFFICIENT REACTION I Doction H	BB(I,M) IS THE PSEUDO DRDER DF REACTION REACTION I Pusitions of	READ(5,943)ID,(8(I,M),M=1,IT),(83(I,M),M=1,IT) IF(I0,NE,1)c0 TD 102	CONTINUE Continue continue of the continue of the	REAU(5,904)(P(J))J=1JIS)		0. P. LBP 14P. 111 0. 1 1 1 1 2 1 5 0 1 1 - D. 1 2 2 2 2 7 7 7 7	P(1) #PP1(1) (11) #PP1(1)	INAME []] INAME (]] THE NAME OF EACH CHEMICAL SPECIES (MAX 20 LETTERS) 4 PER	INAME(J) IS THE ALPANUMERIC IDENTIFCATION OF CHEMICAL
A FURTRAN	51 C 52 C	5 5 C 7 5 7	55	57 55	55 65 7	61 C	63 64	65 66 C 1,	67 68 C	69 C 70	25	73 C 75 C	75	77 1 78 C B	64	81 C		, 85 16	87 2	89	16	70 27 26	95 04 18	97 C 1	99 C

- i

-----

FAGE 0000	ΡΥRΩ 250 ΡΥΜΠ 251	PYRD 252	PYRD. 254	PYFU 255 PYFU 256	PYEU 258	PYRU 227 PYRU 260	PYRU 262	PYRU 264	PYR0 265	ΡΥΧΟ 268 Ονεη 268	PYFD 270	PYRD 272	PYRU 273	PYRU 276 PYRU 276 PYRU 277	PYED 278 · DVED 278	PYRD 280	PYR0 282	PYRU 294	PYRD 286 PVRD 247	PYRL 268	PYR0 290	PYRU 291	PYRU 233 PYRD 294 DV80 305	ΡΥΧΟ 236 ΡΥΧΟ 296	PYRD 298
1 IV (VER L43) SUURCE LISTINGI PYKU SUBRUUTINE 03/03/74	READ(5,905)(INAME(J),J=1,IT) Dr 3 J=1.TS	CP(J,M) IS THE HEAT CAPACITY OF CHEMICAL SPECIES J	READ(5,900) (CP(J,M),M=1,4),10	CONTINUE CONTINUE	EA(I) IS APRHENIUS FREQUENCY FACTUR OF REACTION I	CAL/ "DLE OKKHENLUS ALITVALIUN ENENGT LE REACTIUN 4	EA(1)*EA(1)*F(1)	CONTINCE	DUS JELVES ENTOPY OF CHEMICAL SPECIES J 25 C	DETAILED AND AND AND AND AND AND AND AND AND AN	IF(10,4)E, J) 6D T0 105		GLJ(J,2) AFE THE CONSTANTS OF LEWHARD & JONES	L CULLISIUM PARAMELES. 2 E/K Saurius to the Mri Ecun AB Metchi ne the ith flemital Species	DE(J) IS THE DEUSITY OF SULID CHEWICAL SPECIES J	TF(CL)(J>2) EQ.0.)READ(5,940)DE(J)		00 7 L=1,4 DfD/f=1,1=0	11#KF(1)+1 10+KP(1)+1			UCP(1)L)BUCP(1)L)+B(1)P()+CP(1)P()/S(1)) 12=KF(1) 22=KF(1)		DCP(1,L)=DCP(1,L)=B(1,M)+CP(1,L)/B(1,1)	
	101	103 C	105	105 3	109 C	111 C	E11	115 4	117 C	2 0 C	121	125	125 C	127 0	129 C	131	133 21	135	137	139	141	143	145	147 6	140

-

•

----

1

•

.

. .

i

AGE 000'	PYED 30	PYRU 30	PYED 30	PYED 30	PYRU 30	PYFU 31		15 Daya			PYRU 32	PYAU 32 PYAU 32	PYRU 32	PYRU 32	PYRU 32		PYRU 33 PYRU 33	JPYAD 33 PYAD 33	PYAD 33	PYR0 33	- Бүүд - 66 Рүка 34 чехеп 34	PYRU 34	ΡΥRU 34			PYRU 34
SUBRDUTINE 03/05/74													1410011-100011-10110-10141		**************************************			10414(J), (CP (J,H, M=1,4),U;								
IV (VER L43) SUURCE LISTINGI PYRD	FT(1)=0. ST(1)=0	HT(I)=0 11=KF(I)+1	I2=KR(I)+KF(I) DD 10 4211-12					ST(1)=ST(1)=8(1)()#05(4)/8(1)) UT(1)=ST(1)=8(1)()#05(4)/8(1))	T0=298,15 T0=298,15	REAU (5.928) [3.77.81(])	DD 29 Nals4	HO(I)=HO(I)=OCP(I,M)/X+TU++H	IF(FI(1))         IF(1))         IF(1)         IF(1) <tdif(1)< td="">         IF(1)         IF(1)</tdif(1)<>	11-00P(1,3)/6+/81*11*42-00P(1,4)/12 13-00P(1,3)/6+/81*11*42-00P(1,4)/12	LUCENCE TO CALLENCE AND	WRITE(6.910) • 50 11 -51-15	↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓	WeITE(6,912)(INAME(JJ),JJ=JJ1,JJ2) 1).D5(J).FE(J)	I GUTU=1	DD 17 J=1+15			00_12 1=1,1R	IF (EE(I).EQ.0.)11=1	DO 14 MELJIZ	U#IA(I,M)
A FORTRAN	151 152	153 156	155	157	159	161	163	165	157	169	1/1	173 29	175	177	179 C CH	181	183 186	.185 11 185	187	189	161	. 61	195	261	199	200
	PYRU 350         PYRU 351         PYRU 352         PYRU 355         PYRU 356         PYRU 365         PYRU 366         PYRU 365         PYRU 365         PYRU 366         PYRU 367         PYRU 370         PYRU 370         PYRU 370         PYRU 370         PYRU 370																									
--	--	--																								
	Рүки 352 Рүки 355 Рүки 355 Рүки 355 Рүки 355 Рүки 355 Рүки 356 Рүки 366 Рүки 364 Рүки 364 Рүки 364 Рүки 365 Рүки 366 Рүки 366 Рүки 365 Рүки 365 Рүки 365 Рүки 356																									
	Рүкц 354 Рүкц 355 Рүкц 355 Рүкц 355 Рүкц 359 Рүкц 359 Рүкц 361 Рүкц 365 Рүкц 365 Рүкц 365 Рүкц 365 Рүкц 365 Рүкц 365 Рүкц 365 Рүкц 365 Рүкц 365																									
	РУКО 355 РУКО 355 РУКО 356 РҮКО 358 РҮКО 356 РҮКО 366 РҮКО 366 РҮКО 366 РҮКО 366 РҮКО 366 РҮКО 366 РҮКО 366 РҮКО 367 РҮКО 370 РҮКО 370																									
	РҮКО 359 РҮКО 359 РҮКО 359 РҮКО 359 РҮКО 359 РҮКО 361 РҮКО 364 РҮКО 365 РҮКО 365 РҮКО 368 РҮКО 368 РҮКО 367 РҮКО 370																									
	РҮКО 358 РҮКО 359 РҮКО 360 РҮКО 361 РҮКО 364 РҮКО 364 РҮКО 364 РҮКО 366 РҮКО 366 РҮКО 368 РҮКО 367 РҮКО 370 РҮКО 370																									
	РҮКИ 360 РҮКИ 360 РҮКИ 362 РҮКИ 364 РҮКИ 364 РҮКИ 365 РҮКИ 365 РҮКИ 366 РҮКИ 368 РҮКИ 369 РҮКИ 369 РҮКИ 370																									
	Рүкц 362 Рүкц 362 Рүкц 365 Рүкц 365 Рүкц 365 Рүкц 366 Рүкц 366 Рүкц 369 Рүкц 369 Рүкц 370 Рүкц 372																									
	Рүхц 354 Рүхц 354 Рүхц 355 Рүхц 365 Рүгц 365 Рүгц 369 Рүхц 369 Рүхц 370 Рүхц 372																									
	РУКИ 365 РУКО 366 РУКО 368 РУКО 368 РҮКО 369 РҮКО 371 РҮКО 372																									
	PYRU 364 PYRU 368 PYRU 369 PYRU 370 PYRU 372																									
	PYAD 370 PYAD 370 PYAD 372																									
	PYRU 372																									
	PYRU 374																									
	PYRU 375																									
	PYRU 377 PYRU 378																									
	PY30 379																									
<pre>(Mellele(I)=e(I)=e(I)=e(0)e(I)e(M)</pre>	4) PYRU 350 PYRU 351																									
	PYED 342 DVer 342	•																								
	PYR0 364																									
	PγRU 345																									
E1(J), (IDATB(1), AB(J, 1), Ia1, 12)	PYED 367																									
THE INSIDE OF THE REACTOR TUBE THE FUITSIDE DE THE REACTOR TUBE	РУRU 358 Руси 389																									
DY RATE IN LB MOLES DRE HOUR	PYED 390																									
161	PY50 392																									
	PYRD 394																									
ومنافع والمواجب المحافية والمحافية و	PYRD 395	in the second																								
	- ΡΥRΟ 396																									
	- РҮАП 398 Рүдл 399																									
	(M)_H=1_40)_EA(I)_EE(I)_(DCF(I_M)_H=1 THE INSIDE OF THE REACTOR TUBE THE INSIDE OF THE REACTOR TUBE OF RATE IN LB MOLES ORE HOUR TANT WPH	PYRU 372         PYRU 375         PYRU 375         PYRU 375         PYRU 375         PYRU 376         PYRU 377         PYRU 378         PYRU 378         PYRU 347         PYRU 347         PYRU 348         PYRU 348																								

•

----

.

0 105/74 PAGE 0009	PYFD 400 PyPU 401	PYRD 402 PVPD 403	PYRU 404 404 707 Drvn	PYFD 406 PYFD 406	805 DAV 805 DAVB	PYPU 410	PYRU 412 PVRU 412	PYRU 414 PYRU 414 PVRU 415	)\$60 TO 209 PYRU 416 PYRU 417	PYRU 418 PVRU 418	PYRU 420	PYRD 421 PYRD 422 DVBD 422	ΡΥςΩ 424 Βνευ 425	PΥΚU 426 PV6Π 425	PY30 428 PY30 428 PY51 428		PYRD 432 DYRD 432		ΡΥΧΟ 436 ΡΥΧΟ 436 ΡΥΣΟ 437	FYRD 438	PYRU 440	PYR0 441	ENGTH DF TUBEPYRD 444 Byen 775	TS, A=T=A(1) PYRU 446	- РҮКП 448 449 449	
LISTINGS PYRD SUBRUUTINE 03	n 92								NAME (20) , AND, INAME (13+1), EQ. INAME (20				(6)	- r	214	:6)	.0 205		(*)	[8(I3),I3=1,MM)			ENTRANCE, PRESEPRESSURE OF GAS, 2TEL	IN REACTOR, CI=CONCENTRATION OF INER (4)*7***		
v (VER L43) SUURCE	PSAVE=PT TE(KEVR.FO.D)GD T	WRITE(6,918) DD 205 1-1218	MMEO TETRAI	[]=] []=/	60 TD 206 13-46/11.1	12=KF(1)+KP(1) 12=KF(1)+KP(1)	00 214 Ac11,12		IF(1:4AME(I3).EQ.)	60 T0 210	J=A (1, H) +29,01	ИМАНИА! IDAT3(ИЧ)=IDATA(.	IDAT8(MM)=IDATA(3	ИМ=ИН+  ИМ=ИН+  ТСАТН (НИ)-ТНАИС()	IF(M,EG,12)60 TO	TOATB (MM) = IDATA(	IF(IFIN.EQ.2)GD		JDATB(HH)=IDATA(H	WRITE(6,971)(IDA	WRITE(6,918)	HREO.	AKEL BAS TEMPERATURE AT He-D	=[NCRENENTAL CHA:16	FDAMAT(212) FDRMAT(4412)	• •
A FORTRAH. I	251 252	253 254	255 255	257	259 240 363	261	263 206	265	267 268 208	269	271 210	273	275	277	279	281	283	265	287 212	289 205	291 110	292 293	295 C Te(	297 C DZ=	299 900 300 901	

----

ļ

.•

ŀ

0     0     0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0       0     0     0     0     0     0     0     0 <th>FURTRAN</th> <th>V (VER L43) SJURCE LISTING: PYRD SUBRDUTINE 03/</th> <th>/05/74 PAGE 001</th> <th>0</th>	FURTRAN	V (VER L43) SJURCE LISTING: PYRD SUBRDUTINE 03/	/05/74 PAGE 001	0
0.000     FURNET(12):10     PEG     PEG     PEG     PEG       0.000     FURNET(12):11     PEG     PEG     PEG     PEG       0.11     PEG     PEG     PEG     PEG     PEG       0.11     PEG     PEG     PEG     PEG     PEG       0.11     PEG     PEG     PEG     PEG     PEG       0.1	301 902 102 902	FDRMAT(3F10,5) FURMAT(12.75E3.2)	ΡΥRU 45 ΡΥRU 45	0
0000       Construction       PNN0       Sec         0000       PNN0       Sec       PNN0       Sec         00000       PNN0       PNN0       Sec       PNN0       Sec         000000       PNN0       PNN0       Sec       PNN0       Sec       PNN0       Sec         000000000000000000000000000000000000	303.904	FORMAT(12F6.5) Envertenation	948U 45 978U 45	2
0         0	906 508	FURMAT (4616,8,17)	PYRU 45	
1136157,110       10.4 Work (1.4.1.4.1.4.1.4.1.4.1.4.1.4.1.4.1.4.1.4	307 908	FUHMAILIAALAIAIAIAA FUHMAILIZAAAAAA Fuhmainii Paraaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	PYK0 45 PYK0 45 PYK0 45	91
<pre>10 010 EFFLATION %0.10EFFLEXTENDING OF GEACING, 77975-1714.1734.1734.1734.1744.1734.1014.441 10 11 EFFLATION %0.10EFFLATION EFFLATION FILL OF TAXING ACC 11 EFFLATION FOR TAXING FOR TAXING FOR TAXING FOR ACC 12 11 EFFLATION FOR TAXING FOR TAXING FOR TAXING FOR ACC 13 12 EFFLATION FOR TAXING FOR TAXING FOR TAXING FOR ACC 14 12 EFFLATION FOR TAXING FOR TAXING FOR TAXING FOR ACC 15 12 EFFLATION FOR TAXING FOR TAXING FOR ACC 15 12 FOR</pre>	309 110	115GKS1//1 DK ROCHE 1//1 DK HANEXIAN KINAKANANANANANANANANANANANANANANANANANA	L FULFILMENT PYED 45	ω <b>ο</b>
10       21.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	911 910	FORMAT (1H1,145,110EMTIFICATION OF REACTION SYSTEM)//	//,15,1CONPONPYRD 46	
<pre>N 91 FURNATIONALY NEW STRANTY FLO.3773(20, PES. 01) PFG 443 11 FC CURRENT PATTER STRANTY FLO.3773(20, PEG. 01) PFG 443 11 FC CURRENT PATTER STRANTY FLO.3773(20, PEG. 01) PFG 443 11 FC CURRENT PATTER STRANTY FLO.3773(20, PEG. 01) PFG 443 11 FC CURRENT PATTER STRANTY FLO.3773(20, PEG. 01) PFG 443 12 PC PATTER STRANTY FLORENT STRANTY FLO.3773(20, PEG. 01) 13 PC PATTER STRANTY FLORENT STRANTY FLORENT STRANTY FLORENT PATTER STRANTY FLORENT PATTER STRANTY FLORENT PATTER STRANTY FLORENT STRANTY FLORENT STRANTY FLORENT STRANTY FLORENT STRANTS 12 PC PATTER STRANTY FLORENT STRANTS FLORENT STRANTS FLORENT STRANTS 13 PC PATTER STRANTS FLORENT STRANTS FLORENT STRANTS FLORENT STRANTS 14 PC PATTER STRANTS FLORENT STRANTS FLORENT STRANTS FLORENT STRANTS 15 PC PATTER STRANTS FLORENT STRANTS FLORENT STRANTS FLORENT STRANTS 27 PC PC PATTER STRANTS FLORENT STRANTS FLORENT STRANTS FLORENT STRANTS 27 PC PC PATTER STRANTS FLORENT STRANTS FLORENT STRANTS FLORENT STRANTS 28 PC PC PATTER STRANTS FLORENT STRANTS FLORENT STANDARY FLORENT STRANTS 29 PC PC PC PATTER STRANTS FLORENT STANDARY FLORENT STANDARY PATTER 20 PC PC PC PATTER STRANTS FLORENT STANDARY PATTER STANDARY</pre>	913	274-51, 7116, 1406(K) 1, /2733, 141, 144, 141, 756, 101, 765, 101	1) PYRD 46	22
<pre>11 Trecontriptives. Deliver curative and the recontent prove des 13 Delivers. 14 Delivers. 15 Delivers. 1</pre>	915 912 915 912	FURMAT(1 '22'A1 ) X ] A1 21 X J 2 24 (2X 1 PE10.3) 3 (3X 1 PE1	5.8) PYED 46	
<pre>19. SolvE1) 20. 10. FearTLIL</pre>	817 817	THE CONTAINTAINTAINTAINTERNANDAISENJAANAINTAINTAINTAINTAINTAINTAINTAINTAINTA	ирдестно <u>)</u> Питу/IH уТ71,РҮЧС 46 Ттт, уулол, тоуло 46	
<pre>21 916 FERMITI-1</pre>	319		17 USAd	
27       918       FURATIUI       PYS0       77         28       1051-01       PYS0       73         28       1051-01       PYS0       74         27       1051-01       PYS0       74         27       1051-01       PYS0       74         28       21       1051-01       PYS0       74         27       1051-01       PYS0       74         28       21       1051-01       PYS0       74         27       2       1051-01       PYS0       74         28       25       FGMATIUSCHERTCHAN       DENTECATION       721         283       255       FGMATIUSCHERTCHAN       DENTECATION       721         283       255       FGMATIUSCHERTCHAN       DENTECATION       1017       FLACEUSALIDINALIZATION         283       255       FGMATIUSCHERTCHAN       DENTECATION       1017       FLACEUSALIDINALIZATION       1017       PLACEUSALIDINALIZATION         283       285       FGMATIUSCHERTCHAN       DENTECATION       1017       PLACEUSALIDINALIZATION       1017       PLACEUSALIDINALIZATION       1017       PLACEUSALIDINALIZATION       1017       PLACEUSALIDINALIZATION       1017       1017       PLACEUSALIDI	321 916	FORMAT(1		02
<pre>25 72 FURMATION CONFORTINTZSATGON MONTSATIONING WIL, WILLARCEVED 474 25 21 CONCANTIONESTINTZSATGON MARKETERSING TO THE WARD 475 25 23 FORMATIONESTIGNT DETTRICTIONING TO THE VERT 471 25 23 FORMATIONESTICATE DETTRICTIONING TO THE VERT 471 25 25 FORMATIONESTICATION TO THE VERT 471 DETTRICTIONING TO THE VERT 471 25 25 FORMATIONESTICATION TO THE VERT 471 DETTRICTIONING TO THE VERT 471 25 25 FORMATIONESTICATION TO THE VERT 471 DETTRICTION TO THE VERT 471 25 25 FORMATIONESTICATION TO THE VERT 471 DETTRICTIONING TO THE VERT 471 25 25 FORMATIONESTICATION TO THE VERT 471 DETTRICTION TO THE VERT 471 25 25 FORMATIONESTICATION TO THE PLACE 153, 1011PYSD 481 26 27 FORMATIONESTICATION TO THE PLACE 153, 1011PYSD 481 27 28 FORMATIONESTICATION TO THE PLACE 153, 1011PYSD 481 28 29 FORMATION TO THE FLATTON TO THE PLACE 153, 1011PYSD 481 29 20 FORMATION TO THE FLATTON TO THE PLACE 153, 1011PYSD 481 28 29 FORMATION TO THE FLATTON TO THE PLACE 153, 1011PYSD 481 29 20 FORMATION TO THE FLATTON TO THE PLACE 153, 1011PYSD 481 29 20 FORMATION TO THE FLATTON TO THE PLACE 100 ML PYSD 482 29 20 FORMATION TO THE FLATTON TO THE PLACE 100 ML PYSD 482 20 20 20 ML FLATTON TO THE FLATTON TO THE PLACE 100 ML PYSD 482 20 20 20 ML FLATTON TO THE FLATTON TO THE PLACE 100 ML PYSD 482 20 20 FORMATION TO THE FLATTON TO THE PLACE 100 ML PYSD 482 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 20 FORMATION TO THE PLACE 100 ALLO ATTON 20 20 20 FORMATION TO THE PLACE 200 FOLTENTIAL ATTON 20 20 FORMATION TO THE PLACE 200 FOLT</pre>	323 918		PYR0 4	22
27       2       1066-KN11       00000       00000	325 920	FURMAT(16 CUMPONET1, T22, 1CO NO1, T36, 1LENNARD-JONES 1	HDL - WT.12T62PYED 4	
<pre>25 FORMATILIZATION DEFINITION DE FLACE FISAT DUTPAND 478 25 FORMATILICEFETENT DEFINITION DE FLACE FISAT DUTPAND 478 30 923 FORMATILIZATIONAL CAPA DEFINITION FELACEFISAT DUTPAND 478 30 924 FORMATILIEZTINION DEFINITIONAL ALL DATA DATA CAPA CAPA 31 925 FORMATILIEZTINION DEFINITIONAL ALL DATA DATA CAPA 32 925 FORMATILIEZTINION DEFINITIONAL ALL DATA DATA CAPA 33 925 FORMATILIEZTINION DEFINITIONAL ALL DATA DATA 33 926 FORMATILIEZTINION DEFINITIONAL ALL DATA CAPA CAPA 33 927 FORMATILIEZTINION DEFINITIONAL ALL DATA 33 928 FORMATILIEZTINION DEFINITIONAL ALL DATA 33 929 FORMATILIEZTINION DEFINITIONAL ALL DATA 33 930 FORMATILIEZTINION DEFINITIONAL ALL DATA 33 930 FORMATILIEZTINION DEFINITIONAL ALL DATA 33 930 FORMATILIEZTINIONAL DEFINITIONAL ALL DATA 33 930 FORMATILIEZTINIONAL DEFINITIONAL ALL DATA 33 930 FORMATILI DILLOZA DATA DATA TOTA TAPA PAPA 490 341 931 FORMATILI DILLOZAD ALLELELADEL FE CANAGED TA ALLOZA AL 940 342 934 FORMATILI DILLOZAD ALLELEZASIONATELALIZIENAL DATA 491 344 934 FORMATILI DILLOZAD ALLELEZASIONATELALIZETINI PARD 495 345 934 FORMATILI DILLOZAD ALLELEZASIONATELALIZETINI PARD 491 344 934 FORMATILI DILLOZAD ALLELEZASIONATELALIZETINI PARD 491 345 934 FORMATILI DILLOZAD ALLELEZIZIONALIENALI PARD 493 345 934 FORMATILI DILLOZAD ALLELEZASIONATELALIZETINI PARD 491 345 934 FORMATILI DILLOZAD ALLELEZASIONATELALIZETINI PARD 491 345 934 FORMATILI DILLOZAD ALTERALIZIANALI PARD 492 345 934 FORMATILI DILLOZAD ALTERALIZIANALI PARD 492 345 934 FORMATILI DILLOZASIONATELALIZETINI PARD 494 345 944 945 345 944 FORMATILI DILLOZASIONATELALIZIZIZIZI PARD 494 345 945 345 945 FORMATILI DILLOZASIONATELALIZIZIZIZIZIANALI PARD 494 346 945 347</pre>	327	2 (DEG=K) )		16
<pre>30 22 EGMATCHIACTOR CAPT DEFINITION OF PLACE 15.1 INTER 47 31 22 EGMATCHIACTOR CAPT DEFINITION OF PLACE 15.1 INTER 40 33 22 FGMATCHIACTORY INTERCATION'IZ.1 OUT OF PLACE 15.1 INTER 40 33 22 FGMATCHIACTORY INTERCATION'IZ.1. OUT OF PLACE 15.1 INTER 40 33 22 FGMATCHIACTORY INTERCATION'IZ.1. OUT OF PLACE 15.1 INTER 40 33 29 FGMATCHIACTORY INTERCATION'IZ.1. OUT OF PLACE 15.1 INTER 40 33 729 FGMATCHIACTORY INTERCATION'IZ.1. OUT OF PLACE 15.1 INTER 40 33 930 52 FGMATCHIACTORY INTERCATION'IZ.2.1 INTER 40 33 930 52 FGMATCHIACTORY INTERCATION'IZ.2.1 INTER 40 33 930 52 FGMATCHIACTORY INTERCATION'IZ.2.1 INTER 40 33 930 50 FGMATCHIACTORY INTERCATION 34 931 FGMATCHIACTORY INTERCATION INTER 40 35 930 FGMATCHIACTORY INTERCATION PROVE 48 35 930 FGMATCHIACTORY INTERCATION INTERVALIA 35 930 FGMATCHIACTORY INTERCATION PROVE 48 35 930 FGMATCHIACTORY INTERCATION PROVE 48 35 930 FGMATCHIACTORY INTERVALIANTER 1010/12.1 PTROVE 49 35 930 FGMATCHIACTORY INTERVALIANTER 1010/12.1 PTROVE 49 35 930 FGMATCHIACTORY INTERVALIANTER 401 0.1 PAGE 49 35 930 FGMATCHIACTORY INTERVALIANTER 49 35 940 FGMATC</pre>	329 922	FORMAT("ICCEFFICIENT IDENTIFICATION", 12, 1011 0F PLA FORMAT("ICCEFFICIENT IDENTIFICATION", 12, 1017 0F PLA	4.1211111111111111111111111111111111111	
<pre>33 926 FURMAT(I 1,12,2(5%)IPF12,5),5%)(5%)IAL(**(1),0%) a4 927 FORMAT(I 1,12,1PELACTION')T2).TALEGERATION') 33 928 FURMAT(I 1,12,1PELAALELAATELAA') 33 929 FORMAT(I 1,12,1PELAALELAATELAA') 33 930 FIRAAT(U 'GL CHANGED TOI)IPELA',5) PYRU 489 34 931 FIRAAT(U 'GL CHANGED TOI)IPELA',5) PYRU 480 35 930 FIRAAT(I 'GL CHANGED TOI)IPELA',5) PYRU 480 34 931 FIRAAT(I 'GL CHANGED TOI)IPELA',5) PYRU 480 34 931 FIRAAT(I 'GL CHANGED TOI)IPELA',5) PYRU 480 34 932 FIRAAT(I 'GL CHANGED TOI)IPELA',5) PYRU 480 34 933 FIRAAT(I 'GL CHANGED TOI)IPELA',5) PYRU 480 34 933 FIRAAT(I 'GL CHANGED TOI)IPELA',5) PYRU 480 34 933 FIRAAT(I 'GL CHANGED') PYRU 480 34 933 FIRAAT(I 'GL CHANGED') PYRU 480 34 933 FIRAAT(I 'JL DYA' 0, SYSTEM 405 FIRAAT(I)' DYRU 480 34 933 FIRAAT(I 'JL DYA' 0, SYSTEM 405 FIRAAT(I)' DYRU 490 34 933 FIRAAT(I 'JL DYA' 0, SYSTEM 405 FIRAAT(I)' DYRU 490 34 933 FIRAAT(I 'JL DYA' 0, SYSTEM 405 FIRAAT(I)' DYRU 490 34 933 FIRAAT(I 'JL DYA' 0, SYSTEM 405 FIRAAT(I)' DYRU 490 34 935 FIRAAT(I 'J' ZEIFELA',5) TATATATATIO' PYRU 490 34 935 FIRAAT(I 'J' ZEIFELA',5) PYRU 40 492 34 935 FIRAAT(I 'J' ZEIFELA',5) PYRU 494 34 935 FIRAAT(I 'J' ZEIFELA',5) PYRU 490 34 935 FIRAAT(II 'J' FIRAATIAR')DYRU 90F81,1'DYRU 490 35 935 FIRAAT(II 'J' FIRAATIAR')DYRU 90F81,1'DYRU 490 35 935 FIRAAT(II 'J' PYRU 499 35 931 151/21 FIRAATIAR')DYRU 90F81,1'DE0 Y'J' PYRU 499 35 931 151/21 FIRAATIAR')DYRU 90F81,1'DYRU 499 35 931 151/21 FIRAATIAR')DYRU 90F81,1'DYRU 499 35 931 144 144 144 35 931 144 144 144 35 931 144 144 144 35 931 144 144 144 35 931 144 144 144 35 931 144 144 144 35 931 144 144 144 35 931 144 1</pre>	331 924 331 924	FURMATATATATATATATATATATATATATATATATATATAT	CE1,15,1 101)PY20 40 CE1,15,1 101)PY20 40 CE1.15,1 101)DY30 40	000
355       1N BY CHAPUENTIJJINEACTION JT29JINTEGERATIONI)       PYEU 494         337       928       FERMATCI ILERATION NUMBER-1J3JJJI H3 CONCENTRATION       PYEU 495         337       929       FERMATCI ILERATION NUMBER-1J3JJJI H3 CONCENTRATION       PYEU 495         337       930       FERMATCI ILERATION NUMBER-1J3JJJI H3 CONCENTRATION       PYEU 495         337       931       FERMATCI ILERATION NUMBER-1J3JJJI H3 CONCENTRATION       PYEU 495         337       931       FERMATCI IL ALL DYAF OF SALIDIALIAL DYAF OF SALIDALIAN PYEU 495         341       932       FERMATCI I ALL DYAF OF SALIDALIALIALIALANONATEJELA-5JZXICFJCR=1PYEU 494         341       932       FERMATCI IL ALL DYAF OF SALIDALIALIALANALIJPE14-5J         342       933       FERMATCI ILAL DYAF OF SALIDALALIALIPE14-5J         343       933       FERMATCI ILAL DYAF OF SALIDALALIALANALIJPE14-5J         345       934       FERMATCI ILAL DYAF OF SALIDALALIALANALIJPE14-5J         345       935       FERMATCI ILAL DYAF OF SALIDALAJIALANALIJPE14-5J         345       FERMATCI ILAL DYAF OF SALIDALAJIALANALIJPE14-5J       PYEU 492         345       FERMATCI ILAL DYAF OF SALIDALAJIALANALIJPE14-5J       PYEU 492         345       FERMATCI ILALANAR JANE OF SALIDALAJIALAJIALAJIALAJIALAJIALAJIALAJIA	333 926	FURMAT(I 1,12,2(5%,1PE12,5),5%,6(5%,1A1,1**(1,0PF3,1) FURMAT(IIE)1.13,3(1,0K)1.9%,1CU(57,4M),1.4*(1,0PF3,1)	1))) PY30 4	
337       929       FORMATI:       ITERATIUN NUMBER-1/13//1       HD       CONCENTRATICN       TWH       PYRD       485         339       930       FDRMATI:       OL       CHANGED       TUJ.PELS.5.5X/1216-118-15       PYRD       487         339       930       FDRMATI:       OL       CHANGED       TUJ.PELS.5.5X/1216-118-15       PYRD       483         341       932       FDRMATI:       TL_DX=0       SYSTE4 MUST GE CHANGED       ALLDW REACTION!       PYRD       483         341       932       FDRMATI:       T.J.12/2X*1PEL4.55.2X/1XAGI):       PYRD       490         342       192E14.55.2X       FEGIANCESIJPE14.51       FELAGO       PYRD       491         343       FDRMATI:       J.25(FPE14.55)       FILAL       PYRD       491         343       FDRMATI:       J.26(FPE4.55)       FILAL       PYRD       492         345       FDRMATI:       LENVARD       JONES       CONSTANTS:/ISLOCARD       PYRD       492         345       FDRMATI:       LENVARD       JONES       CONSTANTS:/ISLOCARD       PYRD       492         345       FDRMATI:       LENVARD       JONES       FEET       MARDUPYRD       495         345	335	IN BY COMPONENTI,/TIL, REACTION, T29, TINTEGERATION)	ΑγκΟ Ανεπ Α	
39 930 FDRMAT(10°CL CHANGED TOT,1PELS,5,5%,1ZLC=1,1PEL4,5) PYRU 488 340 931 EORMAT(11°CL CHANGED TOT,1PEL4,5) PYRO 488 341 932 FORMAT(11 AL DXA= 0, SYSTE4 MUST GE CHANGED TO ALLOW REACTION!) PYRO 499 342 933 FORMAT(11'1, 25(1PEL4,5),25K)AATE5,1=1,1PE14,5) PYRO 492 345 933 FORMAT(11'1, 25(1PE12,5),1'1')) PYRO 492 345 935 FORMAT(11'1, 1ENWARD JONES CONSTANTS:12,1CARD 1D1,12,1,1NTERNAL')PYRO 492 345 935 FORMAT(11'1,1 LENWARD JONES CONSTANTS:12,1CARD 1D1,12,1,1NTERNAL')PYRO 492 345 935 FORMAT(11'1,1 LENWARD JONES CONSTANTS:12,1CARD 1D1,12,1,1NTERNAL')PYRO 492 345 935 FORMAT(11'1,1 LENWARD JONES CONSTANTS:12,1CARD 1D1,12,1,1NTERNAL')PYRO 495 345 935 FORMAT(11'1,1 LENWARD JONES CONSTANTS:12,1CARD 1D1,12,1,1NTERNAL')PYRO 495 345 937 FORMAT(11'1,1 LENWARD JONES CONSTANTS:12,1,1NTERNAL')PYRO 495 346 937 FORMAT(11'1,1 LENWARD JONES CONSTANTS:12,12,10,1000 HOLES 31 PFERSAUSCI,495 347 937 FORMAT(11'1,1 LENWARD JONES CONSTANTS:12,1,1NTERNAL')PYRO 495 348 151,4,11 TAL MOLES 1,110,0000 HOLES 31 FEET IN RADIUPYRO 496 349 2:3,1A VELOCITY UF 1,1PE12,5,1 FEET LING AND 1,10EG K'1,1,1 PYRO 499 350 31NITAL AEACTOR 10,110,1PE12,5,1FEET11) 350 31NITAL AEACTOR 10,1000 HOLES 1,10000 HOLES 1,10000 495 351 31NITAL AEACTOR 10,1000 HOLES 1,10000 HOLES 1,00000 496 351 31NITAL AEACTOR 10,1000 HOLES 1,00000 1,0000 4,000 496 351 31NITAL AEACTOR 10,1000 1,0000 1,0000 1,0000 1,0000 4,000 499 351 31NITAL AEACTOR 10,1000 1,0000 1,0000 1,0000 1,0000 4,000 490 351 31NITAL AEACTOR 10,0000 1,0000 1,0000 1,0000 1,0000 1,0000 4,0000 490 351 31NITAL AEACTOR 10,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 4,000 490 351 31NITAL AEACTOR 10,0000 1,0000 1,0000 1,00000 1,00000 1,0000 1,00000 1	337 929	FORMAT(1 ITERATION NUMBER-1, 13, / 1 HD CONCENTRATION	τ Oayo HowT	0.
341       932       FBRMAT (! 1='JI2,2X, IPE14.5),2X, IDXA(I)=', IPE14.5),2X, ICF,CK='PY30       490         342       933       FDRMAT(! ', 25(1PE14.5),5H0XATE,I=1,9PE14.5)       PY80       492         343       933       FDRMAT(! ', 25(1PE12.5)       PY80       492         345       935       FDRMAT(! ', 12,1PE12.5)       PY80       494         345       935       FDRMAT(! ', 12,1PE12.5)       PY80       494         345       935       FDRMAT(! I, 12,1 LENVARD_JDNES CONSTANTS!)I2,1CARD ID!,12,1,1NTERNAL!)PY80       494         345       935       FDRMAT(! I, 12,1 LENVARD_JDNES CONSTANTS!)I2,1CARD ID!,12,1,1NTERNAL!)PY80       494         345       935       FORMAT(! IN,1,1,1 LENVARD_JDNES CONSTANTS!)I2,1CARD ID!,12,1,1NTERNAL!)PY80       494         347       937       FORMAT(! INEACTOR IS ', FDU2,2,1 FEET LM'RADIUPYRO 496       495         347       151,0,1       TCTAL MDLES / HDUR ARE', FDU4N_MDLES AT PRESSURE!, FRYRO 496       497         348       151,0,1       FEET LM'RADUHA MDLES AT PRESSURE!, FRYRO 496       497         349       2,3,1       FEET LM'RADUHA MDLES AT PRESSURE!, FRYRO 496       497         349       2,3,1       VELOCITY UF ', IPE12.5,1       AT PRESSURE!, FRYRO 496         349       2,3,1       A VELOCITY UF ', IPE12.5,1	026 620 126 030	FDRMAT(10.0L CHAMGED T01,1PE15,5,5X,1ZIC=1,1PE14,5) FDRMAT(10.0L CHAMGED T01,1PE15,5,5X,1ZIC=1,1PE14,5)	PYRD PYRD 4	- cc D
343 933 FQRMAT(! !, 25(1PE14,5,5X,12/,' !)) 344 934 FORMAT(! !,12,1PE12,5) 345 935 FORMAT(!!,1 LENWARD JONES CONSTANTS!)I2,!CARD ID!JI2,!JINTERNAL!)PYRD 494 346 936 FORMAT(!I1,1 LENWARD JONES CONSTANTS!)I2,!CARD ID!JI2,!JINTERNAL!)PYRD 495 347 937 FORMAT(!IREACTOR IS !,FIO.2,! FEET LAWG AND ',F6.3,! FEET IN AADIUPYRD 496 348 15!./! TETAL MOLES / HOUR ARE',F6.1J!POULHD MOLES AT PRESSURE!,FREYSD 497 349 2.3J!A VELOCITY UF ',IPE12,5,!FEETJ!) 349 2.3J!A VELOCITY UF ',IPE12,5,!FEETJ!) 350 3INITIAL HEACTOR IMCREMENT(DL',IPE12,5,!FEETJ!)	341 932 342	FDRMAT (1 1=1,12,2%, PA=1,1PE14,5,2%, PXA(1)=1,1PE14. 1,2E14.5.2%, PKEOC=1,1PE14.5.2%, 5HORATE.1=1,1PE14.5)	5,2X, ICF, CK= IPYRD 4	90
345 935 FORMAT(II) LENWARD JONES CONSTANTSIJIZJIZJIZJIJINTERMALIJPYKD 494 346 936 FORMAT(IIREACTOR IS 1,F10.2) FEET LAWG AND 1,F6.3) FEET IN RADIUPYRD 496 347 937 FORMAT(IIREACTOR IS 1,F10.2) FEET LAWG AND 1,F6.3) FEET IN RADIUPYRD 496 348 IS14/4 FOTAL MOLES / HOUR ARE1266,12 POURD MOLES AT PRESSURE12FERYRD 497 349 2:32 A VELUCITY UF 1,1PE12,521 AT TEMPERATURE1,0PF8,1,10E0 K12/21 PYRD 499 350 31NITIAL MECREMENT(DL12)PE12,521FEET11) PYRD 499	343 934 346 934	FURMAT(1 1, 25(1PE14,5,5X,12/,1 1)) Furmatti 1,12,1PE12,5,5X,12/,1 1)	р Пруд	26 59
347 937 FUKMAT(TIREACTOR IS 1,FI0.2)F FEET LAWG AND ',F6.3,FFET IN RADIUPYRD 496 348 ISta/a Trital Moles / Hour Areijeuund Moles AT Pressureijerbryth 497 349 2.3,1A VELOCITY UF 1,1PE12.5,1 AT TEMPERATURE',OPF8.1,1DEG K',/,1 PYRU 498 350 31NITIAL KEACTOR INCREMENT(DL'AJPE12.5,1FEET)!) PYRU 499	345 935	FORMAT(111,1 LENWARD JONES CONSTANTS',12,1CARD 101,12 FORMAT(101,3(5x,101,1,7))	PVALI PVAL 4	94
349 2.33'A VELUCITY UF 1, IPEI2.5, AT TEMPERATURE', OPF8.1, IDEG K', /, I PYRU 498 350 31NITIAL AEACTOR INCREMENT(DL'AJPE12.5, FFEET)!) PYRU 499 350 31NITIAL AEACTOR INCREMENT(DL'AJPE12.5, FFEET)!)	769 746	FURMAT(11REACTOR IS 1, FI0,2, FEET LONG AND 1, F6,3, 1 351,1,1 TOTAL MOLES , HOUR ARE1, E4 1, 1000100 MDLES AT	FEET IN RADIUPYRD 4	96
	349 350	2.3,1A VELUCITY UF 1,1PE12,5,1 AT TEMPERATURE1,0PF8,1 3.1AITTAL REACTOR INCREMENT(DL1,1PE12,5,1FFET)!)	1050 KI, ( 1 PYRU 4	98 99

PYRU 500 Pysu 501	PYRU 502 DV20 502	PYRD 504 Βνευ 505	PYRD 506 PYED 507	РҮАД 508 РҮЗД 509	PYRD 510	PYR0 512	ΡΥRU 514 ΡΥRU 515	PYRD 516 Pyrn 517	PYRU 518 PVRU 518	ΡΥΚÜ 520 Οναπ 521	PYAD 522	PYRD 524	PYFU 526 Dvan 537	PYR0 528 PYR0 528	PYR() 530 Pyr() 531	PYRU 532 DV8N 533	PYPU 534	PYRU 535 PYRU 536 PVPΠ 537	PYRU 538 Pyrd 539	ΡΥΧΩ 540 ΡΥΓΟ 541	ΡΥΓΟ 542 ΡΥΡΟ 543	PYRD 544	ΡΥRU 545	PYRU 547	PYRU 548 PYHD 549
	. 1 222 / 220 / 1	· · · · · · · · · · · · · · · · · · ·	(// . I HUURS . // )				BCN1) F DDVN1)	ES1)	180%1, 1116, 110	011-1/1-922-1/1-				2,1%1)		IN SULTIONS		I NUMBER 1/5X, 10(5		ENT NUMBER 1/5X, 5	PERTUREI, OPF8.2, 1		CUNSTANT		•
	VEL DE 1721 - 1853 -		FILE AFTER 1, F9	DETLE NEW CASELY		HAN SOUND! )	BLOCKED WITH CAR	PRODUCT PROFIL	1, 176, 160%1, 196,			4. 4956 KEAL444 1,/,T20, 17#16NP		1,20A1,1151,F6.	/.166.1/1)	1.4./)) TANTSI - / - 101 7430		NI/JIX, IEQUATION		ATA!/JIX, ICUMPU	SIFEETIS/SI TEMP 5. POULL MOLES	CEO, F			
PE14.4) .5.E14.5)	51 10512 5-1		CTOR RADIUS PAD	.4,E14.4) Teupeaature pp		F GAS GREATER T	UBE COPPLETELY	ATURE REACTANT	120%1. T56. 140%	1) 1/1-736-1/1-766	1/1)	E REACTANT) #S C		1 0F 1,20A1,1T0	()   ET1.T45.ICL'.	FOULTERIN CONST	5X))	HEAT CF REACTIO	3(F7.3,2X))	HEAT CAPACITY D	SITION JIPE14.5	ARBUN AT UI 1200	ALL UF KEAUTUM		
NAT( 1, 12, 14X, 1 1, 12, 14X, 14X, 14X, 14X, 14X, 14X, 14X, 14X	WAT(FI0.0)	MAT(13,11F7,2)	MAT(111,125,1RE/	UNAT( ' ' IZ, IPE1	MAT (80A1)	MATCIOVELUCITY C	MAT (10 REACTOR 84	MAT(T20, 1, TEMPE	MAT (T16, 1021, T31	MAT(1 1,54,0,1F)	1/1, Tas, 1/1, T116	SUCT/(INITIAL COL	THELEFT. D. HOURS	MAT( FUCHNVERSID	2MAT (///.25X.8.A.	7847(1 1, 14, 3X, 3	ER1/05X010(5X012	20011111000000000000000000000000000000	1 4 X 4 4 1 9 1 5 9 4 X 9 1	(#AT(11TEPP 14-13-3411	KWAT (I REACTOR PI Scree-K HULAR FI	IC= DENSITY OF C	ADIUS UFPIPE IN	S#UAXO(IR, IS)	=HINO(IR, IS)
51 938 FDR 52 939 FDR	53 940. FUR	55 943 FUR	57 945 FUR	59 948 FDR 60 949 FDR	61 950 FUR	63 952 FDR	65 954 FUR	67 956 FUR 63 958 FUR	69 950 FDF	71 961 FOF 72 963 EDP	73 16,1	75 1RUC	77 3 TI	79 965 FDF 50 966 FDF	61 967 FDF 32 969 FDF	83 969 FDF 84 970 FDF	85 1/185	<b>b</b> <b>b</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b>	89 973 FUF	91 975 FUF	93 9934 FDF	95 C DEP	97 CC RAD=F	98 151	66 IIV

:

FURTRAN	IV (VER L43) SJURCE LISTING: PYRJ SUBRGUTINE	03/05/74	PAGE 0012
401 402	TF(TR.EQ.IS)IG0=3 TF(TR.LT.IS)IG0=3		PYRD 550 Pyru 551
403 404	RAD=RAOU Pr 48 [=1.190		PYRD 552 PYRD 553
405 405 48	RAPF(I)=RAD Vanitijean		PYRD 554
407 408 58	116141 1165141 214-1		PYRD 556 Pven 557
406	INPHETROPIC		PYRD 558 Pyrd 558
411	00 57 1=1,1S		
412 514 613 614	01=01+0(1) 00 60 1=1,000 00 000111-0005511		PTRU 962 PTRU 962 PYRU 962
415	RAUFRADF(1)		PXXI 564 PXXI 564 DVBC 645
-14 -14			
419	NELTE(6,937)27,8AD,7MPH.PT/VEL1,7DL		PYRU 568 PYRU 568
421	ZT=2TT		PYEU 570
423	028M		PYRU 512
424			PYR0 573
429 426	PL=0. 7161=0.		PYEU 575
427 426	CALL TUBE(T,TMPH) IE(Ma-GE,1000)60.TD 200		ΡΥRU 576 ΡΥΒΟ 577
6.04			PYRU 578 Dven 570
431			PYRD 580
433	12/s1	-	P 4 R 1 5 8 2
435 200	88=M4/1900		
437 201	40 10(2012201220222012202220222021205 VR116(22964) 60 TD 212		
439 202	WRITE(2,952)		PYRO 538
441 213		•	
442 203 443 204			PTRU 591 PTRU 592 ovre 603
445 300 445	CONTINUE Continue Memaati		PYR0 594 PYR0 594 PYR0 595
447 25 448	COMTINUE 16(MA.GT.9)GU TO 55	•.	PYRD 596 PYRD 597
449	ZIC=ZIC+5L	•	PYED 598

------

,

ORTRAI!	V (VER L43) SUURCE LISTING! PYRD SUBROUTINE 03/05/74 P	AGE 0013
151	XH=ZIC/ZTT#10.+1. 1 TH-XH	RYRD 600 Pvri 601
53	XXN=IIN XX	PYRU 602
55	<u></u>	PYR0 604
56	-1J=100,001-(277-21C)/217#99.	PYAU 605
57	RILEIC 0 1-100 2001-1744-24400	PYRD 606 Qved Art
59	IF(1.1.E.99)RDBERADF(1.)+(RADF(1.41)-RADF(1.))+(RIJ-RJ)	
61		ΓΥΣU 503 ΡΥΧΟ 610
62	TeTR Dug4 fe1.tP	PYRU 611 Dvan 612
60 41	ND=0	PYEN 612
65		PYRD 614
60 157	K=IA(1,1) K=IA(1,1)	
68	CESIe	PYED 617
60	DO 35 Mallel2	PYRO 618 Dven Alo
11	IF(CLJ(J,2),EQ.0,)ND=I	PYR0 620
72	IF(BB(IJ*),%E+0.)CF=CF+C(J)#+BB(I,M)	PYR0 621
73 35	CONTINUE	PYAO 622 Pyro 623
15	=KF( )+    =K=[]+	PY80 624
17	D0 36 M#11/1KP11/ D0 36 M#11/12	PYRD 626
78	J#[A(1,2,1)	PY20.627
79 80	[F(GLJ(J,2),EQ,∵,)NO¤] [F(85(I,≥?),NE.(L,)CR≖CR≯C(J))*★88(I,M)	ΡΥΚΟ 628 ΡΥΡΠ 629
61 36 42	CONTINUE 6 A 11 = E A 11 + E F A 1 + V 0 × 1 + V 0 = - V 0 + T + F 1 + V 0	PYRU 630 PVED 430
83	IF(P(K),"C=0,)DXA(I)=1,130973355E4#DL*RA(I)#RAD**2/THPH#PT/P(K)	PYPO 632
84	IF(P(K).EQ.0.)DXA(I)=0.	PYR0 633
85	IF(NT-NE-0)60 TD 54 60 TT 68	ΡΥRU 634 ΡΥβη 635
87 54 29 40	IF((A8S(DXA(I)).6E.1.E-2).AND.(F(I).LE.9.))GD TD 20 TE/AXAPPA IF 0 1522411.20	PYRD 646 Dvpd 437
.89	IF(DXA(1),6E.,1)DXA(1)=DXA(1)*,1	PYRD 638
90	IF(DXA(1), 4E++1)GD T0 20	PYPD 639
91 34	CUNTINUE	
93 20	Z1C=Z1C-0L	PYR0 642
94	DL#ARS(DL#.005/DXA(1))	PYSU 643
95	REJ=REOC(T_I) RATE=EA(I)*EXP(=EE(I)/R/T)	ΡΥRU 644 ΡΥRU 645
15	WRITE(6,930) 0L, ZIC	PYRU 646
35	<u>- ΓΚΙΙΕΙ695322149ΓΑΙΙλουχα(1)96Γ96Κ9ΚΕΨ9ΚΑΤΕ</u> ΝΑΣΥΑΔ.	PYAU 64/ DVDN AAA
22		

1...

II.     PVRU     650       II.     PVRU     651       PVRU     655     PVRU     655       PVRU     656     PVRU     656       PVRU     FVRU     657       PVRU     FVRU     656       PVRU     FVRU     657       PVRU     FVRU     657       PVRU     FVRU     656       PVRU     FVRU     656       PVRU     FVRU     656       PVRU     FVRU     657       PVRU     FVRU     656       PVRU     FVRU     656       PVRU     FVRU     657       PVRU     FVRU     656       PVRU     FVRU     657       PVRU     FVRU     657       PVRU <th></th>																										
11.112         11.112	FAGE UUL4	PYRU 650 Pv20 651	PYR0 652 Dvcn 453	PYR0 654	PYRU 656 PYRU 656	PYRU 658 Pyru 659	PYR0 660 PVR0 661	PYAU 662	PYR0 664 Βνεη 664	PYRU 656 PYRU 656	PYR() 668 PVR() 668	PYRU 670 DVel 671	PYR0 672		ΡΥΚΟ 676 Βνεη 677	PYRU 678 PVRU 679	PYR0 680 PVR0 480	ΡΥΚΟ 652 Βνοη 633	PYR0 634	РҮХО 636 РУГО 636	PΥRD 668 Βναη 689	ΡΥRU 690 ΡΥRU 690	РҮКП 692 Рүзп 693	ΡΥΧΩ 694 ΡΥΧΩ 695	. ΡΥΚΟ 696 ΡΥΡΠ 697	PYRD 698
11.51         11.51	HIJEDIED SHITIDE																									•
			IJIR		[],12	[]»:)/B([]])*C(K)*DXA(]) 1)	+   +	11,12	[[]//]/8(]])+C(K)+DXA(]) []///////////////////////////////////	·····································	1)/1/60		14*UN*6C*T/PT+T*PH	2(1)	2,5000,60 TU 72	1,200)PT=,5 2,200)PT=,5 2,2001 = 2,5			(ABS(UXA(IX)),D)		DL* (05/D) DL* (05/D)	••••••••••••••••••••••••••••••••••••••	E 1)60 TO 31	1028) (J.C (J), TH(J), DXA(J), J=L, IM)	(a1.1.5.())VX())	<i></i>

11.     10.     10.     10.       12.     11.     11.     11.       12.     11.     11.     11.       12.     11.     11.     11.       12.     11.     11.     11.       12.     11.     11.     11.       12.     11.     11.     11.       12.     11.     11.     11.       12.     11.     11.     11.       12.     11.     11.     11.       13.     11.     11.     11.       14.     11.     11.     11.       15.     11.     11.     11.       16.     11.     11.     11.       17.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.     11.       18.     11.     11.	1.     1.     1.     1.     2.     <		IV (VER LAD) SUUKLE LISTING FYAN SURVUULING VE	3/05/74	
3         2 <th2< th=""> <th2< th=""> <th2< th=""> <th2< th=""></th2<></th2<></th2<></th2<>	1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1       1 <td>551 552 31</td> <td>WRITE(6,939)(JJC(J)JTM(J)J=IIJIS) CaNTINUE</td> <td></td> <td>PYRJ 700 PYRJ 701</td>	551 552 31	WRITE(6,939)(JJC(J)JTM(J)J=IIJIS) CaNTINUE		PYRJ 700 PYRJ 701
21/10/100         21/10/100         21/10/100           11/10/100         12/10/100         12/10/100           11/10/100         12/10/100         12/10/100           11/10/100         12/10/100         12/10/100           11/10/100         12/10/100         12/10/100           12/10/100         12/10/100         12/10/100           12/10/100         12/10/100         12/10           12/10/100         12/10         12/10           12/10/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10           12/100         12/10         12/10 <tr< td=""><td>Zirlif,</td><td>53</td><td>ZICI=ZICI+DL IE(ZICI+LE,(ZTT/25,))60 TO 30</td><td></td><td>PYRO 702 PYPO 703</td></tr<>	Zirlif,	53	ZICI=ZICI+DL IE(ZICI+LE,(ZTT/25,))60 TO 30		PYRO 702 PYPO 703
1         1	1         1	55	ZICI=C. MZ=MZ+1		PYRU 704 PYRU 705
0     710     9740     708       0     711     9740     710       0     711     9740     711       0     711     9740     712       0     711     9740     711       0     711     9740     711       0     711     9740     711       0     711     9740     711       0     711     9740     711       0     711     9740     711       0     711     9740     711       0     711     9740     711       0     711     9740     711       0     711     9740     711       10     711     9740     721       11     711     711     711       11     711     711     711       11     711     711     711       11     711     711     711       11     711     711     711       11     711     711     711       11     711     711     711       11     711     711     711       11     711     711     711       11     711     711     7111	Nith         PMU         TOB           1         UTLUTION         PMU         TOB           1         UTLUTION         PMU         PMU           1         PMU         PMU         PMU <tr< td=""><td>57</td><td>WZIC(MZ)=ZIC</td><td></td><td>PYRG 706 PYRG 706</td></tr<>	57	WZIC(MZ)=ZIC		PYRG 706 PYRG 706
0     Millingenetic     Pwol 110       0     Millingenetic     Pwol 111       0     Millingenetic     Pwol 112       0     Millingenetic     Pwol 122       0     Millingenetic     Pwol 122 <td>0     Mithinstell     PN01     11       0     0     Mithinstell     PN01     12       0     0     Mithinstell     PN01     13       0     0     0     Mithinstell     PN01     14       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0       0     0     0<!--</td--><td>59</td><td>WTEPH(MZ)=TMPH</td><td></td><td>PYKU 708 PVBN 708</td></td>	0     Mithinstell     PN01     11       0     0     Mithinstell     PN01     12       0     0     Mithinstell     PN01     13       0     0     0     Mithinstell     PN01     14       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0     0       0     0     0     0     0       0     0     0 </td <td>59</td> <td>WTEPH(MZ)=TMPH</td> <td></td> <td>PYKU 708 PVBN 708</td>	59	WTEPH(MZ)=TMPH		PYKU 708 PVBN 708
8     00.701(3):10:11(1)     00.701(3):10:11(1)       8     70     00.701(3):10:11(1)       8     70     00.701(3):10:11(1)       8     10.701(3):10:11(1)     00.701(3):10:11(1)       8     10.701(3):10:11(1)     00.701(3):10:11(1)       8     10.701(3):10:11(2)     00.701(3):10:11(2)       8     10.701(3):10:11(2)     00.701(3):10:11(2)       9     10.701(3):10:11(2)     00.701(3):10:11(2)       10.701(3):10:11(2)     00.701(3):10:11(2)     00.701(3):10:11(2)       10.701(3):10:11(2):10:11(2):10:11(2)     00.701(2)     00.701(2)       10.701(2):11:11(2):10:11(2):11(2):11(2)     00.701(2)     00.701(2)       10.701(2):11:11(2):11(2):11(2):11(2):11(2)     00.701(2)     00.701(2)       10.701(2):11:11(2):11(	0         0	101	NEL1(12)=VEL1		PYR0 710
6     70     FVAL(1)/(1-6AL(1))     FVAL(1)       6     71     FVAL(1)/(1-6AL(1))     FVAL(1)       6     71     FVAL(2)     FVAL(2)       7     7     FVAL(2)     FVAL(2)       7 </td <td>50     Down (1, 1, 1, 1, 1, 1)     PVEN     715       53     FYPT     PVEN     715       54     DYEAT     PVEN     715       54     DYEAT     PVEN     720       54     DYEAT     PVEN     721       54     DYEAT     PVEN     721       54     DYEAT     PVEN     723       55     DYEAT     PVEN     723       56     DYEAT     PVEN     PVEN       75     DYEAT     PVEN     PVEN       75     DYEAT     PVEN     PVEN       75     DYEAT     PVEN     723       75     DYEAT     PVEN     PVEN       75     DYEAT     PVEN     724       75     DYEAT     PVEN     724       75     DYEAT     PVEN     724       75     DYEAT     PVEN     724       75     DYEAT     PVEN</td> <td>63</td> <td>NG - 70 - 4=19155 NG (1.9 M2) + G (1.)</td> <td></td> <td></td>	50     Down (1, 1, 1, 1, 1, 1)     PVEN     715       53     FYPT     PVEN     715       54     DYEAT     PVEN     715       54     DYEAT     PVEN     720       54     DYEAT     PVEN     721       54     DYEAT     PVEN     721       54     DYEAT     PVEN     723       55     DYEAT     PVEN     723       56     DYEAT     PVEN     PVEN       75     DYEAT     PVEN     PVEN       75     DYEAT     PVEN     PVEN       75     DYEAT     PVEN     723       75     DYEAT     PVEN     PVEN       75     DYEAT     PVEN     724       75     DYEAT     PVEN     724       75     DYEAT     PVEN     724       75     DYEAT     PVEN     724       75     DYEAT     PVEN	63	NG - 70 - 4=19155 NG (1.9 M2) + G (1.)		
67     73     FV2012     FV2012       60     63     FV2012     FV20125       71     WTE(6, Y33, 1(1, 1, 1/H)+     FV20125       71     WTE(6, Y33, 1(1, 1, 1/H)+     FV20125       73     FF(16, 16, 2, 3/F) = 1     FV20125       74     FF(16, 16, 3/2) = 1     FV20125       75     FF(17)     FV11321       76     FF(17)     FV11321       77     FF(17)     FV20125       78     FF(17)     FV20125       79     FF(17)     FV20125       70     FF(17)     FV20125       71     FF(17)     FV20125       70     FF(17)     FV20175       71     FF(17)     FV20175       72     FF(17)     FV20175       73     FF(17)     FV20175       74     FF(17)     FV20175       74     FV20175	61     199     199     199       61     00116(60.91)     199       71     00116(60.91)     190       10116(60.91)     00116(60.91)     190       10116(60.91)     00116(60.91)     190       10116(60.91)     00116(60.91)     190       10116(60.91)     00116(60.91)     190       10116(60.91)     00116(60.91)     190       10116(60.91)     00116(60.91)     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51)     00116.51     190       10116(10116.51     00116.51	65 70			
00     WITE(6,014,1     0500     0500     0500     0500       11     WITE(6,001,00     0500     0500     0500     0500       13     IFFUGE:     0500     0500     0500     0500       14     FULE:     0500     0500     0500     0500       15     FFUE:     0500     0500     0500     0500       17     0500     0500     0500     0500     0500       17     0500     0500     0500     0500     0500       17     0500     0500     0500     0500     0500       17     0500     0500     0500     0500     0500       17     0500     0500     0500     0500     0500       18     0500     0500     0500     0500     0500       18     0500     0500     0500     0500     0500       18     0500     0500     0500     0500     0500       18     0500     0500     0500     0500     0500       18     0500     0500     0500     0500     0500       18     0500     0500     0500     0500     0500       18     0500     0500     0500     0	0     waite(x_0_0)     19     void     18       11     waite(x_0_0)     10     10     10       12     waite(x_0_0)     10     10     10       13     waite(x_0_0)     10     10     10       14     waite(x_0_0)     10     10     10       15     prietie     void     10     10       15     modelia     10     10     10     10       16     11     10     10     10     10       17     0     11     10     10     10       16     10     10     10     10     10       16     10     10     10     10     10       16     10     10     10     10     10       11     10     10     10     10     10       11     10     10     10     10     10       11     10     10     10     10     10       11     10     10     10     10     10       11     10     10     10     10     10       11     10     10     10     10     10       11     10     10     10     1	67 33 67 33			PYAD 716 PYAD 716 PYAD 717
11     wilf E(x) *94412(L1,T TRPH     PYEG     72       12     FFFE(x)     FFFE(x)     PYEG     72       13     FFFE(x)     FYEG     PYEG     72       14     FFFE(x)     FYEG     PYEG     72       17     FFFE(x)     FYEG     PYEG     72       17     FFFE(x)     FYEG     PYEG     72       17     FFE(x)     FYEG     PYEG     72       17     FFE(x)     FYEG     PYEG     72       17     FFE(x)     FYEG     PYEG     72       18     FFE(x)     FYEG     FYEG     72       18     FFE(x)     FYEG     FYEG     72       18     FFE(x)     FYEG     72     FYEG       18     FFE(x)     FYEG     72	11     wurfels, 734, 710, 721       12     IFFALE       13     IFFALE       14     IFFALE       15     FFFALE       17     FFFALE       18     FFFALE       17     FFFALE       18     FFFALE </td <td>69</td> <td>NR1FE(6/916)</td> <td></td> <td>PYRD 718 PYRD 718</td>	69	NR1FE(6/916)		PYRD 718 PYRD 718
73     FF(MEE, SL, 2)PT-2, Non 121           74         FF(MEE, SL, 2)PT-2, PYML 721           75         FF(MEE, SL, 2)LAND, (FLIE, (FGUT+, 2)LAND, (FLIE, (FGUT+, 2)LAND, (FLIE, (FGUT+, 2)LAND, (FLIE, (FGUT+, 2)LAND, (FLIE), (FGE, 2))POP 725           77         FF(MEE, SL, 2)POP FF(2)           78         F(MEE, SL, 2)LAND, (FLIE, (FGUT+, 2)LAND, (FLIE), (FGE, 2))POP 725           79         F(MEE, SL, 2)LAND, (FLIE, (FGUT+, 2)LAND, (FGE, 2))POP 725           79         F(MEE, SL, 2)LAD, 20           70         F(MEE, SL, 2)LAD, 20           71         F(MEE, SL, 2)LAD, 20           72         PYMD 73           73         PYMD 73           74         F(MEE, SL, 2)LAD, 20           75         PYMD 73           76         PYMD 73           77         PYMD 73           78         F(ME, SL, 2)LAD, 20           79         PYMD 73           79         PYMD 73           79         PYMD 73           70         PYMD 74           70         PYMD 74           70         PYMD 74           70	73     Filesters     File     File     File       73     File     File     File     File       74     File     File     File     File       75     File     File     File     File       77     File     File     File     File       78     File     File     File     File       79     File     File     File     File       70     File     File     File     File       70     File     File     File     File       71     File     File     File     File       72     File     File     File     File       73     File     File     File     File       73     File     File     File     File       73     File     File     File     <	171	WITE (6, 7934)21C,T,THPH		PYRD 720
7     With Statistication     PYRU 723       7     Fights     PYRU 723       8     Fights     PYRU 740       8     Fights     PYRU 740       8     Fights     PYRU 740       8     Fights     PYRU 740       9     Fights     PYRU 740       8     Fights     PYRU 740       8     Fights     PYRU 740       8     Fights     PYRU 740       9     Fights     PYRU 740       9     Fights     PYRU 740       9     Fights     PYRU 740	7     Wittebuildstruct       7     Full 11       8     Full 11       7     Full 11       8     Full 12       9     Full 12   <	25	PITEEPT IF(MAZE,FU,2)PT=2.		PYRU 722
7     64     P(1) = P(1(1))       7     64     P(1) = P(1(1))       7     16((F):(5,1)) = P(1))     27       7     16((F):(5,1)) = P(1))     27       81     17((F):(5,1)) = P(1))     27       82     17((F):(5,1)) = P(1))     27       83     17((F):(5,1)) = P(1))     27       84     17((F):(5,1)) = P(1))     27       85     17((F):(5,1)) = P(1))     27       85     17((F):(5,1)) = P(1))     27       86     17((F):(5,1)) = P(1))     27       87     0.1 U = P(1)     27       88     17((F):(5,1)) = P(1))     27       89     17((F):(5,1)) = P(1))     27       81     17((F):(5,1)) = P(1))     27       82     17((F):(5,1)) = P(1))     27       83     17((F):(5,1)) = P(1))     27       84     17((F):(5,1)) = P(1))     27       87     0.1 U = P(1)     27       88     17((F):(5,1))     27       88     17((F):(5,1))     27       88     17((F):(5,1))     27       88     17((F):(5,1))     27       89     17((F):(5,1))     27       81     17((F):(5,1))     27       81     17((F):(F):(F):(F):(F):(F):(F):F)	77     64     P113=PP[11]       77     64     P113=PP[11]       78     Fickres.cs.Pubmer.2)).AND.PFT.LE.FEQUT*.2)1100 T0 65     PYRU 725       71     Fickres.cs.Pubmer.2)).AND.PFT.LE.FEQUT*.2)1100 T0 65     PYRU 725       81     Fickres.cs.Pubmer.2).AND.PFT.LE.FEQUT*.2).AND.PFT.LE.FEQUT*.2).AND.PFT.LE.FEQUT*.2).AND.PFT.LE.FEQUT*.2).AND.PFT.LE.FEQUT*.2).AND.PFT.LE.FEQUT*.2).AND.PFT.E     PYRU 725       82     Fickres.Fecurt*.2).AND.FFT.FEG.2).PDF-PDF2.     PYRU 725       83     Fickres.Fecurt*.2).AND.FFT.FEG.2).AND.FFT.E     PYRU 725       84     Fickres.Fecurt*.2).AND.FFT.EST.FEG.2).AND.FFT.E     PYRU 725       84     Fickres.Fecurt*.2).AND.FFT.EST.FEG.2).AND.FFT.E     PYRU 725       84     Fickres.Fecurt*.2).AND.FFT.EST.FEG.2).AND.FFT.E     PYRU 725       84     Fickres.Fecurt*.2.1.AND.FFT.EST.FEG.2).AND.FFT.E     PYRU 726       84     Fickres.Fecurt*.2.1.AND.FFT.EST.FEG.2).AND.FFT.E     PYRU 726       84     Fickres.Fecurt*.2.1.AND.FFT.EST.FEG.2).AND.FFT.E     PYRU 746       84     Fickres.Fecurt*.2.1.AND.FFT.EST.FEG.2).AND.FFT.E <td< td=""><td>75</td><td>PT=PTTE PT=PTTE 0</td><td></td><td></td></td<>	75	PT=PTTE PT=PTTE 0		
79     IF(KK, EA, 2.5) WD (TEST, EQ, 2) PDD = DDP/2.     PYED 728       81     IF(CTA, EE, EXULTD 6.3)     PYED 7.2       82     IF(CTA, EE, EXULT-2.1), AND, (ITEST, EQ, 2)) PDD = DDP/2.     PYED 7.3       83     IF(P1, EE, DUT-2.1), AND, (ITEST, EQ, 2)) NDP = DDP/2.     PYED 7.3       84     IF(P1, EE, DUT-2.1), AND, (ITEST, EQ, 2)) NAPD     PYED 7.3       85     IF(P1, EE, DUT-2.1), AND, (ITEST, EQ, 2)) NAPD, (ITEST, EQ, 2)) NAP	79     IF(KK:E3.2)PUP=PFF/2     PYR0 728       80     IF(KK:E3.2)PUP=PFF/2     PYR0 728       81     IF(KK:E3.2)PUP=PFF/2     PYR0 728       82     IF(KK:E3.2)PUP=PFF/2     PYR0 728       83     IF(KK:E3.2)PUP=PFF/2     PYR0 722       84     IF(KK:E3.2)PUP=PFF/2     PYR0 722       85     IF(KK:E3.2)PUP=PFF/2     PYR0 722       85     IF(KK:E3.2)PUP=PF/2     PYR0 722       86     IF(KI:E3.2)PU=PF/2     PYR0 722       87     IF(KI:E3.2)PUP=PF/2     PYR0 723       88     IF(KI:E3.2)PUP=PF/2     PYR0 724       88     IF(KI:E3.2)PUP=PF/2     PYR0 724       88     IF(KI:E3.2)PUP=PF/2     PYR0 724       89     IF(KI:E3.2)PUP=PF/2     PYR0 724       81     IF(KI:E3.2)PUP=PF/2     PYR0 74       95     WAITE(L3.95)FIR     PYR0 74       95     WAITE(L3.95)     PYR0 74       96     IF(KI:PIP     PYR0 74 <tr< td=""><td>49 77 54</td><td>P(1)=PP[(1) P(1)=PP](1) Triver(0) = PV(1) AND ANT IS ANGULTA DIVISOR AN AN</td><td></td><td></td></tr<>	49 77 54	P(1)=PP[(1) P(1)=PP](1) Triver(0) = PV(1) AND ANT IS ANGULTA DIVISOR AN AN		
81       iF(177, 0f, FrUT + 2) AND, (ITEST, 64, 2) 100P = DP / 2, 82       PYRD 732       PYRD 732         85       IF(107, 0f, 100, 107 + 2) AND, (ITEST, 64, 3) 180 = PD / 2, 85       PYRD 732       PYRD 732         85       IF(107, 0f, 100, 107 + 2) AND, (ITEST, 64, 3) 180 = PD / 2, 85       PYRD 732       PYRD 732         85       IF(107, 0f, 100, 107 + 2) AND, (ITEST, 64, 3) 180 = PD / 2, 86       PYRD 734       PYRD 734         87       0.7 U 63       PYRD 735       PYRD 735       PYRD 735         87       0.7 U 63       PYRD 735       PYRD 735         89       PT - 5       PYRD 735       PYRD 735         89       PT - 5       PYRD 735       PYRD 735         89       PT - 5       PYRD 74       PYRD 740         89       PT - 5       PYRD 740       PYRD 740         91       IF(107, 07, 2)60       PYRD 740       PYRD 742         92       FF(107, 07, 2)60       PYRD 740       PYRD 742         93       WAITE(60, 963)/R       PYRD 740       PYRD 742         94       PYRD 742       PYRD 743       PYRD 743         95       VAITE(60, 963)/R       PYRD 742       PYRD 743         96       VAITE(60, 963)/R       PYRD 744       PYRD 743 <td< td=""><td>81       FF(FFLUE.F:C.F.UT+.2).A.V.D. (TEST.Eq.2)1909-PDP/2.       PYEU 732         83       FF(VALE.E: 2).500 TD 63       PYEU 732         84       FF(FFLUE.F:C.D.T.T.2).A.V.D. (TEST.Eq.3)1008-PDP/2.       PYEU 731         85       FF(FFLUE.F:C.D.T.T.2).A.V.D. (TEST.Eq.3)1008-PDP/2.       PYEU 732         85       FF(FFLUE.F:C.D.T.2.2).A.V.D. (TEST.Eq.3)104*2       PYEU 734         86       FF(FFLUE.F:C.D.T.2.2).A.V.L (TESST.Eq.3)104*2       PYEU 735         87       GUT 4.53       PYEU 735         89       VAT 736       PYEU 735         91       GUT 4.53       PYEU 735         92       MATE 5       PYEU 735         91       GUT 10.63       PYEU 735         91       FELEPLIT.G.F.2160 7D 91       PYEU 745         92       MATE 60.9231       PYEU 742         94       MATE 60.9231       PYEU 742         94       MATE 60.9231       PYEU 742         95       WATE 60.9231       PYEU 742         96       WATE 60.9231       PYEU 742         97       WATE 60.9231       PYEU 742         98       WATE 60.9231       PYEU 742         99       WATE 60.9231       PYEU 742         91       PYEU 742       PYEU 742<!--</td--><td>64</td><td></td><td></td><td>PYRD 728 PYRD 720 PVEN 720</td></td></td<>	81       FF(FFLUE.F:C.F.UT+.2).A.V.D. (TEST.Eq.2)1909-PDP/2.       PYEU 732         83       FF(VALE.E: 2).500 TD 63       PYEU 732         84       FF(FFLUE.F:C.D.T.T.2).A.V.D. (TEST.Eq.3)1008-PDP/2.       PYEU 731         85       FF(FFLUE.F:C.D.T.T.2).A.V.D. (TEST.Eq.3)1008-PDP/2.       PYEU 732         85       FF(FFLUE.F:C.D.T.2.2).A.V.D. (TEST.Eq.3)104*2       PYEU 734         86       FF(FFLUE.F:C.D.T.2.2).A.V.L (TESST.Eq.3)104*2       PYEU 735         87       GUT 4.53       PYEU 735         89       VAT 736       PYEU 735         91       GUT 4.53       PYEU 735         92       MATE 5       PYEU 735         91       GUT 10.63       PYEU 735         91       FELEPLIT.G.F.2160 7D 91       PYEU 745         92       MATE 60.9231       PYEU 742         94       MATE 60.9231       PYEU 742         94       MATE 60.9231       PYEU 742         95       WATE 60.9231       PYEU 742         96       WATE 60.9231       PYEU 742         97       WATE 60.9231       PYEU 742         98       WATE 60.9231       PYEU 742         99       WATE 60.9231       PYEU 742         91       PYEU 742       PYEU 742 </td <td>64</td> <td></td> <td></td> <td>PYRD 728 PYRD 720 PVEN 720</td>	64			PYRD 728 PYRD 720 PVEN 720
B3     IF(MAEE, E5, 2)(60 T0 63     FYRU 152       B5     IF(10F1, LE, FOUT21, AND, (ITEST, EQ, 31)KW=2     FYRU 153       B7     G0 T0 63     FYRU 735       B7     F(10F1, GE, FOUT21, AND, (ITEST, EQ, 31)KW=2     FYRU 736       B7     F(10F1, GE, FOUT21, AND, (ITEST, EQ, 31)KW=2     FYRU 736       B7     G0 T0 63     FYRU 736     FYRU 736       B7     F0 T0 F10 (G, 2020)     FYRU 736     FYRU 740       B7     F0 F10 F10 (G, 2020)     FYRU 740     FYRU 740       B7     F0 F10 F10 (G, 2020)     FYRU 740     FYRU 740       B7     F1 F10 F0 F0 F10     FYRU 740     FYRU 740       B7     F1 F10 F0 F0 F10     FYRU 740     FYRU 740       B7     F1 F10 F0 F0 F10     FYRU 740     FYRU 740       B7     F1 F10 F0 F0 F10     F1 F10 F0 F0 F10     F1 F10 F0 F10       B7     F1 F10 F0 F10 F10     FYRU 740     FYRU 740       B7     F1 F10 F10 F0 F10     F1 F10 F0 F10     F1 F10 F0 F10       B7     F1 F10 F0 F10 F0 F10     F1 F10 F0 F10     F1 F10 F0 F10       B7     F1 F10 F10	B3       IF(MAZE.ES.2)60 TD 63       PYRD 732         B4       FE(RTIE.ECUTE-2)AND.(ITEST.EG.2))KK=2       PYRD 735         B5       FE(RTIE.EVUT-2)AND.(ITEST.EG.2))KK=2       PYRD 735         B4       FE(RTIE.EVUT-2)AND.(ITEST.EG.2))KK=2       PYRD 735         B7       LG.FUUT-2)AND.(ITEST.EG.2))KK=2       PYRD 736         B7       LG.FUUT-2)AND.(ITEST.EG.2))KK=2       PYRD 736         B7       LG.FUUT-2)AND.(ITEST.EG.2))KK=2       PYRD 736         B7       LG.FUUT-2)AND.(ITEST.EG.2))KK=2       PYRD 736         B7       LG.FUL-2)AND.(ITEST.EG.2))KK=2       PYRD 736         B7       LG.FUL-2)AND.(ITEST.EG.2))KK=2       PYRD 736         B7       LG.FUL-2)AND.(ITEST.EG.2))KK=2       PYRD 740         B7       LG.FUL-2)AND.(ITEST.EG.2))KK=2       PYRD 740         B7       LG.FUL-2)AND.(ITEST.EG.2))KK=2       PYRD 740         B7       LG.FUL-2)AND.(ITEST.EG.2))KK=2       PYRD 740         B7       CG TU 65       PYRD 740         B7       LG.FUL-2)AND.(ITEST.EG.2))KK=2       PYRD 740         B7       VALTE(APS10)       PYRD 740         B7       VALTE(APS10)       PYRD 740         B7       VALTE(APS10)       PYRD 740         B7       VALTE(APS10) <t< td=""><td>81</td><td>IF((PT.66.PUUT+.2).4%D.(ITEST.64.2))PDP=PDP/2.</td><td></td><td>PYRU 730 PYRU 730</td></t<>	81	IF((PT.66.PUUT+.2).4%D.(ITEST.64.2))PDP=PDP/2.		PYRU 730 PYRU 730
85       IF(IPT_GE_PUUT2).AUD.(ITEST_EQ.2)!KK=Z       PYBU 734         86       IE(IPT_GE_PUUT2).AUD.(ITEST_EU.3)!KK=Z       PYBU 735         87       60 TJ 63       PYBU 736         89       PTE_5       PYBU 736         89       PTE_5       PYBU 736         89       PTE_5       PYBU 736         81       T(50 TJ 63       PYBU 736         82       PTE_5       PYBU 736         83       PTE_5       PYBU 736         91       CO TG 69       P         92       KRITE(A.910       PYRU 740         93       KRITE(A.910       PYRU 740         93       KRITE(A.910       PYRU 740         93       KRITE(A.910       PYRU 742         94       PYRU 742       PYRU 742         95       KRITE(A.910       PYRU 742         96       KRITE(A.9410       PYRU 745         97       VRITE(A.96210       PYRU 745         98       CALL PLOT(1, ***)       PYRU 745         97       VRITE(A.96210       PYRU 745         98       CALL PLOT(1, ***)       PYRU 745         99       CALL PLOT(1, ***)       PYRU 745         90       PYRU 745       PYR	5     Fr(RT,GE, PYUT+2.1, ANU, (ITEST,EQ,2.1)K,K=2     FYRD 734       36     FE(RT,LE, POUT=2.1, AVU, (ITEST,EQ,3.1)K,K=2     FYRD 735       38     FVSD 73     FYRD 735       39     WIT=5     FYRD 735       30     WIT=5     FYRD 735       31     FVSD 73     FYRD 735       32     FYRD 735     FYRD 735       31     FYRD 735     FYRD 735       32     FYRD 735     FYRD 735       31     FYRD 745     FYRD 745       32     FIGIE(5,522)     FYRD 746       33     FIGIE(5,523)     FYRD 746       34     FIGIE(5,523)     FYRD 746       35     FIGIE(5,524)     FYRD 746       36     KITE(5,526)     FYRD 746       37     FYRD 746     FYRD 746       38     FIGIE(5,926)     FYRD 746       39     FIGIE(5,926)     FYRD 746       39     FIGIE 10.15,11     FYRD 748       39     FYRD 748     FYRD 748       39     FYRD 748     FYRD 748       39     FYRD 748     FYRD 748       30     FALL FLUT,11,1410     FYRD 748       30     FALL FLUT,11,1410     FYRD 748	83	<pre>IF(MAXE.Fruit).Arge.Fruit=.c).160.10 00 IF(MAXE.Fruit).2)60 10 63 IF(MAXE.Fruit).2)60 10 63 IF(MAXE.Fruit).200.2)</pre>		PYRU 732 PYRU 732 CUSH 732
37       G_0 T4	37     60     14.0     135       89     WT=5     PVAU     135       80     WT=5     PVAU     135       80     WT=5     PVAU     135       80     WT=5     PVAU     135       91     C0 T0 69     PVAU     140       92     MITE(6452)     PVAU     141       93     WAITE(6453)     PVAU     141       95     WAITE(6453)     PVAU     141       95     WAITE(6453)     PVAU     141       95     WAITE(6453)     PVAU     141       96     WAITE(64563)     PVAU     141       97     WAITE(64563)     PVAU     141       96     WAITE(64563)     PVAU     141       97     WAITE(64563)     PVAU     141       98     CALL PLOTI(11, 4N1)     PVAU     141       98     CALL PLOTI(11, 4N1)     PVAU     141       98     CALL PLOTI(11, 4N1)     PVAU     141       99     CALL PLOTI(11, 4N1)     PVAU     141       91     CALL PLOTI(11, 4N1)     PVAU     141       92     CALL PLOTI(11, 4N1)     PVAU     141	85	<pre></pre>		
89       PT=.5       PYEC 738         91       CO TO 69       PYEC 738         92       65       FE(IPLUTGT_2)GO TO 91         93       WRITE(6.9'51)GO TO 91       PYEC 740         93       WRITE(6.9'51)GO TO 91       PYEC 740         94       PYEC 742       PYEC 742         95       WRITE(6.9'53)HR       PYEC 742         97       VRITE(6.9'50)HR       PYEC 742         97       VRITE(6.9'50)HR       PYEC 742         97       VRITE(6.9'50)       PYEC 742         97       VRITE(6.9'50)       PYEC 745         97       PYEC 745       PYEC 745         97       PYEC 745       PYEC 745         97       PYEC 745       PYEC 745         98       CALL PLOT(1) ' N)       PYEC 745         99       CALL PLOT(1) ' N)       PYEC 745         91       CALL PLOT(1) ' N)       PYEC 745	89     PT#.5       90     WRIFE(6,922)       91     CO TO 69       92     65       94     PYRU 740       92     65       94     PYRU 740       94     PYRU 740       95     WRIFE(6,918)       94     PYRU 740       95     WRIFE(6,951)CARD       96     WRIFE(6,962)HR       97     PYRU 745       98     PYRU 745       99     B1       1     PYRU 745       97     PYRU 745       98     CALL PLOT(1,*N)       91     PYRU 745       92     B1       00     CALL PLOT(1,*N)	87 75 75			Γ144 132 ΡΥ3Ο 736 ΡΥσΟ 735
91 CO TO 69 92 65 IF(IPLOT.GT.21GO TO 91 93 WRITE(6,913) 94 WRITE(6,951)CARD 742 95 WRITE(6,953)HR 742 95 WRITE(6,953)HR 744 97 WRITE(6,962) 97 WRITE(6,962) 97 WRITE(6,962) 98 CALL PLOT(1,1*N') 99 81 CALL PLOT(1,1*N')	91       CO TO 69       91       CO TO 69         93       FE(IPLOT, GT, 2)GO TO 9]       PYRU 740         94       WRITE(60,910)       PYRU 742         95       WRITE(60,953)HR       PYRU 744         95       WRITE(60,963)HR       PYRU 744         97       VRITE(60,962)       PYRU 744         98       CALL PLOT(10,140)       PYRU 745         99       B1 CALL PLOT(10,140)       PYRU 748         90       CALL PLOT(10,140)       PYRU 748	68	P1= 5 WeltF64.0421		PYRC 738 PYRC 738 PYRT 739
9.3       WRITE(6,9'10)         9.4       WRITE(6,9'51)CARD         9.5       WRITE(6,9'51)CARD         9.5       WRITE(6,9'51)CARD         9.6       WRITE(6,9'51)CARD         9.6       WRITE(6,9'51)CARD         9.7       WRITE(6,9'52)         9.7       WRITE(6,9'62)         9.7       VRITE(6,9'62)         9.8       Tel4,116         9.9       B1 Tel4,116         9.9       B1 CALL PLOT(1, '*N')         9.9       B1 CALL PLOT(1, '*N')         9.9       CALL PLOT(1, '1)	93       Walfe(6,910)         94       Walfe(6,910)         95       Walfe(6,910)         95       Walfe(6,910)         95       Walfe(6,920)         97       Walfe(6,920)         97       Walfe(6,962)         97       Valiation         98       CALL PLOT(1,*W1)         00       CALL PLOT(1,*1)	91			PYRI 740 PYRI 740 DVot 741
95 WRITE(6,563)HR 96 WRITE(6,963)HR 97 VRITE(6,962) 97 VRITE(6,962) 98 CALL PLUT(1,*W!) 99 81 CALL PLUT(1,*W!) 00 CALL PLUT(1,*W!) 00 CALL PLUT(1,*W!)	95 WRITE(6,963)HR 96 WRITE(6,962) 97 WRITE(6,962) 97 WRITE(6,962) 98 Call Plot(1,**N') 99 B1 Call Plot(1,*N') 99 B1 Call Plot(1,*N') 00 Call Plot(1,*1) 00 Call Plot(1,*1)	93	RAITE(6,91) WOITE(5,91) WOITE(5,05,)CADO		PTRU 141 PTRU 742 PVBU 742
97 VRITE(6,962) 98 PD 81 [6,962) 98 Call PLOT(1,**N') 99 81 Call PLOT(1,**N') 00 Call PLOT(1,'1) 00 Call PLOT(1,'1)	97 VRITE(6,962) 98 PNR 15(6,962) 98 PNR 14716 99 B1 CALL PLUT(1,'*N') 99 B1 CALL PLUT(1,'*N') 00 CALL PLUT(1,'1) 00 CALL PLUT(1,'1)	95	ARITE(6,963)HR WRITE(6,963)HR WRITE(5,944)		PYRU 744 PYRU 744 PYRU 745
199 81 CALL PLUT(T, *N') 199 81 CALL PLUT(T, *N') 100 CALL PLUT(1, 1) 192 749	99 81 CALL PLOT(T, '*N') 00 CALL PLOT(1, ' !) 00 CALL PLOT(1, ' !)	197	VRITE(6,962)		PYRD 745 PYRD 745 PYRD 747
		18 66	CALL PLDT(1, '*N') CALL PLDT(1, ' !)	•	PYRU 748 PYRU 749

				والأفريزين المالية المالية المالية المالية والمالية والمالية والمالية والمالية والمالية والمالية والمالية والم																										
PAGE 0016	РҮКО 750 Руко 751	PYRO 752 BVED 753	PYR0 754	. PYRO 755	PYRU 756	PYRO 758 PV20 759	РҮНО 760 ВУВЛ 761	9481 762 241 763	РҮНО 764 Вуво 745	ΡΥRÜ 766	ΡΫ́ΚŪ 767 ΡΫ́વŬ 768	PYPU 769	PYRU 771	PYRU 772 PVRΠ 773	РҮКО 774 Вуел 776	PYRU 776 Βνου 777	PYRU 778	PYRD 759	PVRD 781	РҮАВ 752 РҮВВ 753	РҮХО 764 Рүри 785	РҮЗЦ 786 Вупл 787	РҮНО 763 	ΕΥΧIJ -789 ΡΥΧϢ 790	PYR0 791	РҮЯЦ 792 Рүнц 793	PYRD 794 Pvan 795	: PYRD 796	PYRD 798	PYRD 799
IV (VER L43) SOURCE LISTING! PYRO SUBROUTINE 03/05/74	DO 82 II=1,1442 I=144741-71	JI=WTN(KEYP,I)/WTM(KEYR,I)#100.+15. 19-813/25-05 11/8412/25-05 114300.115.	JackT(1)-27(1))/(WT(15M2)=47(1))#100.415.	J4=(WPT(1))/0,%100+15	WRITE(6,974) XZIC(1) CALL BLUTTA-13AV.5-10ATCWT1).1.1EN.12.1BN.13.1TN1.14.1BN	1:401) Dr az fei4.114	CALL PLOT(1, 1 + 21) CALL PLOT(1, 1 + 21)	HRITE (6.918)	IF((IPLUT_CT.3),CR,(IPLOT_LT_2))GO TO 90	D0 75 1=1,1412	PT=wPT([] VEL1=WVEL1([)	210=4210(1) 2	T=+1(1) [MEHEWTUPH(1)	DD 76 Jel, ISS				WRITE(6,318) WRITE(6,3511CARD)	. #RITE/6,9334,216.T.T.MPH	YIELDªTH(KEYP)/THPHI/PPI(KEYR)*PI*100. J2#KeYk*20	J1=J2=19 J4=4F*D#20	Jaul4-19 Matrix Activity (-11 -11 -12 -12 -12 -12 -12 -12 -12 -12	WRITE(6,942)PT.VEL1	WRITE(6,729)1 USA(J), DXA(J), J=1, IM)	60 TU (42,45,75),160	II=IS+1 WRTTE(6,933)(1.07x(1).J#II.IR)	60 T:7 75	WRITE(6,539)(J,C(J),TH(J),J=11,15)	NK1151012101 VRITE(6/216)	WRITE(6,95,)CARD
A FORTRAN	601 602	603 404	605	606	607 408 82	609 610	611 93	613 612	615	219	619 619	620	622 622	623 623	625	627	629	630	532 41	633 634	635 635	637	639	640	642	643 42 644	645 645 645	647	045	650 90

÷

	NG#1 27#1	РҮКП 800 РҮСЛ 801	
	T#ZN	PYRD 8nZ	
:	walfe(6,916)	Fyen Bo3	
04	00 59 [#18]/ FEOTT=PEOT		
	WRITE(6.916)	PYAU 806	
	CU D1 1=1,515 11=1+61=14±20	PYRU 808 PYAU 809	
:	12=1+20		
4		PYPE ALL PYPE	
	12×KFVb±20	Ele Dakd	
	J1=J2-19	PYPU 314	
		<u></u>	
	WEITE(6-965)(INAHE(I).I=1).J2).(INAHE(I).J=J3.(/).YIELD		
63	60 T0 50 PT1 PT	PYFU 818 PYFU 819	-
	IF(PT,LT,PPUT)60 T0 49	PYFU 820 DV51 521	
49	PDIR=PI=PT	PYEQ 822	
-63-	PT1=P1	PYRU 823	
	TELDI CE SIICH TH SA	DVED 825	
		PYRU 826	
	PP1(1)=PP1(1)#P1/PT1	PYRD 827	
53	P(1)=PP1(1) C:1)=P/1)/T/C	PYAQ 828 Pyan 829	
	1TEST=2	PYP.D 830	
	· GD TJ 54	PYEN 831	
61	PTImPI PIEDI-Pijo	PYRU 832 PV211 833	
	00 62 1=1,1S	PYRD 834	
		PYRU 835	
62	アドロトロンドアレビュータアレングーム	PVPI 227	
	17651=3	PYRU 838	
	<u> </u>	PYRU 839	
50	T#T[\ Tubu-Tubu-T	PYEL 840	
	HRaHR+15	ΡΥμΩ 842	
	IGHTP=IGHTP+1	PYRO 843	
	WRITE(6/945)HR Dd f3 1#1.173		
	RAD(1,1,0,0,0,0,1,1)	: PYR(1 846	
3	RADE(1)=PAU1(1)	PYEU 847	
	WRITE(6,944)RADI	PYR0 848	

PAGE 0018	РҮ50 850 Рурп 851	РҮКО 852 Ругл 853	PYR0 854	PY50 856 PV20 856	Pγ#0 658		FYRU 802 ΓΥΓΩ 862 ΡΥΓΠ 863	РҮ?О 864 Рүрт 865	PYRU 866		PYRU 859	PYRU 872	РҮЕО 874 РҮЕО 874	PYRU 876	РҮКО-877 РҮКО 878	PYR0-879 PYR0 880	PYLU 831 PYRU 842	PYRD 834	PY30 835 PY30 836	PYRD 888	PYRU 859	РҮЯЦ 894	РҮК[] 894 ругл реб	Рүнд 896 Рурд 896	
SUBRCUTINE 03/05/74																									
(VER L43) SUURCE LISTING! PYRD	P(I)=PPI(I) 	ITESTel 1AET	IF(IGOTU-6E.IZZ)GO TO 56 IF(IGOTU-6E.IZZ)GO TO 56		160T1±122	60 11 - 50 XR11E (6, 949)	ARTELEARTY) 16(121,01,01,2)60 TO 95 WDITELEAREA	WRITE(0,966)ZTT Fertiate(10-9	00 77 J=14,116	CALL PLUT(1) * 1)	00.74.4=2+100+2	וואבט. 10 79 1=1,16טדט	ljkæljk <del>i</del> l If(ljk <sub>6</sub> g7,9)ljkæl		<b>GALL-PLUT(14+1+W1+2510ATP(1JK)+J3</b> IJ=(J+2)/4	IF(FLUAT(J/4), <del>FQ,FLDaT(J)/4,]J=1</del> Call PLUT(5,IDATQ(IJ),65,1+ 1)	PO 80 Jai4,116 CALL PLUT(J,'*N')	CALL PLUT(1,' 1) WRITE(6,966)	WRITE(6,967)CARD	<u>userusi</u> Masi	PTE0. DO 73 Iml.IS	rtavitto. 00 74 1elj15 00111.eorit15	P(1)#PF(1) P(1)#PF(1) TEXTHA-NC.0)ECTHEN	READ(5,943)IGOW/(2(II)/II=1/1) PEAD(5,943)IGOW/(2(II)/II=1/1)	лемизузициям Вг. Кус. ТВ. НТ
A FORTRAN IV	701 707 707	709	705	707	100	711 55 5	00 - 214 	715	717	719 // 20	721	723	725	727	729 79 1	730 - 730 - 0	733 80 0	736 1	736 75 (	139 1	741	743 13 143	745 74 1	147	

FORTRAN	IV (VER L43) SUURCE LISTING: PYRO SUBROUTI	NE 03/05/74	PAGE 0019
751 101	CONTINUE		PYRD 900
753	STGP111		PYRU 902
755 102 755	WITE(6,922)1,1D		
757 103			PYRU 906 PYRU 906
759	STUP113 STUP113		PY50 908 DVNT 000
761 761	WRITE(6,924)[,]D		
763 105	CONTINUE CONTINUE UNITEL-OSALLID		
765	STUP15 STUP15 CONTINE		PYRU 914 DV:01 615
757	FRITE(6,919)		PYRD 916
769			
111			PYRD 920
773 85	VC (Jac) =1, /REQC(TAN)		
775			
777	00.86 [T=800,1200,10 J=(1T=800)/10+1		PYAD 925 PYAD 926
779			
781 86 781 86 782	NC(1);;;HE4444(1,);) NR[TE(6)960)17; (NC(1)N),NE1,18) ND[TE(6,056,11,1-1,15)		PγRU 930 PγRU 930
783	00 88 17=800×1200×10 J={17=800×1200×10		ΡΥΚΟ 932 ΡΥΚΟ 332
785			PYRD 934
767 85	KC(UVN) HHCP(T)N)		PYRU 936
739 99	RETURN		
162 162 1901 062	HRITE (69.235) 10.4		PYEU 939 PYEU 940 PYEU 940
793	WALE LEVENT / JOC (J), DXA(J), J=1, IS)		
195	END		PYRD 944
		•	

HVETTING       PARTING																								
TWO CONTINUE RATIS       TWO CONTINUE RATIS         FUNCTION PARTIS       FUNCTION PARTIS         TENCTION PARTIS       FUNCTION PARTIC         TENCTION PARTING       FUNCTION PARTIS         TENCTION PARTING       FUNCTION PARTIS         TERCULICIAN FUNCTION PARTIS       FUNCTION PARTING         TERCULICIAN FUNCTION FU	PAGE 0020	PRP 945	PRR 947 Dee 040	Рдп 949 ррс 949 940	PRR 951 PRR 951	PRF 953 PRF 954	PRR 955 000 055	PRR 957 DOD 958	PRF 959 Pous 960	PRR 962	PRR 963 Dog 944	PKR 965	PRK 957	PRR 969	PRR 971	PRR 972 PRR 973	PRK 974 PRK 975	РАН 975 РАН 977	202 278 14.5228 979 2055 030	PRA 981 PRA 981 PRA 982				
	4 IV (VER L43) SUURCE LISTINGT PKK FUNCTION US/US/14	FUNCTION PRA(IS) COMMONTATION (IS)	JER (25) JEE (25) JEAD AD COMMON SEARCH STATISTICS (11/25/2) UT125 (21/21/2011) UT	COMMON/TH/TH/TH/TH/TH/TH/TH/TH/TH/TH/TH/TH/TH/	L DH(42), 15(25), 16(2), 10(2) COMMON SET, 27, 13, 19, 10) S	CATA PI/3,1415926/ PT=0-	PT2=0. Host=6	00 ] [=1,15 ICT   11,15 - 5072,073,073	PT#PT+P(I) PT#PT+P(I) PT = PT+P(I)	IF(CLJ(IJ).EQ.0.)60 TD 5	IJ=100=001=(ZTT=ZIC)/ZTT=99= 11=			UL+=ZTT/100.		PQ 3 [K#14.14] RADI(IK)=S2KT(RADI(IK)##2-VOL/OLR/XNC/PI)	IF(CLJ(I,1),Eq.0,)P(I)=0. GD TU 2	01 - Wall5(2,9001)PR8,8A01(1),VUL P(1)=P(1)*PT/PT2	PRREPT DI FURMAT(' FUNCTION PRR(IS)'s/s' PRE's/PEI4,5,5%, FRADI(I)='s/PE					

i

PAGE 0021 Recc 983	REQC 984 REPC 985	REAC 986 REAC 987	0+#KKEJU 200 REAC 989 Print 200	REAC 991 REAC 952												
03/02/14	(25),40(25)													•		
461 REQC FUNCTION	25),551(25),601(25),61( 31,0LS		<u> /K#Luutt)+UUPtisc}/</u>  **3+F[(])				-									
V (VER 143) SJURCE LISTIN FUNCTION REOC(T.I.)	COMMU4/SET/MY, MZ, IB, IPLO	REAL#4 LUG DATA R/1,967/		REUCEARLELAN) RETURN END												
A FORTRAN I	3	4 10 1	0 - 0	a o. c					•	•						

AGE 0022	PRES 993 Pres 994	PRES 995 Pars 996	PRES 997	PRES 933	PRESIDED	PRFSICOL	PRESIDUS	PRESIDER	PRE51006	PRES1007	PRESIDO9 PRESIDO9	PRESIDI PRESIDI 2	PRESIDIA	PRES1014 PRES1015	PRESIOIO PRESIOI7 PPESIOI2	PRES1019	PRESIO21	PRES1023	PRES1025	SPRESIO26	PRESIU28	PRES1029 PRES1030	PRESIOAL	PRE51032	PRESI034 PRESI035	PRES1036	PRESIU37	PRESI039	PRESIU41	PRES1042
03/05/74 P		(020/01.10.00)		······································				.IE LAK				1.01.77484511E-2/			E+CC+E**2+D*E**3))					•*{\ <u>{</u> \} <u>}</u> }								-	•	
SO FUNCTION	25.41			25,2), VI (25), ANY				DATIP ERDM BERNOUL				•CC/•36401820E-1/		-	r)**2*EXP(A+B]*E					""""""""""""""""""""""""""""""""""""""										
CF LISTINCI PRES	T) 111•277•C(25)•CP(	DF(25) . [5.kf(25].KR(25)	RAD, AU	PDN SWITTED CLUI	N1, KN2, V15 7. IR. IDI AT. DI S		ETURN	ULATES-PRESSURE L		T.0.1		/ BI/- 44245917/		0) 60 70 2	)))/(1)*1)/(C[3(1]		0.)60 TO 3		0.)GD TC 4	SCRT(8,1/(1,+SMW	71]** <sub>4</sub> 22]**C			RESDT ) / RAD ** 2*DN	WT(I)+AMWT	/ COK LD MULES)	latit	T0 21	1/2*  *VELA/VIS	0 TO 19 .
V (VER L43) SUUR	FUNCTION PRESO(	1, DH(25), CS(25), COMMULTURE, 719	1, EA (25), EE (25),	-COXMUN/PD/P1/251	A 11/21/10/00/000000000000000000000000000	REAL*4 LIG	IF(#2.EQ.5000)R	IS SUERQUIINE CAL	ATA AVYIJ	IF (HYY, NE, 1) GU	MAZEU1 Droll	DATA A/.4398818	PRESUTEO.	1F(CLJ(1,1),EQ.			IF(CLJ(1,1),EQ.		IF(CLJ(J,1).EQ.	Lauto())/prala	LATONAL (J//SANI)	VISAVIS+V/U	VIS=VIS*,0672	VEL2=42#1/(PT=P		C II AT #FT##3	6C=1.3143	IF(PEN.LE.C.)GO	REHU=2.**AD*DEN	IF (BENU, LE, 0, )G
A FORTRAN I	-1 0	ጠላ	ŝ	••	- 4	6	11	THI J ZI	10 2 2 10	- 12 - 12 - 4		6 C	21	23 11	24 25 25	27 22	56	31	33	34	4 9E .	10 10 10 10	66	40 4	42 543 5	2 2 99	45		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	50

A FORTRAN	IV (VER L43) SUURCE LISTING! HCP	FUNCTION	03/02/74	PAGE 0024	
1	FUNCTION HCP(T,I) COMMUNITIMEI/IR.IS.KE/251.KR(281.:	(25.101-88(25.1:	1.01.11(25.10)	HCP 1089	
। <b>ल</b> ४	1,EA(25),EE(25),RAD/AQ CommunityDevens/7/111,777.6/95).CP(9)	4.4		HCF 1091	
- 10. 4				HCP 1093	
<b>-</b> a				HCP 1095	
	•				
		-			
					.
					•
			•.		
			•		
			n Anna an tao an an an Anna Anna Anna Anna An		1

A FORTRAN	IV (VER L43) SUURCE LISTINGI RATE SUBROUTINE 03/05/74	PAGE 0025
→ c	SURRUUTINE RATE(CIJTJRA) Data R/1.9at/	RATE1097 2016-1098
•m 4	DIMENSID' RA(25).C1(25) Comman /PD/Siurp(52).C1/25.2)	RATE1099 Rate1100
30 V	COMMON/TUBEI/IR.IS.KF(25),KR(25),8(25,10),88(25,10),0L,14(25,10)	RATEIIOI RATEIIOI
7 61		NA 141105 RATE1103 PATE1104
0.0		RATELLOS RATELLOS RATELLOS
11	12#KF(1) CE	RATE1107 PATE1.07
13	00 35 N=11,12 J=16/19/	RATE1109 RATE1109
15	IF(CLJ(J*2).EQ.0.)ND=I 	RATEIILI
17 35		
61		
51	DG 36 M=[],[2	RATE1117 RATE1117 04751119
53	IF(CLJ(J,22),EQ.0,)NG=I	RATE1119
25 36	LEABLISHICKSCRECKECLUITEBBILEND	RATE1120 RATE121
20 3	<u>4                                     </u>	RATE1122 RATE1123
28	END	RATE1124
•		
	·	

· · · · · · · · · · · · · · · · · · ·																						-		
MAT81125 Mat81126	MATB1127	MATB1129	MATB1131 HATB1132	MATB1133 MATB1133	MAT81135 MAT81135	MATB1137 MATE1136	MATB1139 MATB1160	MAT61141 MAT81142	MAT21143 MAT21143	MAT61145	MATB1147	MAT81149 WAT81149	MAT81151 MAT81152	MAT81153 MAT81154	HAT81155	MATBILS7 MATBILS7	MAT81159 MAT81159	MAT81161 MAT81161	HATB1163	MAT81165	MATB1167 MATB1167 MATB1165			
SUBROUTI4E MATB(#Al,#AZ,PC2,DXA,X1,X2,T1,T2,PT1,PT2) Data G(/, aaia/	DIMENSIUM UXA(25),X1(25),X2(25),AC2(25),AA1(25),AA2(25) Communities (15,15,45),48(25),AC25),AC35,40,28(25,40),A1(25)	JEEK (25) PEEK (25) PRADAQ	00 1 1=1,1R V 1 1=1,1R K 1 1 4 10	RA=(RA](I)+RA2(I))/2. • E/VI/01 NE 0 10/04/-1-1 130073365554#01 #04#0404#2/V*/V)			X2(L)=X1(L) X2(L)=X1(L)	DD 39 [=1,]R K=1A(1)		00 38 HEIL/IZ	D1=D1=D(1, %)/B(1, 1)+X1(K)+DX4(1)			DN=DN+K*[],1)/B(I,])#X](K)#DXA(I) X2/1)#Y2/1,+K/+1/D1+-114X1(K)#KN//+)	Т.ЧРна9.0 т.в. 2.2 л.в. 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	TMPH=TXPi++X2(1) TMPH=TXPi++X2(1) CAIL PPHSC/T1.T2-DD.TXPH)	XT2=0.0 U1 40 L=1.15	XT2=XT2+X2(1) CTATTUHE	PT2=PT1=PD	bC2(1)=X2(1)/XT2*PT2/T2/6C	CURLINUE RETURN END			
	: M 4		<b>~</b> ~	0	11 5	1 61	15 27	17	6.70	21	23	25 38	200	29 29 30	31	33 42	. 35	37 40	39		4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			

23), ET(25), E

HEAT1193 Heat1146	HEAT1195	u1 HEAT1186	НЕАТІІЯ7 Неатііяв	HEATI189	HEAT191	HEAT1192	HEAT1193 Uration	HEAT1195	HE 11196	HEAT1197 UEAT1198	HEAT1199	HEAT1200	HEATIZUI	HEAT1202	HEA11203 UEAT1205	HEAT1205	HEAT.1206	HEAT1207 HEAT1268	HEAT1209	HEAT1211	HEAT1212	HEAT1213 HEAT1214	HE411215	HEAT1216	HEA11217 HEAT1218	HEAT1219 HEAT1220	HEAT1221	HEAL1222 HEAT1223	HF AT 1224	HEAT1225	HEAT1227 HEAT1227 5) HEAT1228	НЕАТ1229 НЕАТ1230
SUBRNUTINE HEATB(RADC,T81,TB2,DX4,X1,X2,TB2C,Q,U) Realso 100	COMMOM/PD/P(25),04,54WT(25),CLJ(25,2),VI(25),AMWT,VELL,HI	COMMUNITURE1/18,15,KE(25),KK(25),H(25),B8(25,10),B8(25,10),100,.14(25,1	1, EA (25), EE (25), RADI, RADI Ciikmin , Tiire 2 / Thi, TX / 3 00)	COMMUN/TY/TYPZ/RADZ(100)/DE(25)/ZIC	<u>1.61/3.1415001/681/.001/28851/20./515813/2120./</u>	RO AND AI FOULING EACTORS FRUM APPLIED PROCESS DESIGN FUR	CHENICAL AND PETROCHEMICAL PLANTS BY E.E. LUDWIG PAGES 55-59	TRAUSPERT PHENDMENA BIRD STUART AND LIGHTFOOT PAGE 249	D1tEuSIC: X1(25),X2(25),DXA(25)	<pre>IF(Ind_EC_0)60 T0 10</pre>	TAVG=(T62+T51)/2.	DT1=T5K1:=TAVG	DT2=TB2-T61	012×102-101		K=[A(1,1)]	HR=!HX+HE4TZ4[TAVG,])#(X2(K)+X](K))/2,#0XA(])/1,8	SH=0.0	SH=SH+(X2(I)*HCP(TB2,I)+X1(I)*HCP(T81,I))/2.*1.8	AD=P1+PL*ADD#2.0		AC = PI * R A H C + U L + 2 • 0 A A Y G = { A H - A 1 > / H M C + D / A 1 >	RST=(RADU-PAUI)/XKST		IF(RAUI.ME,RADC)AAVGC=(AI-AC)/LUG(AI/AC) 8C_(KANIL=RANC)/XK(	RU=R3+RST*40/AAV6+RI+1./(HI*AC/AU)+RC*AI/AAV6C	TB2C=TH1+(U#AD#DT1-HR}/SW	——————————————————————————————————————		IF(IC.LT.10)GU TU 5	ИТЕ (2,901)Q.HK,SH,чI • FJ6MAT() 0=1,6,4,6,1 НК=1,F14,4,1 СН=1,F14,	RETURN END
	m	4	n d	-	<b>x</b> 0	0 1 1	11	20		15	17 10	16	19		21	23	-24-1	53	27 2	29	30	31	33	34	сЕ. Эб	37.	39 4	60	11	1	45 C 45 C	47 5 48

AGE 0029	TUBE1231 TUBE1232	TURE1233 TURE1234	TUBE1235	1051238 TU961237 TU66:222	TURE1239 TURE1239	TU5E1241 TU8E1242	TUPE1243	TUBE1245	TUSE1240 TUSE1247	TURE1249 TURE1249 TURE1250	TUAE1251	TURE1253	TU661255 TU661255	10561257 Tuse1268	TURE1259 TURE1260	TUAE1261 TUAE1261	TUª E1263		TUBE1269	TU4E1269 TU8E1270	TUGE1271		TUBE1275	TURE1277 711751278	TUBE1279 TUBE1279
INE 03/05/74 P		1 - ANUT - VEL 1 - UT	8(25,10), DL, 10(25,10)		WVEL1(50).WC(25,50).	2 (25). B[2 (25)																			•
TUBE SUBROUTI	).CP(25.4)		R(25), B(25, 10), BE	(4),98F	TMPH(50), %PT(50),	LS (25).032(25).89A3	RADF (100)																		( • <b>1</b> • )
R L43) SOURCE LISTING	0UT1ME TUBE(T1,TMPH) 0U/PYRMA/7(11),2TT-C(25	25), 65(25), DF(25)	NA/THBE1/IRJ ISJKF (25) JK	CALLERCAL KAULAU DM/TUBE2/IND/TX(100)/01	00////////////////////////////////////	04/SET/MY, HZ, 18, 10L0T, 0	2 (25) . UXA (25) . BDXA (25) .	=0•U	PZER0(01(1),4)		ZTT/3.	[el, ]S		=0.0	[=],[\$  =T%PH40(1)/0T	INUE 1005 - 1163 TO 9	1=1,100	0.	1+10.	RATE (C. TIARAI) EATE (C. TIARAI)	0=T2		TT-(ZIC-DL)	<del></del>	ADF(INT((ZTT-ZIC)/ZTT*9 1.15.9.9)CT#AAD
A FURTRAN IV (VER	L SUBRC	3 1, DH(			9 CONM		13 1,840	15 9101	17 CALL			23 00 1	25 1 CONT	27 ZICI	29 DD 7 29 X1/1	31 7 CONT	33 DD 8	- 35 C DL=1	37 T2#1		41 T20L	43 21C1 65	45 DL=2	47 210 47 210 48 7101	49 4 CI=R

															-													
744E 0030	X, 10XTU961281 TUNE1282	TUAE1283 TUBE1284	TUHE1285	TU0E1286	TUPE1288	TUAE1299 TUEE1790	TUP E1291	TURE1293	TUAE1295	TUFE1297	TU4E1299	TUGEIJOI	TURE1302	TUSE1304	TUBE1305 TUBE1306	TUEE1307 THEFT308	TURE1309	TUREIBIL	TU2E1313	TUSE1314 TURE1315	TUBE1316	TULE1317 TUBE1318	TUBE1319	TU561321	TURE1322 TURE1323	10481329 10461325 T1661325	- TURE1327	
V (VER 143) SUURCE LISTING: TUNE SUBKUUTINE 03/03/14	FDRMAT(! I J K M1,3X, 1X1(K) 1,5X, 1X2(J)1,4X, 1DXA(I))	CALL MATP(RAL,RA2,BC2,DXA,X1,X2,T1,T2,PT,PT2)	IF (MZ.GE.1000)RETURN	16=0 CALL RATF(EC2-RT2-BRA2)	CALL MAT3(EAL, BRA2, BRC2, DOXA, X1, Y2, T1, BT2, PT, PT2)	CALL HEATB(CI,TI,BT2,RCXA,XI,X2,BBT2,QINC,UINC) fe(M2.Ge.1000)Return	IF(A95((08T2-9T2)/88T2),6E.0.0001)60 TO 5	BT2=(38T2+RT2)/2.	IF (IC. 6E. 25) ST3P1000			IF(ZIC,LE,GL)DT=0.0		115012 70240-0	00 60 I=1,1S P(1)=P(1)*CT2*CF	C(I)=89C2(I) X11-702(I)			DD 61 1=1,1S	Γ(I)=PT#XI(I)/TMPH IΓ(ZIC.LT.2854XN)GU TU 63	Xil=X'l+1.	UtheUty+1 TXtutt1=1		- 454214194564411434941464 14 34 KRITE(2,9901)T1,72,974,216	ZICIaC. MZ=MZ+1	HZ 10 (HZ )HZ HZ (HZ )HZ HZ (HZ )HZ		
A FUKIKAN 1	51 6906 52 C	53	53	56	- 28	59	61	63 5	65 65	67 67 67	69 25	71 8	72		15	77 87	64	81	63 69	84 61 . 85	86	67 8.8	89 63	9 1 C	93 69	95	79 79	72

i

•

·

	1		ĺ	ł	1	1	1	1	É					I	]		:	1						·			
			ľ															-									
								ļ				•	-														
										· ·																	
				Ì																						1	
																			ŀ								
																									i		
			ł							·		ĺ															
			ļ											·													i
																							•.				
				1															1								
	<b>1 1</b>	166	5333	2 CD 4	5 m c	1000	3 <b>- 1</b> - 6 9 - 7 - 6 9 - 7 - 6	6 M 4 6 7 7 7 7 7	345	24 4	349										1						
	5	<b>.</b>	ū				i i i i i	مر ومر م ما 111 و			1 สิ.สิ																
	ш С	TUR	105	10.1			101		10 L	TU	27																
	4			5																							•
			.   c																								
	3		ű	ŗ						101														.			1
	51			l						а -																	
	e			Ī							•								1								,
	0		-																								
			.	È.	ľ																						
	u									c																	
				ţ.						111																	
	na l									11																	
	1 BD			Ī						U V																	
1	s									1 1 1																	
										80			-														
	C BE		u u	Ę	2					F									1								
	-			Ι.	2					X									ŀ								
	0		•	F.	5.			1		ī																	
			5		31			1		1	L L								ł								
	L I S			F	2		1	4		1			-														
	ш	-	F -		A		2			1 H										:							
	URO	5	0	5					ļ																		
	s:	~ × ×	1	12	1 m 1 m		No.	170	4 4	}																	
	Ē		ج يد					1 () a   1		<u> </u>									1	Î							
.	2	N.		E.	13	+~-	122	3	=	ын - - н -	2																
	VER N	<b>1</b> 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1	17	125			TUR A		ž																
	-				;∺	165		1 <u>~</u> u 3 F		Ĩ	α μ Σ																
	-		.	•																							
	N A Y	20	0	20				ł		500																	
	H H	12	5	in a	5	10		10.4	5		50											•					
	Ĩ	42	1	<b>†</b>	17	772	1-1-1			1								•									
	4							ļ																	ł		
			1			1																	į .				

•

•

																							-			
Liei Siv	VIS 1352	VIS 1353 VIS 1354	VIS 1355 VIS 1356	VIS 1357 VIS 1358	65E1 SIA	List sive	VIS 1362	VIS 1365 VIS 1365	VIS 1368	VIS 1369	ILET SIV	VIS 1373	VIS 1375	VIS 1377	VIS 1379		VIS 1383 VIS 1383		VIS 1387	VIS 1369	VIS 1391	VIS 1393				
		10).DL.1A(25.10)	•	WT,VEL1,HI /22/27484511E-2/						E+CC+E++2+D+E++3)					****								••	•		
		) . 8 ( 25 , 10 ) , 8B ( 25 ,	(25,4)	(25,2),VI(25),A44						#1)##5*EXP{A+8]#					• . +				2 /61-37 /							
(1,TCOND)		/18,15,KF(25),KR(25 51.600.00	/2(11),277,C(25),CP 5),DE(25)	25) JUNSANT (25) JCL J 818 / 51 / - 44245917 /	93E-5/171LC/10./	<u></u>			EQ.0) 60 TD 2	T (SMWT(1)+T)/(CLJ()					EQ.0.)60 TC 4	wit(I))**.25)**2	8 1 1 / 10 T + T C / 1	2	435.15 110 11 811//10 ET#1	VIS, TCOND	·//·/·································					
FURCTION VIS	PEA1#4 176	COMMON/TUBE1	COMMON/PYRA3	СОМНОИ/РО/Р ( рата А. 4398	DATA A1/2.66	TJLD=T	PT=0.0 DD 1 J=1.IS	PRESDT=0.	IF(CLJ(IJ). F=(nc/7/01).	VI(I)=D]#S0R	0=017	PU 3 I=1,IS	1/*T4/(1)4=V		IF(CLJ(JJ))	1*(SNWT(J)/SM	VISHCALCONST	C0:111:0E VIS=VIS*.067	TCPND=TCPHD+	WRITE(2,907)	RETURN	VISEVIS Return Fun		•		
-	• ~	n 4		~ ∝	6	1	13	122	17	6 1 6	21	23	25	22 22	5.0			· 35 3	37	39 6	40 4 30 4 1 4	4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				

DRTRAN	V (VER L43) SUURCE LISTING! PRESC SUBRDUTINE 03/05/74 F	AGE 0033
	SUBROUTIVE PRESC(T1,T2,PD,TMPH) PEAL#4 100	PRES1395 Defs1395
	COMMON/PYRL3/Z(11)/ZTT/C(25)/CP(25/4) 1.00(25).05(25).0F(25)	PRESI397 Presi396
5.4	COMMPNI/TUBEL/IR.IS.KF(25),KR(25),8(25,10),BB(25,10),DL,IA(25,10)	PRES1399 Dec1400
		PRES1401 PRES1401
0	COMMINU/SET/MY, KZ, IB, IPLOT, DLS	PRESI403
10 C 7H	S.SUBRUUTINE CALULATES PRESSURE DEDP ERON BERNDULTE LAM Teten to take eriction loss futh runsinedation	PRES1404 PRES1405
12 ~ 11	DATA A2/1,16209295544/A3/7,3749554/	- NC01700 PRES1406
et 3	DATA PRESDT/W_U/_GC/1_3143/ T_/T1+T3//3	PRES1407 Dresi407
12:	VISS=VIS(T,TCUND)	PRES1409
11		
19 1	ANWTEDS	PRES1413
20	HGE3=0,0 Vel2=424t2/(PY+PKESDT)/RAD**2*THPH	PRES1414 PRES1415
23	HCP8=i(Pi+H:CP(T,I)*P(I)/PT/SHWT(I)	PRES1417
25 C		PRES1418 PREs1419
36	DELE-PT/ILCAT)#ANNT	PRES1420
27 28 A	IF(DEH+LE.U.)GU TD 21 Vei A=(Vei +±VFi -)/	PRES1421 Drfs1422
29	RENU=2,*#AG*UEN*VELA/VISS	PRES1423
31	IF (REIU.LE, 3500, )GD TD 20	
33 20		
35 10	Fc0.0056r+.5/(RENU#*.32)	PRES1429
37 100	Ρυ=ΩΕΞΞά{VELΔ%&2%F%DL/RAD*VEL2%%2=VEL1%%2}/62.4/2116.8 Ρυ=ΑRS(P2)	PRES1430 PRES1431
38		PPES1432
39 60	IF(P2,LE,3,)0J TU Z1 VEL25Δ2¥T/P2/μΔD#≠2#TMPH	PRES1433 PRES1434
41 42	IF(P0.EQ.0.)60 TA 7 IE(A.S.(/BEESDT-DN./BANJE001)60 TA 7	PRES1435 DRFS1435
64	PRESDT=PD DEV://0.4664T)4ANUT	PRES1437 PEF51437
43 46 7	60 T3 6 PT2=0.	PRES1439 PRES1440
47 42	00 9 1=1,IS	PRFS1441
49	IF((IPLDT.EQ.2).DR.(IPLDT.EQ.3).AND.(MZ.EQ.1))60 TD 1001	PRES1443

A FURTRAN	IV (VER L43) SOURCE LISTING, TEMPT SUBROUTINE 03/05/74	PAGE 0035
	SUBROUTILE TEMPT(TSKIN, ZIC, IND)	TEMP1472
N 6 -		TEUP14/3 TEUP1474 TEUD1475
2 K) 1		TEXP1470 TEXP1476
a	CALL PZEAUTI(1)/210) CALL PZEAUTI(1)/210) CALL PZEAUTI(1)/210)	TEMP1478 TEMP1478 TEMP1478
0 0 C	CALL REAL(3)'TEM21972(1)/60) Call Real(3)'TEM2127(1)/60) Call Brancastrast, taci	TENP1480 TENP1480 TENP1481
	X1#FTTT(ZX(1)*TL(9)*7*5*C1(1)*1#1.) X1#FTTT/22(1)*TL(9)*7*5*C1(1)*1#1.)	TE: P1452 TE: P1452 TE: D1452
13	X2=FITIT(ZX(1),T2(9),7,4,522(1),1,1,1)	TEVP1434 TEVP1434
15 901	FURMAT(1 STARDARD DEVIATION TEMPERATURE CURVE1.3E16.7) 1401-2	TEPP1495 TEPP1496 TEPP1496
17 5	ZSE#ZIC-FLOAT(INT(ZIC)/56)#56. IS/FECTOT 2. CATEGRAAL 156	TECHP1488
16		TEPP1470 TEPP1470
21	TSKIN=E20A(ZSEJC3(1))	TENP1492
53 TO	TSKINEF2UA(25EJC1(1))	
25 15	TSK NAEAUA(25E#C2(1)) TSK NAEAUA(25E#C2(1))	T = 57 1430 T = 101496 T = 101496
27 22	<u>ketuku</u> setuku	TE:P1458 TE:P1458
29 900	FORMAT(! TEMPERATURE OF REACTOR WALL OUTSIDE OF RANGE T= ",E10	3.5) TENP1437 3.5) TENP1500
31 31	ISKIMAL120 RETURN - Fun	TEMP1501 TEMP1502 TEMP1503

:

	SURROUTIVE FURN	FURNISO4	
	A TANIAOS, VAREA, MADEA, VIVIER ALIVES, ACAREVO, 95.	FURNISTS FIRMA	
	A POUSIJ VAREAD MAREAD ALAD ANIDID ACUER(8931) A Poblac, debs."Fility, Filipian, Yowy, Tstry.	EIRAN SOT	
	A NCR, HDUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,	FURN1508	
	A HISSELK, NGSELK, NGGELK, HOURE, NVCL,	- FUKN1509	
	A XSURFX(9), XJ, YD, ZLENG, NCUL, NROW, NXSXN, A sstatt trude, sende, ngaav, jhehe.	FURNISIC FURNIS:	
	A KI, K2, RCRU(10), TUEP(100), PERM(200), NPRNT	FURNISIZ	
4		EURNISI3	
	COMMUN /CPHY/ CPCP(11), HVHV(12)	FURNIS14	
		FURNIS15 FURNIS16	
	TUTEGER SCCDE. TCDDE. RSTART. HCDDE	FUP11517	
	EQUIVALENCE (DUMIY(1),KHTCL5), (DUMHY(2),KHTCL6), 	FURNIS15 Fift N 5 9	
U		FURN1520	
		EURNI521	······································
С (		FURN1522	
    _	CALL D7FR0130444713.4003	FURN1524	
		FURN1525	
	K2=6	FURNI526	
	kk17E1K2>876)	EULN1527	
	76 ЕДЕМАТ (1Н1) реал Амр. Авте тирге титі е сарос нере	FURN1529 Filen1529	
	UO 802 J=1,3	FURNIS30	
	kE#D{k1.40}}(FER%(N).N=1.18}	FUPRIS31	
ċ	DI FÜRMAT (18A4)	FUPN1532	
a		FURN1520	
, a	A CONTINUE	FURN1525	
U		FURNI536	
	NOONE = 0	EURNI537	
0		FURN1538	
	KUTAKI TTT U 11U KEUTARI DICAT DICAT	EURIDIA Growtero	
<b>پ</b> ر	J PASE LEEP DESTART DESC		
0		FURN1542	
U	TCDDE O ALL VDL AND SURF TEMP TO BE READ IN	FURN1543	
00	I MIN MAX TEMP KNUWN	FURN1544	
	Z VALU MIN MAA IEME FAUM AUIADAIIV FLAME IEME 3 NGE TEMD NATA EDÜM BECTART NICKS	EULINDS2	
) () 		FURN1547	
5	SCHDE O VOL AND SURF TEMP ARE ALL VARIABLES	FURN1548	
5	1 SOME VOL TELP ARE TO BE HELD CONSTANT	FURN1549	
50	2 SIME SURF TEMP ARE TO BE HELD CONSTANT 2 Sour No 2007 Temp Are TO SO HELD CONSTANT	FURNI550	
	<u>. 3 SUME VUL + SUKE LENP OKE TU EE HELD CUNSLANI Name Strender - 20</u>	FU:N1221	
ي د م			

٠,

1

ţ

•

•

FURN1554 FURN1555	LE FURNI556 EURNI557	FURN1558 FURN1559	FURNI560 EUCUI561	FURNI562 FURNI562	FURN1564 EURN1565	FURN1566 FURN1567	FURNIS68 FURNIS68	FURN1570	FURN1572	FURN1574 Fuan1575	FURN1576	FUPN1578	FURNI530	FURN1582 FUEN1582	FURNI584 FURNI585	FUEN1586 FUEN1587	FURN1588 FURN1583	FURN1590 FURN1591	FURN1592	FURNI594	FURNI596	FURN1593	FURNI600 FURN1600	FURN1602 FURN1603
NSTART D MEN CASE	I PREVIDUS CASES MAVE BEEN RUM - TREAT AS RESTART C	PICASE O HO MORE CASES TO FOLLOW 1 ANDTHER CASE WILL FULLOW	NODNT	1 DETAILED RESULTS NOT PRINTED	READ(K1,2)+START,TCUDE,SCUDE,NGRAY,JHCHC,NSTART,NCASE,NPRNT 2 FHRMAT (81,0)	LE ( ISTART (FE O ) ESTART = 2	TE / DATABLY IN 2 / TE 12 /		CALL READ(4)ISTAR1)D(1PMV(1))400) TE ( 717-05 LE 0 10 10 10 15 0.0 18	I NCOL .LE. 0 .OR. NROW .LE. 0 .DR. 2 ISLI-E .LE. 0 .D. NROW .LE. 0 .DR.		NSTARTEL NSTARTEL Deress vitteren vittere vitteren vitteren vitteren vitteren	L FORMAT ( 5110,2710,27)	CALL CLI ( RCASE, NSTART, NVNSH, NVMAX, NSMAX )	IF ( RSTART •EQ. 2 ) GU TU 40	RETURIA Emtry fuemo	CALL CL2 Call Cl3	RETURN Enter Furin	. NOUNE=0	NSNVALEN 09 EG	I FORMAT (1H1,14X,35HEHERGY BALANCE INTERMEDIATE RESULTS/15X,	1.35114-1 HCODE = 0		DD 52 NVELANVMAX Write (K2.2011) IV
υu	00	υu	UL	00		U	U		0				L		U	-	40				2			

PAGE 0038	TEDIATFURNI604 EURNI605	FUANI606 Fueni607	FURN1608	FURNI610	FURN1612 FURN1613	FURNI614	ERMEDIFURNI616	FURNI618 FURN1619	FUPN1620 FURN1621	FURN1622 FURN1623	FURN1624 FURN1624	FURR1626		FUCN1630	FURNI632	FURN1634 FURN1634	FURN1635		FURN1640		••			
03/05/74	ESULTS, INTERN						RESULTS, INTE															٠		
SUBROUTINE	ERGY BALANCE P	4AX ] GN TN 5A					ENERGY BALANCE	4AX ) GU TU 57				DONE = 1						HECK DS231)						
NG & FURN	י עטרטאב בוו	NV .FO. W			•		FACE AREA	NS .FO. HS			NV FO.	.EQ. 1 ) N				999 CT 1	TD 999							
SOURCE LISTI	//15X,60HGAS	F3: 2 . UR				USHAX	//15x,62HSUR	.Ea. 2 .DR.		•	F1. 2 . AVE	Z AND NS	<b>┨ ि भे प्रताह कर </b>			10 0 10	4NE. 0 ) GD	20X, IRESTART						
V (VER L43)	FORMAT (///	CALL CL5	CONTINUE	CALL CL4	CONTINUE	00 56 MS=1,	FORMAT (///	CALL CL6 IE ( ICDAF	ICODE = 10 CALL CLA		TE C HCHDE	1 ICODE . EQ.	CONTINUE	HADDINE KK		RETURN IF ( RSTART	IF ( MCASE	FURMAT(111,	END					
RAN I	2011		51		C 52	54	2021	55		L L	5 2 2		60	70	0.	00	111	112						

RTRAN	IV (VER L43) SUURCE LISTING: CLI SUBREUTINE 03/05/74	PAGE 0039	
L	SUBROUTIRE CLI ( NCASE, ASTART, RVNSM, NVMAX, NSMAX )	CL1 1641 CL1 1642	
10.	COMMON // AUMAY(3), KK, ICODE, HCODE, A TANYON, VAESA, WAREA VIV, VATAY, ANDESA, AND	CL1 1643 CL1 1643	
	A TERIDG, PRES, FLUET, FLUE(5), XPWX, TSIPK,		
0-0	A MCKA HULLY - HIVALA FRAILS KAULA XALKA FIERKA A NSSBLK, NSGBLK, NSGBLK, NGGRLK, NSURF, NVOL		
	A NOUNTRY OF AUT SUPERAL NOUNTRY WAYNY A RSTART TCUDE, SCUDE, NGFAY, JACHC, A K1, K2, RTEDVION, TDEPVIOND	CL1 1649 CL1 1649 Cl1 1650	
с , , , , ,		CL1 1651 CL1 1651 CL1 1651	
5	FATEGER - VENEES - VENEES - VENEES - VENEE EQUIVALE - (OUMARY(1), KHTCL5), (OUMAY(2), KHTCL5), · VEREAV: OOK - VENEES - VENEES - VENEES - VENEES - VENEES		
5			
0		CL1 1657 CL1 1657 CL1 1658	
0.0	1 NVNSN, WYLAX, NSHAX, KHICLE, KHICLE, DHICLE, DHICLE, DHICLE, DHICLE, CHICLE, DHICLE, DHICLE, DHICLE, CHICLE,		
	A /// 20X 124RESTART CODE 128		
1	C / 20X 23HTENPERATURE CALA LAVE 12 C / 20X 23HTENPERATURE CALCULATION CODE 112		
0	6 // 26X 2015/05/65K OF CVERALL ENERGY BALA CES 117	CL1 1667	
8 6	H / ZOX 36H3UH3ER DE 342 VALUME EJERGY HALANGES 114 I / ZOX 38H74UABER DE SURFACE AREA EYERGY MALANGES 112	CL1 1669 CL1 1669	•
	M // ZOXADEHIUMBER DE CAS VOLUEE ENERGY BALANCES USING CURRENT	INTECL1-1670	
-1 2	NACHANGE AREASJIIZ D / 20x 72Huumber df Surface Area emergy balances using current	CL1 1671 1×TCL1 1672	
ų م	PERCHANGE AREAS/110 A // 20% 47HTULERANGE DN GAS VOLUME ENERGY FALANCE, DEG. F.	CLI 1673 CLI 1674	
5	L F13.3 & / 20% Aquatri erance dn Shifface Asea Enebry Rai Amce, deg F	CLI 1675 CI 1675	
L .		CL1 1677 CL1 1677	
	KERR = 0		
	DEFINE FURMACE GEUMETRY, AND HEAT RELEASE PATTERN	CL1 1631	
	15 CALL AAA ( KERR )	CL1 1082 CL1 1683	
00	READ FUEL CUDE, EXCESS AIR, FUEL TEMP, ARIDGE WALL TEMP, And bux pres	CLI 1685 CLI 1685 CLI 1686	
00 ~ ¢	KEUEL 0 nil Firing	CL1 1637 CL1 1658	

A FURTRAN IV (VER L43) SUURCE LISTING: CLI SURROUTINE 03/05/74	AGE 0040
51 IF ( RSTART .EQ, 2 ) GG TD 31 s	CL1 1691 C1. 1692
53 23 FURNAT (IJU, 4FJU, 0)	CLI 1693
55 IF (TBRIDG .EQ. 0.0) TPRIDG = -460.0	CLI 1695 CLI 1695
57 BU20 FORMAT ( 1M1) 14/10/10/10/10/10/10/10/10/10/10/10/10/10/	CL1 1697 CL1 1697
59 Z, F23,2 / ZUX, 304FUEL=AIR MIXTURE TEMP., DEG, F F18,2) 50 Erend - 2,420, 2,440 Mixture Temp., DEG, F F18,2)	CL1 1679 · CL1 1570
	CLI 1701 CLI 1701
63 C COMPUTE FUEL AMALYSIS AND THE SPECIFIC HEAT + ENTWALPY DATA	
65 31 CALL BUB ( KERK )	CL1 1705 CL1 1705
67 C ESTABLISH TEMPERATURES	
69 IF ( RSTART .EQ. 2 .AND. TCODE .EQ. 3 ) GD TO 41	CL1 1709 CL1 1709
71 C SETARITEN AND SLOPACE DATA	
74 1F ( RSTART +EQ, 2 AND, JHCHC +EQ, 0 ) JUNK = 1 75 1F ( RSTART +EQ, 2 AND, JHCHC +EQ, 1 ) JUNK = 2	
77 C CALL DDD { JURK, KERR }	CLI 1716 CLI 1717
78 C CHARACTERIZE FLUE GAS 79 C	CL1 1718 CL1 1719
90 51 1F ( RSTART -EQ. 2 ) GD TD 61	cli 1720
81 CALL EEE 82 c -	CL1 1721 Cl 1 1723
83 61 IF (KERR "EQ, O) RETURN 86 stad	CLI 1723 CLI 1723
. 85 END	GLI 1725

AAA 1726 AAA 1727	AAA 1726 AAA 1729	AAA 1730		AAA 1734 AAA 1734 AAA 1735	AAA 1736 AAA 1736 AAA 1737	AAA 1738 AAA 1738	AA6 1740	AAA 1742		AAN 1746 AAN 1746	AAA 1746 AAA 1746	444 1750 444 1750 444 1750	AAA 1752	AAA 1756 AAA 1756 AAA 1756	AAA 1758 AAA 1758	AAA 1760 AAA 1761	AAA 1762 AAA 1762 AAA 1763	AAA 1764 AAA 1765	AAA 1766 AAA 1765 AAA 1767	AAA 1768 . AAA 1768 .	AAA 1770 AAA 1770	0.00 11/11 0.00 1772 0.00 1772	AAA 1774
SUAROUTIME AAA(KAPUT) Common // Lunmy/ajskk, icode, hcode.	A TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(5,3), A taridg, pres. Fluet, Flue(5), X%xX, Tsink.	A NCR, HPUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,	A XSURFX(9) × VO ZLCNG, NCOL, NROW, NXSXN,	A KI, K2, RCRU(10), TUEP(100), PERM(200)	INTEGER SCUDE,RSTART,HCDDE Foutvalfeger (71(1), 7/1)),(72(1),7/61))	DINEWSIGW 2(120),21( 60),22( 60)	IF(RSTART,EQ.2) 00 TH 30 Diserver creverov	FEAD(KI) 16) ACEL MRDVA XWINE/YHIGH, ZLONG/XLX, (XSURFX(J), J=1,9)	FURMANTICALLOVATION ************************************	VRITE(KZ/IE) NCOL/NROW/XNIDE/YHIGH/ZLONG Enemal(27h furnace genwetry incurrect/iox.5hcol =15.10X.5hrow =1	1/10%/3HX =F10.4/16%/3HY =F10.4/16%/3H Z#F10.4)	SULTS FLOAT (RCOL) XO=XXIDE/FLOAT (RCOL) VALUTCU/FLOAT (RCOL)	NVOLENCOL *REDW WVOLENCOL *READW	triasum.rate; MaxXIIIIXSXIIII Xerperval:	CQUTINUE NSUEF=2★(HCFL+NRIN)+UXSXI#NRIW	HCR#2*(NCUL+HRUW) MCCul V-MC.UL+HRUW)	IF(NSSaLK+15-MSURF,EQ.0)GD T0 25 MSSPLK+15-MSURF,EQ.0)GD T0 25	NGGALK=NVUL/15 16/06681 k#15-31V01 (PO.0) 60 TO 26	NGGBLKENSGFLK+1 NGSBLKENSGFLK+1	NSGULKERGGALK Ternvrite, 60. Ann.Nsire, 15. 601gn TD 28	KERREL KERREL Settersossen svon "Nsinge	FURMATICIACIONI HAULTSTATA FURMATICI NUMBER OF GAS VOLUMES AND/OR SURFACE AREAS EXCEEDED '60 1/10x41 GAS VOLUMES -1174,10x41 SUBFACE AREAS-1115)	Gn Tel 30

	1825	444 444	•			<b>aKERR</b>	E.O)KAPUT	IF(KERR.W CONTINUE	99 100 40
	1822 1823	444 444			5URF) 51//125X	N) II II NI	803U)(22) 5X, SURF	WRITE(KZ) EDRMAT(/2	97 98 8030
	1820 1821	444 444	DT DF FURNACE	81U/HR/FD	PATTERN -0))	RELEASE	2 <sub>0</sub> X, 1HEAT LUMES1//(	FURMAT(//	95 8020 96
	1818 1819				רוםא	VH e L = M e ( N	802011214	316.0) <u>4017E(K2.</u>	93 94
	1817	0017 440 51155443	/////INCAT	LIBILITY1/25X,	AT AVAL	5/23X .148	R 1, E10.	115X, 1	92 26
	1815	AAA	SE PATTERN'	AUD HEAT RELEA	11 DUTY	RNACE HEI	<u>197 exete</u> l	EDRMAT(14	90 BUID
	1814	444				Y, HTVAL	LUGH(UI03	WRITE(K2.	66
-	1812 1813	848 848			60) 601	1,21(1),	E(2,1HGAS	CALL WRIT	87 83
	-1811	444			,		2	-CONTINUS-	86.27
	1807						120	1=N 78 00-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	1505	AAA				E6/SUM	/ZLUNG#1.	FAC =HDUTY	E CO
	1806 1807	000 000			0 IN 40	-F3-0-034	21 114c#Silm	CONTINUE IELUDUTY#	81 36 82
	1604 1605						120	Law of UN-12	80 80
	1805 1803	444					10.01	SUMBOL	ce 11
	1901	AAA AAA				ערועע, ו=א זהוצא, ובא	5)(2](3) <b>)</b> 5)(22(3))	READ(K <b>1</b> ,3 READ(K <b>1</b> ,3	75 76
	1798 1759	AAA AAA	HEAT RELEASED	TION DF TOTAL	DR FRAC	PCENTAGE	4 AS A FE	EAD DATA I CALL PZER	73 C R 74 34
	1796 1797	444 444	5 LACE	TU/HR/FT_OF_FU	IG SEP AS 3	1.E6/ZLUA	ry7:17VAL* 54 FATTER	HEAT RELEA	71 33 72 C
	1794	AAA AA:			I ENGT I	EUDNACE	10-737-11	60 T0 34 2476= 16 5	69 70 C
	1792	HEATAAA	JOXIFUEL	U/HR] =1,F20.5	CAN 3T	RI'43 RATE =1-E10-0	VIUXJI FI	1CDNPLETE1	57 68
	1211	440 17 444	VALUES ARE M	R EUEL HEATING	U UN J.	HTVAL IRING HAT	32)HDUTY,	WRITE(K2, FURMAT(1	65 66 32
	1739 1739	040 200	c		33	0.0)60 TO	TVAL NE.	IF (HOUTY#	63 64
	1786 1737	040 040				TVAL	() НОUTYJH	READ(K1.3 EURHAT12E	61 30 62 31
	1784 1785	444 444		<u>1113 FUEL)</u>		REAS <b>1,123</b> -A <del>VAILADI</del>	CRFACE A	T I NO DF	59 69 69
	1722 1793	444 444	5 <b>,2/,25%,</b> 5 <b>7,125,/,25%</b> ,	DTH , FEET',F2. . UF GAS - VOLUH	101 101 101	/,25X,1CD +538,2//+	1151,132/ 11. FEETI	STAP. DF R	57 58
	1780 1781	X, AAA	5, F10.2)///.20 129/,25X.	FEET9(/,53X,1) U. DE COLUMNS1	CATID'I	BE REW LO SNACEL.//	LN DE FU	A 1SUSDIVIS	55
	1778 1779	1,2544A	ET. F33.2.	5X,114%10TH, FI	5 / / s	F FURNACE	SHSIZE D	1.///.20X.	53
	1776 1777	AAA 		<u> </u>	DMETRVI	URF URMACE GE		LURIAL XO. YO	51 52 80:00
	0042	PAGE	03/05/74	SUBROUTINE	ААА	LISTING	SUIRCE	V (VER L43	FURTRAN I

						•						<b>,</b>		;									
														;	•								
							Ì																
							1																
Mi et	90	ł																					
00	18																						
AGE	A A A																					1	
2																							
			•																••				
5/7																				•			
0/60						Ì																	
ш 7																							
UTI																							
UBRC																							
S								ļ															l
4																							
AA																							
1 S N			•	-						:													
571																							
							·																
URC		\ .										`											
) SG																							
L43																							
VER	TUR																						
י א		đ																				•	
AI! I																							
IR TR.	25	ł							ĺ									• •					
A FU		1																					
																							1

•
0044	1628 1629	1830 1831	1832	1834	1836 1836	1838	1640	1842	1644 1644	1646 1847	1648	1850	1852	1854 1854	1856	1858	1560 1560	1962	1864	1866	1868	1670	1872	1874	1876 1877
PAGE	6 9 9 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1) 882 836	ດ ເມີດ ເບີ		າ ແ. ແ ສີສວິ ແ ດີ ສິ	2 63 6 6 63 6		10 E 10 E 10 E	199 199 199	11. E 12. E 14. E	198 198		5 7 7 0 5 7 7 0 5 7 0 7 0 5 7 0 7 0 br>7	6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		9 9 9 9 9 9 9 9 9 9		1 40 4 1 40 4 1 40 4	ສ. ເ ເດີ ສ ເວີ ຊ	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6			688 688		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
A IV (VER L43) SOURCE LISTING: BBB SUBROUTINE 03/05/74	SURRUTI∿E 888(КАРИТ) Сомрите биет сас ѕрестрис неат+ент∴ару	(SPECIFIC HEAT AND ENTHALPY DATA TH SE STORED IN PULYNOMINAL FO	COMMON // NUMMY(3),KK, ICADE, HCADE,	A TERIOS PAES FLUET, FLUE (5), XAWA, TSINA,	A NCKA HULIYA HIYALA HATHA KEUELA XALKA FIERKA A NSSBLKA HOSALKA NSGBLKA NGGGLKA NSURLA A VEHBEYTAN, KE VA NORGHNA MENA MYENA	A RELATIONCE SCODE NGRAY, JHCHC, AND	THIRDED CODE TODE DETACT TOTES	CUMMUI/ED/ A(10,5),2(12,7),C(11,7),CMW(7)	REAL CUMP(25) CHAILINGYIE! REAL CUMP(25) CHAGAS(25) FWT(5) DATA CHAWAKS / 66 - 200 444 - 1945 - 1946 - 2010 - 2014 - 2028 -	11,4*56.1,26.1,46.1,54.1,28.0,444.0,22.0,34.1,18.0,28.0/ KEEP=0	IF(RSTART,EG,2)GD TD 80	FUETEI.	CCHPUTE FUEL GAS ANALYSIS UN A PER FOOT OF FURNACE BASIS			FUEL DATA DIL FIRING	FECATUS NT NT SASTS FSULF = XT % SULFUE IN FUEL DIL Stenn = 15 Stenn + B FUEL DIL	READ(K1,35)FMW,FAPI,FBP,FWATK,HCRATD,FSULF,STEAM Format(75,0.0)	IF(STEAM.LT.0.0.GR.STEAM.GT.1.0)STEAM=0.5 Soate=coateastean	PRIGRITY OF NOL WI DETERMIMATION			KJRO VIII		IF(FBP*F4ATA*ME*UA452 IF(FBP*F4ATK*ME*U*0)KJ=2 IF(FAPT*FBP_ME*0.0)KJ=1
FORTRA	ں ہ ہ	າດ 1 ເກັນ	5	• • •	-0 -		5 13 13	15	01-0	6.0	21	232	100	200	500			35 35 35	100 100	39 5			4 2 7	44	4 9 5 0

											والمركب										•		والمتقارفة المحافظ والمحافظ والم			таралай класски и чилар к.с. с вышиларарски што с таража осфиналась - <sub>по</sub> рективных продукта стал												
0045	1878 1879	1880	1842	1883 1883	1884	1835	1980	1638	1889	1690	1001	1892	1894	1896	1297	1898	-1868	1900 1901	1902	1904	1905	1906		19/9	1910	1111	1912	1914	1915	1916	1919	1919	1920	1921	1922 1923	1924	1026	1927
PAGE	888 883	a 8 8 8		383	198 198		1994 1997 1997	100 100	885	6.40 6.40		100	589	47#(88?	u B S	100 100 100 100 100 100 100 100 100 100	193	888 888 888			DBA	84#5889	883	п. л 10 а 10 а	88a	BBB	5 8 8 5 8 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	889	нВя	5.89		7791883	883	883	8 8 8 8 9 8 8 9 8	មិត សិត សិត		5 8 0 6 0 6 0 6
BB SUBROUTINE 03/05/74											11111111111111111111111111111111111111	946 /E=1	314 * 00029*5**3+16 * 97391*(5*P)**3	<del>*************************************</del>	075,52418/512423- 82216156418/5144		AP1 THEN 00 KJE1					7,90343*AK**2-28,81656*8+0.06136*	*5	Tuén DO K (=)							*A.**C300310 - 3**000000 - 3**	★★★★★0。50000101714000001114214140000000000000000	10089545E+1*(S*AK)**3			••• •••		
IV (VER L43) SUURCE LISTINGI B	IF(KJ.EC.0)60 TO 53 Gn Tu (62.65.66.52).Kl	KJ=1 83 CHART 3-25	FUDEAWAY, TERP NO. 1	8={EDP+460,)/1000	IF(FBP.LE.750.)Gn TD 43		FAPISAMAX1(FAPI)=30.) Sist sisting 5		EAPISANAX1 (EAPIstic)	Sel41.5/(FAPI+131.5) Sel41.5/(FAPI+131.5)	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	1 0.10800022L01748+0.7409 SEAMAX1(5,53414)	FMM=_453 6322+56.096181#5##4=	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	35/P1##6-39 325111#5%8##8432 0	60 70 57	KJEZ - BB CHARI Z=20 TJ CBTAIN	F8P=AMIN1(F8P,1000) F8P=AMAX1(F8P,100)	FWATKEAMINI (FWATK, 14.)	B-JEBS-44, JERAINSAN	AKEENATK/10.	FAP1=-102.40915+139.36071*AK-	]+9+84756#AK/8=0+16243#(AK/8)*	60 T0 42 VIE3 64 CUART 2-20 TO DETAIN AD	FWATK=AMINI(FWATK,14.)	FX4TK AMAX1 (FWATK, 9.)	FAPI=AMIX1(FAPI,105.) Fapi=AMAV1(FAPI, _20.)	Sel41.5/ (FAPI+131.5)	AKaFWATK/10.	X1#S/AK		am=0*102322/a/14/m/0*2484010/m/2 本( 2001100/a/2014/m/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/	282E=3*X2**4+0.14858729)*X2+0.	FBPE3#1000.=460.	IF(FRP,GE,100。)GU TU 51 FAPI=AHAX1,FAPI,24.)	60 T0 47 TELEND 1 E 1000 1 EN 42	EADTEALCELUNUEJ UN LU 32 EADTEANTA-YEADT-20-EN	50 TD 47
A FUNITAR	51 52	53 C	74 46	2.0	51	58	59		62 43	1994 1994		60 66	67 44	69	02	11		73 45 74	15	۹۲ ۲	78	64		81 82 8	83 46	84	28. 29.	87 47	BB	89	66	47	63	94	95 96	97 54 51	10 60	100

!

E 0046	BR 1926 BP 1929	86 1930 Af 1931	85 1932 84 1933	8F 1934 Bs 1935	69 1936 Bu 1936	88 1938 86 1939	BR 1940 Bu 1961	В5 1942 Ни 1063	89 1944 88 1945	83 1946 83 1946	87 1948	89 1949 89 1950	59-1951 86 1952	43 1924 BB 1954 BB 1966	BR 1956	83 1958 89 1958	BH 1950 BB 1951	BH 1962	84 1963 82 1964 83 1965	83 1966 85 1967	84 1968 00 1960	88 1970 82 1970	188 1972 188 1973	1974 188 1974 188 1975	185 1976 180 1976
SUBROUTINE US/05/74 MAN		3 5**8**9-0*07706*8**5		UTE MOL WT OF FUEL OIL 1) E	Y = ATOMS OF HVDROGEN		. BE GIVEN TO FUEL GAS COMPOSITIUS					464410, FSULF, STEAM	22,2/25%,144757-1.41,6435,2//25%,1 11. % SULFUR1, F31,4//25%,14104124												
(VEK E43) SUUKCE LISTINGI 868	=4 BB CHART 3-20 3={EBP+460.1/1002	FMW=-1.446891+81.959317#F+152.3928	468.8±1 468.8±1 4017524535541	FURMAT(! INSUFFICIENT DATA TO COMP Format() insufficient data to comp	COMPOSITION X=ATOMS OF CARBON Letheratione-0.0160 to 59	KERR=1 VB1TE(X2.58)	FURNATCI HYDROGEN CARBON RATO MUST	60 T0 80 Hrest-: 2 ±1/28 ATD	X=FXX/12,+HCFAC) X=FXX/12,+HCFAC)	+ = = = = = = = = = = = = = = = = = = =	SLOHR=FKATE*FSULF/100.	28176(K2,8030) 6:00,640,6401,680,6401K, Format(//25X,101L Firing'//25X,100	F40.2/25X <del>,18U]LJ4G_PJ1NT_(M</del> EAN)1,F H/C_RATIO, WT.BASIS',F24.4//25X, <sup>1</sup> %	TI <u>RA STEANI/30X+1455-STEAN/43-</u> E FLUE(1)eXF4UL 	rtuck13=1/2+mraut+3KAIr/14+ FLUE(3)=5LAHK/32. Youry / Vervir / Strum /33	α ξ = 0 + + + + + + + + + + + + + + + + + +		READ(K1,35) (COMP (J), JE1,25)	50##04 DO 62 N#1,25 SumeSumeFind Fini	CONTINUE TECSIM_NE_O_0)GD TD 64		PRIME (ALTOS) COMPOSITION REQUIRED TO SUPERION OF THE SUPPORT OF T	FWYEO DD AS NEL 25	COMP ( N ) = COMP ( N ) / SUM FNU=FNU=FCMD ( N ) / SUM FNU=FNU=FCMD ( N ) # CMM6AS ( N )	
A FORIKAN JV	101 C KJ= 102 52 B	103 104	105 53 205 53	107 55 F	109 C HC	111 112 2	113 58 F				121 5	122 8030 F	124 JF 125 2H	127 F	671 671			135 60 R	137	129 62 (	× 3	143 63 F	145 64	147 (	149 65 0

									ووالموافقة والمتعاومة والمحافظة والمحافظة والمحافظة والمحافظة والمحافظة والمحافظة والمحافظة والمحافظ والمحافي والمحاف				· · · · ·							والمواقع والمواجع		•																	
0047	1978 1379	1980 1981	1982	1983	1984	1985	1987	1988	1939	1990 1991	1992	1993	1994	1995	1997	5661	1999	2000	2002	2003	2004	2005	2007	2003	2010	2011	2012	2013 E102	2015	2016	2017	2018 2018	2020	2621	2022	2023	2024	2026	2027
PAGE (	884 5X,1888	N1, F388	/30X888	PPCBBR3	X, I TBBB	130,8480	F 20 • 585 GEN B82	198	68	ម្មាត សំព សំព	(CDMBBR	1+4+BBa-	+4 <b>.</b> *988	887000	CHP LBB0	HP ( 1884	188	555 547 * . r	IP (13888	P ( 1 9883	88 8		699 888		584	- BBB -	565	199	1. n 1) d 1) d	989 8	5 <b>8</b> 3	ម ឆ ស ស ស	100	RAA	884	EURNBRB	10051885 1 5 5 8 8 8		. a
03/05/74	15X1F12,2//2	0.6/30X.'ETHA	IEXANE1, F29.6	EL E27 6/30X	-2, 1, 125, 6/30	TYLE 'E 1 2 2 0 4	THE RUNCXIDE	27.6)			+COMP (5))+5.#	1)+3**CUMP(12	)+3,*CUNP(16)	1 1 1 1 0 AL JT 1 7 1	14/14/11/14/14/14/14/14/14/14/14/14/14/1	GNP(17)+2,*CO		7 ( 1 3 ) ANU JT ( 7 ) 7	10(10)+9°*(CDA	101-5 5×CDV	•		HULTS OF FLINE	1 • • •							DF DEG R					-30X, LEDUT DE	HFLUE GAS Cra		
UBROUTINE	ULAP WEIGHT!	LAETHANEL FZ	JE29-6/30X.1	30X IETHYLEN	OX, IC-BUTENE	-6//30X+146E	0//30X21CARR VD20GEN1.527	INITROGENI F			+4.#(COMP (4)	0)+2,#CnHP(-1	)+2*#CUMP(17	Chult arter	121121410142-X	+COMP(14))+C	(24)	110112 St.C.		100x 9+(21)d	(6)	C 040 / 36 /	LES TATAL	3 				4 mm			BE IN TERHS				(21)	118348 BEA11	<pre></pre>	,	
888 S	5X - 1101 EC	U1//30X>	I PENTANE I	1.529.6//	F27 5/3	AST LASS	E-112519	4/30X,			• *COVP (3)	8+*Crup.(1	+COMP(16)	141127 241	111144444	+CO4P(16)	(23)+CCHD	DAL JA ST		1+2 54011	.5*C'1"P (2		AND COURT	с Ш							A ARE TO				UE(J),J=1	PLATE ME	16HT1,15)	1 .F15 61	
ISTING;	1 1 1 0 1 7 7 2	E FRACTI	25.6/3UX	K. LCCTANE	1-311ELE-1	DELISTER	0X, 1807YN Idel E21.	WATER I, F			COMP (2)+3	+(6)daŭSa	+C[]MP(15)	04P(21)	214404401 131482 <u>*</u> CO	(CI]HP(15)	(22-) +CUMD	( ~ ) Q % ( ) 4 4	5 + CNP (8)	• C 1 + 1 + 1 + 1 + 1	0%P (22)+1		NCITISUAN	OF FURIAC					<b>1</b> 1		HAL'PY DAT		( F ) MM		J ] (XHWX (FL	645 <u>-112</u> 5X	ECULAR WE	6/51X+1N2	
SUURCE L	FMW Xz1GAS F	ITTON NOITT	TANE F	E28-6/30	6.6/30XP	+E25+6/3	5014-010X	9.6/30X	5	10 (11) # F MOI	1. ( ] ) + S • #	· 24 (8) 41:	-CUMP(14)-	0+(02)and		*(13)+4.#	191+COHP	rp(23)	•6+((L)d.	CU196151	20)+.5*C	12#X41R/	Jet - Love	FR FOUT	ATE		(N) 30174+1		) 15 ( M/ / 51   1		LAND ENT		LUE(J)*C		SO FLUET	-BULALLE	/25x, 11/0L	721 .F15.	
VER 143)	TL=FRATE/ RMAT(//2)	SDAMDO TE,	X IISUPE	HEPTANEL.	YLENE LE F2	1175155-201	130X-TCAE	LFIDE', FI	-66-NE1.2	MP (N) = C01	UE (1)=CD)	7.).46.*6.	CDNP(13)4	111 ( ] <del>9</del> ) + C:		)+4.*CUMF	+3•*CU3P4	UE(3)=(0)	10 + (9) 4 M	C01010000	+ .5*CUMP	115 (4) = 26	061275 ELL	6AS F	11MY (3) =F;	1_63_11=11	UET=FLUE	INT THUE	1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	1:TINUE	IFIC HEAT	1WX=0.		WITTUE	(ITE (K2,8)	PRATIL/21	E 1, F23, 2,	-6/51X21	77 181
TRAN IV (	FM 8040 FD	150	990 990	1.0 %	SUP	1 = 0	2 °	950		66		) d F	2#(	026	17.	212	38)	 1L 0		5 / F	39)		C NORM	• •		Da	ا ہے۔ ۱۹۰۹ کا ۱۹	<b>P</b> 3 <b>C</b>	<u>ה</u> נ	69 CU	C SPEC	X		71 60	3	8050 FG		416	10
A FOR	151 152	153	155	156	157	158	159	161	162	163	165	991	167	6-9 [	170	171		173	175	176	177	178	140		183	154	185	931	101	189	190	191	193	401	195	196	191	199	200

0049	2052 2053	2054 2055	12056 12055	2058	2000	20091	12004 12054	12066 22067	<2068	2069	42071 42072	12073	k2074 V2675	22076 22277	42078 	2040	N2081		2046	42098	82059 82090	k2091	X2092 X2093	42094 42095	42096 42097	K2098 20098	
BROUTINE 03/05/74 PAGE	FLCI F FURNACE LB/HR FLCI	FL01 FF(3.31. F101	SINK, FLO					S 1.0 LB/HR/FOUT OF FURNACE FUR			374 		TAL FLUE GAS FLOW RATEFLO					JLB/HR/FOOT OF FURMACE'/15X,FLD			F15,0) F10 1N = 001) F15	RERDY ND ICECUL ND FLO					
.43) SOURCE LISTING: FLOW SUE	FINE FLOW (FAC,KAPUT) AL FIUE GAS FLOW RATE PER FONT OF	// DUMMY(3),KK, ICODE, HCUDE, 1. VAREA, HAREA, XIX, XK(3), ACOF	D. PPES, FLUET, FLUE(S), XNAXA TS Jointy, utval, ceate, kenel, vate.	A RESULT REGILLS REGILLS REAL	I TCODE SCODE NGRAY JHCHC	Z <u>) - KGKU (101) - 10EK (10U) - FEALLZCO</u> - SCUPE, TCUDE, SZAFT, HCONE 	10	THE CULK FLOW PATTERN BASIS IS Patrom Incol 1144NGCM	CT10:: [NEDW+1]*NCCL	26-94241-)+240+ 01+1)*8808	(7F1^_0)	<u>nk+1                                    </u>	IP35)(GMY(4))N=],NY) FLO: PATTERN BASED ON ACTUAL TO	FER FOOT OF FURNACE	N#1,240		RITE(2,1647 ', 544(1), 44) RITE(2,1647 ', 647(1), 47)	TUILITERN FLUE CAS FLOW PATTERN	K2,8110)(GNX(4), h=1, NX)	K2,8120)(GNY(N), N=1,NY)	<u> </u>	BALARCE CHECK IN 6AS VOL	D]=ECTION JX1={.18+1)*([:CD[+1])+[.1C]	T JX2= (JR-1)*(PC0L+1)+(JC+1	1 (7)=(7) 1 (7)=(1+1:CUL)	7EPO(11111150)	10/13/14/0 <sup>-1</sup>
A FORTRAN IV (VER L	1 SURROUT 2 C FAC= TOTA	3 COMMON 4 A TAU(9)	5 Å THRIDG	7 A NSSaLK	9 A RSTART	11 INTEGER	13 EQUIVAL 13 EQUIVAL		17 C Y- PIREC	14 CALL P2 19 4X = (NCC	20 READIKI 21 35 FDRMAT(	22 NY=(4R)	23 READ(K) 24 C AUJUSTES	25 C EEAFEE	27 DO 72	29 37 CONTIN	31 CALL WE	33 8099 FURMAT	35 WRITE(K	37 WRITE(*	38 8120 FUEMAT	40 C AATTERAL	42 C X - 1	43 C 0U1	45 C IN 46 C DU1	47 38 Keo 48 CALL M3	49 D0 43

	GE 0051
SUBROUTINE CCC	CCC 2152 CCC 2153
COMMON // DUNNY(3),KK, ICODE, HCADE, A TAU(9), V28EA, HAREA, XLX, XK(3), ACDEE(8,3),	CCC 2154 CCC 2155
A TERIDG, PRES, FLUET, FLUE(5), XNEX, TSIER, A ref. inntv. Htval. Epate. Keufl. Xar. Ftemp.	CCC 2156 CCC 2156
A NSSBLK, NCSDLK, NGG3LK, NGG3LK, NSURF, NVDL, A veneryon, yy, yn yfring Nerv, Nerv, Nyevn,	CCC 2158
A RSTART, TCEDE, SCUDE, NGRAY, JHCHC, A K1- K2- RCEDEION, TJEPEIOGI, PF3-MC2001	CCC 2160 CCC 2160
TRIEGED SCHOOL TODE. DELADIT HESDE	600 2142 601 2142
UIMEMSIJM Z(120),21( 60),22( 60),04( 60),NN( 60) SOUTAALEYCE (71/1),200,1711,200,000,000 (60)	600 2164 617 2154
WRITE(K2/82/00) MRITE(K2/82/00)	CCC 2166 CCC 2166
GAS VULUKE AND SUKFACE AREA TEMPERATURES	
CALL PEERD(Z(1))-120) 1 F(TCUDE.GT_0) G(1 TO 31)	CCC 2169
ELEVITION OF A CONTRACT OF A CONT	CCC 2172
E 60 TU 87 60 TU 87 61 TU 87	CCC 2174
READ(K1, 33) TATUAT READ(K1, 33) TATUAT	
	CCC 2178
DIG 65 Mail # ISURF	
CALL AFLAME (TMIN, TMAX)	CCC 2184 CCC 2184
NRITE(K2.8210)(Z1(N),14=1,NVDL) FURMAT(//2007.10AS VD1.14E TEMPERTUDE.0FC E 1///257.4615.01) FURMAT(//2007.10AS VD1.14E TEMPERTUDE.0FC E 1///257.4615.01)	
\kappa K = 1 \ka	CCT 2188 CCT 2188
00 A9 N=1,120 15/14/50 -20167 TO A9	CCC 2190 CCC 2190
Z(N)=Z(N)+460.	CCC 2192 CCC 2192
CALL WRITE(2, ITENG', Z1(1), 60)	CCC 2194
IF ANY VALUE CONTENSION OF ARE TO BE HELD COWSTANT Then are not superace temp are to be held cowstant	CCC 2196 CCC 2196
CALL PIERCAL IN VULUES AND UN SURFALE VURBEN CALL PIERCAL (ALL PIERCAL C (1))120)	
LE 12(900,503,900),500DE	CCC 2200
V READYN - 001 VVV - VIVN - VIV - VIV	rr 3351

																		•							
2006	2202 2203	2204	2206	C 2208	C 2210 C 2211	C 2212	C 2214 C 2215	c 2216 7 2217	C 2218	C 2220	C 2222	C 2224 C 2224	C 2226	C 2226	C-2230 C 2230 C 2233	C 2232 C 2232 C 2233	C 2234 C 2235	C 2236 C 2237	C 2238 r 2238	C 2240					
	20	RES ARCCO						PES ARCCO			500						50			22		••			
+1 /en/en		TEMPERATU	• •					I TEMPERTU			110 6 4 7 6												٠		
34.41		C ANDWED						AVE KNOAN			V HLV HL														
ישעיטר		ИНІСН НАЛ						S WHICH P			SCIATED W	-						DFC.F.1.1							
	( 214	NUMBERS	-	-	. (09 .(	CDDF	(14)	EA NUMBER			), 60) IIEES ASST		SURF)		6	601	S	MPFoTUPF.							
	)) 11 M J • M = 1	S VJLUME		-	1) HH ( 1 /H	TU 913		PFACE AR	et Indu (17		I) MN ( 1 SM)	120)		))	0 10 9	1112.14	INPERTURE	SINK BIEBT TE							
	10/(7110 -8-30)(W	/20X,16A	-1, NH		TE (2, 1CU	.Ev.0)60	1601000	/20X1 SU			TE(2,1CD	(1)2)03	• 8240) (Z	X,6F15.0	E4.0.0)6	TECSITE	PILNT TE	(1202-10) T	114K+460						
	FURNAT(I WRITE(K2	FURMAT()	00 902 N	MN(K)=1	CALL WRI		READ(K1)	FDPHAT(/	DD 912	MH(K)=1 CONTINUE	CALL #RI	CALL PZE	KRITE(K2	1F.1//(25	IF(Z(M).	CONTINUE CALL XEI	EAD IN AP Read(Kia	WKITE(K2 EDe MATI/	TSILKETS	END					
	106	3 8230 4	10.1	003	903		016	8231		915	619					66	С В	8250	0						

										· ·		· · ·				
74 PAGE 0053	н 2241 Н 2242	H 2243 H 2244	Н 2245													
FUNCTION 03/05	1,21,50m(7)			-							-					
IV (VER L43) SUURCE LISTING: H	FUNCTION H(TT,JJ) COMMON JED/ A(10,5), 2(12,7),0(1)	H=EGUA(TT/1040,88(1,J))	END													
A FORTRAN	-1-2	<b>m</b> 4	5										-			

																				•			-									
AGE 0054	000 2246 000 2246	000 2248	DDN 2243	251	000 2252 2252	000 2254	6622 000	DDD 2257	000 2258	<u>500 2259</u>	000 2240 000 2241	000 2252	DDN 2264	000 2266	000-2267	000 2268	000 2270	1722 060	001 2272 000 2273	000 2274	000 2276	2222 200	DDD 2279	000 2280	DDN 2232	000) 2284	1000 22H6	D00-2287	000 2280 000 2280	000 2290 000 2291	CD0 2292	
(VER L43) SOURCE LISTING: DDD SUARDUTIME 03/05/74	SUPROUTIRE DOD(JONK/KAPUT) Crunned // Dirmy/a/.Kk. ICODE. HCODE.	TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3),	TIRLUGA FREDA FLUEIA FLUEIDIA ANXXA IDINKA More Hintv. Htvala fratfs.kfufl. Xáir. ftempa	-NGSPLKA HISPILKA NGGLKA NSURFA TVILA	XSURFX (9), XD, YD, ZLENG, NCOL, HPOW, HXSXN,	KI, K2, RCRU(10), T0EP(100), PERH(200)	tutesta sesat.testat.ustat.usena	114 EGEN 30005915405751441776595 D14E45134.27(20),224(60),224(60),215(60)	DIMENSION ALPHA( 60)	EQUIVALENCE 121(1)+2(1))+(22(1)+2( 61))	KERR=0 Technic Echiloci to 30	69 10(111,90) JUAK	FORMAT(1H1,14X, ISURFACE AREA GAS VOLUME DATA!/15X ,30(1-1))	RE43 1 SURFACE BATA Call P2E <sup>r</sup> D(2(1),120)		READ(K1,35)(21(N),N=1,NSURF)		15(2)(1).670999)21(1)=.9099	COUTIPUE CALL MEITERI, FESHEL-ZIII, 60)	WRITE(K2, p310)(Z1(J),J=1,NSURF) MRITE(K2, p310)(Z1(J),J=1,NSURF) MRITE(K2, p310)(Z1(J),J=1,NSURF)	TRAISHISSIVITY ( DUTSIDE SURFACES HAVE A VALUE OF ZERD	16(18)18F, EC. JCR.) CO 10 82	₩Ε₽₽(K]>35)( ΔU(J)>J=]>9) FneM±T(7F n_P)		TALL MACHINE AND	CALL READ(1, 175UR1, 22(1), 60)	FORMATIC//2012/01/2012/01/01/01/11 DIMENSIONLESSI//(253/6F12	litel(CAL)	JE RAUPE EQUIVED 19 832 DD 231 JEBU.NSURE	ALPHÁ(J)=1 -Z2(J) CUNTTIUE	CALL WRITE(1, TALP 1, ALPHA(1), 60)	-15(12145549805411 50-10-830
A FURTRAIS IV		- T -	4 v	~ ~		4 4 9 0 0		11	5	4	15	200	19 8300	20 5	22 C	181	25	26	27 B1 28	29 20 8310	31 C	22	33 24 35	. 35 82	37 C	39	41 8229 41 8229	45 42	6 9 7	45 831 46 832	47	48 ×0 830

ł

. . . . . . . .

-----

•

	11 (AEN (42) 200446 11211461 200 200400114 02/02/14	
51	IF(1,0-Z1(J)-Z2(J).6T.0.0)63 TG 83	DON 2296 DDN 2296
53	La (2) a (2)	DDN 2298 220 33203
55	IF(N, EG, U)GU TO 850	00h 2300
56	KEPREI	· DDD. 2301 ·
57 58 84	WRITE(K2,84)(MI(J))J=1,N) Formatii Sure Have Zero or Negitivity Reflectivity((1015))	(Dn 2302 DD0 2303
59 C 60 850	APEA Call Pzesn(21(1), 60)	100 2304 000 2305
61 4	284 2*FICUL 2010 05 2-FICUL	000 2306 Nor 2306
63	Z (1)	001: 2308 001: 2308
65 65		DD0: 2310 200 2310
57	2 (!!) = Yr 2 (!!) = Yr	UUU 2312
60.86	C0:1114UE	DD0-2313
69	IF(NXSX1, EC. C) GD TD'88	00h 2314
12	YAFEEEYUWZ. RMarcs+1	215 2315 DDn 2316
-72	00_87_1/s/U/s/18/5	000-2317
73	Z (1) _ YAREA&ALPHA(N) Cruttanic	000 2318 9.55 MGC
75 88	CALL WFITE(1,'ASUR',Z(1), 60) Weite(K2.4330)(7(.)1."Sture)	000 2320 000 2320 000 2321
77 8330	FURMAT(//20XJISURFACE AREA PER FUUT OF FURNACE SQUARE FEETI//	23220 2322 2252 000 2323
79 C	READ IN VELUIE DATA	001: 2324 001: 2324
81 C	UNINOSITY ( GAS VOLUME CORECTION FACTOR )	000 2326 
5 X 2	CALL ABTERS (VILLATE) SAN AN	· INE 2427
14	VALL MATE(12) ALAT JL 11 001 VALTE(12,8340)(7(1),41=1440L)	DDD 2329
· 85 8340 P5	FUPMAT(//20X)164S VOLUME CORRECTION FACTOR DIMENSIONLESS!//(25	X,6FDDD 2330 DDD 2331
57 C 57 C	HEAT TRANSFER COEFFICIENTS He He Subeace to Gas	000 2332 5000 5552
3 0 0 0 0 0 0 0	HCP SURFACE TO PROCESS FLUID HCPP SURFACE TO AMBLENT SINK	000 2334 GD0 2335
01 C	NDIE CORFECT BUTH HC AND HCP FOR TUBE-T/ -PLAIN AREA Waite(K2.8400)	000 2336 000 2336
63 8400	FORMAT(1-1, 14X, 'SURFACE HEAT TRANSFER COEFFICIENTS'/15X, 34('-'	)) UDD 2338 000 2338
95 1	VAREA=0,0 VAREA=0,0 0.111 1.0011070150	DOF 2340 DOF 2340
57	READ(KI, 35)HULA, HCLCL, HNRPW	
98	IE(HCLCL+E2+0,0101 T3 9]	DDC 2343
66	HAREA=HN~00++3.14159274+DIA/HCLCL	0DD 2344

10. 91     11. 10. 11. FERRICLICATION OF CLANARD     000     249       10. 10. 10. THERRICLICATION OF CLANARD AND AND AND AND AND AND AND AND AND AN	FORTRAN IV (1	VER L43) SUURCE LISTING: 000 SUARGUTINE 03/05/74	PAGE 0056	
10.3         39.4         WHER AND STATE AND	101 91 RE	4D(K],35)VD]A,VCLCL,VNRΩ4 VVCLCL,80,0,0)CD 73 92	000 2346 000 2347	
10     <	103 VAF	<pre>AEd=V0ROM#3.1415927#V01A/VCLCL fff(y) = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 =</pre>	000 2348 001 2348	·
1     2 <td>105 8410 FUF</td> <td><pre>XMAT()/20X91TURE StateManueversity (55X) (MLLL1) (51X) (11XERNEDIATE)/ XMAT()/20X91TURE StateManueversity (55X) (MLLL1) (51X) (11XERNEDIATE)/ XMAT()/20X91TURE StateManueversity (55X) (MLLL1) (51X) (5</pre></td> <td>25X, 000 2350</td> <td></td>	105 8410 FUF	<pre>XMAT()/20X91TURE StateManueversity (55X) (MLLL1) (51X) (11XERNEDIATE)/ XMAT()/20X91TURE StateManueversity (55X) (MLLL1) (51X) (11XERNEDIATE)/ XMAT()/20X91TURE StateManueversity (55X) (MLLL1) (51X) (5</pre>	25X, 000 2350	
10     CGAL SEGRET (1,11,140)     000     2555       11     CGAL SEGRET (1,11,14)     000     2555       11     CGAL SEGRET (1,11,14)     000     2555       11     CGAL SEGRET (1,11,14)     000     2555       12     CGAL SEGRET (1,11,14)     000     2555       13     CGAL SEGRET (1,11,14)     000     2550       14     DEAT REAL SEGRET (1,11,14)     000     2550       15     DEAT SEGRET (1,11,14)     000     2560       16     DEAT SEGRET (1,11,14)     000     2560       17     DEAT SEGRET (1,11,14)     000     2560       18     DEAT SEGRET (1,11,14)     000     2560       19     DEAT SEGRET (1,11,14)     000     2560       10     DEAT SEGRET (1,11,14)     000     2560       11     DEAT SEGRET (1,11,14)     000     2560       11     DEAT SEGRET (1,11,14)     000     2570       11     DEAT SEGRET (1,11,14)     000     2770       11<	107 2 F1	LAREFEX.HUTES	44T10000 2352	
111     creation     000     2000       112     creation     000     2000       113     000     000     2000       114     creation     000     2000       115     creation     000     2000       116     creation     000     2000       117     creation     000     2000       118     creation     000     2000       119     000     000     000       110     creation     000     2000       111     creation     0000     2000    >	109 CAI	LL P2E%D(2(1),120) Ad(k1,35)(1),120)	00C 2354 DDC 2355	
111       8445       Februit 1/2/2004 States and Februit aftelings         115       C. CUVERT VALSES AND FEBRUITS       DOID 2500         116       C. CUVERT VALSES (COFFICIENTS)       DOID 2500         117       2000       2000         118       C. CUVERT VALSES (COFFICIENTS)       DOID 2500         119       2000       2000         110       2000       2000         111       2000       2000         112       2000       2000         111       2000       2000         112       2000       2000         113       2000       2000         114       2000       2000         115       2000       2000         115       2000       2000         111       2000       2000         111       2000       2000         111       2000       2000         111       2000       2000         111       2000       2000         111       2000       2000         111       2000       2000         111       2000       2000         111       2000       2000         111	111 RE1	AQ(K],35)(Z2(N),N=1,^NSURF) 116(K2.84)22	000 2356 DDJ 2357	
11     Cuyrerr Aun. Gorffrond     000: 2300       11     2014 Fistart Aussient Gorfforterts     000: 2300       11     2014 Fistart     000: 2300       12     2014 Fistart     000: 2300       13     440: 2152 Fistart     000: 2300       14     415 Fistart     000: 2300       15     610 Fistart     000: 2300       16     2014 Fistart     000: 2300       17     1701 Fistart     000: 2300       18     410 Fistart     000: 2300       19     2100 Fistart     000: 2300       10     2014 Fistart       11     Fi	113 8415 FD:	PNAT(//20X1SURFACE FEAT TRANSFER COEFICIENTS HAVE THE FOLL Pitts Bith PEP Hing PERIZOX ISONARE FONT OF ALAN AFFAID.	D⊬I⊬GDDN 2358 DND 2359	
117     2017322(10)*******     000 3565       118     201732(10)*******     000 3565       121     5     REPORTANCE     000 3265       122     5     REPORTANCE     000 3265       123     NET ALL     000 3265     000 3265       123     NET ALL     000 3265     000 3265       123     NET ALL     001 2565     001 2565       123     NET ALL     001 2565     001 2565       123     NET ALL     001 2565     001 2565       123     NET ALL     001 2567     001 2565       124     NET ALL     001 2567     001 2565       125     011 ALL ELECT ALC     001 257     001 257       124     011 ALL ELECT ALC     001 257     001 257       125     011 ALL ELECT ALC     001 257     001 257       124     13     010 257     001 257       125     011 ALL ELECT ALC     001 257     001 257       125     011 ALL ELECT ALC     001 257     001 257       124     13     010 257     001 257       125     011 ALL ELECT ALC     001 257       126     011 ALL ELECT ALC     001 257       127     011 ALL ELECT ALC     001 257       128     011 ALL ELECT ALC </td <td>115 C CONVI</td> <td>ERT WALL HEAT TRANSFER COEFFICIENTS</td> <td>000 2360 000 2361</td> <td></td>	115 C CONVI	ERT WALL HEAT TRANSFER COEFFICIENTS	000 2360 000 2361	
119     Christizzinistenia     000 2504       129     Structure     000 2514       129     Structure     000 2514       129     Structure     000 2514       121     Structure     001 2514       122     Structure     001 2514       123     Structure     001 2514       123     Structure     001 2514       124     Structure     001 2514       125     Structure     001 2514       128     Structure     001 2514       129     Structure     001 2514       129     Structure     001 2514       121     Structure     001 2514       122     Structure     001 2514       123     Structure     001 2514       124     S	117 00		000) Z362	
121     5.     FELT (MY SUFFACE EDUT     90     236       122     100     237     90     237       123     2101     211     91     90     237       123     2101     211     91     90     237       123     2101     231     90     237       127     94     601     90     237       129     641     411     90     931       129     641     411     90     90       131     430     100     237       131     430     100     237       131     430     100     237       131     430     100     237       131     430     100     237       131     430     100     237       132     430     100     237       133     430     100     237       134     430     100     234       135     10     100     234       134     10     100     234       135     10     100     234       135     10     100     234       135     10     100     234       135     10     <	119 22	(N)=414574454 (N)=42(N)#44454	001 2364 001 2364	
127     00: 200       128     00: 200       129     00: 10: 200       129     00: 10: 200       129     00: 200       129     00: 200       129     00: 200       129     00: 200       120     00: 200       121     00: 200       129     00: 200       120     00: 200       131     00: 200       132     00: 200       133     00: 200       134     00: 200       135     00: 200       134     00: 200       135     00: 200       134     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       135     00: 200       136     00: 200       137     00: 200       138 <td>121 C KEAD</td> <td>IN SUMFACE DATA NVESHER OF ON ON</td> <td>000 2366 000 2365</td> <td></td>	121 C KEAD	IN SUMFACE DATA NVESHER OF ON ON	000 2366 000 2365	
125     121111-111111-1111     12111-111111-1111       129     3211111111-1111     1211111111111111111111111111111111111	NNN EZT		00F 2366	
27     98     Curring     000     277       129     50     Curring     000     279       129     Curring     000     279       131     Ray = Multicity.supply     000     279       131     Ray = Multicity.supply     000     237       131     Ray = Multicity.supply     000     237       132     Ray = Multicity.supply     000     237       133     Ray = Curring     000     237       134     Ray = Curring     000     237       135     Ray = Curring     000     234       135     Ray = Curring     000     234       135     Ray = Curring     000     234       137     Ray = Curring     000     234       138     Ray = Curring     000     234       149     Refu     000     234       157     Ray = Curring     000     234       158     Ray = Curring     000     234       159     Ray = Curring     000     234       150     Ray = Curring     000     234       151     Friden     000     234       153     Ray = Curring     000     234       151     Friden     000 <td>125 21</td> <td>98-48-48-48-548-4 (N) #21 (N) #VAREA</td> <td>000 2370</td> <td></td>	125 21	98-48-48-48-548-4 (N) #21 (N) #VAREA	000 2370	
129     CUL VETERZAZZIJIA 001       131     Manne FERMIT(22/2014) 401       132     Manne FERMIT(22/2014) 401       133     Manne FERMIT(22/2014) 401       133     Manne FERMIT(22/2014) 401       134     Manne FERMIT(22/2014) 401       135     Manne FERMIT(22/2014) 401       134     Manne FERMIT(22/2014) 401       135     Manne FERMIT(22/2014) 401       134     Manne FERMIT(22/2014) 401       135     Manne FERMIT(22/2014) 401       136     Cull FERMIT(22/2014) 401       137     Manne FERMIT(22/2014) 401       138     Cull FERMIT(22/2014) 401       139     Cull FERMIT(22/2014) 401       131     Cull FERMIT(22/2014) 401       132     Cull FERMIT(22/2014) 401       133     Cull FERMIT(22/2014) 401       134     Cull FERMIT(22/2014) 401       135     Cull FERMIT(22/2014) 401       136     Cull FERMIT(22/2014) 401       137     Cull FERMIT(22/2014) 401       138     Cull FERMIT(22/2014) 401       139     Cull FERMIT(22/2014) 401       1310     FERMIT(22/2014) 401		11118UE 11118UE 11 001156224UE 1277112 401	000 2372 000 2372	
131       R420       WRITE(KZ,RA39)(522(H),H1,HSURF)         133       R420       HOLE (KZ,RA39)(522(H),H1,H2,H1,HSURF)         134       R430       SCHAFT(XZ,M1,H2,M2,H2,H2,H2,H2,H2,H2,H2,H2,H2,H2,H2,H2,H2	129 CA	LL WAITE(2) HCP / 22(1)) 60) TTC/25 2/20/07/10/08 - 1151255	00n 2374	
133       10       1001       230         148       140       156415,41)       000       230         134       10.615,41)       000       231         137       10.615,41)       000       232         137       EAD(475501714)410.       000       232         137       EAD(475501714)41.       000       232         138       EAD(475501714)41.       000       234         137       EAD(475501714)41.       000       234         140       ENECOTORECCENTSTREACE F1.ABIENTL//(FSXJ6E15,41)       000       234         141       FFUGRAL*ELON       000       234         143       FFUGRAL*ELON       000       234         144       FFUGRA       000       234         144       FFUGRA       000       234         143       FFUGRA       000       234 <td>131 8420 - FUL</td> <td>ITE(K2)8430)(22(N))0=1_NSURF) EMAT(//25X)(22(N))0=1_NSURF) EMAT(//25X)(222(D)FF1E)CTENTS SURFACE TH GAS1///25X.6F</td> <td>001 2376 15.41007 2377</td> <td></td>	131 8420 - FUL	ITE(K2)8430)(22(N))0=1_NSURF) EMAT(//25X)(22(N))0=1_NSURF) EMAT(//25X)(222(D)FF1E)CTENTS SURFACE TH GAS1///25X.6F	001 2376 15.41007 2377	
155 1X.6F15.+1) 157 1X.6F15.+1) 157 2610(11201 157 2610(11201) 158 2610(11201) 158 2610(11201) 158 2610(11201) 158 2610 159 110 1F1000 2345 150 110 1F1000 2345 150 110 1F1000 2346 151 110 1F1000 246 151 1100	133 8437 ED	Statt//// to solution for the fold state of the solution	001 2378	
137 WEAD (K193)(12(H3)HET.NCR) 138 REAL WETEC: (H3)HET.NCR) 138 REAL METEC: (H3)HET.NCR) 139 NATTEC/SA4+91(2001)+11/NCR) 141 111 REAL (H2)HET.NCR) 141 111 REVERAL-(E_0)KAPUT=KERK 143 111 REVERAL-(E_0)KAPUT=KERK 143 111 REVERAL-(E_0)KAPUT=KERK 143 111 REVERAL-(E_0)KAPUT=KERK 144 ERD 145 ERD 149 ERD	135 1X		0DC 2350	
139 XATTE(K2, 544-0) (2(K)) '=1,*CR) 140 B440 FOKMAT(22XLEUGENT SURFACE TO ABIENTL/(25X, 6E15, 41) 00D 2345 141 119 RETURN. "E.0) KAPUT=KEAR 143 119 RETURN. "E.0) 00D 2349 143 END 143 END		AD(K1=35)(A1)/41)/AD AD(K1=35)(Z(M)/41)/AC AD(K1=35)(Z(M)/41)/AC AD(K1=35)(Z(M)/41)/AC	001 2382 2822 CON	
141 110 IFIKERA."E.OKAPUT=KERK 143 111 RETURN 143 END 00D 2348 	139 8440 FO	ITE(X2,8440)(2(N)/M=1/MCR) EMAT///22X.4F15.4/) EMAT///22X.4F15.4/)	000 2334 000 2345	
143 END	141 110 IF	TIDE STATES STAT	000 2396 000 2336	
	143 E41		000 2388	
		· · · · · · · · · · · · · · · · · · ·		
		•		
			-	
			ланицин 144 (тата и дин Мал цинин)рири (Муйно) Алин Ал (Шу) Айтинин 477 ж. о о ороном Ан	

A FURTRAL	I IV (VER L43) SUURCE LISTING: 03/05/7	74 PAGE 0057
-+ c	SUBROUTLIE EEE	EEE 2309 FEE 2300
5.00	A TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3), A TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3), A TARTAG, DEFS, FILTE, FILLER, XEWY, TSTUR	EEE 2391 FEE 2391
	A NCR, HUNTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP, A NCR, HUNTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,	
~ 0	A XSURFX(9), XO, YO, ZLONG, NCOL, UROW, NXXXN, A SETART, TEDER VEXAV, SILAND, VICE NEXAV, USAV, USAV, USAV, VICE	
6 0	A KI, K2, KCRU(10), TAEP(101), PEAK(200) THIFFE SCUNFTCUDE-EVEAKT-WCDDE	EEE 2397 EEE 2397
11	REAL T(10),4(10),TT(10) REAL T(10),4(10),TT(10)	EEE 2399 EEE 2400
13	DATA T/500, JOUN. J500, 2000, 2500, 3000, 3500, 4000, 4500	0.,5000./EEE 2401 FEE 2401
15	PH20=FLUr(2)*PRES	EEE 2403 EEE 2403
0	CHARACTERIZED REAL GAS BY	
	3 GRAY GAS MAXIUM (PRESENT LOGIC VALID FOR 1 GRAY ( CUMPUTE AUGUEDTION CORCENTION FOR THE THE THE STUGICE FORV ORS	GAS) EEE 2407 FFF 2407
212	EE1=EMIS(PCU2,PH20,PSU2,PRES,TRRIDGALX) EE1=EMIS(PCU2,PH20,PSU2,PRES,TRRIDGALX) EE2=EMIS(PCU2,PH20,PSU2,PRES,TR21502, *V))	EEF 2409 EEF 2410
23	XK(1) #LUC(A35(EE1/(EE2-EE1)))/XLX	
52 52 52	E1 = EMIS(PG2) PH2(), PS02, PRES, T(J), XLX)	
20 20		FEE 2415 FEE 2415
20 20 20 20 20 20 20 20 20 20 20 20 20 2		
31 15	CONTINUE CONTINUE Continue	
33	T8R=T6R[06-460.0]	EEE 2421 T.V EEE 2421
. 35 36 46	110) 110) 110 Active State of the Active State of the State of States State	1111111 EEE 2428 111100X:1.5FE 3428
37 50	INUMBER IF FRAMERANGERANGERANGEN FRAMERANGEN IN INTERVISED INTO INTO INTERVISED INTO INTO INTERVISED INTO INTO INTO INTO INTO INTO INTO INTO	6.2//20%16EE 2425 //20%1EEE 2425
39	3ESSURE ATM.11.120.110.120.114.130.144L TEMPERATURE.0EG F1.F.	17.2//20XEEE 2427 skriv.1.5ee 2427
41		
43	END	EEE 2431
A second distribution of the second se		

•

									•											
	PAGE 0058	CP 2432 CP 2433	CP 2434 CP 2435	CP 2436	CP 2438	CP 2440										-				
	03/05/74																•			
	44: IV (VER L43) SUURCE LISTING: CP FUNCTION	FUNCTION CP ( TT )	FUNCTION COMPUTES SPECIFIC HEAT OF FLUE GAS Commony (Crono), HOVEN(12)	CD - 5010 - 1111100 0. FDFD 1		EZD C														
	A FURTRA	ر ۲۰۰۰ ۲	5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 C	2 5	0							•							

								•							· · ·					
																	•			
PAGE 0059	622 2441 677 2442	CZZ 2443 C77 2443	CZZ 2445 C73 2445	CZZ 2447 C77 2448	CZZ 2449 CT7 2450	C12 2451			•								•			
03/05/74																	•.	•		
FUNCTION																				
IV (VEK L43) SUURCE LISTINGI CZZ	FURCTION CZ2(TT,JJ) COMMON /ED/ ACLO.5).av12.7). D(1)	DATA KTIRE /0/ TEXMITHE NG ANON IN 20	00 9 Jels7	00 8 K#3.12 11/2-11/2-11/2-11/2-11/2000	CONTINUE CONTINUE		RETURN END													
A FORTRAN I		m 4	5.0.4	o ra	8 G C	11	13 99 13 99 14						•							

FUNIKAN	IV (VER L43) SUURCE LISTING; AFLANE SURRUTINE 03/05/74	PAGE 0060
	SUBROUTIME AFLAME(TMIN,TMAX)	AFL 42455 AFL 42455
m.	COPAGN // DUMMY(3),KK, ICGDE, HCDDE,	AFLA2457
\$ in .	A TURIDGE PRESS FLUETS FLUE(5), XNAST STURFUSSIS	AFLA2459 AFLA2459
0 -	A RCKP HOUTYP HITVALP FRALES KEUELS XALKS FLENDS A NSSBLKS Ngselks NSG9LKs Rgg4LKs KSURF, NVRLS	AFLA245U AFLA2461
- o ;	A YSUREX(D), XD, YD, ZLCMG, HCHL, HEDW, MXSXH, A RSTART, TCRRE, SCODE, NGRAY, JHCHC,	AFLA2463 AFLA2463
11 C		AFLA2465
13		AFLA2466 AFLA2467
12	<u>PEAL E(7)\$AU(5)\$AV(5)\$AA(5)7)</u> REAL#4 LFG	AFLA2468 AFLA2469
17 C	CONSTAULE:CE (AH(1,1),4A(1,1)),4A(1,2)),AA(1,2)) Constauts needed fur gerivaties	AFLA2470 AFLA2471
19		AFLA2473 AFLA2473
20 0	<u>-ЕЗИЦІЯКІЧК СІЧКТАЧТ АКЛ РЭКТІАЦ ОБКІЧАТІЧЕ БДЯ СД25И2Л5СОР АМЛ</u> ЕДК НЭЗАНЗАКО Д2	112 AFLA2474 AFLA2475
22	ZKP21T)=[XF1A2/T+82]	AFLA2476
5	PKP2(1)=-ZkP2(1)+42/1++2 ren=1 /2600 =1 /5600	AFLA2477 AFLA2477
100	A1 = CLOC(2,775) = CC(17,8))/OFN	
27	A2#(L06(1.26E6)-L06(2.32))/DEN	AFLA2481 ************************************
29 C	MOLES DF FLUE 6AS	AFLA2483
90 91 91	F(1) 602 F(2)= H2C	AFLA2464 AFLA2435
- - 	- F(3) SU2 - CU:STANT	AFL A2436
00 6 4 6 4	F(4) 52 F(5) 72 - CONSTANT	AFLA2467 411 404490
. 35 C		4FLA24=9 AELA24=9
37		251.22491 451.42491
39 13	C(1)7 - LUE()72-LUEL C(1)7 INUE	AFLA2492 AFLA2493
07	E(6) =0.0	AFLA2494
41 42 C	F(7)=0.0 CPNSTANT	AFLA2495 AFLA2496
00 74 74	1. TUTAL MASS 2. CARAPIN ATTHS	AFLA2497 AFLA2495
45 C	3, HYDRUGERI ATONS Conveted of	AFLA2499 AFLA2500
41	00 14 JELy7 Contenents 114-000	AFLA2501
49 14	CONTINUE	AFLA2503
50		A E I A P E J V

- 1

activity ITTAL GUESSES DF GAS AND TEMPERATURE         ITTAL GUESSES DF GAS AND TEMPERATURE         ITTAL GUESSES DF GAS AND TEMPERATURE         ITTAL GUESSES DF GAS AND TEMPERATURE         CO2=0,25*F(1)         F(1)=F(1)-F(2)         F(1)=F(1)-F(1)-F(2)         F(1)=F(1)-F(1)-F(2)-F(2)-F(2)-F(2)-F(2)-F(2)-F(2)-F(2	
INITIAL GUESSES DF GAS AND TEMPERATURE     AFLAZSOP       NTRIAL GUESSES DF GAS AND TEMPERATURE     AFLAZSOP       AFCASIS     AFLAZSOP       CO2=0,25*F(1)     AFLAZSOP       F(1)=C012     AFLAZSOP       F(1)=F(1)=C012     AFLAZSOP       F(1)=C012     AFLAZSOP       F(1)=C012     AFLAZSOP       F(1)=C012     AFLAZSOP       F(1)=C012     AFLAZSOP       TITALE     AFLAZSOP       ON 22 J=1,7     AFLAZSOP       AFLAZSOP     AFLAZSOP       AFLAZSOP     AFLAZSOP       AFLAZSOP     AFLAZSOP       AFLAZSOP     AFLAZSOP       AFLAZSOP     AFLAZSOP       AFLAZP     AFLAZSOP       AFLAZP </td <td></td>	
CD2=0.25*F(1)       AFLA2510         H20:0.05%E(2)       AFLA2511         F(1)=F(1)-CU2       AFLA2513         F(4)=F(2)-CU2       AFLA2513         F(4)=F(2)-CU2       AFLA2513         F(4)=F(2)-CU2       AFLA2513         F(4)=F(2)-CU2       AFLA2513         F(4)=F(2)-CU2       AFLA2513         F(4)=F(2)       AFLA2515         F(4)=F(2)       AFLA2515         F(4)=F(2)       AFLA2515         TUTALEV       AFLA2515         UN 22 J=1,7       AFLA2525         UN 22 J=1,7       AFLA2525         UN 22 J=1,7       AFLA2525         UN 22 J=1,7       AFLA2525         CALCULATE MCLE VILLE(A)/TOTAL)       AFLA2525         PLUS THE APPROPARE EQUILIFRATUM CUNTAL       AFLA2525         CALL PERDITIERATION CUNTAL       AFLA253         AFLA253       AFLA253         AFLA253       AFLA253         AFLA253       AFLA253         AFLA	
F(1)=F(1)-C012       AFLA2313         F(3)=F(2)-002       AFLA2313         F(3)=F(1)-C012       AFLA2313         F(4)=F(1)-C012       AFLA2313         F(5)=002       AFLA2315         F(1)=112U       AFLA2315         F(1)=112U       AFLA2315         Te(5)=000       AFLA2315         F(1)=112U       AFLA2315         Tel200       AFLA2316         Tel200       AFLA2316         Tel2101       AFLA2316         Tel2101       AFLA2316         Tel2101       AFLA2316         Tel2101       AFLA2321         Collinit       AFLA2322         Collinit       AFLA2322         Collinit       AFLA2322         Collinit       AFLA2322         Collinit       AFLA2322         Collinit       AFLA2322         F(1)/12KP2(1)/12KP2(1)/107AL1)       AFLA2322         AFLA232       AFLA2323 <td></td>	
F(4)=F(4)+,5*(C02+H2U)       AFLZ513         F(5)=C(12       AFLZ513         F(5)=C(12       AFLZ513         F(5)=C(12       AFLZ513         F(5)=C(12       AFLZ513         F(5)=C(12       AFLZ513         F(5)=C(12       AFLZ513         F(5)=C(12)       AFLZ513         TUTAL=TOTAL=F(1)       AFLZ513         UN 22 J=1,7       AFLZ523         UN 22 J=1,7       AFLZ232         AFLZ23       AFLZ232         AFLZ23       AFLZ232         AFLZ23       AFLZ232         AFLZ23       AFLZ232         AFLZ23       AFLZ232         AFLZ232       AFLZ232         AFL	
F(7)=H2U       AFLA2515         T=5500.       T=5500.         TTAL=1.       AFLA2515         TUTAL=1.       AFLA2519         TUTZL=1.       AFLA2522         CONTINUE       AFLA2511         CULATE MOLE       AFLA2522         F(0)=F(1)/(12KP2(T)*S2)T(F(4)/TOTAL))       AFLA2525         F(0)=F(1)/(12KP2(T)*S2)T(F(4)/TOTAL))       AFLA2525         F(0)=F(1)/(12KP2(T)*S2)T(F(4)/TOTAL))       AFLA2525         F(1)/(12KP2(T)*S2)T(F(4)/TOTAL))       AFLA2525         F(1)/(12KP2(T)*S2)T(F(4)/TOTAL))       AFLA2525         AKU       AFLA255         AKU       AFLA255         AKU       AFLA2553         AK(	
CALCULATE       FREM LAST ITERATION TOTAL NUMBER DF MOLES PRESENT       AFLA2517         TUTAL=TUTAL=E(U)       AFLA2517       AFLA2519         TUTAL=TUTAL=E(U)       AFLA2521       AFLA2521         TUTAL=TUTAL=E(U)       AFLA2521       AFLA2521         CUNTALE       AFFLA251       AFLA2521         CUNTALE       AFFLA2521       AFLA2522         CULUATE       AFLA2522       AFLA2522         CULUATE       AFLA2522       AFLA2523         CULUATE       AFLA2523       AFLA2523         CULUATE       AFLA2523       AFLA2523         CULUATE       AFLA2523       AFLA2523         F(0)=F(1)/(ZKP2(T)*S2)T(F(4)/TUTAL))       AFLA2525       AFLA2523         F(0)=F(1)/(ZKP2(T)*S2)T(F(4)/TUTAL))       AFLA2523       AFLA2523         F(1)       AFLA253       AFLA2539       AFLA2539         AT       AFLA2539       AFLA2539	
00 22 J=1,7 TUTAL=TUTAL=E(4) CUNTINUE CUNTINUE CUNTINUE CULATE MCLES JF H2 AND CU KNOWING H20,CC2,AND D2 PLUS THE APPROPATE EQUILIBRIUM CUNSTANTS F(6)=F(1)/(2KP2(T)*S)PT(F(4)/TUTAL)) F(6)=F(1)/(2KP2(T)*S)PT(F(4)/TUTAL)) F(6)=F(1)/(2KP2(T)*S)PT(F(4)/TUTAL)) F(6)=F(1)/(2KP2(T)*S)PT(F(4)/TUTAL)) F(6)=F(1)/(2KP2(T)*S)PT(F(4)/TUTAL)) AFLA2523 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2525 AFLA2531 AFLA2532 AFLA2535 AFL	
CONTINUE       AFLA2521         CALCULATE MOLES JE H2 AND CU KNOWING H20, CD2, AND D2       AFLA2523         PLUS THE APPROPATE EQUILIBRIUM CUNSTANTS       AFLA2523         F(6)=F(1)/(ZKP2(T)*S)PT(F(4)/TOTAL))       AFLA2525         F(6)=F(1)/(ZKP2(T)*S)PT(F(4)/TOTAL))       AFLA2525         F(1)=CNW(1))/(ZKP2(T)*S)PT(F(4)/TOTAL))       AFLA2525         F(1)/(ZKP2(T)*S)PT(F(4)/TOTAL))       AFLA2525         F(1)/(ZKP2(T)*S)PT(F(4)/TOTAL))       AFLA2525         AN(1)/1)=CNW(1)       AFLA2525         AN(1)/1)=CNW(1)       AFLA2523         AN(1)/1)=CNW(1)       AFLA2533         AN(1)/1)=CNW(7)       AFLA2533         AN(1)/1)=CNW(7)       AFLA2533         AN(1)/1)=CNW(7)       AFLA2533         AN(1)/1)=CNW(7)       AFLA2533         AN(1)/1)=CNW(7)       AFLA2533         AN(1)/2)=CNW(7)       AFLA2533         AN(1)/2)=CNW(7)       AFLA2533         AN(1)/7)=CNW(7)       AFLA2533         AN(1)/7)=CNW(7)       AFLA2533         AN(1)/7)=CNM(7)       AFLA2533         AN(2)/2)=-SCT+CON       AFLA2533         AN(2)/2)==CLA       AFLA2533	
PLUS THE APPROPATE EQUILIBATUM CONSTANTS       AFLA2523         F(5)=F(1)/(ZKP2(T)*S)PT(F(4)/TUTAL))       AFLA2525         F(5)=F(1)/(ZKP2(T)*S)PT(F(4)/TUTAL))       AFLA2525         F(5)=F(1)/(ZKP2(T)*S)PT(F(4)/TUTAL))       AFLA2525         F(1)       AFLA2525         F(1)       AFLA2525         CALL       PERMOLATINA42)         SET UP MATEIX       AFLA2525         AN(1)       AFLA2532         AN(1)       AFLA2532         AN(1)       AFLA2533         AN(1) <td< td=""><td></td></td<>	
F(6)=F(1)/(ZKP2(T)*S)PT(F(4)/TUTAL))         CALL P2EKO(AA(1,1),42)         SET UP MATPIX         AFLA2525         AFLA2531         AFLA2533         AFLA2534         AFLA25354 <td></td>	
SET UP MATGIX       AFLA2527         SET UP MATGIX       AFLA2527         AR(1,2)=CMx(1)       AFLA2529         AN(1,2)=CMx(2)       AFLA2531         AN(1,2)=CMx(2)       AFLA2531         AN(1,2)=CMx(7)       AFLA2531         AN(1,7)=CMx(7)       AFLA2533         AN(2,2)=CUN       AFLA2534         AM(2,1)=-ScT+CUN       AFLA2538	
AN(1,1)=CN*(1) AF(A252 AN(1,2)=CAN*(2) AN(1,2)=CAN*(2) AN(1,2)=CAN*(7) AN(1,7)=CAN*(7) AN(1,7)=CAN*(7) AF(A2532 AN(1,7)=CN*(7) AF(A2532 AN(2,1)=-ScT+CON AM(2,1)=-ScT+CON AM(2,2)==CLA AM(2,2)==CLA	
AM(1,2)=CMx(2)       AFLA2531         AM(1,4)=CMx(5)       AFLA2532         AN(1,7)=CMx(7)       AFLA2533         AN(1,7)=CMx(7)       AFLA2533         AN(1,7)=CMx(7)       AFLA2533         AN(1,7)=CMx(1)       AFLA2533         AN(2,1)=-ScT+CON       AFLA2538         AM(2,1)=-ScT+CON       AFLA2538	
AH(1,4)=CAW(2) AFLA2532 AN(1,7)=CAW(7) AFLA2533 AFLA2533 AFLA2533 AFLA2535 AFLA2535 AFLA2535 AM(2,1)=-ScT+CON AFLA2536 AM(2,1)=-ScT+CON AFLA2538	6 4 5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
RUM 2 SQT=SQMT(TUTAL) CQUEF(1)/(2,*SQT) AF(2>1)=-SCT+CON AM(2>1)=-SCT+CON AM(2>2)=-SLA AM(2>2)=-SLA AF(A2>3=	
AM(2)1)=+SGT+CON AM(2)1)=+SGT+CON AM(2)2)=+SL2)==SL2 AM(2)2)=+SL2	
AK(2/3)=F(6)/2,#ZKP1(T)/SORT(F(4))=CON AK(2/3)=F(6)/2,#ZKP1(T)/SORT(F(4))=CON	6.0
AM(5,2,2,3) = F(7)/2, +ZKP2(T)/SQRT(F(4))-CON AM(2,4,2,4)/CON AM(2,4,2,4)/CON	24 24
AM(3,5)=SQRT(F(4))*ZKP2(T)=CON AM(3,5)=SQRT(F(4))*ZKP2(T)=CON AM(3,4)=F(7)*SCPT/F(4)/*DVP3/T)	6 4 0 4
AN(4,1)=K(1,1)=K(FL=1K+1=1K+1) AM(4,2)=K(T,2)-H(FTE'1P,2) AM(4,2)=Y(T,4)=H(FTENP,4) AK(4,3)=Y(T,4)=H(FTENP,4)	53

																										· · ·					
4 PAGE 0062	AFLA2555 AF1 A7556	AFLA2557	AFLA2559 AFLA2559 AFLA2550	AFLA2561 AFLA2562	AFLA2563	AFLA2565 AFLA2565	)+F(7)*CAFLA2566	AFLA2508	AF1 A2569 AF1 A2570	AFLA2571	AFLA2573	AFLA2574	AFLA2576	AFLA2577	AFLA2579	AFLAZSEI	AFLA2582	AFLA2584	AFLA2555 AFLA2555	AFLA2547	ALLACZUD AEI AJERG	AFLA2590	AFLA2591	AFLA2593	AF4A2594	AFLA2595 AFLA2596	AFLA2597 AFLA2597	AFLA2599	AND. F ( 6 ) AF L A 2000	I AELA2602	- AFLAZÓUS ×F1 × 2534
IV (VER 143) SUURCE LISTING: AFLA"E SURROUTINE 03/35/74	AN(4,4)=H(T,6)+H(FTENP,6) AN(4,4)=H(T,7)+H(FTENP,6)	DD 26 Jely7		AH(551)=1. AH(551)=1.	Rúw 6	A46623=1. A4(654)=1.	SET UP VECTURS AV(1)=CONWT=F(1)*CMW(1)=F(2)*CMW(2)=F(4)*CMW(4)=F(6)*CMW(6)	1:4.(7)	AV(2)==F(6)*53RT(F(4))*2KP1(T)+F(1)*52T Av(3)==F(7)*53RT(F(4))*7KP2(T)+F(2)#53T	AV(4)=2	00_29_J=1,77 (J)*(H(FTEMP_J)-H(T_J)) AV(4)=67(4)+F(J)*(H(FTEMP_J)-H(T_J))	CONTSUES A.(51-51).511(ADD)A	ΔΨ(δ)==F(2)=F(6)+μΥΝ2Π	SOLVE LINEARIZED SYSTEM		SUNESUM+AM(J+K)		AMELL & JEANLINY / SUIM			DE-LANAS CONTROL (20)	rt1=4/11/ DF2=4/121	DF3=AV(3)	0F4±AV{4} 0F5=AV{5}	DT=AV(6)	TEST FUR CONVERGENCE Comcoi	IF(A85(0F1),LT.CON*F(1),AND,ABS(0F2),LT.CON*F(2),AND, . ABS(0F2),IT.CON*F(1),AND,ABS(0F2),IT.CON*F(2),AND.	Z ABS(DF7),LT.CON*F(7),AMD.ABS(9T),LT.1.)60 T0 50	TEST FUA NEWITINE UN ZERU NUTIES IF(F(1)+MF1,6T, 0,.ANG,F(2)+9F2,5T,0, AMD,F4+0F4,6T, 0, .	1+0E6.6T+_2+0.4U3+E47)+DE7.6T+0.160 TO 50	DF1=UF1/2. neo=neo/o.
A FGRTRAN	101	103	105 26	107	109 C	111	113-6		115	117	119	120 29	121	123 C	125	127	128-32	130	131 33	133 34	134 15 35	ce cel.	137	138	140	141 C	143	145	147 40	148	147

ł

i

	· ·		· · · · · · · · · · · · · · · · · · ·
A FORTRAN	IV (VER L43) SOURCE LISTING: AFLARE SUBROUTINE 03/0	5/74 PAGE 0063	· · .
151 152	DF4=1)F4/2. DF6=3F6/2.	AFLA2605 AFLA2605	
153	0F7=0F4 GO Til 40	AFLAZ607 AFLAZ607	
155 C 156 C	LIMIT MAXIMUN CORRECTION TO 10 PERCENT OF RATE And 100 deger eng terperture	AFLA2609 461.42610	
157 50 15P	DF]=SIG:(AMI41(A8S(DF1),0,1*F(1)),DF1) DF2=SIG:(ANI41(A8S(DF1),0,1*F(2)),DF1)	AFLAZ611 AFLAZ611	
64 1 200	DF4=SICK(APIMI(AES(DF4))0.1#F(4))0F4) DF4=SICK(APIMI(AES(DF4))0.1#F(4))0F4)	AFLA2613 AFLA2613	•
161	DF74516%(ARIM1(ABS(DF7))00.1#F(7))0F7)	AFLA2615 AFLA2615	
163			
165	F(2) #F(2) +FF2 F(2) +FF2	AFLA2619 Act A2510	
157		ALLACUEV AFLA2621 AFLA2621	
169			
171 60		AFLA2625	
173	ETURA	AFLA2627	
•			-

|--|

|.

35       11100       1110       1110		「 「 「 「 「 」 「 」 「 」 」 「 」 」 」 」 」 」 」 」	1,121476,1%0FM152479	
55     555 <td>50</td> <td></td> <td>146)*C++26EH152640 1476)*C++26EH152640</td> <td></td>	50		146)*C++26EH152640 1476)*C++26EH152640	
37     60     70     <	55 56	35*EI0411429E-3)*E**305242469)*E+((.27741309E-13*F**2. 6E-6)*E+.49435057F-3)*E4(225366066664.6F-22664.076587927)*6	-220706362E4152632 ENIS2693	
59     1000000000000000000000000000000000000	57 53	60 TA 24 ECASE 148936016147 14836335553344432 47238054521484	EMIS2664	
1         5         4         5         6	5.9	1*#2+(90049276E+3#8*#2+*26297150)#8+(-39268750E+2#C##2+ ***********************************	:+,13650452)EAIS26F6 .01702055555555	
2     2 <td>61</td> <td>▲ ● ○ ● ○ ○ ○ ○ △ △ △ △ ○ ○ ○ ○ □ ○ → ○ ○ ○ ○ ○ □ → → → → → → →</td> <td>(3)*F**3 ENISS63 ENISS633</td> <td></td>	61	▲ ● ○ ● ○ ○ ○ ○ △ △ △ △ ○ ○ ○ ○ □ ○ → ○ ○ ○ ○ ○ □ → → → → → → →	(3)*F**3 ENISS63 ENISS633	
50     Pre-Anisti (-2) SPES)     EN150000       61     PT-ANISTI (-2) SPES)     EN150000       62     PT-ANISTI (-2) SPES)     EN150000       63     PT-ANISTI (-2) SPES)     EN150000       64     PT-ANISTI (-2) SPES)     EN150000       71     CCU22 EXALOR     EN15000       73     21%-1     EN15000       74     TANISTI (-1) SPES (-2) SPES)     EN152000       75     FULANISTI (-1) SPES (-2) SPES)     EN152000       75     CU22 EXALOR     EN152000       75     FULANISTI (-1) SPES (-2) SPE	63 24 64 C	ECO2=EXP(ECO2) PriseIvity condections excluded	EN152690 EN152690	
0     F(Lawink) (F(L)     F(Lawink) (F(L)     F(Lawink) (F(L)     F(Lawink) (F(L)     F(Lawink) (F(L)     F(L)     <	65 30	PT=AHAX1(.05,PRES)	EM152692	
68       0.114.01(1).01.01       0.114.01	67	PCL=AHAX1(PCU2*XX,,02)	EN152694	
11     CUIS-III(1-, Fb747709E-3)+4., 4500036E-2)+4., 460036E-2)+4., 41003773       11 <td< td=""><td>68 69 </td><td>PCL=AHIMI(PCL,2,5)</td><td>EMI S2695 ENI S2696</td><td></td></td<>	68 69 	PCL=AHIMI(PCL,2,5)	EMI S2695 ENI S2696	
13       21**27531666513**.559941195-1)**       EMIS2700         15       CCC2ERSUTC       EMIS2701         17       TexhNaltSou.r1       EMIS2703         17       TexhNaltSou.r1       EMIS2703         18       ATANALSou.r1       EMIS2703         19       Fit (cL) ************************************	12	CC(12+1) (***) (**	*A- 6220262EEM152698 * 10.0150612EM152698	
75     0     H2151117       76     0     H2151017       77     TeMAN1(5000, T)     F15703       78     TeMAN1(5000, T)     F15703       79     T114.0004, F014     F15704       70     T14101, F15004     F15704       71     TeMAN1(5000, T)     F15705       79     F114.0004, F014     F15704       81     F1     F15704       81     F1     F15704       82     F15704     F15704       83     F14     F14.1004       84     F14.1004     F15712       85     F15712     F15712       85     F15712     F15712       86     F15712     F115712       87     F15712     F115712       89     F115712     F115712       80     F2005     F115712       81     F115712     F115712       81     F115712     F115712       82     F1014     F115712       83     F2005     F1350155       84     F1402     F1351712       85     F2005     F13520155       86     F2005     F13520155       87     F1402571     F1452712       88     F1402571	200	1-21-21-21-21-21-21-21-21-21-21-21-21-21		
77     T=AkINI(15000, yT)     EMIS2704       78     FNIN=60, yT)     EMIS2705       78     FNIN=60, yT)     EMIS2705       80     FININ=60, yT)     EMIS2705       81     AT NIN=60, yT)     EMIS2705       82     A3     FULANIC (PNL)-20, 10       83     ANT/AUGA     EMIS2710       85     FELFC     EMIS2712       85     FELFC     EMIS2712       86     FELFC     EMIS2714       87     Carability (PNL)-20, 10     EMIS2714       89     FELFC     EMIS2714       81     EMIS2714     EMIS2714       81     EMIS2714     EMIS2714       81     EMIS2714     EMIS2714       81     FELFC     EMIS2714       81     EMIS2714     EMIS2714       83     EMIS2714     EMIS2714       84     EMIS274     EMIS2714       83     EMIS274     EMIS2714	75 C H	20 EMISSIVITY	E HI S 2702 E KI S 2703	
79     Philva.cub     Filva.cub     Filva.cub       80     41     Philva.cub     Filva.cub       83     43     Philva.cub     Filva.cub       83     43     Philva.cub     Filva.cub       84     Philva.cub     Filva.cub     Filva.cub       85     Put = AnitAti (Phil.200.)     Filva.cub     Filva.cub       85     Partati (Phil.200.)     Filva.cub     Filva.cub       85     Partati (Phil.200.)     Filva.cub     Filva.cub       86     Farva     Filva.cub     Filva.cub       87     Catural     Filva.cub     Filva.cub       88     Farva     Filva.cub     Filva.cub       91     Filva.cub     Filva.cub     Filva.cub       92     Catural     Filva.cub     Filva.cub       93     Catural     Filva.cub     Filva.cub       93     Farva     Filva.cub     Filva.cub       94     Farva     Filva.cub     Filva.cub       95     42#Filva.cub     Filva.cub     Filva.cub       95     Farva     Filva.cub     Filva.cub       95     Farva     Filva.cub     Filva.cub       96     Farva     Filva.cub     Filva.cub       97     Filva.cub     F	77	TeANIAL(\$000, T)	EX152704 EX152704	
R1     41     PUIN=EFC(EUA(T/1000.,FCPF))       B2     A2     PW1=ANIXA(FEU2(2XXX,PMTU))       B3     AV1=ANIXA(FEU2(2XXX,PMTU))     EM152710       B5     ANT_1000.     EM152710       B5     B=PVL     EM152712       B5     B=PVL     EM152712       B6     F=A/V     EM152712       B7     DEA/P     EM152712       B9     F=A/V     EM152714       B9     F=A/V     EM152714       B9     F=A/V     EM152714       B1     DE1/P     EM152724       B2     DE2/P	62		EX152706 EX152706	
3       PwL=xNIWitPWL-20.)       EMIS2710         44       Artlouct.       EMIS2711         55       F=ut       EMIS2712         65       C=LUCin       EMIS2714         67       C=LUCin       EMIS2714         68       F=ux/b       EMIS2714         69       F=ux/b       EMIS2714         69       F=ux/b       EMIS2714         70       L1787129       EMIS2714         90       EMIS2714       EMIS2714         91       EH2U921605099       EMIS2714         92       1.1787129       EMIS2714         93       21.440507714       0.10945259=1.1*42096714         94       EMIS2714       EMIS2719         95       42.4547129       EMIS2719         95       42.4547129       EMIS2719         95       42.454120       EMIS2722         96       EMIS2722       EMIS2722         97       EM20.0567E12.140       EMIS2722         96       PEANXLEFULINEATOR       EMIS2726         97       EM20.05761E12010       EMIS2726         98       FM20.05622.2140       EMIS2726         97       EM20.05761E12010       EMIS2726 <tr< td=""><td>81 41 82 42</td><td>PMIN=EXP(EGUA(T/1000, FCUF)) PMIN=EXP(FGUA(T/1000, FCUF))</td><td>EMI 52708 EMI 52708 EVI 52708</td><td></td></tr<>	81 41 82 42	PMIN=EXP(EGUA(T/1000, FCUF)) PMIN=EXP(FGUA(T/1000, FCUF))	EMI 52708 EMI 52708 EVI 52708	
85       8+PWL       ENIS2712         86       C=L06(E)       ENIS2714         87       C=L06(E)       ENIS2714         89       F=A/W       ENIS2714         89       F=A/W       ENIS2714         89       F=A/W       ENIS2714         81       EX152114       ENIS2714         89       F=A/W       ENIS2714         81       EX121-92100574+1(1,36785026-1)*A-2890780)*A-ENIS2719         92       1.17871294E=3#4###24(1(1,14:069452296-1)*A-2890780)*A-ENIS2719         93       236606547E=1)#E+1(1(1,14:06940076-4)*E+1(1,1273963176-1)*E)*1(152720         94       24:490.2771E=1)#E+2,499330455-4)*F+.090096-1)#E+1(1,27396327219         95       42:41***2-5,11005E-2)#E+1,490.277016-2)#F+(1,1273963272125-1)#E+1(1,273963272125-1)#E+1(1,273963272125-1)#E+1(1,2739632722-1)#E+1(1,273963272-1)#E+1(1,12,2722-1)#E+1(1,273963272-1)#E+1(1,12,2722-1)#E+1(1,273963272-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2722-1)#E+1(1,12,2722-1)#E+1(1,12,2722-1)#E+1(1,27396372-1)#E+1(1,12,2396372-1)#E+1(1,12,236470-1)#E+1(1,12,236470-1)#E+1(	85 85 84	PWL=AMIN1(PWL,20.) A=IV1060.	EM152710 FM152711	
87       D=4*9         68       E=4xU         68       E=4xU         99       S=ExA         91       E+120=-,921c0574+(1,36785012E-4*4**3-0,16945229E-1)*4283078E)*4- EMIS2716         91       E+120=-,921c0574+(1,36785012E-4*4**3-0,16945229E-1)*4283078E)*4- EMIS2716         92       2+1305574+(1,365892E=3*4C+,1324707E=2)*E+4.61488015E=3)*ECEMIS2718         93       2+1,4603877E=6)*E+44550919E=1)*E+1(1,45862337E=1EMIS2720)         95       424F**2-,14665877E=0)*E+455650919E=1)*E+1(+12739632E=EMIS2722)         95       5846x***=5721605E=2146         97       EH100E2XFE1401         97       EMIS2722         97       EMIS2726         97       EMIS2726         97       P=4xAL(10P+1,2)         97       PMIS2724         97       EMIS2726         98       EMIS2726         <	88 26 24	882%L 6.1 mG/cs	ENIS2712 ENIS2713	
89Far/bEMIS271691G=E/AEMIS2717EMIS271791G=E/AEMIS2717EMIS271792147129E=34±41((1,142C6699E=3±C+1324707E=2)±C+6148E015E=3)±CEMIS2718EMIS2718921417129E=34±419(1,142C6699E=3±C+1324707E=2)±C+6148E015E=3)±CEMIS2718EMIS2718932+,36606547E=1)*C+,305499)*C+(+469700199E=8*0±*2-9862848E1E=3)±CFEMIS2719EMIS27199431(+40u27711E=5±E±2-24520578E=2)±E+1(1(+4985233776=1EMIS2721)EMIS2721954245±42-146654970578E=2)±F+((12739632E=EMIS2722)EMIS2721954245±4272055E=214GEMIS272396CH2n CU24ECT1Qu EACT3Q97EMIS2726EMIS272498CFMIS27259950PPEAMIN1(PP112)910PPEAMIN1(PP112)EMIS2727	87		EM152714 EM152714	
91 EH2D=-,92160574+((.367B5012E-4*A**3-0.16945229E-1)*A28307B0)*A- EMISZTB 92 1.1787129E=3*B##24(((.141420699E=3#C+.1324707E=2)#C+.61480015E=3)#CEMISZ719 93 2-,366065f4F=1)*C+.31305419)*C+(.46970019E-8*0*#298628B61E-3)*U+ EMISZ720 94 3(f.400.22711E-5#E##224520378E-2)#E+.6456909FE-1)#E+!((.49852337E-1EMISZ721 95 428f4#457217605E-2)#C 96 28464#457217605E-2)#C 97 EH2D=EXP(EH2D) 97 EH2D=EXP(EH2D) 98 C 98 C 97 EH2D=EXP(EH2D) 97 EH2D=EXP(EH2D) 98 C 97 EMISZ722 98 C 98 C 99 50 PP=AMAX1((PH2D+PRES)/2.,0.0) 99 50 PP=AMAX1((PH2D+PRES)/2.,0.0) 99 50 PP=AMAX1((PH2D+PRES)/2.,0.0) 99 50 PP=AMAX1(PP.1.2) 91 57724 100 PP=AMAX1(PP.1.2) 92 50 PP=AMAX1(PP.1.2) 93 50 PP=AMAX1(PP.1.2) 94 50 PP=AMAX1(PP.1.2) 95 50 PP=AMAX1(PP.1.2) 95 50 PP=AMAX1(PP.1.2) 96 50 PP=AMAX1(PP.1.2) 97 50 PP=AMAX1(PP.1.2) 98 50 PP=AMAX1(PP.1.2) 98 50 PP=AMAX1(PP.1.2) 99 50 PP=AMAX1(PP.1.2) 90 PP=AMAX1(PP.1.2) 91 PP=AMAX1(PP.1.2) 91 PP=AMAX1(PP.1.2) 91 PP=AMAX1(PP.1.2) 91 PP=AMAX1(PP.1.2) 91 PP=AMAX1(PP.1.2) 91 PP=AMAX1(PP.1.2) 91 PPAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	89 80	Fac/6 Gara A	EMIS2716 EMIS2717	
93 236606564F-1)*C+.31305419)*C+(.46970019E-8*D**298628461F-3)*D+ EMISZ720 94 34(.40w27711E-5*E**224520578E-2)*E+.6456909E-1)*E+(1(.45857337E-1EMISZ721 95 42*F**214865877E-6)*F+.49533045E-4)*F7292208E-2)*F+(.12739632E-EMISZ722 96 5846**4-57217605E-2)*G 97 EH2DEEXP(EH20) 98 C H2n CU28EEC11QH EACT2P 98 C H2n CU28EEC11QH EACT2P 99 50 PPEAMIK1(PPI20+PRES)/200.0) 99 50 PPEAMIK1(PPI20+PRES)/200.0) 99 50 PPEAMIK1(PPI20+PRES)/200.0)	16	EHZU==-92160574+((,36785012E-4*A**3-0.16945229E-1)*A28 1.177179E-3*#**7+((/,1427669E-3*C+.1326707E-2)*C+.6148	2830788)#A- EMISZ718 4840155-2)#CEMISZ719	
95 42ÅF**2+.14665877E-6)*F+.49533045É-4)*F729220ÅÉ-Z)*F+(.12739632E-EMIS2722 96 5846**4=.57217605E-21%G 97 EH2D=EXP(EH2U) 98 C H2D CU3RECTIQU EACTQP 98 C H2D CU3RECTIQU EACTQP 99 50 PP=AMAXI(PH2O+PRES)/200.0) 100 PP=AMIK1(PP.1.2) 100 PP=AMIK1(PP.1.2)	93 94	2-,366065f4F-1)*C+,31305419)*C+(.46970019E-R*D*2-,986288 3(.40.25711E-5*E**224520578E-2.*E+.6456909E-1)*E+((1.4	8861E-3)*D+ ENISZ720	
97 EH20=EXP(EH20) 98 C HH20=EXP(EH20) 98 C PHEALCTOR 99 50 PHEAMAXI((PH20+PRES)/2,,0,0) 100 PHEAMINI(PP,1,2) 100 PHEAMINI(PP,1,2)	95	42#F##2+,14865877E-6)#F+,49533045E-4)#F-,7292208E-2)#F+(.	(.12739632E-EMIS2722	
98 50 PP=AMXI(PP=1.2) 99 50 PP=AMXI(PP=1.2) 100 PP=AMIL(PP=1.2) 100 PP=AMIL(PP=1.2)	97 97			
	98 C 99 50	HZO CORRECTION FACTOR PP=AMAXI((PHZO+PRES)/2.,0.0) PP=AMIN(PP.1.2)	EMIS2725 EMIS2726 FMIS2727	

EM152728 FM152729	EMI52730 FMI52731	#4+1.066M1S2732 4.845326M1S2733	EM152734 EM152734	EM152736	ENIS2737 ENIS2738	EK152739	EMIS2740 FHIS3741	EMIS2742 FMIS2743	EHIS2744	EM152746 EM152746	EN152747 EN152748	EN152749	EMIS2750	)3244848EMLS2752 9705-2 **FML52753	595-2) +EMIS2754	ENI 52756	EN152757 EN152758	5675-21 #ENIS2759 363985-2EMIS2760	EM152761	EM152762 EM152763	184442E-EM152764 2335735-F4152765	59767036EMIS2766	EM152767 FM15276A	EMIS2769	EMIS2779 EMIS2771	EMIS2772 EMIS2773	: EMIS2774	E4152776
		A124019851*A5385303 3016-21*84.3961676-11*												#A+ 60735416E-1)#A##3+ #A- 79288225-4 #5- 3044	44283372E-2)*C+.59025		.1*A**3-,27576063E-1}*A	. <b>=</b> -8( <u>1</u> 74563 <u>5-4)*5</u> =-26232 { ( (603473065-3%c+ - ) 65	+.13114829E=1)*C		(*44*3-°131836E-2)*4+•15 31*8-°334955345-2)*4+-15	1E-8*C+_11118057E-5)*C	×¢					
H20#XX,.05) WL.10.)		2029815E-1#A+.25004224)# ((7.,08.846F-2#8872,6	19942644)#8+1.0			20/(PCG2+PH20)+0+0)	1,0) (1)22212714VX2.2)		0.)KOUE#1	60,1KUDE=3 60,01KDDE=4	0)K00E=2		, <u>43</u> 421 V2Dr	956336-2+({-,914195655-1 956336-2+({-,914195655-1 536955-3±3.,333028335-3	(5) #8+ ( ( ( 38471551E-2*C	(EZ(1),0,0)	.23.9KURE .25029E-3+{{-0.30954913E-		62E=2)*C=_20869105E=2)*C	(EZ(2),0.0) 4)67 ID 67	/851956-2+((254383216-( //3012666-348130223455-	14376-1)*8+(({{-,6409217	15407E=31*6+•12768373E=2; 152731-0->>	2150 TD 65	( <b>a</b>	0, EZ, 3, 2, DCOF, 1, 1, 0)		/114
PWL=AMAX1 (P	A=PP5 A=DD#1 DC/D:	CH2D= ( ( (	24646=2)#5=	EZ(1)=0+0	E2(2)=0.0	PP=AI:AX1 (PI	PP=ATINI (PP	14)[4]#V#]4 6	IF(TT+LE+72	IF(TT,E2,14	<u></u>	E-LUCIDI 1		EZ(1)=-674	38+ 01154022	EZ(1)=444	E2(2)=-,514	<u>1+,522774576</u> 28+,72816575	]*C=_415£25	EZ(2)=AHAX1 IF(KDDE-EQ	EZ(3)=-350	22) #8+.18003		IF(KODE EQ	DELE=EZ(KUL GD TD ZO	54=FITIT(Tr DFLE=E0UA(1	60 T0 70	SD2 EMISSIV

.....

AGE 0067	EM152778 EN152778	EM152780	EMIS2782 EMIS2782 EMIS2783	ENIS2784 ENIS2784	EMIS2736	ENIS2788	EX152790	ENIS2792 554152792	92EM152794 FM152795	EM152756 EM152756	EMIS2798	EM152860 EM152860 EM152801	EMIS2802										
03/05/74 F								107623556+1)*4+	26-4)*E**3+•23159 097447-01464	6+.20649587E1)*G									•••	•			
FUNCTION								33155203)#A+.	26-5*6+。7503312 6-101*65*24-106	6+•16932033E1)*		12	2										
LISTING, EMIS		11 0.	00 - 500511	(NIWd				(•202776E=2#A**	93%P+((.3292010	**2+,51539196)*		10+CH20-PELE+ESN											
(VER L43) SUURCE	T=AHAX1(TT,700.)	IF(T.6E.1450.)GD T	50 T0 72 21 T1 - EXPLECTIAT 700	SL=ANAX1(PSU2#XX)	AET/1000.	C=L06(PSL)		5502=-,2772374E1+(	5857489)*C- 234271	(((+,16829012E+1+G		ENLS=0+0 ENLS=ECD2+CC02+EH2 2 ETH24	Etto								-		
A FORTRAN IV	151	153	155	157 72 5	159	161	102	165 E	167 255 168	169 41	171		175 6	•									

PAGE UDOB	NETT2803 Nett2804	NETT2805 Nett2806	NETT2807 Nett2808	NETT2809 Nett2810	NETT2811	NETT2813	NETT2815 NETT2815 NETT2816	NETT2817 NETT2818	1/ NETT2819	1/ NETT2821	1/ NETT2823	1/ NETT2825	NETT2827 NETT2827	NETT2029	NETT2831	METT2833 Nett2434	NETT2835 Nett2835	NETT2837 NETT2837	NETT2839 NETT2839	NETT2841 Nett2842	NETT2943 Nett2943	NETT2845 NFTT2646	NETT2847 Nett2648	NETT2649 Nett2849	NETT2651 NETT2652
TIV (VER L43) SUURCE LISTINGI	SUBRGUTINE NETTAU 21407 O - MO INTERMEDIATE SUREACES EXIST	1 INTERHEDIATE SURFACES EXIST ** COMPUTE NET TAU Common // Fundey(a).KK. ICODE. HCODE.	A TAU(9), VAREA, HAREA, XLX, XK(3), ACOEF(8,3), A TRETD: PRES, FILEE, FILE(5), XAMX, TSTAK, 3),	A NCK, HUUTY, HTVAL, FPATE, KFUEL, XAIR, FTEMP, A NSSRIK, NSSRIK, NSSRIK, NSSUPF, NVLL	A XSURFX(9), XD, YD, ZLENG, NCDL, NKUW, NXSXN,	A K1, K2, KCRD(10), THEP(100), PERM(200)	INTEGER SCUDE, TCUDE, RSTART, HCODE DIMENSION, JSSID), JGGID, JSGGID, JCGGID, JC, AD, AD, AD, AD, AD, AD, AD, AD, AD, AD	INTEGER ZTAUZ Het transmissivity sureace to surface	DATA 255/125511,125521,125531,125541,125551,125561,12558	DATA 256/12561,125621,125631,125641,125651,125661,125671,12568	UATA 265/12011,126521,126521,126531,126541,126551,126561,126571,12658	141 HAHAMANANANANANANANANANANANANANANANANANA		ZTAUZ=0	COMPUTE SURFACE TRANSMISSIVITY AND STORE	CALL PZERU(Z(1))60)	KMENCR+(J+1)*4RDW KMENCR+(J+1)*4RDW DO 4 V+1 becom		- CONTINUE Continue	CALL WRITE(1, TSUR1,2(1), 60) Wet tan end subeace to subeace intermance apea	CALL PZERG(AA(1,1), 3600) TE/JTAHY NE 3,50 TO	00 14 Km1/rSURF 01 14 Km1/rSURF 00 13 Jm1 - SSURF	AA(J,K)=1.0	COUTINUE GOUTINE	COMPUTE NET TRANSMISSIVITY Calinate nover left have ne matrix
A FURTRA	1 2. C	ט וח ל י	5	1-a	69			5		6 1	512	23	1 5 4	27	59 59 59	15	60.0	- 35 - 35	4 K	6 58 0 7	1 19	144	45 45 13	41 74 41 14	

INGI NETTAU SURFACE SURFACES S
--

PAGE 0070	NETT2903 NETT2604	NETT2905 NETT2906	NETT2907 . NFTT2908	NETT2909 NETT2910	NET 72911	NET12913 NET72913 NET72914	NET12915 NET12915	NET12917 Net12918	NETT2919 NETT2920	NETT2921 NETT2922	NET12923	NET12925	NET12927 NET12927 NET12929	NETT2929 NETT2930	NETT2931	NETT2932 NETT2933 NETT2934	NET12935	NETT2937 NETT2038	NETT2939 AA NETT2940	NETT2941 Nett2942	NETT2943 NETT2946	NETT2945 NETT2946	NETT2947 Nett2948	NETT2949 NETT2950	NETT2951 Nett2952
IE 03/05/74			•																TRANCPUCE HATRIX					<b>1</b>	•
4 IV (VER L43) SUURCE LISTING, NETTAU SUBROUTIN	00 48 JeljaSSBLK CALL WRITEAL-255612.AA41.1541-141. 9001	CONTINUE Het tau fir surface to gas interchane Area	CALL PZER0(AA(1,1), 3600) Te(7th17 Ne.0)CO TO \$5		A(J'K)=1.		CALULATES MET TRANSMISSIVITY	CALL ZUHE (0,K,XE,YE) CALL ZUHE (0,K,XE,YE)	XE	CALL 2016 (1) J.X. YR)	XXR×XX+HALFXU	IF(K+LE+LCR)60 T0 62 IF(XXR-XXE)50,57,57		T=TCALC(XE,XR) Gr to 70		CONTINUE CONTINUE	STORE RESULTS DTDR - 1SGBLK	CALL WRITE(1,26S(J),AA(1,15+J-14), 900)	HET TAU FDA GAS TO SURFACE INTERCHANGE AREA Style G-S = S-G ALL THAT REMAINS THE DANE IS	N RL=MINO(XSURF,NVGL)	00 82 Nalaria 1 anti	00 81 L=LLøn Save=aa(**:1)	AA(NoL)=AA(LoN) Aa(L-1)=5AVE	CONTINUE	NL=NL+1 TF(NSURF=NVOL)83.88.84
A FURTRAN	101 47	103 48	105 50	107	109	111 53	113 C	115	117	119	121	122	125 58	127 62	129 63	130 14 131 75 27 151	133 C	-135	137 C	139 60	141	143	145	147 81 148 82	149

ļ

/J5/74 PAGE 0071	NETT2953 NETT2954	NET 12955 UFT 12956	NETT2957	NE112959	NETT2960 NETT2961	NE112962	NETT2963 NETT2964	NFTT2965 NETT2046	NETT2907	NETT2965	NET 12970	NETT2971 NETT2972	NETT2973	NET12915		NET12978	NET12979 NETT2960	NETT29R1 Nett29a2	NETT293	NETT2965	NETT2986	NET12998	NETT2949 Nett2990	NET12991 Het12992	NETT2993	NET12995	NET12997	HETT2998	I NETT2999 HETT3000	- NETTAOU1 NETTAOD2	
A FORTRAM IV (VER L43) SOURCE LISTING, WETTAU SUBROUTINE 03/	ISI C NVDL.GT.NSURF IS2 83 IISTARTAIL	153 LSTART=1 154 GN TN 85	155 C NSURF.67.HVDL	157 LSTARTENL	158 85 00 87 N=+START_NVDL 159 D0 86 L=LSTART_NSURF	160 AA(L=N)=AA(N=L)	161 AA(NPL)=0,0 162 86 CONTINUE	163 87 CONTINUE 145 F 5705 UEE.NTE	165 88 DQ 89 Jaly 45G8LK		IDT 85 CUMITING 168 C NET TAU FUR GAS TO GAS INTERCHANGE AREA	169 CALL P2EPU(AA(1.)) 3600) 170 TE(7TAU7-NE-0)60 TU-82	171 00 91 k=1,4V0L	173 AA(J,k)=1.	175 91 CDITINUE	176 60 70 113	177 C CALCULATE VET TRANSHISSIVITY 178 C CALULATE LUWER LEET MALF DE MATRIX	179 92 DD 109 K#1, NVDL 180 CALT ZTVEFL K VEV		183 IF(J,EQ,K)GJ TO 97	184 CALL ZOJE(194)XX,YX) 185 IF(AB5(XE-XR).LT.XTEST)GD TO 97	185 XXR=XR+HALFXD	187 T=TCALC(XXE)XR) 188 Cn T3 105	189 97 T=1. 190 103 ΔΔ(J=K)=T	191 100 CONTINUE	193 C GENERATE UPPER RIGTH OF MATRIX FROM LOWER LEFT	195 00 112 JalyJ	196 Kjajt]	197 DD 111 K=KJ_NVDL 198 AA(J±K)=AA(K≠J)	199 111 CONTINUE 200 112 CONTINUE	

								-					•			•					
PAGE 0072	NETTBOOD	NETT3005 NETT3005	NETT3007 NETT3008																	-	
E 03/05/74																	1	•			
TTAU SUBROUTIN		141, 900)	•						•								•				
V (VER L43) SUJACE LISTINGI NET	STORE RESULTS	CALL WRITE(1,266(J),AA(1,15+J-)	PETURN Feturn FND	-			•								-						
A FURTRANI IV	201 6	203	205 205 206									4	•			• •					

	FUNCTION TCALC(XXE+XXR)		TCAL3009
	<u> </u>		16463910 TCAL3011
	A TURIDGA PRESS FLUET, FLUETS), XIWY, TSINK,		TCAL3012
	A NCR. HOUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,		TCALADIA
1	A NSSULKA NGSULKA HAGULKA NGGULKA NSURAJ NYULA A XSURFX(9), XU, YD, ZLONG, NCDLA NROW, NXSXNA	•	TCALSOLS TCALSOLS
	A RSTART, TCUDE, SCUDE, NGBAY, HCHC. A VI: V2. DEPOLIOL, TAEBLIKOL, DEBUGION		TCA13016 TCA13017
	A KID NED AUROLITOUS LITERITION DERALECUL		ICAL3018
	INTEGER SCUDE, TCUDE, KSTAKT, HCUDE Beat Vrimmon		TCAL3019 TCAL3019
1			TCAL3021
1			TCAL3022 TCAL3023
			TC4L3024
	XODWA(L)=XSURFX(LL) CONTINUE		TCAL3025 TCAL3025
	XTEST**001*X0		TCAL3027
	NTTEET XITeANINI(YYF.YYR)		TCAL3028 TCAL3029
	XETEAMAX!/XXE.XXE)		TCAL302A
	IF(ARS(XXE=XXR),LT,XTEST)GD TD 40		TCALBOB TC 11 2031
	N2=0 N2=0		TCAL 3033
			TCAL3034 TCAL3035 TCAL3035
			TCAL3039
	UU 22 LEIJIYYYXU IF(XRO4N(L).LT.XRT)GD TD 24		1661-3060 76.01-3041
	CONTINUE		TCAL3042
	GD TC 40 M2 =NXSV:=1+1		TCAL3043 TCAL3044
	COMPUTE TCALC If(M1.6T.M21Cn T0 40		TCAL3045 TCAL3045
	TCALC=1.		TCAL3047
	TCALC=TCALC+TAU(M)		TCAL3048
	CONTINUE		TCAL3050
	VL INTERMEDIATE SURFACES ARE		10423034 TCAL3052
	(1) TO LEFT OF XLT (2) TO THE BIGTH OF XRT	-	TCAL3053 TCAL3054
	TCALC=1. RETIRN		TCAL3055 TCAL3055
	END	·	

•

ن د ه م م	IV (VER L43) SUURCE LISTING! ZUNE SUBRUUTINE 03/05/74	PAGE 0074
۲ د. ۲ د	SUBROUTINE ZONE ( KODE, ND, XX, YY )	204E3058 704E3059
) n d	KDDE SURFACE AREA / GAS VOLUME ( 0=AREA, 1=VOLUME ) No mumbes de subeace de volume	ZQ1E3060 701E3060
	XX/YY COURDINATES REFERENCED TO UPPER LEFT CORNER	ZU1:E3062 70:E3062
	CAUNDA // ALMANYA, WA TEADE, UCADE	ZD1E3064 10ME3064
0	A TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3),	20NE3066
	A TARIDGA PRESA FLUETA FLUE(5)A X44XA ISIAKA A Neb. Units. 475415 -54755 Kalel, Vate. 255405	Z011E3067 7th/E304.6
	A NEW FULLY A LIVEL FRATEN FUELS FAIRS FIGHTS	201:E3069
5.1	A XSURFX(9), XO, YO, ZLONG, NÇOL, NPOW, NXSXN, A betavt, tende secone negav, ihene	ZQME3070
51	A KI, K2, RCKD(10), ThEP(100), PERM(200)	2UVE3072
0 - 0	INTEGER SCUDE, TCUDE, ASTART, HCODE	
10 C		20453076 20453076 70453076
21		Z0/16.3078
-22	15 ( KODE she, 0 ) 63 TO 80	20/63079
23 5	CUDEACE ADEA	2046 3090 2086 3081
52	IF ( [ . GT . NCOL ) GI TO 12 Tra subsect	ZU1E3082 701/E3082
27	X = X0 + FLOAT ( L = 1 )	ZDNE3084
50	60 TU 99	
31	IF ( L . CT. NCOL ) GQ TO 14	20HE3088
32 C 33	× BUTTUM SURFACE L = 1 ) X = Xü + Flüht ( L = 1 )	ZDNE 3089 ZDNE 3090
1		Z0463091
65 . 1 86		ZUME3092
37 28 C	IF ( L .GT. NROW ) GO TO 16 IFFT STOF	20NE3094 20NE3095
904		20ME3096 20ME3097
4		ZUME3098 70462098
	IF ( L	20VE3100 20ME3100
1 1 1 1 1 1 1	X = X0 + FLOAT ( NCOL ) X = X0 + FLOAT ( NCOL ) V = V0 + FIDAT ( J = 1)	ZUHE3102 ZUHE3102 ZUHE3102
47 48	60 T 0 99	ZD4E3104 ZD1E3104
49		201453106

-

		· · · · · · · · · · · · · · · · · · ·																			
	PAGE 0075	ZDNE3108 70463108	ZDNE3110 ZDNE3111	Z0463112 Z14463113	ZONE3114	ZDNE3116 70463117	ZOVEJIB	ZUKE3120 73NE3120	20N E3122 ZDNE3123 ZDNE3123												
	03/05/74			-													-				
	INE SUBROUTINE																				
· ·	A FORTRAN IV (VER L43) SOURCE LISTING, 20	51 C INTERNEDIATE SURFACES	53 Y = Y0 + FLOAT ( L = 1 ) 54 60 TO 00	55 C GAS VOLUKE	57 IF ( L .LE. HCOL ) GO TO 91			04	65 RETURN 66 END												

A FORTRAN	IV (VER L43) SOURCE LISTING! HV FUNCTION	03/05/74	PAGE 0076	
	FUNCTION HV ( TT )		HV 3124 HV 3125	
0 L	FUNCTION COMPUTES ENTHALPY OF FLUE GAS		HV 3126 HV 3125	
- u	COMMON /C2HV/ CPCP(11), HVHV(12)		HV 3128 HV 3128	
	HV = EQUA ( TT/1000.05 HVHV )			
00	RETURN End		HV 3132 HV 3132 ·	
•				
. '				
		-	-	
		•		
-				

L SUBRUUTINE CLZ 2 C CARF LAAD 2		CL2 3134 CL2 3135	
		CL2 3136 CL2 3136	
5 COMMULT // DUMHY(3),KK, ICODE, HCODE,		CL2 3138	
7 A TANIAL VAREAN HAREAN ALAN ANIALA ANIALA ANIALANA	•		
9 A NSSELA MUSELA MINALS FRATES KEUELS XAIKS FTERRS 9 A NSSELA MCSELA, NSGELA FGEBLA, NSURF, NUNLS ••••••••••••••••••••••••••••••••••••		CL2 3141 CL2 3142 CL2 3142	
11 A REPARTS FOR THE CECKER INCLESSION AND THE AND AND A REPARTS FORDER SCODE, NGRAY JHERE,			
13 C THREAD FOR STATE STATE UNIT			
Image: String	NH(8,3),	CL2 3148 CL2 3148 F1 3 346	
17         17         17         17         17         17         17         17         17         17         17         17         15         16         17 <th17< th="">         17         17         17<!--</td--><td>(),ALPHA( 60)</td><td></td><td></td></th17<>	(),ALPHA( 60)		
19 WRITE(X2001)			-
23 2002 FURMAT(TIO,ICL2 B1)			an and a start of the start of th
25 WRITE(K2) 2003)			
	14 24 24 24 24 24 24 24 24 24 24 24 24 24		
29 C TEST OF COMPUTION OF TOTAL INERTCCANCE AREAS		CL2 3162 C1 2 3162	
31 C (2) VOLUMA AS THE EWITTER			
33 2004 FURMAT(T10,1CL2 D1) 24 51 CALL D75CD/04(L2 D1)		CL2 3166 CL2 3166	
35 62 CALL READ(1) (1/SUR1) 88(1/5), 60) 24 C SUREACE AT THE EMITTED (1/5), 60)			
37 C NSSBLK=MURBER DF SURFACE TO SURFACE BLOCKS 28 C NSSBLK=MURBER DF SUBFACE TO SURFACE BLOCKS		CL2 3170 CL2 3170	
39 KMAX=NGRAY+1 40 DD 89 K81.KHAX		CL2 3172 CL2 3172	
41 IF(K.EQ.KMAX)GD TD 63		CL2 3174	
		CL2 3176 CL2 3176	
45 64 DO 65 J=1,01SSBLK 46 CALL READ(1,5SBNK(J,KK),4A(1,15#J=14),900)		CL2 3178 CL2 3178 CL2 3179	
47 65 CONTINUE 48 no 67 Lei Asure	••	CL2 3180 CL2 3141	
49 DD 66 NELTISURE	•	CL2 3182	

FURTRAN	IV (VER L43) SUURCE LISTING; CL2 SUBROUTINE	03/05/74	PAGE 0078	• •
51 66	CONTINUE		CL2 3184	
52 67	CONTINUE True so which to on		CL2 3185	
55	IFIK EVENMAA/GU IU 90 DD 73 Jaierûsbûk		CL2 3187	
55 55 73	CALL READ(1,65NM(J,KK),AA(1,15*J=14), 900)		CL2 3188 CL2 3189	
57	0074 [#1]FSURF D074 [#1]FSURF		CL2 3190 CL2 3190	
59	BB(L,KK)=BB(L,KK)+AA(N,L)		CL2 3192 CL2 3192	
61 74				
62 63 69 7	GAS AS THE EMITTER NGGBLK=HUNBER OF GAS TO GAS BLOCKS NSGRLK=MINPEP DE GAS TO SUBFACE BLOCKS		CL2 3195 CL2 3196 CL2 3197	
5.0	KO=6+2*(KK=1) br 34 -145-14500.5		CL2 3198 CL2 3198	
67	CALL REAM(1,000M(J,KK), AA(1,15*J=14), 900)			
69	50 79 L=1,NVUL			
70	00 78 H=1, HVUL B8(L,KU)=BU(L,KO)+AA(NoL)		CL2 3203 CL2 3204	
61 EL				-
75	CALL READ(1.5GNM(1.KK), AA(1.15*J-14), 900)		CL2 3208 CL2 3208	
4 4 4 1	00 83 L=1,*NUL		CL2 3210 CL2 3210	
66	00 82 N#LFLSURF BB(L,KD)#BR(L,KD)+AA(N,L)		CL2 3211 CL2 3212	
81 83	CONTINUE		CL2 3214 CL2 3214	
83 83	. CDN=6.#XK(KK)#XO#VD 00.84 [#1,00VUL		CL2 3215 CL2 3216	
84	CONTINUE		CL2 3218 CL2 3218	
87 90	WRITE(K2,91) WRITE(K2,91)		CL2 3220	
6 0 0 0 0	TARANTIAL & CALT COMMENTERISTIC CAS THE SUC OF ALL AND A SULT THE SURFACE AREA AS THE THE EMITTER	R MUST EQUAL	THECLE 3222	
16	ZEAKEAL/////////AREAL)			-
93 92			CL2 3226 CL2 3226 CL2 3226	
66 56	FDRMAT(1]FDR EACH CHARACTERISTIC GAS THE SUM DF ALI 1 And Abear with a cas wolling as the emitted must for	L DIRECT INT	ERCHCL2 3228 2000/12 3228	
64	ZUCT OF THE GAS ABSORPTION COEFICIENT AND THE VOLUT 2 of the Cas Absorption Coeficient and the Volut	HE MULTIPLIE	ED FYCL2 3230 ED FYCL2 3230 San Fi 3331	
66	4 GAS 3, 1/15X, 1 INTER-AREA1, 5X, 1485+VOL 1, 10X, 11NTER.	K-AREALJOX11	185*VCL2 3232	

A FORTRAN	IV (VER L43) SOURCE LISTINGI CL2 SUB	ROUTINE 03/05/7	14 PAGE 0079	
101	WRITE(#2:94)(I.(BB(I.M).M=6.11).I=1.NVG ECONAT.(		CL2 3234	
103	CALL WRITE(4/1574R1/WT(1))]		CL2 3236 CL2 3236	
105	END .		CL2 3238	
•				
			•	
		•		
• "				
			• •	
•				
IFUNCTION SS(XXE,YYE,XX,YYR,WN,MMH)COMMEON // DUMHY(12)&KK, ICODE, HCDDE, HCDDE, HCDDE, HCDDE, HCDDE, HCDDE, HCDDE, HCDDE, HCDDE, TSINK, TSINK, TSINK, TSINK, TSINK, TSINK, HUUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,AA TAU(9), VAREA, HTVAL, FRATE, KFUEL, XAIR, FTEMP,AA NCR, HDUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,AA NCR, HDUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,AA NCR, HDUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,AA NSBLK, NCSBLK, NSGRLK HGGOLL, NSURF, NVUL,AA SSURFX(9), XO, YO, 2LONG, NCGL, NROW, NXSXN,AA SSURFX(9), XO, YO, 2LONG, NGGL, NROW, NXSXN,AA SURFACE SCODE, NGRAY, HCODEIINTEGER SCODE, TGODE, ASTART, HCODEIINTEGER SCODE, TGODE, ASTART, HCODEDCINTEGER SCODE, TGODE, ASTART, HCODEDCINTEGER SCODE, TGODE, ASTART, HCODEDCINTEGER SCODE, TGODE, ASTART, HCODEDCNUTDIMENSIONBCDNUTBCNUTDIMENSIONBCCNU-2BCCNU-2CNU-2BCCNU-2BCCNU-2CNU-2CNU-2 </th <th>55       3239         55       3243         55       3242         55       3243         55       3245         55       3245         55       3245         55       3245         55       3245         55       3246         55       3246         55       3246         55       3246         55       3250         55       3254         55       3254         55       3254         55       3254         55       3255         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256</th> <th></th>	55       3239         55       3243         55       3242         55       3243         55       3245         55       3245         55       3245         55       3245         55       3245         55       3246         55       3246         55       3246         55       3246         55       3250         55       3254         55       3254         55       3254         55       3254         55       3255         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256         55       3256			
--	---	---		
COMMENA // DUMHY(2),KK, ICDDE, HCDDE3A TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3),3A TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3),5A NCR, HDUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,5A NCR, HDUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,7A NSSBLK, NGSBLK, NGGRLK, NSURF, NVOL,7A NSSBLK, NGSBLK, NGGRLK, NSURF, NVOL,7A NSSBLK, NGSBLK, NGGRLK, NSURF, NVOL,7A NSSBLK, NGSBLK, NGGRLK, NSURF, NVOL,9A KL, K2, RCRD(10), TUEP(100), PEAM(200)9A KL, K2, RCRD(10), TUEP(100), PEAM(200)0INTEGER SCODE, SCODE, NGRAY, HCODE1INTEGER SCODE, TCODE, RSTART, HCODE2DIMENSIDA W(9), Z(9), NPT3DIMENSIDA W(9), Z(9), NPT4CHNIA/CAUSS/ HICKICAL5C7C8C8C9	SS 3240 SS 3241 SS 3243 SS 3244 SS 3244 SS 3246 SS 3246 SS 3246 SS 3254 SS 3254 SS 3254 SS 3254 SS 3255 SS 3255 SS 3255 SS 3255 SS 3255 SS 3255 SS 3255 SS 3255 SS 3255			
<ul> <li>a Tau(9), VakEA, HAREA, XLX, XK(3), ACDEF(8,3),</li> <li>a TGRIDG, PRES, FLUET, FLUETS, XMWX, TSINK,</li> <li>b A NCR, HDUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP,</li> <li>a NSBLK, NGSBLK, NSGBLK, NGGRLK, NSURF, NVOL,</li> <li>b A NSSBLK, NG, YD, ZLONG, NGGAY, H4CHC,</li> <li>b A RSTART, TCDUE, SCODE, NGGAY, H4CHC,</li> <li>b A R1, K2, RCRD(10), TUEP(100), PEAM(200)</li> <li>c INTEGER SCODE, TGDE, ASTART, HCODE</li> <li>c INTEGER SCODE, TGDE, ASTART, HCODE</li> <li>c NU-1, SURFACE IS HORIZONTAL</li> <li>c NU-2, SURFACE IS HORIZONTAL</li> <li>c RN-2, SURFACE IS VERTICAL</li> <li>c C NN-2, SURFACE IS VERTICAL</li> </ul>	SS 3241 SS 3242 SS 3244 SS 3244 SS 3244 SS 3244 SS 3244 SS 3244 SS 3254 SS 3254 SS 3254 SS 3254 SS 3254 SS 3255 SS 32555 SS 3255 SS 32			
A NCR, HDUTY, HTVAL, FRATE, KFUEL, XAIR, FTEMP, A NSSBLK, NGSBLK, NGGRLK, NGGRLK, NSURF, NVOL, A XSURFX(9), XO, YD, ZLONG, NGOL, NROW, NXSXN, A XSURFX(9), XO, YD, ZLONG, NGOV, HGHG A X1, K2, RCRD(10), TOEP(100), PEAM(200) I INTEGER SCODE, START, HCODE I INTEGER SCODE, TCODE, RSTART, HCODE D INTEGER SCODE, TCODE, RSTART, HCODE COUMMIN, GAUSS/ WT(9), XY(9), ARG(9, 9), NPT D INTEGER SCODE, TCODE, RSTART, HCODE COUMMIN, GAUSS/ WT(9), XY(9), ARG(9, 9), NPT D INTEGER SCODE, TCODE, RSTART, HCODE COUMMIN, M(9), Z(9) D INTEGER SCODE, START, HCODE COUNTALENCE IS HGRIZONTAL COUNTALENCE IS HGRIZONTAL C NN=1 SURFACE IS VERTICAL C NN=2 SURFACE IS VERTICAL C NN=2 SURFACE IS VERTICAL C RECEIVER ORIENTAL	SS 3243 55 3244 55 3246 55 3246 55 3249 55 3259 55 3259 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255			
A NSSBLKA MCSBLKA NGGLKA NGGLKA NSURFA NVOLA A XSURFX(9), XO, YD, ZLONG, NGOLA NSURFA NVOLA A KI, K2, RCRD(10), TOEP(100), PEAM(200) A KI, K2, RCRD(10), TOEP(100), PEAM(200) I INTEGER SCODE, TCODE, ASTART, HCODE COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), NPT COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), NPT B COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), NPT COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), NPT B COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), NPT COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), NPT COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), NPT B COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), NPT COMMUNACAUSS/ MI(9), XY(9), ARG(9,9), ARG(	55 3244 55 3245 55 3246 55 3249 55 3254 55 3254 55 3254 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255			
A KIJ KZP TCOUE SCHOEN NGRAY HCHC A KIJ KZP RCRD(10), TOEP(100), PERM(200) I INTEGER SCODE,TCODE,RSTART,HCODE CUMMIN/GAUSS/ MT(9),XY(9),ARG(9,9),NPT DIMENSIOW W(9),2(9) B COMMIN/GAUSS/ MT(9),2(1) B COMMIN/GAUSS/ MT(9),2(1) COMMIN/GAUSS/ MT(1),2(1) B COMMIN/GAUSS/ MT(1),2(1) COMMIN/GAUSS/ MT(1),2	55 3246 55 3247 55 3249 55 3250 55 3250 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255 55 3255			
<ul> <li>A KL, KZ, RCRD(10), TOEP(100), PEAM(200)</li> <li>INTEGER SCODE, TCDE, RSTART, HCODE</li> <li>INTEGER SCODE, TCDE, RSTART, HCODE</li> <li>DIMENSION W(9), 2(9), XY(9), ARG(9,9), MPT</li> <li>DIMENSION W(9), 2(9)</li> <li>DIMENSION W(9), 2</li></ul>	55 3247 55 3249 55 3250 55 3251 55 3251 55 3255 55 3255 55 3255 55 3255 55 3259 55 3259 55 3259			
I INTEGER SCODE, RSTART, HCODE CUMMIN/GAUSS/ HT(9), XY(9), ARG(9,9), NPT DIMENSION W(9), 2(9) EQUIVALENCE (XY(1), M(1), 2(1)) C NP-2 SURFACE IS HORIZONTAL C NP-2 SURFACE -: 5 VERTICAL C RECEIVER ORIENTAL C RECEIVER ORIENTAL C NM=2 SURFACE IS VERTICAL C NM=2 SURFACE IS VERTICAL	55 3249 55 3250 55 3251 55 3255 55 3255 55 3255 55 3255 55 3255 55 3259 55 3259			
DIMENSION W(9),Z(9) C EQUIVALENCE (XY(1),M(1),Z(1)) C NP=1 SURFACE IS HORIZONTAL C NN=2 SURFACE -: 5 VERTICAL T C RECEIVER ORIENTATION C NM=1 HORIZONTAL C NM=2 SURFACE IS VERTICAL C XE=XXE C XE C X	SS 3251 SS 3255 SS 3255 SS 3256 SS 3256 SS 3256 SS 3259 SS 3259 SS 3259 SS 3259			
5 C NU-=I SURFACE IS HERIZENTAL 6 C NU-=Z SURFACE 75 VERTICAL 7 C RECEIVER ORIENTATIOM 8 C MA=1 HORIZENTAL 9 C NM=2 SURFACE IS VERTICAL 0 XE=XXE	SS 3253 SS 3255 SS 3256 SS 3256 SS 3256 SS 3259 SS 3259 SS 3250			
7 C RECEIVER ORIENTATION 7 C RECEIVER ORIENTATION 8 C MM=1 Horizontal 9 C NM=2 Surface IS Vertical 0 Xe=XXE	55 3256 55 3255 55 3256 55 3256 55 3258 55 3259 55 3259			
9 C NHEL HURLCONIAL 9 C NHEZ SURFACE IS VERTICAL 0 XEEXXE	55 3259 55 3258 55 3259 55 3259 55 3259			
	55 3259 55 3250 55 3250			
	SS 3261			
6 151KK5EQ.4)60 70 23				
	55 3266			
9 23 ZZ=0,0 0 CVATATION ACRINS FULTTING SURFACE	SS 3267 SS 3268			
I C I = VARIATION ACCROSS RECEIVING SURFACE	SS 3269			
3 XX=ABS(XR+XE)	SS 3271			
Vradbs (Vreve)	SS 3272			
5 60 TU(31,32),NN 6 31 60 TU (31,44),4M	55 3273 55 3274			
7 32 60 TO(51,71), NH	SS 3275 SS 3276	-		
9 C EMÎTTER ÎS HDRIZDNTAL Y CONSTANT 0 C beceiver îs verticat y constant	55 3277 55 3278			
1 41 IF(XR.GT.XE)GG TO 42	5S 3279			
5 42 X1=XX=X0 6 X2=X2	55 3284 55 32843 55 32283			
7 43 IF(YR.LT.YE) 60 TO 44	: 55 32A5			
9 Y2=YY+YD .	SS 3287			

			200		
A FUNINAN	IN [NEW Page Suddle Plating 33 FUNCTION 03/03/	14 7A		70	•
E9 101	DG 64 [#1,NPT		SS 333	60	•
201			100 SS		
1040			HEE SS	<b>1</b>	
105 64	CONTINUE		926 334		
107			200 200 200 200		
109 C	CASE & PURZY MARK IS VERTICAL X CONSTANT	]:   	956 SS	47	
100	RECEIVER IS VERTICAL X CONSTANT		4EE 55	48	
111 71	IF(XX+EQ+0+0)60 TD 84		55 334 55 335	6 0 0	
10 ×			555 335 256 235		
115	00 75 JelsNPT Vear_/YSEArt/1.14/18/84/11U/11/1/22		55 335 255 335	E A C	
117	IF(YR.EQ.YE)60 T0 72		SS 335	5	а
119			266 335 266 335	57	-
121 72	V1=-78AR V1=-78AR V2=-1-V1		SS 335	69	
123 73	00 74 [s],NPT V-vs411		SS 336	10	-
125			SS 336	69	
127 74	<u></u>		SS 336	69	
129 15	CONTINUE CIDEATE 455 SUBGATE AST THE SAME BUT MAY ADDATANT		55 336 55 336 25	50	
131 84			SS 336	6 <b>9</b>	
133 85	5580. Do 87 Jei - NoT		55 331 56 331	71	÷
135	FAC=0.0		SS 337	73 74	•
137	FAC+FAC+WT(1)*ARG(1,J)		LEE SS	75	
139	0.018/04/21(_)#FAC		SS 33	17	
141 07	Ssess/3,1415927		55 33 55 33 79	79	
143			55 33	81	
		••			
		•			

NICTION 03/05/74 PAGE 0083	Terk Lagi Sucke Laffind F (%)       Family F (%)       Base         Undertin F (%)       Base       Base         Difficient F (%)       Difficient F (%)       Difficient F (%)         Difficient F (%)       Difficient F (%)       Difficient F (%)         Difficient F (%)       Difficient F (%)       Difficient F (%)         Difficient F (%)       Difficient F (%)       Difficient F (%)         Difficient F (%)       Difficient F (%)       Difficient F (%)         Difficient F (%)       Difficient F (%)       Difficient F (%)         Difficient F (%)       Difficient F (%)       Difficient F (%)         Difficient F (%)       Difficient F (%)       Difficient F (%)         Difficient F (%)       Difficient F (%)       Diffic
NGTIGN 03/05/74 NGTIGN 03/05/74 1)+V++2-=526582481+V+,8858 1)+V++2+=1189248853)+V 17445=2181,0552 2=-472701651+V+,5595915275 2=-472701651+V+,5595915276 1+V+,5548433295+61+V+*3 1+V+,5548433295+01+V+*3 1+V+,5548433295+01+V+*3 1+V+,5548433295+01+V+*3 1+V+5548433295+01+V+*3 1+V+5548433295+01+V+*3 1+V+5548433295+01+V+*3 1+V+5548433295+01+V+*3 1+V+55484433295+01+V+*3 1+V+5548433295+01+V+*3 1+V+5548433295+01+V+*3 1+V+55484334445+01+V+*3 1+V+5548445+01+V+*3 1+V+554845+01+V+*3 1+V+554845+01+V+*3 1+V+55445+01+V+*3 1+V+55445+01+V+*3 1+V+55445+01+V+*3 1+V+5545+01+V+*3 1+V+5545+01+V+*3 1+V+5545+01+V+*3 1+V+5545+01+V+*3 1+V+555+01+V+*3 1+V+5545+01+V+*3 1+V+5545+01+V+*3 1+V+5545+01+V+*3 1+V+5545+01+V+*3 1+V+5545+01+V+*3 1+V+5545+01+V+*3 1+V+555+01+V+*3 1+V+55+01+V+*3 1+V+55+01+V+*3 1+V+55+01+V+*3 1+V+55+01+V+10+V+*3 1+V+55+01+V+10+V+10+V+10+V+10+V+10+V+10+	TVRC 1431 SUDACE LISTING       TVRC 1400         UUNTTON F(x)       UUNTTON F(x)         UUNTTON F(x)       UUNTTON F(x)         UUNTTON F(x)       UUNTTON F(x)         If Nu.       UUNTTON F(x)
	Tyek Less source Listinul T UNCTION F(W) CUNCTION F(W) CUNCTION F(W)

いたがないためのためとう

Service and a service of the

1.     Consumpties Activity in the subset of start intractuated atch     Startis       1.     Consumption State activity in the subset of start intractuated atch     Startis       1.     Consumption State activity in the subset of start in the start	1     Summaries     Standing     Standing     Standing       1     Computation Statute     Standing     Standing       1     Tarkino, Statute     Standing     Standing       1     Tarkino, Statute     Statute     Statute     Statute       1     A Harkino, Statute     Statute     Statute     Statute       1     C     Integer statute     Statute     Statute       1     Integer statute     Statute     Statute     Statute       1 <th></th>	
3     Convention     Seconds       3     Convention     Seconds       4     Failedo, False, Hanke, Marca Martin, Seconds     Seconds       5     A failedo, False, Hanke, False, Marca     Seconds       6     A failedo, False, Hanke, False, Marca     Seconds       7     A failedo, False, Hanke, False, Marca     Seconds       9     A failedo, False, False, Marca     Seconds       10     A kurke, False, False, Marca     Seconds       11     C Auta Marca     Seconds       12     Constant Action     Seconds       13     Constant Action     Seconds       14     Constant Action     Seconds       15     Constant Action     Seconds       16     Constant Action     Seconds       17     Coll     Seconds       18     Constant Action     Seconds       19     Coll     Seconds       11     Coll     Seconds       12     Coll     Seconds       13     Coll     Seconds       14     Seconds     Seconds       15     Coll     Seconds       16     Coll     Seconds       17     Coll     Seconds       18     Seconds     Seconds       19 <td>3     COMMUN // DUMINY 13/WK, TCOE, HCUE, HCUE</td> <td></td>	3     COMMUN // DUMINY 13/WK, TCOE, HCUE, HCUE	
1         1	3     A TANIDO, PRES, FLUETS, MURA, CENTRA, ACCENTRA, STRAND       7     A NESSLOWTS-FLUET, FLUETS, MURA, CENTRA, MARY, FERNA     SEGARDE       7     A NESSLOWTS-FLUET, FLUETS, MURA, MENNAN, MENNAN, SERAND     SEGARDE       7     A NESSLOWTS-FLUET, MENUL, MENNAN, MENNAN, SERAND     SEGARDE       1     A NESSLOWTS-FLUET, MENUL, MENNAN, SERAND     SEGARDE       1     A NESSLOWTS-FLUET, MENUL, MENNAN, MENNAN, SERAND     SEGARDE       1     Construction     SECARDE       1     Construction     SECARDE       1     MURED        1     MURED <td></td>	
7     A MASA LANDAR STATURY AGAINY AGAI	7     A NUMBA FUNCTIONAL FUNCTION FOR FULLY NUMBARY FULLY     Strawed       7     A NUMBA FULLY FULLY FUELT FUELY FUELY     Strawed       9     A NUMBA FULLY     Strawed       1     Construction     Strawed       1     A NUMBA FUELY     Strawed       1     Strawed     Strawed       1     Strawed     Strawed       1     Strawed     Strawed       1     Strawed     Strawed       1     Call MEDITS FUEL     Strawed       1     Call Strawed     Strawed       1     Strawed     Strawed       1     Strawed     Strawed       1     Strawed     Strawed       1     Strawed     Strawed	
1     A RELACT STORE S	9       # R51ATTy TCDPF, SCOPE, WORNY, JECHC, SCOPE,	
1         C         Intract. Storts, stutta, including         Storage           1         1         1         Storage         Storage           2         Storage         Storage	1     C     SSCAMPS       1     SSCAMPS     SSCAMPS       1     SSCAMPS     SSCAMPS       1     SSCAMPS     SSCAMPS       1     SSCAMPS     SSCAMPS       1     SSCAMPS <td></td>	
13         C         Strates         Strates           13         C         Construct/122/Scla)/Sc	13     C     COUNCULATZZAL SSURTE ALL CRUMER ALL READER SCIENT ALL READER A	
P         1.5556370,25610,26610,26610,26610,26010,26610,2600,256240,2400         5552430           11         CALL REGIL, VALP MAILLOOD         5554330           12         CALL REGIL, VALP MAILLOOD         5554330           13         CALL REGIL, VALP MAILLOOD         5554330           14         CALL REGIL, MALPHAILLOOD         5554330           15         CALL REGIL, MALPHAILLOOD         5554330           16         CALL REGIL, MALPHAILDOOD         5554330           17         DO OP SEGLAMA         5554330           18         CALL REGIL, MALPHAILDOOD         5554330           17         DO OP SEGLAMA         5554330           18         MARCHANA         5554330           18         MARCHANA         5554340           18         MARCHANA         5554340           18         MALPANICO         5554340           18         MARCHANA         5554340           18         MARCHANA         5554340           18         MARCHANA         5554340           18         MARCHANA         5554440           18         MARCHANA         5554440           18         MARCHANA         5554440           18         MARCHANA <t< td=""><td>1       1.255(6)/255(8)/256(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/260(6)/200(6)/2</td><td></td></t<>	1       1.255(6)/255(8)/256(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/265(6)/260(6)/200(6)/2	
17         Kall, PERINIS, Map 1, ALPFALIJ, 601         S52,8333           19         Kall, PERINIS 1, 11,16001         S52,8335           21         CALL PERINIS 1, 11,16001         S56,8335           22         CALL PERINIS 1, 11,16001         S56,8335           23         CALL PERINIS 1, 11,16001         S56,8335           24         KIN, EGAMMAN         S56,8335           25         KIN, EGAMMAN         S56,8335           24         KIN, SEGAMAN         S56,8335           25         KIN, SEGAMAN         S56,8335           25         KIN, SEGAMAN         S56,8335           25         Z2,950 (M)         S56,8346           27         L2         KIN, SEGAMAN           28         G50 (GAN         S56,8346           29         G50 (GAN         S56,8346           21         RAM         S56,8346           21         D 09         S111106, SUFAGES           21         C 010         S14,94           21         D 09	17       CdLL READILY LAPTIJY 601       SSCA3432         19       CAL EXENDILY LAPTIJY 601       SSCA3434         20       DD 9X FLAKAX       SSCA3434         21       DD 9X FLAKAX       SSCA3434         22       CAL EXENDICAL       SSCA3434         23       TERK GG KHAKIGT TO 12       SSCA3436         23       TERK GG KHAKIGT TO 12       SSCA3436         23       TERK GG KHAKIGT TO 12       SSCA3440         23       TERK GG KHAKIGT TO 12       SSCA3440         23       TERK GG VLY LOHER LEFT OF SURFACE TO SURFACE MATRIX       SSCA3440         27       TZ       Kke4       SSCA3445         28       CALL PLETOLAULE SUBFACES       SSCA3445         29       C BERATER USENO	
19         Call PTERNIGATIJ-10001         SSCA444           21         011 99 **1.MIX         SSCA444           21         011 99 **1.MIX         SSCA444           22         011 99 **1.MIX         SSCA444           23         101 95 **1.MIX         SSCA444           23         101 95 **1.MIX         SSCA444           23         112 SSCA444         SSCA444           24         21 KKN         SSCA444           25         22 *KKN         SSCA444           27         22 *KK         SSCA444           27         22 *KK         SSCA444           27         22 *KK         SSCA444           27         22 *KK         SSCA444           27 *C         SSCA444         SSCA444           27 *C         SSCA444         SSCA444           27 *C         WINNER IF         SSCA444           27 *C         WINNER IF         SSCA444           28         SSCA444         SSCA444           29         CH IZINUS         SSCA444           21         00 *******         SSCA444           21         00 ********         SSCA444           21         01 **********         SSCA445 <t< td=""><td>19       Call PERVIENT: 1000         21       00 99 **1.kitx         22       Call PERVIENT: 5503458         23       Fike 50.kHaX1GG TD 12         24       Fike 50.kHaX1GG TD 12         25       Fike 50.kHaX1GG TD 12         26       File 71         27       Iz         28       File 70         29       G ENEAFE D*LY LOWER LEFT DF SURFACE MATRIX       55024440         27       File 70       State 3440         29       G ENEAFE D*LY LOWER LEFT DF SURFACE TO SURFACE MATRIX       55024442         21       R NeuWIBER DF ENTITIOG SURFACE SURFACE TO SURFACE MATRIX       55024442         29       C GENEARE D*LY LOWER LEFT DF SURFACE TO SURFACE SURFACE MATRIX       55024442         21       R NNUNBER DF ENTITIOG SURFACE SURFACE MATRIX       55024442         23       R NNUNBER DF ENTITIOG SURFACE SURFAC</td><td></td></t<>	19       Call PERVIENT: 1000         21       00 99 **1.kitx         22       Call PERVIENT: 5503458         23       Fike 50.kHaX1GG TD 12         24       Fike 50.kHaX1GG TD 12         25       Fike 50.kHaX1GG TD 12         26       File 71         27       Iz         28       File 70         29       G ENEAFE D*LY LOWER LEFT DF SURFACE MATRIX       55024440         27       File 70       State 3440         29       G ENEAFE D*LY LOWER LEFT DF SURFACE TO SURFACE MATRIX       55024442         21       R NeuWIBER DF ENTITIOG SURFACE SURFACE TO SURFACE MATRIX       55024442         29       C GENEARE D*LY LOWER LEFT DF SURFACE TO SURFACE SURFACE MATRIX       55024442         21       R NNUNBER DF ENTITIOG SURFACE SURFACE MATRIX       55024442         23       R NNUNBER DF ENTITIOG SURFACE SURFAC	
21     C0 '95 YEIJAITA     500       23     FIR. Edecaduality 10 12     5524343       23     FIR. Edecaduality 10 12     5524443       25     Z2 oKK (Kt)     5524443       27     12     Keen     5524443       27     C GEREATE O'LY UNER LEFT UF SURFACE TO SURFACE NATRIX     5524443       27     12     Keen     5524443       27     G REATE O'LY UNER LEFT UF SURFACE TO SURFACE NATRIX     5524443       27     G REATE O'LY UNER LEFT UF SURFACE TO SURFACE ATRIX     5524443       27     G REATE O'LY UNER LEFT UF SURFACE SWART     5524443       27     G REATE O'LY UNER LEFT UF SURFACE TO SURFACE ATRIX     5524443       27     G REATE O'LY UNER LEFT UF SURFACE SWART     55243443       28     G RATER O'LY UNER LEFT UF SURFACE ATRIX     55243443       29     C RATERON SURFACES     55243443       21     NANUBER OF RELEVING SURFACES     55243443       21     NANUBER OF RELEVING SURFACES     55243443       21     NANUBER OF RELEVING SURFACES     55243443       22     C GRIVENDALIZE     55243443       23     C MANUBER OF RELEVING SURFACES     55243443       24     ZANATERONALIZE     55243443       25     S5243443     55243443       26     S524443 <td< td=""><td>21       DD 99 FFLFMAX         23       FALL PZECUAA(1+1)+ 3600)       550.4443         23       FF(L.EG.KMAX)60 TD 12       550.4443         25       22 FX(K)       550.4443         25       22 FX(K)       550.4443         26       CGUERATE D'LY LOWER LEFT DF SURFACE TO SURFACE MATRIX       550.4443         27       12       Xxea       550.4443         28       CGUERATE D'LY LOWER LEFT DF SURFACE TO SUFFACE MATRIX       550.4444         29       CGUERATE D'LY LOWER LEFT DF SURFACE TO SUFFACE MATRIX       550.4444         28       CALL 2006 SUFFACE       550.4444       550.4444         28       CALL 2006 SUFFACE       550.4445       550.4445         28       CALL 2006 SUFFACE       550.4445       550.4445      <t< td=""><td></td></t<></td></td<>	21       DD 99 FFLFMAX         23       FALL PZECUAA(1+1)+ 3600)       550.4443         23       FF(L.EG.KMAX)60 TD 12       550.4443         25       22 FX(K)       550.4443         25       22 FX(K)       550.4443         26       CGUERATE D'LY LOWER LEFT DF SURFACE TO SURFACE MATRIX       550.4443         27       12       Xxea       550.4443         28       CGUERATE D'LY LOWER LEFT DF SURFACE TO SUFFACE MATRIX       550.4444         29       CGUERATE D'LY LOWER LEFT DF SURFACE TO SUFFACE MATRIX       550.4444         28       CALL 2006 SUFFACE       550.4444       550.4444         28       CALL 2006 SUFFACE       550.4445       550.4445         28       CALL 2006 SUFFACE       550.4445       550.4445 <t< td=""><td></td></t<>	
23     FIRL GALANAGETTE 2004       23     FIRL GALANAGETTE 2004       24     24.00       25     27.40       26     GETERTE 2014       27     12       26     GETERTE 2014       27     12       27     12       26     GETERTE 2014       27     12       27     12       27     12       28     GETERTE 2014       29     GETERTE 2014       20     Networken Ver       21     Networken Ver       22     GETERTE 2014       23     C       24     Networken Ver       25     Networken Ver       26     Networken Ver       27     Networken Ver       28     Statuste 200       29     C       20     Networken Ver       21     Networken Ver       22     Statuste 200       23     Contoning 10       24     Statuste 200       25     Statuste 200       26     Networken Ver       27     Statuste 200       28     Statuste 200       29     Statuste 200       20     Statuste 200       21     Statuste 200 <t< td=""><td>23       FF(K, FG-KHAX)GT TD 12       55CA3439         24       XKaK, FG-KHAX)GT TD 12       55CA3440         25       72 Y (KK)       55CA3440         26       7 X (KK)       55CA3440         27       12       XKa4         28       52 Y (KK)       55CA3440         29       C GEUERATE D'UY LOWER LEFT OF SURFACE TO SURFACE TO SURFACE TO SURFACE SCA3443       55CA3443         29       C GEUERATE D'UY LOWER LETTING SURFACES       55CA3443         29       C GEUERATE D'UY LOWER LETTING SURFACES       55CA3443         20       C B NALUNES OF FAILTY       55CA3445         21       XNUMBER OF FEMITING SURFACES       55CA3445         23       C B UL ZUNE (D.J.ALZENCH) NULL       55CA3445         23       Z NULL ZUNE (D.J.ALZENCH) NULL       55CA3445         24       Z NULL       SSCA3445         25       R Null       55CA3445         26       UB S Mull       55CA3445         27       NULL       SURFACES       55CA3445         28       CAUL       SSCA3445       55CA3445         27       NULL       SURFACES       55CA3445         28       CAUL       Z SCA3450       55CA3445         29</td><td></td></t<>	23       FF(K, FG-KHAX)GT TD 12       55CA3439         24       XKaK, FG-KHAX)GT TD 12       55CA3440         25       72 Y (KK)       55CA3440         26       7 X (KK)       55CA3440         27       12       XKa4         28       52 Y (KK)       55CA3440         29       C GEUERATE D'UY LOWER LEFT OF SURFACE TO SURFACE TO SURFACE TO SURFACE SCA3443       55CA3443         29       C GEUERATE D'UY LOWER LETTING SURFACES       55CA3443         29       C GEUERATE D'UY LOWER LETTING SURFACES       55CA3443         20       C B NALUNES OF FAILTY       55CA3445         21       XNUMBER OF FEMITING SURFACES       55CA3445         23       C B UL ZUNE (D.J.ALZENCH) NULL       55CA3445         23       Z NULL ZUNE (D.J.ALZENCH) NULL       55CA3445         24       Z NULL       SSCA3445         25       R Null       55CA3445         26       UB S Mull       55CA3445         27       NULL       SURFACES       55CA3445         28       CAUL       SSCA3445       55CA3445         27       NULL       SURFACES       55CA3445         28       CAUL       Z SCA3450       55CA3445         29	
27       22.4X(KX)       55.0.3440         27       12       Keat       55.0.3440         27       12       Keat       55.0.3440         29       C       EUERATE       55.0.3440         29       C       BTAIN REMAINS UNEACES       55.0.3440         29       C       BATAIN REMAINS UNEACES       55.0.3440         29       C       BATAIN REMAINS UNEACES       55.0.3440         20       DATAIN REMAINS UNEACES       55.0.3440         20       NAUNBER OF FUTURO SURFACES       55.0.3440         20       LI       9 Nai.NGUE       55.0.3440         21       DO 10 Nai.NGUE       55.0.3440       55.0.3440         22       NAUNBER OF FUTURO SURFACES       55.0.3440       55.0.3440         23       LI       DO 10 Nai.NGUE       55.0.3440       55.0.3440         23       NAUNSUR       S5.0.3440       55.0.3440       55.0.3440         24       DI 10 NAUNE       S5.0.3440       55.0.3440       55.0.3440         25       NAUNSUR       S5.0.3440       55.0.3440       55.0.3440         26       NAUNSUR       S5.0.3440       55.0.3440       55.0.3440         27.01 BIN LALANELYRE       S5.0.	25       22-XX(KK)       556/3440         27       12       X2-940         29       CGUT0.21       556/3441         29       CGUERATE 0*17 UDHRR UFET OF SURFACE TO SURFACE HATRIX       556/3444         20       CALL       SSCA3441         20       CALL       SSCA3445         20       CALL       SSCA3445         20       CALL       SSCA3445         20       CALL       SSCA3445         21       CALL       SSCA3445         22       CALL       SSCA3445         23       CALL       SSCA3445         23       DO 80 N=1/NSURF       SSCA3445         23       DO 80 N=1/NSURF       SSCA3445         23       DO 80 N=1/NSURF       SSCA3445         23       Nu=1       ZOLL       SSCA3445         23       DO 80 M=1/SURL       SSCA3445       SSCA3445         24       DO 80 M=1/SURL       SSCA3445       SSCA3445         25       CALL       ZOLL       SSCA3445         23       DO 80 M=1/SURL       SSCA3445       SSCA3445         24       DO 80 M=1/SURL       SSCA3455       SSCA3455         25       ZALL       ZOLL	
27       12       KK+4       555442         29       C       C       555444         30       C       NAUN NEERT D'LY LONER LEFT OF SURFACE TO SURFACE       5554344         30       C       NAUN NEERT D'LY LONER LEFT OF SURFACE       5554344         31       C       NAUN NEERT P'LY LONER LEFT OF SURFACES       5554344         32       C       NAUN NEERT P'LY LONE SURFACES       5554344         33       C       NAUN NEERT P'LY LONE SURFACES       5554344         33       C       NAUN       5554344         33       LOU SUNFACES       5554344         34       C       SS54344         35       NAL       SS54344         36       NAL       SS54344         37       DU 86       NAL       SS54344         38       CAUL 2001 Num 2       SS54344         39       NAL       SS54344         31       DU 86       SS54344         32       DU 86       SS54344         33       C       SS54344         34       NAL       SS54344         35       CAUL       SS54344         34       NAL       SS54344         35	27       12       KK=4       55(A3442         28       2.2000       GENERATE D'LY LUMER LEFT DF SURFACE TD SURFACE HATRIX       55(A3442         20       C GENERATE D'LY LUMER UFENDE SURFACE TD SURFACE       55(A3444       55(A3444         20       C GENERATE D'LY LUMER UFENDE SURFACE SUMETRY OF MATRIX       55(A3444       55(A3444         21       C NeNUMBER OF ENTING SUBFACES       55(A3444       55(A3444         22       D 089 N=1, NUSE       55(A3444       55(A3444         23       R1       ZONE SUBFACES       55(A3444         23       CALL       SUBFACES       55(A3444         23       Na       SUBFACES       55(A3449         24       ZALL       SUBFACES       55(A3449         25       NALL       SUBFACES       55(A3449         25       NALL       SUBFACES       55(A3449         25       NALL       SSCA3440       55(A3449         26       NAL       SSCA3449       55(A3449         27       NAL       SSCA3449       55(A3449         28       NAL       SSCA3449       55(A3449         28       NAL       SSCA3449       55(A3449         29       NAL       SSCA3449       55	
29 C       GEUERATE O*LY LOHER LEFT OF SURFACE TO SURFACE TO SURFACE TO SURFACE SAMETRY OF MATRIX       SSCA3445         30 C       DERIN REMAIRER USERNO SUMETRY OF MATRIX       SSCA3445         31 C       NaNUMBER OF ELECTVING SURFACES       SSCA3445         32 C       D NaNUMBER OF ELECTVING SURFACES       SSCA3445         33 Z1       D Na NALASURF       SSCA3445         34 D       NALL ZDIE COMMERY OF MATRIX       SSCA3445         35 NULL       SSCA3445       SSCA3445         36 NaLASURF       SSCA3445       SSCA3445         37 DU 86 NaLASURF       SSCA3450       SSCA3450         38 NAL       NAL       SSCA3450         39 NAL       NAL       SSCA3451         30 NAL       SSCA3451       SSCA3452         31 DU 86 NaLASURF       SSCA3455       SSCA3455         32 NAL       DU 86 NaLASURF       SSCA3456         31 DU 86 NaLASURF       SSCA3455       SSCA3455         32 NAL       DU 86 NaLASURF       SSCA3456         33 NAL       NALASURF       SSCA3456         41 XX-ABISIA-KEV       SSCA3456       SSCA3456         42 XAABISIA-KEV       SSCA3456       SSCA3456         43 GU TU 83221/MIL       SSCA3456       SSCA3456	29 C       GENERATE DVLY LOWER LEFT OF SURFACE TO SURFACE MATRIX       55(A3444         30 C       DRTAIN REWAIDER USEING SYMMETRY OF MATRIX       55(A3445         31 C       N=NUMBER OF EMITTING SURFACES       55(A3445         32 C       N=NUMBER OF EMITTING SURFACES       55(A3445         33 CL       N=1       55(A3445         33 CL       00 89 N=1       50(EXTING SURFACES         33 CL       01 89 N=1       55(A3445         33 CL       01 80 N=1       55(A3445         33 CL       1       200 89 N=1       55(A3445         33 CL       1       200 89 N=1       55(A3450         34 DO       1       200 86 N=1       55(A3450         35 CA3451       55(A3450       55(A3451         37 DO       86 M=1       55(A3451         38 N=1       1       55(A3451         39 N=1       1       55(A3451         37 DO       86 M=1       55(A3455         38 N=1       55(A3451       55(A3455         39 N=1       1       55(A3456         31       1       55(A3456         33       1       1       55(A3456         39 N=1       1       55(A3456         41	
31 C     Nahumber of Fultring Supracts     SSCA3446       32 C     Nahumber of Feltring Supracts     SSCA3446       33 Z1     D0 89 Metro Receiving Supracts     SSCA3426       33 Z1     D0 88 Metro Supracts     SSCA3426       34 Cull Zumarks of Stratts     SSCA3426       35 Null     SSCA3426       37 D0 86 Metro Supracts     SSCA3450       38 Null     SSCA3451       39 Mult     Filly of ZaticuliNue2       39 Mult     SSCA3451       31 Full     SSCA3451       32 D0 88 Metro Supracts     SSCA3451       33 TENU Convextor     SSCA3451       34 Metro Supraction     SSCA3451       35 Fully of Convextor     SSCA3451       36 D1 10 10 Joints     SSCA3451       37 00 86 Metro Supraction     SSCA3451       38 00 T1 10 10 Joints     SSCA3451       48 0 Actual Supraction     SSCA3451       49 1 Control 50 Joints     SSCA3451       47 50 T0 88     SSCA3451       48 1 Actual Type Control 10 81     SSCA3451       49 1 Control 50 10     SSCA3451       40 10 10 82     SSCA3451       40 10 10 82     SSCA3451	31 C       URNUMBER OF EMITTING SURFACES       55(53440         32 C       N=NUMBER OF EECEIVING SURFACES       55(53440         33 Z1       D0 89 N=1,NSURF       55(53449         35 NN=1,NSURF       55(53449       55(53449         35 NN=1,NSURF       55(53449       55(53449         36 Ncall 2006 (0.04,NE)       55(53449       55(53449         37 D1 88 Met JSURF       55(53450       55(53450         37 D1 86 Met JSURF       55(53450       55(53450         37 D1 86 Met JSURF       55(53450       55(53451         38 CALL 2006 (0.04) XR, YR       55(53452       55(53452         39 NH=1       55(53452       55(53452         30 RH=1       7006 (0.01) MH=2       55(53452         39 NH=1       55(53455       55(53455         43 G1 T0 (0.01020 T0 81       55(53456       55(53456         43 G1 T0 (0.0150 T0 81       55(53456       55(53456         45 51 TE(XX+YVEC+0.0.0)60 T0 81       55(53456       55(53456         47 60 T0 (85,61) 2000       55(53456       55(53456         47 60 T0 81       55(53456       55(53456         47 60 T0 81       55(53456       55(53456         47 60 T0 81       55(53456       55(53456         47 6	
33     21     00     89     N=1,NSUF     SSCA3448       33     Note to why Keyte)     SSCA3448     SSCA3448       33     Note to why Keyte)     SSCA3450     SSCA3452       34     Note to why Keyte)     SSCA3452     SSCA3452       37     Note to why Keyte)     SSCA3452     SSCA3452       39     KH=1     SSCA3455     SSCA3455       41     XFABSTV=KE1     SSCA3455     SSCA3455       42     Cu Tri (31,232),MI     SSCA3455     SSCA3455       43     Cu Tri (31,232),MI     SSCA3455     SSCA3455       44     XFABSTV=KCLO,0160 TR BI     SSCA3450     SSCA3455       45     Gu Tri (31,232),MI     SSCA3450     SSCA3455       45     Gu Tri (31,232),MI     SSCA3450     SSCA3450       45     Gu Tri (31,000,00     Tri B	33       21       D0       89       N=1,NSURF       SSCA3448         34       CAL1       20HE (0, M, XE, VE)       SSCA3450         35       NN=1       SSCA3451       SSCA3451         36       FE(N, GT, 2*HCUL)NH=2       SSCA3451       SSCA3451         37       D0       88       Met #: SSURF       SSCA3451         39       FRM       SSCA3452       SSCA3452         39       FRM       SSCA3452       SSCA3452         39       FRM       SSCA3452       SSCA3452         39       FRM       SSCA3454       SSCA3455         39       FRM       SSCA3455       SSCA3455         39       FRM       SSCA3455       SSCA3455         41       XX=ABS(XF=XE)       SSCA3455       SSCA3455         42       G0       FR       SSCA3455       SSCA3455         43       G0       FR       SSCA3455       SSCA3455         44       XX=ABS(XF=XE)       SSCA3455       SSCA3455         43       G0       FR       SSCA3455       SSCA3455         44       XX=ABS(XF=XE)       SSCA3456       SSCA3456         45       32       G0       FR       SSCA34	
35     NN=1     SSCA3450       36     TE(N_GT_2HICULINU=2     SSCA3451       37     DIL 80 Met JRSURF     SSCA3452       39     KH=1     ZULE(COM_XRE/VR)     SSCA3452       39     KH=1     ZULE(COM_XRE/VR)     SSCA3452       39     KH=1     ZULE(COM_XRE/VR)     SSCA3452       41     XF=ABS(KF=KE)     SSCA3455       43     GG TG (31-32)/W     SSCA3455       43     GG TG (31-32)/W     SSCA3456       43     GG TG (31-32)/W     SSCA3456       45     GG TG (30-32)/W     SSCA3456       45     GG TG (30-32)/W     SSCA3456       46     AL(M/N)=0.0     SSCA3450       47     GG TG 81     SSCA3450       48     AC(M/N)=0.0     SSCA3450       49     B1     ASCA3452       40     CD TD 83     SSCA3450       40     CD TD 84     SSCA3450	35       NN=1       55CA3450         37       D0       88 Met JFSURF       55CA3451         38       CALL ZOLE (0.4 XR.YR)       55CA3451       55CA3451         39       MM=1       55CA3454       55CA3454         39       FRM GT ZELCULJNH=2       55CA3454       55CA3454         39       FRM GT ZELCULJNH=2       55CA3454       55CA3454         39       FRM GT ZELCULJNH=2       55CA3455       55CA3455         40       FRM GT ZELCULJNH=2       55CA3455       55CA3455         41       XYXEABSIXE-KE)       55CA3455       55CA3455         43       G0 <t0 (31="" 32)="" nn<="" td="">       55CA3455       55CA3455         43       G0<t0 (61="" 20)="" am<="" td="">       55CA3456       55CA3456         43       G0<t0 (61="" 20)="" am<="" td="">       55CA3456       55CA3456         45       G0<t0 (61="" 20)="" am<="" td="">       55CA3456       55CA3460         45       G0<t0 (61="" 20)="" am<="" td="">       55CA3460       55CA3460         45       G0<t0 (61="" 20)="" am<="" td="">       55CA3461       55CA3461         45       G0<t0 (60="" 20)="" am<="" td="">       55CA3461       55CA3461         46       61/20       55CA3461       55CA3461       55CA3461</t0></t0></t0></t0></t0></t0></t0>	
37     D0     88     Mmt. PrSURF       38     CALL <zon-kr.yr< td="">     SSCA3452       39     FH=0     SSCA3454       41     XX=ABS(XF-XE)     SSCA3454       42     YY=AASS(YH=VE)     SSCA3455       43     GO TO (31,221,000     SSCA3456       43     GO TO (31,221,000     SSCA3456       45     32     GO TO (31,221,000       45     32     GO TO (31,221,000       45     32     SSCA3456       45     32     SSCA3456       45     53     SSCA3450       46     1     SSCA3450       47     53     SSCA3450       48     50     SSCA3460       49     81     A(M/N)=(-0       50     70     83       49     81     A(M/N)=(-0</zon-kr.yr<>	37       D0 88 Met skSURF       5503452         38       CALL ZOLE (0, M, XR, YR)       5503452         39       FFM CT ZELCUL (MH=2       5503454         39       FFM CT ZELCUL (MH=2       5503454         40       FFM CT ZELCUL (MH=2       5503455         41       XX=ABS(YK=YE)       5503455         42       YY=ABS(YK=YE)       5503455         43       G0 T0 (31/32) MH       5503455         43       G1 T0 (61.85) MH       5503455         45       32       G1 T0 (85.61) AMH         45       32       G1 T0 (85.61) AMH         45       G1 T0 (85.61) AMH       5503455         45       G1 T0 85       5503455         46       S503455       5503455         47       60 T0 81       5503460         47       60 T0 81       5503460         47       60 T0 81       5503460         47       60 T0 81       5503461	
39       FHH-I       55CA3454         41       XX=ABS(XF=XE)       55CA3455         42       XX=ABS(XF=XE)       55CA3455         43       G0 T0 (51.85).HM       55CA3459         43       G0 T0 (51.85).HM       55CA3459         43       G0 T0 (51.85).HM       55CA3450         45       G1 T0 (51.85).HM       55CA3450         46       G1 T0 (51.85).HM       55CA3450         47       G1 T0 81       55CA3450         48       A (M=N=0.0)       1       55CA3451         49       B1       A (M=N=0.0)       1       55CA3452         49       C1 T0 89       55CA3452       1       55CA3455         40       C1 T0 89       55CA3455       1       55CA3455         41       C1 T0 89       55CA3452       1       55CA3455         42       C1 T0 89       55CA3455       1       55CA3455         43       C1 T0 89       55CA3455       1       55CA3455	39       MH=1       556A3454         40       1F(M_GT_2M.Cut.)MH=2       556A3455         41       XX=ABS(YK=YE)       55CA3456         42       YY=ABS(YK=YE)       55CA3456         43       G0 TG (31/32) MH       55CA3456         43       G0 TG (31/32) MH       55CA3456         45       32       G1 TG (51.85) MH       55CA3456         45       32       G1 TG (85.61) MH       55CA3456         45       60 TG 90.000 TG 81       60 TG 90.000 CD 70 81       55CA3460         45       60 TG 90.000 TG 81       60 TG 90.000 CD 70 81       55CA3460	
41       XX=aBS(XF-XE)       55CA3457         42       VY=ABS(Yh=VE)       55CA3457         43       GD T0 (31,32),MN       55CA3459         43       GD T0 (61,85),MN       55CA3459         45       32       GD T0 (61,85),MN         45       32       GD T0 (61,85),MN         45       32       GD T0 (85,61),MH         45       55CA3461       55CA3462         47       60 T0 8       55CA3462         48       C       55CA3462         49       81       A(M) N=0.0         50       60 T0 8       55CA3464         50       60 T0 8       55CA3462	41       XX=ABS(XK=XE)       55CA3456         42       YY=ABS(YK=YE)       55CA3457         43       G0 T0 (31.922) MH       55CA3459         43       G0 T0 (61.022) MH       55CA3459         45       32       G0 T0 (61.020 MH         45       32       G0 T0 (61.020 MH         45       32       G0 T0 (65.01) MH         45       32       G0 T0 10 85.61) MH         45       52CA3461         47       G0 T0 85         47       G0 T0 85         47       55CA3461	
43       60 T0 (31,32),MN         44       31       60 T0 (31,32),MN         45       32       61 T0 (61,45),MM         45       32       61 T0 (85,61),MM         46       61 T6(XX+YY) E0,0,0)60 T0 81       55CA3460         47       60 T0 85       55CA3461         48       C       55CA3463         49       81       AA(M,N)=0,0         50       60 T0 88       55CA3465	43       60 T0 (31,32),NN       555,03458         44       31       60 T0 (61,13),MN         45       32       60 T0 (85,61),MM         45       32       60 T0 (85,61),MM         45       32       60 T0 (85,61),MM         45       32       60 T0 81         45       60 T0 82       555,03460         47       60 T0 82       555,03461         47       60 T0 82       555,03461	
45 32 GD TU(85.61) MM 55CA3460 46 61 TE(XX+YYE0.0.0) D 81 55CA3461 47 60 TD 85 55CA3462 48 6 A SURFACE CANNUT VIEW ITSELF 55CA3463 49 81 AA(MAN)=0.0 50 CD TD 88 55CA3465	45 32 60 T0(85,61)/MH 55CA3460 46 61 TF(XXXYYEC.0.0)60 T0 81 47 60 T0 85 47 55CA3461 55CA3461 55CA3462	
47 60 70 85	47 60 70 85 556A3462	
49 81 AA(MAN)=0.00		
	49 81 ÅA(M#N)=0.0	

51 85 AA(M <sub>2</sub> N)=SS(XE <sub>2</sub> YE <sub>2</sub> XR <sub>2</sub> NN <sub>2</sub> MM) 52 IF(M.GT.RCR1 AA(M <sub>2</sub> N)=AA(M <sub>2</sub>	PAGE 0085
53 IF(N.GT.HCR)AA(M.N)=AA(M.N)+ALPHA(N) 54 BB CONTINUE 55 B9 CONTINUE 56 C COMPLETE UPPER RIGHT OF MATRIX 57 C N ROW L COL	SSCA3466
55 89 CUNTINUE 55 6 COMPLETE UPPER RIGHT DF MATRIX 57 C N ROW L COL	SSCA3468 55CA3468 55CT32468
ST C N ROW L COL	55CA3470 SSCA3470 SSCA3471
	SSCA3472 SSCA3472
	SSCA3474
61 00 93 LettyKSURF 61 00 93 LettyKSURF 63 AAXM1 V-AAXTON	
	55CA3478 55CA3478 55CA3478
65 DQ 945 J#1/NSSBLK 54 FA11 BEADIT: 7551.111. 9001	55CA34R0.
	55643462 55643462
69 1F(J,EQ, FSSELK)MLAST=NSURP=JJ	
71 00 941 N=1,450RF	550A3486 550A3486 557A3486
73 AA (N, MM) = AA (N, MM) +CC (N, M) 73 AA (N, MM) = AA (N, MM) +CC (N, M) 73 AA (N, MM) = AA (N, MM) +CC (N, M)	55CA3468 55CA3468
75 941 CONTINUE 25 941 CONTINUE	55CA3490
77 945 CONTINUE 77 945 CONTINUE 78 C MADUMATTED LEAD GAS SUBEACE TO SUBEACE INTEORUANCE ADEA	\$50.43491 \$50.43492 \$50.732.03
79 C SO THAT THEY SUM TO THE AREA OF THE CHITTER AND	500A3434 550A3434 557A3434
81.95 NN=2+NCUL 200 Hold Hold Hold Hold Hold Hold Hold Hold	SSCA3496 55CA3496
83 IF(N.6T, KN) GU TD 201	
87 AREA=YU BR	55CA3502 55CA3502 55CA3502
89 202 AREA=YD#2,#ALPHA(N) 80 202 Area=yd#2,#ALPHA(N) 80 203 77-0-0	SSCA3804 SSCA3804 SSCA3804
91 UG 205 H=1,45URF	55C435U6 55C435U6
93 205 CONTINUE 93 205 CONTINUE 94 304 1-14864.1	55CA3508 55CA3508
95 DO 207 HalsNSJRF 95 AA(M-H) - AA(M-1) - 77 96	SSCA3510 SSCA3510 SSCA3510
97 IF(AA(H,M),LT.0.)CALL EREDR(ISSZZI,H,N) 38 207 CONTENUE	SSCA3512 SSCA3512 SSCA3512
99 209 CONTINUE 100 Gn TD 96	SSCA3514 SSCA3514

A FORTRAN	IV (VER L43) SOURCE LISTING SSCALC SUBROUTINE 03/05/74	>AGE 0086	
101 C	COMPUTE SUM OF SURFACE TO SURFACE INTERCHANGE AREAS	SSCA3516 Ssca3516	
106 601	DD 303 NeljnSURF	SSCA3518	
105	HB (N, KK) = BB (N, KK) + AA (M, N)		
EOE 201			
100 96	00 97 Jal/NSSBL Call Watters.ssnw(j.kk).aáíj.15±1-14). 900)	SSCA3524 SSCA3524	
111 97		SSCA3526 SSCA3526	
113	IF(NPRNT.EC.1)60 T0 99 UPTE(V2.20.)VV	SSCA3528 SSCA3528	
115 401	FDRMAT(11),19X, SURFACE TO SURFACE DIRECT INTERCHANGE AREAS', LUX	, I SSCA3530 SSCA3530	
117	CALL PRINT(AA,NSURF,NSURF) Continue		
119 101		SSCA3534 SSCA3534 SSCA3534	
•			
•			

Contraction of the local division of the loc

The second s

	1 (VER 144) 294465 1971841	PAGE 0087	
U 7 4	SUBROUTINE SSCALC Computation of Subface to volume direct interchange Abfa	65CA3536 65CA3537	
. m .	COMMON // DUMMY(3),KK, ICTOE, HCADE,	GSCA3538	
	A TERIDG, PRES, FLUET, FLUETS), XMMX, TSINK,	65CA3540	
9 <b>~</b> (	A NCRA HOUTYA HIVALA FRATEA KFUELA XAIRA FTEMPA A NSSBLKA NGSBLKA NSGBLKA NSURFA NVOLA	. 65CA3542 65CA3542	
6 G C	A KSUKEXIYIS AUS YUP ZUTANA NGULE IKUME RABANE A RSTARTE TCODE, SCODE, NGRAY, JACHC. A KI. K2. RCRDIIDI. TDEPIJODI. PERMIZODI.NDRNT	65CA3544 65CA3544	
11 0		GSCA3546	
267	INTEGER SCUCEPILUDE/KSTAFLANCUUE COMMON/JAZZZ/ SSMM(8/4)/GSMM(8/3)/SGMM(8/3)/GGMM(8/3)/ /25528).76528).756781.766781	65CA3547 65CA3548 65CA3549	
	COMMON/SPCEZ/ AA( 60, 60),88( 60,15),6C( 60,15),ALPHA( 60) XPVD=AHTH)/YP,VD,	65CA3550 rer03551	
12	CALL READ(1, 'ASUR1, 83(1,5), 60)	GSCA3552 CSCA3552	-
19 10	DO 1900 KK#1+NGRAY	65CA3554	
21 5	VENUMBER UF ENITTING SURFACE	GSCA3556 GSCA3556	
23	DO 1850 X=1.04 NGUE	GSCA3558 CSCA3558	
100		65CA3560 65CA3560	
27 C	- WRITE(K2216)N3XE,YEAM3XR3YR Erdbhat,//rejonse,es	65CA3562 65CA3562	
29	XRAEXR	GSCA3564	
	XRAEXX+X XRAEXX+X3 Voo	GSCA3565 GSCA3566 GSCA3566	
88	XFGEXF XFGEXF VertexetXr	65CA3568 65CA3568	
. 35	X R D = X R V R D = X R V R D = X R	65CA3570 65CA3570	
37 C 38 Cos	WRITE(K2,25)XRA,TRA,XRB,YRB,XRC,YRC,XRD,YRU Frimatt:.ck.sf.f.	65CA3572 65CA3572 65CA3573	
39	IF(N.GT,2##CUL)GN TO 37	656A3574 CCCA3574	
41		GSCA3576	
43		GSCA3578 CSCA3578	
45 C	VERTICAL SURFACES	650A3580 650A3580	
<b>47</b> 47	IF(XE.GT.XR)GD T0 50 IF(YE-YR)400-800	. 65CA3582 GSCA3582	
49 50	IF(YE+Ye)500+700+900	GSTA3584	

·

· 1

|.

91 C     0187711101 1     0543396       91 S     0187111101     0543395       91 S     0181711101     0543395       91 S     0111101     0543395       91 S     011101     0543395       91 S     01111101     0543395       91 S     011111101     0543395       91 S     01111101     0543395       91 S     011111011     0543395       91 S     0111110110     0543395       91 S     0111110110     0543395       91 S     0111110110     0543395       91 S     0111101101 <tr< th=""><th></th><th></th><th>•</th></tr<>			•
31         100         52000         56000           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100         100           101         100         100	51 C ORIENTATION 1	GSCA3586	•
35         551.	52 100 Sist.	CSCA3587	
1         1	53 S2401, Ex 53401	6SCA3588 6SCA3588	
Main         Contrast         Contrast         Contrast           100         110         100	55 S4=1.	GSCA3590	
87     70     00000000     00000000     00000000       83     1000000     0000000     0000000       84     0000000     0000000     0000000       84     0000000     0000000     0000000       84     00000000     0000000     0000000       84     00000000     0000000     0000000       84     000000000     00000000     00000000       84     0000000000     00000000     00000000       84     000000000000000000000000000000000000			
95     5:1:1     GG(239)6       10     5:1:1     GG(239)6       11     5:1:1     GG(239)6       12     10     GG(239)6       13     10     GG(239)6       14     10     GG(239)6       15     10     GG(239)6       15     10     GG(239)6       15     10     GG(239)6       15     10     GG(230)6       15     10     GG(230)6       15     10     GG(230)6       16     11     GG(230)6       17     1700     GG(230)6       18     10     GG(230)6       19     10     GG(230)6       10     11     GG(230)       11     10     GG(230)       12     13     GG(230)       13     14     GG(230)       14     15     GG(230)       15     14     GG(230)       15     15     GG(230)       15     16     GG(230)       15     17     GG(230)       15     16     GG(230)       16     16     GG(230)       17     17     GG(230)       18     16     GG(230)       19     10 <t< td=""><td>57 C UNIENTATUM 2 88 200 TETARSIVE-VET ED 0.0100 TO 210</td><td>6SC A3593 6SC A3593</td><td></td></t<>	57 C UNIENTATUM 2 88 200 TETARSIVE-VET ED 0.0100 TO 210	6SC A3593 6SC A3593	
01     33-11     000000000000000000000000000000000000	59 SIEle	63CA3594	
31         00110         544310         5563393           31         00170         1007.000         5563393           31         1007.000         1007.000         5563393           31         1007.000         551300         551300           31         5213         551300         551300           31         5213         551300         551300           31         5213         551300         551300           32         5213         551300         551300           31         5213         551300         551300           32         5213         551300         551300           32         521300         551300         551300           32         521300         551300         551300           32         521300         551300         551300           32         521300         551300         551300           32         521300         551300         551300           32         521300         551300         551300           32         521300         551300         551300           32         521300         551300         551300           32         52110 <td>61 S3==1,</td> <td>GSCA3596</td> <td></td>	61 S3==1,	GSCA3596	
87     31.0     EV. PL. SEV. C. M. SEV. C. M. J. SEV. C. M. J. SEV. 2000       85     1.0     1.0     55.000       85     30.0     10     55.000       85     30.0     10     55.000       85     30.0     10     55.000       85     30.0     10     55.000       85     30.0     55.000     55.000       73     10     55.000     55.000       73     10     50.0     55.000       73     10     50.0     55.000       74     50.0     55.000     55.000       75     10     10.0     55.000       75     10     10.0     55.000       75     10     10.0     55.000       75     10     10.0     55.000       75     10     50.0     55.000       75     10     50.0     55.000       75     10     50.0     55.000       75     10     50.0     55.000       75     10     50.0     55.000       75     50.000     55.000       75     50.000     55.000       75     50.000     55.000       75     50.000     55.000       7		CSCA3597	
1         1         1         7         0         1         1         0	63 60 TU 1500 64 210 FAC-XU-SSIX5,YE,XBB,YBB,NN,2]=SSIXE,YE,XEC,YAC,NN,1]=SSIXE,	65CA3599 E, XRD¢GSCA3599	
67 C     C	65 1 YRP. HN. 2)	GSCA3600	
69     300     52-1     65(25800)       73     52-1     65(25800)       73     611     10.0       73     611     65(25800)       73     611     65(25800)       73     611     65(25800)       73     611     65(25800)       74     60     71       75     611     65(25800)       75     611     65(25800)       76     612     65(25800)       77     52     65(25800)       78     611     65(25800)       79     611     65(25801)       70     51     65(25801)       81     52     65(25801)       82     61     65(25801)       81     52     65(25801)       82     61     65(25801)       81     52     65(25801)       82     61     65(25801)       81     61     65(25801)       82     61     65(25801)       81     61     65(25801)       82     61     65(25802)       81     61     65(25802)       81     61     65(25802)       81     61     65(25802)       81     61     65(25802)   <	60 C URIENTATION 3	GSCA364	
30         55-11         66:53:00         66:53:00           11         51:10         55:53:00         55:53:00           12         51:11         55:53:00         55:53:00           13         0         51:11         05:53:00           14         52:11         05:53:00         55:53:00           15         52:11         05:53:00         55:53:00           17         52:11         05:53:00         55:53:00           17         53:11         05:53:00         55:53:00           18         52:11         05:53:50         55:53:00           19         0         11:10:0         55:53:00         55:53:00           10         52:11         05:53:50         55:53:50         55:53:50           11         50:0         15:00         55:53:50         55:53:50           11         52:00         55:53:50         55:53:50         55:53:50           11         52:00         55:53:50         55:53:50         55:53:50           12         52:00         55:53:50         55:53:50         55:53:50           13         51:00         10         10:00         10:00         55:53:50           13 <td< td=""><td>68 300 S1=1. 60 S2=1.</td><td>GSCA3603 GSCA3604</td><td>•</td></td<>	68 300 S1=1. 60 S2=1.	GSCA3603 GSCA3604	•
71     6.4-1:     656.4300       73     C arti 150.     656.4300       73     C arti 150.     656.4300       74     C arti 150.     656.4300       75     C arti 150.     656.4301       76     C arti 150.     656.4301       77     Sati     656.4301       78     C arti 150.     656.4301       79     C arti 150.     656.4301       70     C arti 150.     656.4301       71     Sati     656.4301       73     C arti 120.     656.4301       80     51.1     656.4301       81     51.1     656.4301       82     51.1     656.4301       83     51.1     656.4301       84     C arti 150.     656.4301       85     C arti 150.     656.4301       85     C arti 150.     656.4301       84     C arti 170.     656.4302       85     C arti 170.     656.4302       86     C arti 170.     656.4302       87     C arti 170.     656.4302       88     C arti 170.     656.4302       89     1 -56.44.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.	70 53=1	GSCA3605	
73 C     C RATHTEV 4     GSCA368       73 C     C RETTON 4     GSCA368       74 Stati     SSCA36     GSCA361       75 C     Stati     GSCA361       76 C     Stati     GSCA361       80 Stati     GSCA361     GSCA361       81 Stati     GSCA361     GSCA361       82 Stati     GSCA361     GSCA361       82 Stati     GSCA361     GSCA361       82 Stati     GSCA361     GSCA361       82 Stati     GSCA361     GSCA361       83 Stati     GSCA361     GSCA361       83 Stati     GSCA361     GSCA361       84 C     GSCA361     GSCA361       85 C     REHATON S     GSCA361       85 C     GSCA361     GSCA361       85 C     GSCA361     GSCA362       85 C     GSCA362     GSCA362       86 C     GSCA362     GSCA362       810 G     GSCA362 <td< td=""><td>71 S4mm1.</td><td>GSCA3606 GSCA3607</td><td></td></td<>	71 S4mm1.	GSCA3606 GSCA3607	
73     53-11     55(2300)       71     53-11     55(2301)       73     53-11     55(2301)       74     53-11     55(2301)       75     53-11     55(2301)       76     53-11     55(2301)       81     53-11     55(2301)       82     53-11     55(2301)       83     53-11     55(2301)       83     53-11     55(2301)       84     53-11     55(2302)       85     55(2302)     55(2302)       84     51-11     55(2302)       85     51-11     55(2302)       85     51-12     55(2302)       85     51-13     55(2302)       85     51-13     55(2302)       85     51-13     55(2302)       85     55(2302)     55(2302)       85     55(2302)     55(2302)       85     51-13     55(2302)       85     51-13     55(2302)       85     55(2302)     55(2302)       85     55(2302)     55(2302)       85     55(2302)     55(2302)       85     55(2302)     55(2302)       85     55(2302)     55(2302)       85     55(110)     55(2302)	73 C DRIENTATION 4	GSCA3608	
7       54-1.       0.5443011         7       54-1.       0.5443012         7       54-1.       0.5443012         7       51-1.       0.5443012         8       51-1.       0.5443012         8       51-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       54-1.       0.5443012         8       51-1.       0.5443012         9       51-1.       0.5443012         9       51-1.       0.5443012         9       51-1.       0.5443012         9       51-1.       0.544302         9       51-1.       0.544302         9       51-1.       0.544302 <td>75 52 52 52 52 52 52 52 52 52 52 52 52 52</td> <td>65CA36US 65CA36L0</td> <td></td>	75 52 52 52 52 52 52 52 52 52 52 52 52 52	65CA36US 65CA36L0	
79 C     C	77 54=1.e	65CA3612	
80 500 Si=1       G5C43615         81 53=1       53=1         82 53=1       53=1         83 53=1       6570301         83 53=1       6570301         84 53=1       53=1         85 7       11500         85 7       6570301         85 7       6570301         85 7       6570301         85 7       6570301         86 7       6570301         87 35=1       6570301         88 53=1       6570302         89 53=1       6570302         89 53=1       6570302         80 53=1       6570302         81 53=1       6570302         82 53=1       6570302         81 53=1       6570302         82 53=1       6570302         82 5302       6570302         81 53=1       6570302         82 5302       6570302         82 5302       6570302         82 5302       6570302         82 5302       6570302         82 5302       6570302         82 5302       6570302         82 5302       6570302         92 700 If For Train       6570302         93 700 If Fo	78 C DRIENTATION 5	65CA3614	
81       52=1.       GSCABSID         83       54=1.       GSCABSID         85       C       DR [E171101:6       GSCABSID         87       S1=1:       GSCABSID       GSCABSID         87       S1=1:       GSCABSID       GSCABSID         89       S3=1:       GSCABSIS       GSCABSIS         91       FACEYDESXXEXESXEXYEAKEXEXEXEXEXEXEXESXEBANNU21       GSCABSIS         92       GUI TO LIONI       GSCABSIS       GSCABSIS         93       C       OR [ENTATIONI       GSCABSIS         94       C       GSCABSIS       GSCABSIS         97       S1=16       GSCABSIS       GSCABSIS         91       S1=16       GSCABSIS       GSCABSIS         92       S1=16<	60 50n S1=1.	CSCA3615	
83       541, 60       60       61       71       55	81 SZFI. 82 Samel.	GSCA3616 GSCA3617	
85 C     DRIENTATION 6       87     51=1       87     51=1       87     51=1       87     51=1       89     53=-1       89     53=-1       89     53=-1       89     53=-1       80     53=-1       81     53=-1       82     53=-1       83     53=-1       89     53=-1       80     53=-1       81     53=-1       82     53=-1       83     53=-1       89     53=-1       80     53=-1       81     55=2       82     53=-1       83     53=-1       83     53=-1       84     55       85     53=-1       85     53=-1       85     55       81     55       82     55       83     55       84     55       85     55       85     65       85     65       85     65       85     65       85     65       85     65       85     65       85       85     65    <	83 Starle 64 FO 1500	GSCA3618 GSCA3618	
37       51=11       51=11       55(A3052)         87       52=11       55(A3052)       55(A3052)         89       53=-13       55(A3052)       55(A3052)         81       50       1300       55(A3052)       55(A3052)         82       610       FAC = YD=SS(XE, YRC, MN, 1)=SS(XE, YE, XRB, YRB, MN, 2)       55(A3052)       55(A3052)         92       1=SS(XE, YE, XRA, YRA, NN, 1)=SS(XE, YE, XRB, YRB, MN, 2)       65(A3052)       55(A3052)         93       1=SS(XE, YE, XRA, YRA, NN, 1)=SS(XE, YE, XRB, YRB, MN, 2)       65(A3052)       55(A3052)         93       C       0R (ENTT1)0M       700       65(A3052)         95       700       F(A8S(ARS, XR-XE)-XD), LT, XDYD)GD       710       65(C33053)         97       51=1       65(C33053)       65(C33053)       55(A3053)         98       52=1       65(C33053)       65(C33053)       65(C33053)         99       52=1       65(C33053)       65(C33053)       65(C33053)         97       53=1       65(C33053)       65(C33053)       65(C33053)         98       52=1       65(C33053)       65(C33053)       65(C33053)         99       52=1       65(C33053)       65(C33053)       65(C33053)      <	· 85 C DRIENTATION 6	65643620	•
89       53=-1.       65643624         91       610       1500         92       610       60       65643624         93       1=55(XE_YE_XRA_YRA_NN_11=SS(XE_YE_XRB_YRB_NN_21)       656A3624         93       1=55(XE_YE_XRC_NN_11)       656A3626         93       1=55(XE_XE_XRA_YRA_NN_11=SS(XE_YE_XRB_YRB_NN_22)       656A3626         93       1=55(XE_XR_XR_VRA_NN_11)=SS(XE_YE_XRB_YRB_NN_22)       656A3628         93       1=55(XE_XR_XR_XE_1=X01,1T_X0Y0)G0 TD 710       656A3639         95       700       1E(ABS(ABS(XR=XE)=X01,1T_X0Y0)G0 TD 710       65CA3639         95       51=1       65CA3639       65CA3639         97       51=1       65CA3639       65CA3633         97       51=1       65CA3633       65CA3633         98       53=1       65CA3634       65CA3634         99       53=1       65CA3635       65CA3635         90       53=1       65CA3635       65CA3635         90       54=1       65CA3635       65CA3635         90       54=1       65CA3635       65CA3635         9100       54=1       65CA3635       65CA3635	ar state tertenertar in our state of state of the state o	63643622 65643622	
91       C0 T0 15(0         92       610       Fdc s70=55(KE,YE,XRA,YRA,NN+1)=S5(KE,YE,XRB,YRB,NN,2)       G5CA3626         93       1=55(KE,YE,XRC,YRC,NN+1)=S5(KE,YE,XRB,YRB,NN,2)       G5CA3628         93       1=7500       G5CA3628         94       C0 T0 1700       G5CA3630         95       C 0RIENTATIUH 7       G5CA3630         95       C 0RIENTATIUH 7       G5CA3630         96       700       Ff(ABS(ARE,XE)=XD), LT,XDYD) G0 T0 710       70         97       51=1       65CA3632         98       52=1       1       65CA3633         99       53=1       1       65CA3633         97       53=1       1       65CA3633         97       53=1       1       65CA3633		62(43624 65(43624	
92       01       FALETURDSIXE TEARBOTHOULLEDSIXESTEREDTHOMUSI       UDE RADE 1         93       0       1-55 (XE,YE,XR,WN,1)       05 (A3628         94       C0       10       1700         95       C       01 1700       05 (A3628         95       C       01 1700       05 (A3631         95       S       01 1F(ABS(APS(XR-XE)=XD), LT, XDYD)GO TD 710       05 (A3631         97       S1=1       1       05 (A3633         98       S2=1       1       05 (A3633         99       S3=-1       1       05 (A3633         90       S4=1       1       05 (A3633		02043626	
95 C DRIENTATIUM 7 95 C DRIENTATIUM 7 96 700 IF(ABS(APS(XR=XE)=XD),LT,XDYD)GO 7D 710 97 S1==1. 98 S2e1. 99 S3==1. 100 S4==1. 100 S4==1. 100 S4==1.	93 1-55 (XE,YE,XRG,YRC,NN,1)	656 43628	
97 S1=+1. 98 S2=1. 99 S3=+1. 100 S4=1. 100 S4=1. 1	95 C ORIENTATIUM 7 95 C ORIENTATIUM 7 96 700 TELARCIARSIYR_VEI_VUN IT_VNVNIGA TA 710	65CA3629 6SCA3630 6SCA3631	
99 53 <b>=-1.</b>	97 Slarle 98 Starle	: 65CA3632	
	99 53=+1. 100 54-11	65CA3634 GSCA3634	
			-

101     101     101     102     102     102       103     103     103     103     103       104     104     104     104       105     104     104     104       105     104     104     104       105     104     104     104       105     104     104     104       105     104     104     104       104     104     104     104       105     104     104     104       105     104     104     104       105     104     104     104       105     104     104     104       105     104     104     104       106     104     104     104       107     104     104     104       108     104     104     104       109     104     104     104       101     104     104     104       101     104     104     104       101     104     104     104       101     104     104     104       101     104     104     104       101     104     104     104	FORTRAN IV (VER L43) SOURCE LISTING! GSCALC SUBROUTINE 03/05/7	PAGE 0009	
100     1-555 (16.100, Mark 2)     5650.000       100     100     100     100       101     100     100     100       102     100     100     100       103     100     100     100       101     100     100     100       102     100     100     100       103     100     100     100       104     100     100     100       105     100     100     100       105     100     100     100       105     100     100     100       105     100     100     100       105     100     100     100       105     100     100     100       105     100     100     100       106     100     100     100       107     100     100     100       108     100     100     100       109     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100	101 60 T0 1500 103 710 FAC-VD-SS(XE-VE-XBA-VBA-NN-1)-SS(XE-VE-XBC-VRC-NN-1)	GSCA3636 GSCA3637	
100     600     600     600     600       100     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     600     600     600     600       111     100     600     600     600       1110     100	103 1-55(XE,YE,XRD,YRD,NN,2)	GSCA3638	
100     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       111     100     100     100     100     100       112     100     100     100     100     100       113     100     100     100     100     100       114     100     100     100     100     100       115     100     100     100     100     100       114     100     100     100     100     100       115     100     100     100     100     100       115     100     100 <td></td> <td>GSCA3639</td> <td></td>		GSCA3639	
107     55=1;     107     55=1;       118     53=1;     10     105     105       118     53=1;     105     105     105       118     53=1;     105     105     105       118     53=1;     105     105     105       118     53=1;     105     105     105       118     53=1;     105     105     105       118     53=1;     105     105     105       118     53=1;     105     105     105       119     100     105     105     105       111     53=1;     105     105     105       119     100     105     105     105       111     55=1;     105     105     105       119     100     105     105     105       111     100     105     105     105       111     100     105     105     105       111     100     105     105     105       111     100     105     105     105       111     100     105     105     105       111     100     105     105     105       111     100<	105 C UKLENIALIN 6 106 BOD Start.	65CA3641	
100         500000         100         500000           111         0         500000         500000           111         0         500000         500000           111         0         50000         500000           112         0         50000         500000           113         50000         500000         500000           113         50000         500000         500000           114         0         500000         500000           115         0         500000         500000           115         0         500000         500000           115         0         500000         500000           116         0         500000         500000           111         0         500000         500000           111         0         500000         500000           111         0         500000         500000           111         0         500000         500000           111         0         500000         500000           111         111000         500000         500000           111         500000         5000000         5000000	107 Sza-1.	65CA3642 65CA3642	
111     E. RATERTATION 9     555000       113     52411     555000       114     52411     555000       115     52411     555000       115     52411     555000       115     52411     555000       115     52411     555000       115     52411     555000       115     52411     555000       115     52411     555000       115     55411     555000       115     55411     555000       115     55411     555000       115     555100     555000       115     55111     555000       115     55111     555000       115     55111     555000       115     55111     555000       115     55111     555000       115     55111     555000       115     55111     551111       115     55111     551111       115     55111     551111       115     55111     551111       115     551111     551111       115     551111     551111       115     551111     551111       115     551111     5511111       115     5511111	109 S4=1. 110 S4=1. 110 S1 T0 150	65CA3644 CSCA3644	
11     52:13:40       12     52:13:40       13     52:13:40       14     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:13:40       15     52:14:40       15     52:14:40       15     52:14:40       15     52:14:40       15     52:14:40       15     52:14:40       15     52:14:40       15     52:14:40       15     52:14:40       15     10:11:1       16     51:11:1       17     1-55:14:11:1       18     10:11:1       19     11:11:1       19     11:11:1       10:11:1     11:11:1       10:11:1     11:11:1       10:11:1     11:11:1       10:11:1     11:11:1       10:11:1     11:11:1	III C DRIENTATION 9	65CA3646	
11         544-1         564-1           11         0         044-1           12         044-1         050-000           13         050-000         050-000           14         000         050-000           15         050-000         050-000           15         050-000         050-000           15         050-000         050-000           15         050-000         050-000           15         050-000         050-000           15         050-000         050-000           15         050-000         050-000           15         050-000         050-000           15         050-000         050-000           15         000-000         050-000           15         000-000         050-000           15         000-000         050-000           15         000-000         050-000           15         000-000         050-000           15         000-000         050-000           15         000-000         050-000           15         000-000         050-000           15         000-000         050-000	113 YOU Starts 113 S2*1.	USC A3044 USC A3048 CSC A3048	
117     000     51-11     000       118     1000     51-11     000       119     00     11-11     05(34565)       120     51-11     00     11-11       121     51-11     05(34565)     05(34565)       121     51-11     05(34565)     05(34565)       123     00     11-110     05(34565)       123     011     1100     05(34565)       123     51-11     05(34565)     05(34565)       123     51-11     05(34565)     05(34565)       123     51-11     05(34565)     05(34565)       123     51-11     05(34565)     05(34565)       123     51-11     05(34565)     05(34565)       123     11-15     05(34565)     05(34565)       124     0110     105(34567)     05(34565)       123     0110     105(34567)     05(34567)       124     0110     107(347444)     05(34567)       124     0110     107(347444)     05(34567)       124     110     107(347444)     05(34567)       124     124(110)     05(34567)     05(34567)       124     124(110)     05(34567)     05(34567)       124     124(110) <td< td=""><td>114 54841. 115 S4841.</td><td>GSCA3650</td><td></td></td<>	114 54841. 115 S4841.	GSCA3650	
118     1000     Similar     65(34565)       120     Similar     65(34565)       121     Similar     65(34565)       122     Conferratius     65(34565)       123     Conferratius     65(34565)       124     Similar     65(34565)       125     Similar     65(34565)       126     Similar     65(34565)       127     Similar     65(34565)       128     Similar     65(34565)       129     Similar     65(34565)       129     Similar     65(34565)       129     Similar     65(34565)       129     Similar     65(34565)       131     Six Sinterversarea     65(34565)       133     Conference     65(34565)       134     Six	116 GG TG 1500 117 C DRIENTATION 10	GSCA3651 GSCA3652	
120         5341         5341           122         667 H1 960         65 KAB55           123         1100         65 KAB55           124         1100         65 KAB55           125         5 = 1         05 KAB55           126         110         110 Start         05 KAB56           127         5 = 1         05 KAB56         05 KAB56           128         5 = 1         05 KAB56         05 KAB56           128         5 = 1         05 KAB56         05 KAB56           128         5 = 1         05 KAB56         05 KAB56           129         110         24 KUNSTON         05 KAB56         05 KAB56           129         110         24 KUNSTON         05 KAB56         05 KAB56           121         24 KUNSTON         05 KAB56         05 KAB56         05 KAB56           123         24 SUNSTON         05 KAB56         05 KAB56         05 KAB56           123         25 entit         05 KAB56         05 KAB57         05 KAB57           123         25 entit         05 KAB57         05 KAB57         05 KAB57           123         25 entit         05 KAB57         05 KAB57         05 KAB57	118 1000 S1==1. 119 S2==1.	GSCA3653 GSCA3654	
121         Chi fi Ison         05023600           123         C INTATUNI II         05023600           123         C INTATUNI II         05023600           123         Sant         05023600           124         Sant         05023600           127         Sant         05023600           128         Sant         05023600           129         Sant         05023600           120         100 150         05723600           129         Sant         05723600           129         120 100 150         05723600           130         120 100 120         05723600           131         120 100 120         05723600           133         C OKIEWATUNA         05723600           134         0510 11/2         05723600           135         0510 11/2         05723600           136         05512675         05723670           137         0510 11/2         0573670           138         1400 12         0573670           139         1500 55212         0573670           139         1500 100 112         0573670           131         1500 001 112         0573670	120 53#1.	[5 <u>C</u> 43455	
123 C     0R1ENTION 11     65(24569       129     51*1     65(24569       120     51*1     65(24560       121     51*1     65(24560       127     53*1     65(24560       129     110     65(24560       120     110     65(24560       121     120     65(24560       121     120     65(24560       121     120     65(24560       121     120     65(24560       121     120     65(24560       121     120     65(24560       123     0     70     55(24560       120     120     65(24560     65(24560       121     120     65(24560       123     120     55(24560       124     120     55(24560       125     55=1     65(24560       126     55=1     65(24560       128     1240     125(2460       129     1240     1240       120     55=1     65(24560       120     55=1     65(24560       121     1240     125(24560       123     55=1     65(24560       124     1240     65(24560       125     1240     65(24560 <td>121 54=1. 122 6n T0 15n0</td> <td>65CA3657 GSCA3657</td> <td></td>	121 54=1. 122 6n T0 15n0	65CA3657 GSCA3657	
27     51****     51****       28     53****     53****       28     53****     55       29     10     150       29     10     55       29     10     150       29     10     150       29     10     150       20     110     Extravestrextantukulisstrextextextaka.       29     130     155       20     130     155       20     155     55       21     155     55       23     155     55       24     0.01     120       25     55     55       25     55     55       26     55     55       27     55     55       28     150     55       29     150     55       27     55     55       28     150     55       29     150     55       29     150     55       20     150     55       2137     55     55       28     55     55       28     55     55       29     150     55       20     150     55	123 C DRIENTATION 11 124 Tiro Triabsiansian - Ven IT vovojen to 1110	GSCA3658 GSCA34560	•
127     53-1;     53-1;     55-1;       129     60 T0 1500     55(A3662       130     110 Fox     55(A3662       131     1-55(KE,VEXKLAYRA,VM.1)=55(KE,VE,XBA,VBA,NW.2)     55(A3665       133     1-55(KE,VEXKLAYRA,NM.1)=55(KE,VE,XBA,VBA,NW.2)     55(A3665       133     1-55(KE,VEXKLAYRA,NM.1)=55(KE,VE,XBA,VBA,NW.2)     55(A3665       133     C OK EVATUOR     55(A3665       134     100     55(A3665       135     S2-1;     55(A3665       137     55-1;     55(A3665       137     55-1;     55(A3665       137     55-1;     55(A3665       137     55-1;     55(A3675       137     55-1;     55(A3675       137     55-1;     55(A3675       137     55-1;     55(A3675       138     1500     55(A3675       139     1500     15(A167)       140     1740     55(A3675       141     1740     55(A3675       143     1840     55(A3675       144     1841     55(A3675 <tr< td=""><td></td><td>65CA3660</td><td></td></tr<>		65CA3660	
129     100     120       130     110     Fak ANUASTKE YE XRA.YRA.NNA11=SSIXE.YE.XEB.YRB.NN.21     155(124065       131     1=St KEVESTKE YE XRA.YRA.NNA11=SSIXE.YE.XEB.YRB.NN.21     155(124065       133     C     0K ENTATURE     1700       133     C     0K ENTATURE     1200       134     C     0K ENTATURE     1200       135     C     0K ENTATURE     1200       135     C     0K ENTATURE     05(13665       135     C     0K ENTATURE     05(13656       135     S2=1     05(13657     05(13657       135     S2=1     05(13657     05(13657       136     1500     S1=25     05(13657       137     S3=14     05(13657     05(13657       138     1500     140     15(1107       141     15(1107     05(13657     05(13657       143     1840     16(1107     05(13657       143     1840     16(11107     05(13657       144     15(11107     05(13657       143     1840     05(13657       144     16(11107     05(13657       145     011101     05(13657       145     0111101     05(11111)       145     0111112	127 Sael. 128 Sael.	GSCA3662 GSCA3662	
131     1-55(KE/YRD,YRD,WW,2)     05(A3666       135     C NK INTIUM L2     05(A3668       135     C NK INTIUM L2     05(A3668       135     Sarl     05(A3668       135     Sarl     05(A3668       135     Sarl     05(A3668       137     Sarl     05(A3668       137     Sarl     05(A3668       137     Sarl     05(A3668       137     Sarl     05(A3673       138     Ison     05(A3673       139     1500     Sarl       137     Sarl     05(A3673       138     Ison     05(A3673       139     1700     ANAJUJEKA       139     1700     SCA3673       139     1700     SCA3673       140     1700     SCA3674       143     1840     C0NTINE       143     1840     C0NTINE       144     LELLALIJI     900)       145     CILL REANUL-SCG(1JJ1)     900)       149     ISIC     SCA3673       149     ISIC     SCA3673       149     ISIC     SCA3673       149     ISIC     SCA3673       149     ISIC     SCA3668       140     ISIC     SCA3689	129 GO TO 1500 130 1110 FAC-XD-SS(XE-VE-XRA-VRA-NN-1)-SS(XE-VE-XRA-VRB-NN-2)	6SCA3664 6SCA3665	
133 C     0xiEwitatiun 12     0550068       134 1200     51=1.     05500569       135     52=1.     05500569       137     53=1.     05500569       137     53=1.     05500569       137     53=1.     05500569       137     53=1.     0550056       137     53=1.     05500572       139     1500     54=1.       139     1505     05101714       139     1500     0510056       140     17.00     5505073       141     17.00     5505073       142     1840.01     5505073       143     1841.01     5505073       144     1841.01     5505073       145     1840.01     5505073       145     011110     5503073       145     011110     5503073       145     011110     5503073       145     011110     5503073       147     012505011/01     9001       147     01250501     5503063       147     012520504     5503063       148     14104     1       149     14104     1       140     165043063       141     16504063       142     1	131 1=S(XE,YEA,YRA,NNA,2)	6SCA3666	
135       52=1.       65CA3677       65CA3677         136       53=1.       65CA3677       65CA3677         137       53=1.       65CA3677       65CA3677         137       54=71.       65CA3677       65CA3677         139       1500       54=71.       65CA3677       65CA3672         139       1500       54=71.       65CA3677       65CA3672         140       1700       54(M_1N)=FAC       65CA3675       65CA3675         141       17(M.GT.WCSALK       65CA3676       65CA3676       65CA3676         143       1810.01(M.GT.WCSALK       65CA3676       65CA3676       65CA3676         143       1810.01(M.GT.WCSALK       900)       65CA3676       65CA3676         143       1810.01.205(1).000)       65CA3676       65CA3676       65CA3676         143       1810.01.205(1).000)       65CA3676       65CA3676       65CA3676         144       NLASTELS       14.000)       65CA3676       65CA3676         145       01       181.012.000)       65CA3676       65CA3676         146       NLASTELS       65CA3676       65CA3676       65CA3676         147       NLASTELS       65CA3676       65CA3676	133 C DŘIENTATIDN 12	GSCA3668	
137       54=1,1         137       54=1,1         138       1500       Fac=551XE vFaxRavRavNut1)*51+551XE vFaxRavNup2)*52       0560473         139       1+551XE vFaxRavRavNut1)*51+551XE vFaxRavNup2)*52       0560473         139       1+551XE vFaxRavRavNut1)*51+551XE vFaxRavNup2)*52       05604673         139       1+551XE vFaxRavRavNut1)*51+551XE vFaxRavNup2)*52       05604673         141       1740       0511110E       05604673         142       1840       00171110E       056043673         143       1840       0171110E       056043673         145       0117110E       056043673       056043673         145       0117110E       056043673       056043673         146       0114110E       056043673       056043673         145       0141141526514) vCc(111) x 900)       056043673       056043673         146       0141457=18       1       056043663       056043663         147       145       011457=18       1       056043663         147       16145745       056043663       056043663       056043663         147       16145745643       056043663       056043663       056043663         148       16145745643       05	135 1200 51#1. 135 520 52#1.	65CA3559 65CA3570 -	
139     1+55 (XE/YE_XRC_YRC_NN_1)*53+55 (XE/YE_XR0_YRD_NN_2)*54     GSCA3674       141     1+51 (ARAH)*EAC     GSCA3675       142     1840 CDNTINUE     GSCA3676       143     1840 CDNTINUE     GSCA3676       144     1851 Jap.40581K     GSCA3677       145     Call REAN(1,255(J)).CC(1,1)).     900)     GSCA3678       147     NL357 Jap.40581K     GSCA3678       148     Call REAN(1,255(J)).CC(1,1)).     900)       149     165 GSCA3681     GSCA3682       147     NL357 Jap.40581K     GSCA3682       148     145 CALL REAN(1,255(J)).CC(1,1)).     900)       149     155 GSCA3682     GSCA3682       147     NL357 Jap.40581K     GSCA3682       148     145 FSCA3682     GSCA3682       149     165 FSCA3682     GSCA3682       149     165 FSCA3682     GSCA3682       149     1857 Halvol     GSCA3685       149     1957 Halvol     GSCA3685       149     165 GSCA3685     GSCA3685 <td>130 - 24441. 137 137 54441. 134 1500 FAC=SS(YE-VE·YEA.VRA.NN.1)#S1+SS(YE-VE·YEA.NN.2)#S3</td> <td>USCA3614 GSCA3672 GSCA3672</td> <td></td>	130 - 24441. 137 137 54441. 134 1500 FAC=SS(YE-VE·YEA.VRA.NN.1)#S1+SS(YE-VE·YEA.NN.2)#S3	USCA3614 GSCA3672 GSCA3672	
141       1F(M,GT, ACK)AA(M,M)=FAC*ALPHA(N)         142       1840       CONTINUE         143       1850       CONTINUE         144       DO 1831       JatAUCSBLK         145       CALL REAU(1)ZCS(J)JCC(1)1)J       900)         145       CALL REAU(1)ZCS(J)JCC(1)1)J       900)         146       JALLELSTIJ#15       GSCA3683         147       NLAST*13       13         147       NLAST*13       6SCA3683         148       PDU 1852       MLAST*NVOL=JJ         149       DU 1852       MLAST         149       DU 1852       Mature         149       DU 1852       Mature         149       DU 1852       Mature         150       DU 1852       Mature         150       DU 1852       Mature         150       DU 1853       Mature	139 1+SS(XE,YE,XE,YRC,YRC,NN,1)#53+SS(XE,YE,XR0,YRD,NN,2)#S4	GSCA3674 GSCA3674	
143       1850       C0HTINUE         144       00       1851         145       01       1851         145       01       1851         145       01       1851         145       01       1851         145       01       1851         145       01       1851         145       01       1851         146       01       1851         147       NLAST#IS       65CA3680         147       NLAST#IS       65CA3681         147       NLAST#IS       65CA3682         147       NLAST#IS       65CA3683         147       NLAST#IS       65CA3683         148       F[(J_EQ_5CGSBLK]HLAST#NUDL=JJ       1         149       01       1852       900         149       01       1852       65CA3683         149       01       1852       65CA3684         150       01       1853       65CA3684	141 IF(N,GT,NCK)AA(M,N)=FAC*ALPHA(N) 141 IF(N,GT,NCK)AA(M,N)=FAC*ALPHA(N)	GSCA3676 GSCA3676 GSCA3676	
145       CALL REAN(1,2GS(4)),CG(1,1), 900)       GSCA3680         146       JJ=(J-1)*15       GSCA3681         147       NLAST=15       GSCA3681         147       NLAST=15       GSCA3682         148       F[(J=Eq.16.2000)]       GSCA3683         149       D0 1852       M=1,NV0L         150       D0 1853       H=1,NV0L         150       D0 1853       GSCA3685	143 1850 CONTINUE 143 1850 CONTINUE 144 1841 LILINEE	65CA3678 65CA3678 65CA3478	
147       NLAST#15       1       65CA3682         148       FE(J_FQ.LGSBLK]HLAST=NVDL=JJ       65CA3683         149       DU 1852       Mm1.NLAST         150       DU 1853       Jmm1.NVDL         150       DU 1853       Jmm1.NVDL	145 CALL REAN(1,2GS(4)),CC(1,1), 900)	65CA3680 65CA3680	
149 DD 1852 M#1.MLAST 65CA3684 150 DD 1853 PalaNVDL 65CA3685	147 NLASTELS	65CA36R2 65CA36R2 65CA36R2	
	149 DU 1852 MELANT 150 DU 1852 MELANDL	GSCA3604 GSCA3604	

. •

. •

•	
WTINUE CARAGE WITH THE REMEMBED AREA DN DISK GEGABOB MITNUE GEGANDE MERENANGE AREA DN DISK GEGABOD E BUZ Jaj NGSBLK E BUZ Jaj NGSBLK MI WIT I BUZ Jaj NGSBLK MI NUE SUN FECHANGE AREA WITH SUBRACE AS EMITTER GEGABOD COOT Paj NGUR LEOOT Paj NGUR LEOOT Paj NGUR LEOOT Paj NGUR LEOOT Paj NGUR MITLE SUNFACE TO SUBRACE MITH SUBRACE AS EMITTER GEGABOD LEOOT Paj NGUR MITLE SUNFACE TO SUBRACE MITH SUBRACE AS EMITTER GEGABOD LEOOT Paj NGUR MITLE SUNFACE TO SUBRACE MITH SUBRACE AS EMITTER GEGABOD MITLE SUNFACE TO SUBRACE MITH SUBRACE AS EMITTER GEGABOD MITLE SUNFACE TO SUBRACE MITH SUBRACE AS EMITTER GEGATOD MITLE SUNFACE TO SUBRACE DIRECT INTERCHANCE AREAL GEGATOD MITHUE CANDINARY SUBRACE DIRECT INTERCHANCE AREAL OCCATIS MITHUE AND THE INTERCHANCE AREAS GEGATOD MITHUE TO 2040 GEGATIS MITHUE AND THE ANTHAL SUBRACE DIRECT INTERCHANCE AREAL IOX I GEGATIS MITHUE TO 2040 GEGATIS MITHUE TO ANTHAL SUBRACE DIRECT INTERCHANCE AREAL IOX I GEGATIS MITHUE TO 2040 GEGATIS MITHUE AND THE ANTHAL SUBRACE AREAS GEGATIS MITHUE TO ANTHAL SUBRACE DIRECT INTERCHANCE AREAL IOX I GEGATIS MITHUE TO ANTHAL SUBRACE AREAS GEGATOD MITHUE TO ANTHAL SUBRACE AREAS GEGATOD MITHUE TO AND THE ANTHAL SUBRACE AREAS GEGATOD MITHUE TO ANTHAL SUBRACE AREAS GEGATOD TO CONTACE ATTOR MITHUE TO ANTHAL SUBRACE AREAS GEGATOD TO CONTACE ATTOR MITHUE TO ANTHAL SUBRACE ANTHAL SUBRACE AREAS GEGATOD TO CONTACE ATTOR MITHUE TO ANTHAL SUBRACE ANTHAL SUBRACE AREAS GEGATOD TO CONTACE ATTOR MITHUE TO ANTHALLISTALIALS SUBLACE AREAS GEGAT	
MTINUE E SURFACE TO VOLUME INTERCHANGE AREA ON DISK 65(24890) E SURFACE TO VOLUME INTERCHANGE AREA ON DISK 65(24809 MTINUE E SURFACE TO VOLUME INTERCHANGE AREA WITH SURFACE AS EMITTER 65(24809 COORT 1: ANULT COORT 1: ANULT COORT 1: ANULT COORT 1: ANULT COORT 1: ANULT MTLLE SURFACE TO SURFACE INTERCHANCE AREA 65(2470) MTLL SURFACE TO SURFACE INTERCHANCE AREA 65(2470) COORT 1: ANULT COORT 1: ANULT COORT 1: ANULT MTLLE SURFACE TO SURFACE AREA 65(2470) COORT 1: ANULT COORT 1:	
1062     Just Strate     Scrabb2       1062     Just Strate     Scrabb2       101     Just Strate     Scrabb2       101     Just Strate     Scrabb2       101     Just Strate     Scrabb2       102     Just Strate     Scrabb2       103     Scrabb2     Scrabb2       103     Just Strate     Scrabb2       103     Just Strate     Scrabb2       103     Just Strate     Scrabb2       104     Just Strate     Scrabb2       105     Just Strate     Scrabb2       105     Just Strate     Scrabb2       105     Just Strate     Scrabb2       105     Just Strate     Scrabb2       106     Just Strate     Scrabb2       107     Just Strate     Scrapp       107     Scrapp     Scrapp       107     Scrapp     Scrapp       107     Scrapp     Scrapp       107     Scrapp	
NTINE NUME FILLOGSWI(1/AKL)ALTILEDUALY, 900) ATT SUPECIANCE AREA NITH SURFACE AS EMITTER 65(23696 ACCO Fain NUME FIRENTIAL SUFFICE INTERCHANCE AREA AND 65(23696 ACCO Fain NILE BROWN FILL SUFFICE INTERCHANCE AREA AND 65(23700) ALTE SUFFICE TO SURFACE INTERCHANCE AREA 65(23700) COLD Jain NSBLK AND 12 SUFFICE TO SURFACE AND 900) COLD Jain NSBLK FILL SUFFICE TO SURFACE FILL SAMILLAR 1000 65(23700) COLD Jain NSBLK FILL SUFFICE TO SURFACE FILL SAMILLAR 1000) COLD Jain NSBLK FILL SUFFICE TO SURFACE FILL SAMILLAR 1000) COLD Jain NSBLK FILL SUFFICE TO SURFACE FILL SAMILLAR 1000) COLD Jain STOR FILL SUFFICE TO SURFACE FILL SAMILLAR 1000) COSC 3712 COSC 3712 COST 10010 FILL SUFFICE FILL SAMILLAR 1000) COSC 3712 COSC 3712 COST 10010 COSC 10000 COSC 100000 COSC 1000000 COSC 100000 COSC 1000000 COSC 1000000 COSC 1000000 COSC 100000000 COSC 10000000 COSC 1000000000 COSC 1000000000 COSC 10000000000000000 COSC 1000000000000000000000000000000000000	
ADDESUM FULTERCHANGEAREA WITH SUBFACE AS EMITTERGSCA396912001FULLSSCA3900GSCA390012001FULLSSCA3701GSCA37011211ULECOLLGSCA3702GSCA37021211ULECOLLGSCA3702GSCA37021211ULECOLLGSCA3702GSCA37021211ULEGSCA3702GSCA3702GSCA37021211ULEGSCA3702GSCA3702GSCA37021211ULEGSCA3702GSCA3702GSCA37021211ULEGSCA3712GSCA3702GSCA37121211ULEGSCA3712GSCA3712GSCA37121211ULEGSCA3714GSCA3712GSCA37121211ULEGSCA3714GSCA3712GSCA37121221WITHUEGSCA3712GSCA37121221WITHUEGSCA3714GSCA37121221WITHUEGSCA3714GSCA37121221WITHUEGSCA3714GSCA37121221WITHUEGSCA3714GSCA37121221WITHUEGSCA3714GSCA37121221WITHUEGSCA3714GSCA37121221WITHUEGSCA3714GSCA37121221WITHUEGSCA3714GSCA37121221WITHUEGSCA3714GSCA37141221GSCA3714GSCA3714GSCA37141221WITHUEGSCA3714GSCA37141221GSCA3714GSCA3714GSCA37141221GSCA3714GSCA3714GSCA37141221GSCA3714GSCA3714 <td></td>	
1.201     1.201     000       0.1116     500.43698     50.43698       0.1116     50.43702     50.43702       0.11110     50.43702     50.43702       1.201     3.141.1414.1441.144.141.154.141.9001     05.643702       0.121     3.141.1414.1441.141.154.141.9001     05.643702       0.121     5.201.141.141.141.154.141.154.141.9001     05.643702       0.201     3.141.1414.141.141.154.141.9001     05.643710       0.201     3.141.141.154.141.154.141.9001     05.643710       0.201     3.141.141.154.141.154.141.9001     05.643712       0.111.4     5.201.110     55.643710       0.201     3.141.141.154.141.154.141.9001     05.643712       0.201     4.14.141.154.141.154.141.9001     05.643712       0.111.4     5.201.120     05.643712       0.111.4     5.201.120     05.643712       0.111.4     5.204.01     05.643712       0.111.4     5.204.01     05.643712       0.111.4     5.204.01     05.643712       0.111.4     5.204.01     05.643712       0.111.4     5.204.01     05.643712       0.111.4     5.204.01     05.643712       0.111.4     5.204.01     05.643712       0.111.4     5.204.01     05.643724       0.	
ITTINUE     55(A370)       ALIZE SUBEACE TO SUBFACE INTERCHANCE AKEA     55(A370)       ALIZE SUBLACE TO SUBFACE INTERCHANCE AKEA     55(A370)       ALIZE SUBLACE TO SUBFACE INTERCHANCE AKEA     55(A370)       INTINUE     55(A370)     55(A370)       Costanty Subley     55(A370)     55(A370)       Costanty     55(A370)     55(A370)       Costanty     55(A370)     55(A370)       Costanty     55(A370)     55(A371)       Costanty     55(A371)       Costanty	
1     2011     JulyNSSELK     05CA3702       1     READIL:SSUNLJKKIJAALLJEBU-RAIP 9001     05CA3702       NTTIUE     05CA3705     05CA3705       1     READIL:SSUNLJKKIJAALLJEBU-RAIP 9001     05CA3705       1     READIL:SSUNLJKKIJAALLJEBU-RAIP 9001     05CA3705       1     05CA3705     05CA3712       1     05CA3712     05CA3713       1     05CA3713     05CA3713       1     05CA3714     05CA3724 <td< td=""><td></td></td<>	
AL REALL-SSURLINE MALLIE MALLE WALLE SURVE     55.03704       1-2022     11.1154     55.03705       1-2023     11.1154     55.03705       1-2023     11.1154     55.03705       1-2021     11.1154     55.03705       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03712       11.111     55.03712     55.03722       11.111     55.03712     55	
T. Solds (1.5) (BB(M,K))     CSCA3705       C. SOLD (1.5) (1	
((M)(A) AA(M)(A) FAC ((M)(A) AA(M)(A) FAC (F)(A) AA(M)(A) FAC (F)(A) (F)(A	
MITINUE     SCGA3710       12031     HILVE       12031     HILVE       12031     HILVE       12031     HILVE       12031     HILVE       12031     GSCA3712       12031     GSCA3713       12031     GSCA3714       12040     GSCA3715       12041     GSCA3725       12041     GSCA3725       12041     GSCA3725       12052     GSCA3726       12052     GSCA3726       12051     GSCA3726       1201     GSCA3726	
LL MRITE(LJSSNM(JJKK),AA(LJJ5*J=14), 900) LL MRITE(LJSSNM(JJKK),AA(LJJ5*J=14), 900) CNPRNT.EQ.1)GG TD 2040 CNPRNT.EQ.1)GG TD 2040 CSCA3715 CSCA3725 CS	•
Intillue     65CA3713       Intillue     65CA3713       Intillue     65CA3715       Intillue     65CA3716       Intillue     65CA3719       Intillue     65CA3719       Intillue     65CA3720       Intillue     65CA3721       Intillue     65CA3723       Intillue     6	
HILL FRITILIULIYA, ISURFACE TO SURFACE DIRECT INTERCHANGE AREAL, 10X, 1 SSCA3716 FMAT(1H1, 19X, 1SURFACE TO SURFACE DIRECT INTERCHANGE AREAS LL PRITT(AA, HSURF, NSURF) LL PRITT(AA, HSURF, NSURF) ALIZE SURFACE TO VOLUME INTERCHANGE AREAS SO41 J=1, MGSBLK HL REAPCIJ, GSUM(J, KK), AA(1, 15*J=141, 900) SCA3723 SC	
LL     PRIFT(AA, HSURF, NSURF)     GSCA3718       IALIZE     SURFACE TO VOLUME INTERCHANGE AREAS     GSCA3719       IALIZE     SURFACE TO VOLUME INTERCHANGE AREAS     GSCA3720       INTINUE     0.041 J=1, NGSBLK     GSCA3721       ILL     REACL1, GSHH(J,KK), AA(1, 15*J=141), 90U)     GSCA3722       INTINUE     GSCA3723     GSCA3723       INTINUE     GSCA3724     GSCA3723       INTINUE     GSCA3723     GSCA3723       INTINUE </td <td></td>	
1 2041 J=1,MGSBLK 1. 2041 J=1,MGSBLK 1. REAPTIJGSHM(J,KK),AA(1,15±J=141, 900) 1. 2052 T=1,ASURF 1. 2052 T=1,ASURF 1. 2051 H=1,NVRL 1. 2051 H=1,NVRL 1. 2051 H=1,NVRL 2. 11,00 T 2. 11,00 T 2	
INTINUE     65CA3722       INTINUE     65CA3722       IZOS2     65CA3722       IZOS2     65CA3722       IZOS2     65CA3722       IZOS2     65CA3725       IZOS1     65CA3725       INTINUE     65CA3729       INTINUE     65CA3729       IZOS1     65CA3739       IZOS1     65CA3739       IZOS1     65CA3739       IZITE(1)60 T0 1870     65CA3733       IRTE(K2*5C01)KK     65CA3733	
VC=8B(N,5)/BB(N,KK) 1 2051 <sup>H</sup> =1, <sup>6</sup> NVRL 1 2051 <sup>H</sup> =1, <sup>6</sup> NVRL 1 2051 <sup>H</sup> =1, <sup>6</sup> NCSB1K 1 2051 <sup>H</sup> =1, <sup>6</sup> NCSB1K 1 2051 <sup>H</sup> =1, <sup>6</sup> NCSB1K 2 2051 <sup>H</sup> =1, <sup>6</sup> NCSB1K 2 2051 <sup>H</sup> =1, <sup>6</sup> NCSB1K 1 2 2051 <sup>H</sup> =1, <sup>6</sup> NCSB1K 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
X(M,W)=AA(M,W)#FAC INTINUE DNTINUE SCA3726 SCA3727 SNTINUE CSCA3729 SSCA3729 SSCA3720 SSCA3720 SSCA3721 SSCA3721 SSCA3721 SSCA3722 SSCA3723 SSCA3722 SSCA372 SSCA372 SSCA3722 SSCA3722 SSCA3722 SSCA372 SSCA372 SSCA3	
ЛТИИИЕ 1 2061 Јајумсявцк ALL WRITE(1JGSNM(JJKK)/ДА(1J5#J=14)/ 900) GSCA3730 3NTINUE F(NPANT.EQ.1)GD TD 1870 Rite(K2.5CJ1)KK TD 1870 Rite(K2.5CJ1)KK	
ALL WRITE(1/GSNM(J,KK),ΔA(1/15*J=14), 900) GSCA3730 3NTINUE F(NPaNT.eq.1)GD TD 1870 SSCA3732 Rite(K2.5cJ1)KK GSCA3732	
F(NPANT.E2.1)GD TD 1870 RITE(K2.5CJ1)KK 65CA3732 RITE(K2.5CJ1)KK	
JRMAT(IH1,19X,,SURFACE TO VOLUME DIRECT INTERCHANGE AREAS,,IOX,/KGSCA3734 1.15) GSCA3735	

A FORTRAM IV (VER 143) SOURCE LISTING! GSCALC SUBROUTINE 03/05/	74 PAGE 0091	
201 CALL PRINT(AA,NVDL/NSURF) 202 C natain Vnlume TD Supface Direct interchance Area	GSCA3736 GSCA3737	
203 C BY TRANSPUSING MATRIX AA(NVDL,NSURF) 204 C N Riv designation	GSCA3738 GSCA3738	
205 C L CULUHN DESIGNATION	65CA3740 GSCA3741	
207 1870 NL=MINO(NSUKF/NVDL)	65CA3742 C5CA3742	
	65CA3744 65CA3744	
211 SAVE=AA(t, ) 211 SAVE=AA(t, ) 222 AAVA1 (t, )	65CA3746 CCCA3745	
213 AA(L_W)=SAVE	GSCA3748 CSC 43748	
215 1872 CONTINUE	656,43750	
217 IF(NVUL-NSURF)1873/1878/1874 217 IF(NVUL-NSURF)1873/1878/1874 218 C NSURF.GT.NVOL COLUNNS.GT.RAWS	65CA3752 65CA3752 65CA3753	
219 1873 NSTARTEL 210 1873 NSTARTEL	65073754 65073754	
221 60 T0 1875 221 60 T0 1875 222 NVD1 61 MSUB5 BOMS 67 FOULIMMS	6SCA3756 GSCA3756	
223 1874 NSTARTENZ	65643758	
225 1875 DD 1877 1=WSTART, NVOL	656A3760	
	65CA3762	
220 1876 CONTINUE 230 1876 CONTINUE 330 1877 CONTINUE	655A3764 655A3764	
231 C WRITE VOLUME TO SURFACE INTERCHANGE AREAS DN DISK 2331 C WRITE VOLUME TO SURFACE INTERCHANGE AREAS DN DISK	65CA3766 6SCA3766	
233 CALL #PITE(1,SGNM(J,KK),AA(1,15*J=14), 900) 233 CALL #PITE(1,SGNM(J,KK),AA(1,15*J=14), 900)	55CA3768 55CA3768	
-235 IF(NPRHT,EQ.1)GD TD 1900	02783770 052633770	
230 5001 FURMAT(1H1, 19%, VDLUME TO SURFACE DIRECT INTERCHANGE ARE	A1, 10X, 1K=GSCA3772 A1, 10X, 1K=GSCA3772	
239 CALL PRINT (AA, NSURF, NVEL)	65CA3774 65CA3774	
241 RETURN 242 END 242 END	65CA3776 65CA3777	
	•	

FORTRAN	IV (VER L43) SUURCE LISTINGI		
	SURROUTINE GGCALC Crudite de Voillie d'Arect inter change Abeas	GGCA3778 GGCA3779	
5	COMMON // DUMHY(S),KK, ICODE, HCODE,	GGCA3780	
4	A TAU(9), VAREA, HAREA, XLX, XK(3), ACOEF(9,3), A TUDING, BEEN, ELLETER, YNGY, TELNY,	66CA3781 GGCA3782	
• •	A HUALOU TARVI LUCIT LUCITI ATARY ILINA A HUKA HDUTYA HIVALA FRATEA KFUELA XAIRA FTEMPA		
1 <b>6-</b> 0	A NSSBLK, NCSBLK, NSGBLK, NGGBLK, NSURF, NVDL,	GGCA3784 GGC A3785	
0	A RSTART, TCUDE, SCUDE, NGRAY, JHCHC, ARSTART, TCUDE, SCUDE, NGRAY, JHCHC, ARSTART, TCUDE, SCUDE, NGRAY, JHCHC,	666A3786 572A3785	
11 C		66CA3788	
13	INTEGER SCADE, TCODE, 45TAPT, HCADE COMMON / JAZZ2/ SSUM(8,4), GSUM(8,3), SGUM(8,3), GGUM(8,3), COMMON / JAZZ2/ SSUM(8,4), GSUM(8,3), SGUM(8,3), GGUM(8,3),	666A37#9 666A37#90	
	COMMUNEVEEZ/ AA( 60, 60),88( 60,15),CC( 60,15),ALPHA( 60)	666.43792	
- <u>-</u>	VD 1900 KK 1116KAY FAIL D'SEDIAAAAA	666.83794 662.83794 662.83795	
5	GENERATE DNLY LUMER LEFT OF VOLUME TO VOLUME MATRIX		
51 5		66CA3798 65CA3798	
23		00003860000	
101		666A3602 555A35C2	
27 5	WRITE(K2)5)NJ XEJYEJYEJYE	666 A 3 8 0 4 6 6 6 C A 3 8 0 4	
50 50 50 50 50 50 50 50 50 50 50 50 50 5	COUNDINATES OF SURFACES MAKING UP RECEIVING VOLUME	66CA38U6 55CA38U6	
31	YAAYA Vaaya		
33	KRBark vactors	66CA3810 66CA3810	
. 35	YRC=YR+Y() VB()=VB	66CA3812 66CA3812	
37	ΥΧΟΒΥΧ    ΥΧΟΒΥΧ    ΒΙΤΕΙΡΟ - ΟΥΡΑ.ΥΝΑ.ΥΝΑ.ΥΝΑ.ΥΝΑ.ΥΝΑ.ΥΝΑ.ΥΝΑ.ΥΝΑ.	66CA3814 66CA3814	
39 68	FORMAT(1,0X,2F15,5)		
41 10			
06 64		66CA3820 66CA3820	
45 C	GAS VOLUME TO GAS VOLUME	GGCA3822 GGCA3822 GGCA3823	
44 42	S28+1 53=-1	: 666A3824 666A3824	
64 64	54=1. 50 JU 174.0	66CA3826 66CA3827	
-			

	BRDUTINE 03/05/74	PAGE 0093	
51 C GAS VOLUME TO GAS VOLUME 42 c obtentation 2		66CA3828 66CA3829	
53 50 S1=1.		665A3830 665A3830 665A3831	
	•	. 66CA3832 06CA3832	
57 60 70 17co		GGCA3834	
59 C DRIENTATIDN 3 VILONE 60 55 C DRIENTATIDN 3 60 55 C DRIENTATIDN 3		66CA3836 66CA3836	
61 S2=1. 62 S2=1.		66CA3838 66CA3838 66CA3838	
63 S4=-1, 64 GT 11 1700		66CA384U 66CA384U	
65 C GAS VOLUME TO GAS VOLUME		GGCA3842 CCCA3842	
		66CA3844	
		665A3843 665A3846 665A3846	
		66CA3348 677 A3848	
73 C DRIENTATION 3		GGCA3850	
75 52#1. 75 52#1.		666A3852 667 43852	
		66CA3854 Crevases	
79 C GAS VOLUME TO GAS VOLUME		66CA3856 66CA3856	
81 70 SIEFL.		66CA3858	
62 S2sel		66CA3859 66CA3860	
85 60 11 1700 85 6 61 11 1700 84 645 VII 1145		666A3862 666A3862 6667A3862	
B7 C URLENTATION 7 CONTRACTOR		66CA3864 66CA3864	
69 52=1. 52=1.		66CA3866	
		666A3864	
93 C GAS VOLUME TO GAS VOLUME		66CA3809 66CA3870 672 A3870	
		GGCA3872	
97 S3==1.		· 666 A3874	
99 1700 AA(MaN)=SG(XE,YE,XRA,YRA,1)#S1+SG(XE,	E, XAC, YRB, 2) #52	GGCA3876	

SUBRQUTINE 03/05/74

A FORTRAN	IV (VER L43) SOURCE LISTING	GGCALC SUBROUTINE	03/05/74 PAGE 0095	
151 5001	I FORMAT(1H1,19X, IVOLUNE TO V	VOLUME DIRECT INTERCHAI	165 AREA1,10X,1K=166CA3928 66CA3929	
153	CALL PRINT(AA,NVOL,NVOL)		666 A3930 666 A3930	
155	RETURN		66CA3932 66CA3932	
-		•		
-				
-				
•	•			
		•		

÷

1     FUNCTION SCICKGE/VEXXMM     50       1     FUNCTION SCICKGE/VEXXMX/VEXXML     50       1     AURIAL / URAN SURVEL     50       1     A URSUL, MODELA, HONL, SCICKGE, MODELA     50       1     A URSUL, MODELA, HONL, SCICKGE, MODELA     50       1     A URSUL, MODELA, MODELA, MANA, MODL, SCICKGE, MANA, MANA, MANA, MANA, MANA, MANA, MANA, MANA, MANA, M		V (VER LAS) SUURCE LISTINUI SU	FUNCTION 03/03/14		0046	•	
2       THE FULUTTOR 15 MORE UP SY CONSTORY NO THE RECEIVING (YOLUNE) TO ESS       3939         3       CUMUNI // COUNTAIDARE, HIREE, HOLDE       50       3939         4       A MARE TAULUTTA, TAULATE, TELEVEL       50       3940         9       A MARE TAULUTTA, TAULATE, TELEVEL       50       3940         9       A MARE TAULUTTA, TAULATE, TELEVEL       50       3940         9       A MARE TAULATA, TELEVEL       50       3940         11       A MARE TAULATA, TAULATA, TELEVEL       50       3940         12       A MARE TAULATA, TAULATA, TAULATA, TAULATA, TELEVEL       50       3940         13       A MARE TAULATA, TAULA, TAULATA, TAULATA, TAULATA, TAULA, TAULA, TAULA, TAULATA, TAULA,		FUNCTION SC(XXE, YYE, XXR, YYR, NH)	ALE TO VOLUME INTERVONCE A	ABEA SG	3934 1055		
5         COMMUN. TOUNTY, ALTONG, MACORE (A-1)         5         5939           7         A TRUITY, FULLE FLICT, FULLE, FLICE, STUDE, MALLE FERMAL         50         3940           7         A TRAILY FOURS, MULLE FLICE, FLICE, STUDE, MALLE FERMAL         50         3941           7         A TRAILY, FLOUE, SCUDE, MICLA, FLICE, MULLE, FLICE, STUDE, MALL, ESCARCE HOLL, MALLE FERMAL         50         3943           1         A RESTART, FLOUE, SCUDE, MICAL, MALL, ESCARCE HOLL, MALL         50         3944           1         A REVEL, MALL, ESCARCE HOLL, MALL         50         3944           1         A REVEL, MALL, MALL         50         3944           1         A REVEL, MALL         50         3944           1         A REVEL, MALL         50         3944           1         A REVEL, MALL, MALL         50         3944           1         A REVEL, MALL         50         3944           1         A REVEL, MALL         50         3944           1         C REVEL, MALL         50         50           2         A REVEL, MALL         50         50           2         A REVEL, MALL         50         50           2         A REVEL, MALL         50         50	1 2 2	HE EVALUATION IS MADE UP BY CONSIDER And the network subsects	ING THE RECEIVING (VOLUNE)	TO BESG	3936 3937		
7     A     High (Role Are File File Are Are File Are Are File Are File Are File Are File Are File Are File Are	5	COMMON // DUMHY(3),KK, ICODE, HCODE		50	3938 2010		
0     A KENEKCINACENC, MCENIC, MCENI	0 - 0	A TORIOS VARCAN HAREAN ALVANOSIN A TORIOS PRESS FLUETS FLUES (5) X MWS A NOVING PRESS FLUETS (5) X MWS	» TSINK,	0.0	3940 3941		
11     A RSTARTY TCUUE SCORF. WEAV. JACHE     56     3946       12     A KI, KZ, REALLON, TERLION, FERLICO)     56     3946       13     A KI, KZ, REALLON, TERLION, FERLICO)     56     3946       14     C. INTERCE SUBJECT ON TREPLICO)     56     3946       15     C. TURGER SUBJECT     50     3946       16     C. INTERCLUM     56     3946       17     XDY-MAILINIKU/VD)     56     3951       18     C. TURECLAND     56     3951       19     VENYR     56     3951       19     VENYR     56     3951       19     VENYR     56     3951       23     VAAVR     56     3955       24     VAAVR     56     3955       25     VAAVR     56     3955       26     VAAVR     56     3955       27     VAAVR     56     3955       28     VAAVR     56     3955       29     VAAVR	6	A MSSBLK, MSSBLK, MSSBLK, MSSBLK, MS A MSSBLK, MSSBLK, MSSBLK, MSSBLK, MS A STUREVIOL XM, VN, VI, MSSBLK, MSSBLK, MS	URF, NVOL,	000	3942 3943		
13     A KLy K2, REBUTIOJ, FREPLIOJ, PERLIZOJ     55     344       15     C INTERCANCE STATE TURDE IN OLIVER BILL     55     344       17     C INTERCANCE STATE TURDE IN OLIVER BILL     55     344       18     C INTERCANCE STATE TURDE IN OLIVER BILL     55     344       19     C INTERCANGE STATE TURDE IN OLIVER BILL     56     3331       19     VENNE     56     3331       20     VENNE     56     3331       21     VENNE     56     3331       22     VENNE     56     3331       23     VENNE     56     3331       24     VENNE     56     3331       25     VENNE     56     3331       26     VENNE     56     3332       27     VENNE     56     3332       28     VENNE     56     3332       29     VENNE     56     3332       21     VENNE     56     3332       22     VENNE     56     3332       23     VENNE     56     3332       24     VENNE     56     3332       25     VENNE     56     3332       26     VENNE     56        27     VENNE		A RSTART, TCUDE, SCUDE, NERAY, JHCHC	1 1	500	3944 2944 2045		
1     C     Infertivitier kill for Starker für value and use fuertion SS     3949       1     Viennal fuerkare     Value interconnice kill for Starker für value     50     3949       1     Viennal fuerkare     Viennal fuerkare     SS     3949       1     Viennal fuerkare     Viennal fuerkare     SS     3949       1     Viennal     Sinter für value     SS     3949       2     Vienna     SS     3951     SS       23     Vienna     SS     3951       23     Vienna     SS     3951       23     Vienna     SS     3951       24     Vienna     SS     3951       25     Vienna     SS     3951       26     Vienna     SS     3951       27     Vienna     SS     3951       28     Vienna     SS     3951       29     Vienna     SS     3951       20     Vienna     SS     3951       21     Vienna     SS     3951       22     Vienna     SS     3952       23     Vienna     SS     3952       24     Vienna     SS     3952       25     Vienna     SS       26     Vie	E1	A KI, K2, RCRU(10), TDEP(100), PERMI	200)	500	3946 3047		
17     XGYDANAHIVI (XU) (D)     XGYDANAHIVI (XU) (D)     XGYDANAHIVI (XU) (D)       19     YEAVE     XGYDANAHIVI (XU) (D)     XGYDANAHIVI (XU) (D)       21     YEAVE     XGYDANAHIVI (XU) (D)     XG       22     YEAVE     XG     YGG       23     YEAVE     XG     YGG       24     YEAVE     XG     YGG       25     YEAVE     YGG     YGG       26     YEAVE     YGG     YGG       27     YEAVE     YGG     YGG       28     YEAVE     YGG     YGG       29     YEAVE     YGG     YGG       21     YEAVE     YGG     YGG       22     YEAVE     YGG     YGG       23     YEAVE     YGG     YGG       24     YEAVE     YGG     YGG       25     YEAVE     YGG     YGG       26     YEAVE     YGG     YGG       21     YEAVE     YGG     YGG       22     YEAVE     YGG     YGG       23     YEAVE     YGG     YGG       24     YGG     YGG     YGG       25     YGG     YGG     YGG       26     YGG     YGG     YGG       27	15 0	NTERCHANGE SULL OF SURFACE TO VOLUME	AND USE FUCTION SS	90 U	3948 3948		
19       VERYNE       56       395         21       VAANK       56       395         23       VAANK       56       395         24       VAANK       56       395         25       VRB-VR       56       395         26       VRA-VR       56       395         27       VRC-VRA       56       395         28       VRR-VR       56       395         29       VRC-VRA       56       395         29       VRC-VRA       56       395         29       VRC-VRA       56       395         20       VRLACE       56       395         20       VRLACE       56       395         20       VRLACE       56       395         21       VRLACE       56       395         22       VRLACE       56       395         23       VRLACE       56       395         24       VRLACE       56       395         25       VRLACE       56       395         26       VRLACE       56       395         27       VRLACE       56       397 <t< td=""><td></td><td>X0Y0-04 //// 20//Y0) X0Y0-4H1N1(XU,Y0) Xextraction</td><td>ANTER ALLA CONTRACTOR</td><td>000</td><td>3950 3951 3951</td><td></td><td></td></t<>		X0Y0-04 //// 20//Y0) X0Y0-4H1N1(XU,Y0) Xextraction	ANTER ALLA CONTRACTOR	000	3950 3951 3951		
21     YRAVYE     56     9954       23     YRAVK     56     9954       24     YRAVK     56     9954       25     YRAVK     56     9954       26     YRAVK     56     9954       27     YREVK     56     9954       28     YREVK     56     9954       29     YREVK     56     9950       21     YREVK     56     9950       28     XREVK     56     9950       29     SREVK     56     9950       20     SREVK     56     9950       21     WHALL HURACE     56     9950       29     HIRLINITL SURFACE     56     9950       20     TELVE-ATTAL SURFACE     56     9950       21     WHALL     SURFACE     56     9950       20     TELVE-ATTAL SURFACE     56     9950       21     FILVE-ATTAL SURFACE     56     9950       22     WALL     SURFACE     56     9950       21     FILVE-ATTAL SURFACE     56     9950       23     FILVE-ATTAL SURFACE     56     9950       24     SURFACE     56     9950       25     FILVE-ATTALOUTALIOULIDOL	19	YE #YYR Ye #YYR Yd #Xye		9 9 9 9 9 9	3952 3952 3953		
23     VAM*YR     50     3956       24     VAM*YR     50     3959       27     VAC*YR     50     3959       27     VAC*AR     50     3959       27     VAC*AR     50     3959       27     VAC*AR     50     3950       27     VAC*AR     50     3950       27     VAC*AR     50     3950       28     VAND*YR     50     3950       29     VAND*YR     50     3950       29     VAND*AR     50     3950       20     VAND*AR     50     3956       21     VAND*ARCES     50     3956       23     VAND*ARCES     50     3956       23     VAND*ARCES     50     3956       24     VAND*ARCES     50     3956       25     VAND*ARCES     50     3956       26     VAND*ARCES     50     3956       27     VAND*ARCES     50     3956       28     3976     3970     50       29     VAND*ARCES     50     3970       28     3970     50     3971       29     11/12/201/10/12/00     50     3971       29     11/12/201/10/1	100	YRayyE Voatye		50	3954 3055		
25     YRU: YK YK     56     3951       27     YKC.YK     56     3951       28     XKC.YK     56     3950       28     XKC.YK     56     3950       29     XKC.YK     56     3950       20     XKC.YK     56     3950       21     XKC.YK     56     3950       28     XKC.YK     56     3950       29     UNLL     SKC.YK     56       31     UKL     SKC.YK     56       32     UNLL     SKC.YK     56       33     CU     TO(20.977)/MM     56       33     SC     TO(20.977)/MM     56       33     SC     MAL     56       34     KKK-KT.N1000-2000     56     3970       35     VKHTICL     SKC     56       36     VKHTICL     56     3970       37     KKKE-KT.N1000-2000     56     3974       39     KKKE-KT.N1000-2000     56     3974       39     KKKE-KT.N1000-2000     56     3974       39     KKKE-KT.N1000-2000     56     3974       41     KKKE-KT.N1000-2000     56     3974       42     KKKE-KT.N1000-2000     56     3976 <td>53</td> <td>Y RA = YR</td> <td></td> <td>200</td> <td>3956</td> <td></td> <td></td>	53	Y RA = YR		200	3956		
27       YKC-YR+V3       56       3960         28       XRD-XR       56       3961         29       SURFACE       56       3962         29       SURFACE       56       3963         31       C NN=1 HUFIZONTAL SURFACE       56       3964         31       C NN=1 HUFIZONTAL SURFACE       56       3964         32       C MN=1 HUFIZONTAL SURFACE       56       3964         33       CO TRICOL SURFACE       56       3964         34       C HORIZONTAL SURFACE       56       3964         35       C HORIZONATION       56       3965         36       TEICE-CT_VEIGE       56       3963         37       TEICE-CT_VEIGE       56       3963         38       TEICE-CT_VEIGOLOGORODO       56       3970         38       TEICE-CT_VEIGOLOGORODO       56       3973         38       TEICE-CT_VEIGOLOGORODO       56       3973         39       C VERTICAL SUFFACES       56       3970         39       TEICE-CT_VEIGOLOGORODO       56       3974         40       TEICE-CT_VEIGOLOGORODO       56       3974         41       TEICE-CT_VEIGOLOGORODO       56	52			300	3958		
29       YRD=YR       56       3962         20       Sustact critical surfact       56       3963         31       C       Nma 1       HURIZONTAL SURFACE         33       Culticolaria       Vertical surfact       56       3964         33       Culticolaria       Second       56       3964         33       Culticolaria       Second       56       3964         33       Culticolaria       Second       56       3964         34       Culticolaria       Second       56       3964         35       Culticolaria       Second       56       3964         36       Filteracia       Second       56       3964         36       Second       Second       56       3964         36       Filteracia       Second       56       3964         37       Filteracia       Second       56       3970         38       Second       Second       56       3970         38       Filteracia       Second       56       3970         38       Filteracia       Second       56       3976         41       Filteracia       Second       56       <	27	VRC=VR+VD		500	3960 3041		
31 C       NM=1 HURIZCHIAL SUBRACE       56       3964         32 C       URPICAL SUBFACE       56       3965         33 C       TE(YE.GT.YE)LOL SUBFACE       56       3965         34 HURIZCHIAL SUBFACES       56       3965       56         35 C       NN=1       50       3965         36 HIRTONIAL SUBFACES       56       3965       56         37 IF(XE-XE)IU00-200-300       56       3970       56         37 IF(XE-XE)IU00-1200       56       3971       56         38 OU TE(XE-XE)IU00-1200       56       3971       56         39 C       VERTICAL SUBFACES       56       3972         39 C       VERTICAL SUBFACES       56       3974         41       TF(XE-XE)FU00-9009       56       3974         41       TF(XE-XE)FU00-9009       56       3974         41       TF(XE-XE)FU00-9009       56       3974         42       TREACE       50       3975       56         43       TREACE       56       3976       56         45       C       TREACE       56       3976         45       C       TREACE       56       3976         45 <td>29 29 20 F</td> <td>XAVXXX YRD#YR HIGEXATAN</td> <td></td> <td>00</td> <td>3962 3062</td> <td></td> <td></td>	29 29 20 F	XAVXXX YRD#YR HIGEXATAN		00	3962 3062		
33       CU Tel(20.57)/NM       56       3966         34       HURIZUNITAL SURFACES       56       3966         35       NN=1       56       3966         35       TE(YE-KE)1000/2000 300       56       3971         37       TE(XE-XE)1000/2000 300       56       3971         38       30       TE(XE-XE)1000/2000 300       56       3971         38       30       TE(XE-XE)1000/2000       56       3971         39       C       VERTICAL SURFACES       56       3971         39       C       VERTICAL SURFACES       56       3971         39       TE(XE-XE)1000/2000       56       3972       56       3974         39       TE(XE-VE)500/500/900       56       3974       56       3974         41       TE(XE-VE)500/500/900       56       3974       56       3974         42       C       DRIENTATION 1       56       3974       56       3974         47       S2=1       56       3976       56       3979       56       3976         47       S2=1       56       3979       56       3979       56       3979         47       S2=1		NN=1 HURIZONTAL SURFACE		500	3964 3965		
35       20       NN=1       56       3968         36       16(KE-KK)100:200,300       56       3970       56       3970         37       16(KE-KK)100:1200       56       3970       56       3970         38       30       17(KE-KK)100:1200       56       3970       56       3972         39       C       VERTICAL SURFACES       56       3972       56       3974         40       17(KE-KK)400.600.800       50       56       3974       56       3974         41       17(KE-KK)400.600.800       56       3974       56       3976         43       50       17(KE-VR)500.900       56       3976       56       3976         43       50       17(KE-VR)500.900       56       3976       56       3976         45       5       01       56       3976       56       3978         45       5       01       56       3978       56       3978         47       528-1       56       3970       56       3978		GG T3(20,37), NA 3000 AVE GG T3(20,37), NA IND T1017 (20,37), NA		0.0	3966 3946		
37       IF(XE-XK)]UU0-200-300         38       30       IF(XE-XK)]UU0-1200         39       C       VENTICAL SURFACES         39       C       VENTICAL SURFACES         39       C       VENTICAL SURFACES         41       IF(XE.GT.XF)GG TU 50         42       IF(XE.GT.XF)GG TU 50         43       S0       IF(YE-VR)5G02900         44       S0       S6       3974         45       G       IF(YE-VR)5G02700,900       S6         45       G       S6       3975         45       G       S6       3976         45       G       S6       3978         45       G       S110       S6       3978         45       G       S110       S6       3978         47       S2=-1       S6       3980       S6	35 20	NN#1 NN#1 TCVE.GT.VR16n TC 30		000	3968 3969		
39 C       VEKTICAL SURFACES       56       3972         40       37       NN=2       56       3973         41       1F(XE.GT.XF)GU TD 50       50       56       3974         42       1F(YE=YR)500,900       50       3975       56       3975         43       50       1F(YE=YR)500,900       56       3975       56       3977         45       C       0RIENTATION 1       56       3977       56       3977         45       C       0RIENTATION 1       56       3979       56       3979         45       C       0SI=1       56       3979       56       3979         47       S2s=1.       56       3980       56       3980	37	[F{XE=XK]]00>200>300 [F{XE=Xk]]000>200>300		00	3970 3971		
41       IF(XE.GT.XF)GU TU 50         42       IF(YE=YR)400.600.800         43       50       IF(YE=YR)500.700.900         45       C       01F(YE=YR)500.700.900         45       C       01F(YE=YR)500.700.900         45       C       01F(YE=YR)500.700.900         45       C       01F(YE=YENTEDN 1         45       C       010         51=1       56       3979         47       S2=1       56       3980	39 C V	FERTICAL SURFACES		50	3972 3073		
43 50 [F(YE-YR)560,700,900 44 5 50 [F(YE-YR)560,700,900 45 5 3978 46 100 51e1 47 52e-1. 56 3980	14	[F(XE,GT,XF)61 TU 50		55	3974 2075		
45 C DRIENTATION 1 5G 3978 46 100 Siel. 5G 3979 47 S2e-1. 5G 3980	43 50	IF (YE-YR) 563, 700, 900		300	3976		
47 S2+-1. 56 3980	45 C 0 46 100	JRIENTATION 1		200	3978 3979		
48 S3erl.	47 48	S2#+1. S3#r1.		20 20 20	3980 3981		
49 54=1. 50 Gn Tn 15nG 56 3983	49 50	54=1. Gn Tn 15n0	•	80 80 80	39R2 39R3		

A FORTRA!	N IV (VER L43) SOURCE LISTING: SG FU <sup>r</sup>	CTION 03/	05/74	PAGE	2600	
51 C	URIENTATION 2			SG	398 <del>4</del>	
53 40	<u>u</u>			20	3986	
<b>8</b> 8 8				0 1	3987 3688	
50 20 20	54881	•		20	3989 3989	
57	60 T() 1500 647 - Y7 - 564 YE - VER - NN - 31 - 564 YE - VE	VDF - VDF - NN - 1 1 - 0	10 1 A E . V E . V B	S S S	3990 3001	
29	1 YREANIA 2)			0,00	3992 2002	
61 C	ORIENTATION 3			9 9 9 9 9 9 9 9	1994 1994 1006	
E9				00	3996 39996	
6.9			 	200	3998 39998 3000	
67 C 67 C	DRIENTATION 4			000	4000	
69	52#41e 52#41e			500	4002 4002	
12				Sc	4004 4004 4005	
2 62	DRIENTATION 5			200		
75		-		500	4008	8 - 1.
22			•	S S S S	4010 4010	Ŧ
19 C	DRIENTATION 6 DRIENTATION 6 O TEXASSOCIED O OTOP TO ATO			202	4012	
81 81				500	4014 4014	
69 69 40	S3441. S441.			500	4016	
85	GD TU 1500 FAC -VI-SS(XE.VE.XBA.V7A.NN.1)-SS(XE.VE	X60. VP6. NN. 3)		500	4018 4010	
67 88	1-SS(XE,YE,XRC,YRC,NN,1)			S S S	4020 4021	
89 C NU 70	DRIENTATION 7 L IFLAUSLAESIXH-XE1-XD1-17-XDYD16D TO 71		•	202	4022 4023	
16 16	S1==1. S2=1.			s c S c	4024 4625	
69 6	53==1. 54==1.			900 800	4026 4027	•••
95 96 71	GD TD 1500 D FAC -VD-SS(x6.VF.XPA.VPA.NN.1)-SS(XE.VF	XBC-VBC-NN-11		S S S S S S S S S S S S S S S S S S S	4028 4028	
97 98	1-SS(XE,YE)XRD,YRD,NN,2)		-	20 20 20 20	4030 1E04	
3 66 6	GRIENTATIUN S		•	000	4032 2504	
NA 1111				10		

			· · ·
+//co/co	PAGE 009	œ	
	56 403 56 403		
	SG 403	95	
	50 4 03	- <b>c</b> , <b>d</b>	
	20 404 20 404 20 404	0.0	
	50 404 50 404	2	
	50 404 50 404		
	804 95 904 95	96	
	SG 404	-20	
	SG 405 SG 405	00	4
	20 4 0 2 2 0 4 0 2		
	SG 401		
	SG 405		
12 MN	20 402		
	20 406 20 406		
	20 404 20 404		
	20 404 20 404		
2) #54	SG 406	10	
	20 404 20 404	80	
	ne ne		
-			
•.			
			•
			56     4035       56     4034       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     404       56     405       56

1         Summurtie (1.3)         (1.3)	1         Summurtie (1)         (1)         (1)         (1)           1         A TAURY), YAREA, MACH ROLE, ACORE         (1)         (1)         (1)           1         A RANDAN AND AND AND AND AND AND AND AND AN	1         000000000000000000000000000000000000		IV (VER 443) SUURCE LISTING	PAGE 0099
1         r Taulos, Press, Wick, W	1         1	A     A     A     A     A     Color A     Color A       A     A     A     A     Color A     Color A       A     A     A     A     Color A     Color A       A     A     A     A     Color A     Color A       A     A     A     A     Color A     Color A       A     A     A     A     Color A     Color A       A     A     A     Color A     Color A     Color A       A     A     A     Color A     Color A     Color A       A     A     A     Color A     Color A     Color A       A     A     A     Color A     Color A     Color A       A     A     A     Color A     Color A     Color A       D     Color A     Color A     Color A     Color A       D     Color A     Color A     Color A     Color A       D     Color A     Color A     Color A     Color A       D     Color A     Color A     Color A     Color A       D     Color A     Color A     Color A     Color A       D     Color A     Color A     Color A       Color A     Color A		SUBROUTINE CL3 Foundy // Dilausticky Trans. Urans.	CL3 4070 F13 4071
5     A NEW YOU'NE, FAILER SARE, MALL, HIRP,     C13     C13 <td>5     A KAD, KAD, FART, FART</td> <td>1         1         N. KARL, NOWTH, Y.A., FLUC, FALL, MARL, MILL, MARL, M</td> <td>m.</td> <td>A TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3),</td> <td>CL3 4072</td>	5     A KAD, KAD, FART, FART	1         1         N. KARL, NOWTH, Y.A., FLUC, FALL, MARL, MILL, MARL, M	m.	A TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3),	CL3 4072
1         A NERSMAN MIGHAL NEGALA NAMA         (13 401)           1         A NEURA STATE TOTAL THEALS         (13 401)           1         A NEURA STATE TOTAL THEAL TOTAL THEAL         (13 401)           1         COMMONT STATE TOTAL THEAL TOTAL THEAL         (11 401)           1         COMMONT STATE TOTAL THEAL         (11 401)           1         COMMONT STATE TOTAL THEAL         (11 401)           1         COMMONT STATE TOTAL	7         A KURNANJAN, MAGUA, MEGUV, MANU, MAN	7         A KANA KASUKA MGALKA HOGELKA ANGLA         C13 000           7         A KANA KASUKA MGALKA HOGELKA ANGLA         C13 000           1         A KANA KASUKA MGALKA HOGELKA ANGLA         C13 000           1         COMMELS FATOLEKA HOGELKA ANGLA         C13 000           1         COMMELS FATOLEKA HOGELKA ANGLA         C13 000           1         COMMELS FATOLEKA HOGEL REAL         C13 000           1         COMMELS FATOLEKA FATORATION         C13 000           1         COMMELS FATOLAKA FATORATION         C13 000           1         CALL REALLY FERNILIA COL         C13 000           1         CALL REALLY FERNILIA         C13 000           2         CALL REALLY FERNILIA         C13 000           2         CALL REALLY FERNILIA         C13 000           2         CALL REALLY FERNILIA         C13 000 </td <td>e n</td> <td>A THRIDGA PREAD FLUELD FLUE(3), XMXXD ISINKA A NCRD HDUTYD HTVALD FRATED KFUELD XAIRD FTEMPD</td> <td>CL3 4073 CL3 4074</td>	e n	A THRIDGA PREAD FLUELD FLUE(3), XMXXD ISINKA A NCRD HDUTYD HTVALD FRATED KFUELD XAIRD FTEMPD	CL3 4073 CL3 4074
9     A 13, N23, TCLER     C13 (017)     C13 (017)       1     INTEGE SCHEFTUDE STATAROE     C13 (017)       1     INTEGE SCHEFTUR     C13 (017)       1     CHL NEXOLIA STATAROE     C13 (017)       1     CHL NEXOLIA STATAROE     C13 (017)       1     CHL NEXOLIA STATAROE     C13 (017)       2     CHL NEXOLIA     C13 (017)       3     CHL NEXOLIA     C13 (017)       4     CHL NEXOLIA     C13 (017)       5     CHL NEXOLIA     C13 (017)       6	0     A KJ, KART, KGORG, SGORG, SGORG, MARKAN, MARKAN, SGORG, SGORG	9         A KLA, KENLE, KENLE, KENLEN, MERVICOT         C13 403           1         INTERE SCORE ASTARTANCOE         C13 403           1         CALL REALLY SERVELLAS SERVELADA         C13 403           1         CALL REALLY SERVELLAS         C13 403           2         CALL REALLY SERVELADA         C13 403           2         CALL REALLY SERVELA		– A NSSRLK, NGSALK, NSGALK, NSURF, NVDL) A sturesty), sn. vn. 71 nng. NCDL, NrdW, NSSN.	CL3 4075 CL3 4076
1         1	Antion of the second	1         Image Statistics         1		A RSTARTS TCCDES SCHDES NCRAYS JHCHCS	CL3 4077
11         Integers         Score, Fronte, and Francher         Cit         Construct (1) (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	Internet         Construction	International according and according a	, c	A KLA KCENTULA LARTING'S LEVELENDI	C13 4070
1         1	1         156000000000000000000000000000000000000	1         1		INTEGER SCADE, RSTART, HCODE	CL3 4080
1         Communications         Constraints         Constraints <thc< td=""><td>1         Communications         <thcommunications< th="">         Communications</thcommunications<></td><td>1         Communication Constrained Control         Communication Control         Control         Communication Control         <thcontrol< th="">         Control         <thc< td=""><td>13</td><td><del></del></td><td>- 413 4082</td></thc<></thcontrol<></td></thc<>	1         Communications         Communications <thcommunications< th="">         Communications</thcommunications<>	1         Communication Constrained Control         Communication Control         Control         Communication Control         Control <thcontrol< th="">         Control         <thc< td=""><td>13</td><td><del></del></td><td>- 413 4082</td></thc<></thcontrol<>	13	<del></del>	- 413 4082
10         CALL BEADLIVISURIESCULTESCONTING         COLD         SCONT         SCONT <td< td=""><td>1         CALL EXACTLUTSURFISTATION OF CONSTRUCTION CONTRINCTION CONTRINCTION CONTRINCTION CONTRICT         CONSTRUCTSURFISTATION CONTRICT           1         CAL REACTLUTSURFISTATION OF TATAL HATERCHANCE AREA         C13 4000           2         CAL REACTLUTSURFILLS         C13 4000           2         CALL REACTLUTSULLS         C13 4100           2         CALL REACTLUTSULLS         C13 4100           3         FLARECT ASTLUTSULES         C13 410</td><td>11         CALL REALLY ISSURFIXING         COLI SCRIPTISSURFIXING         COLI SCRIPTISSURFIX         COLI SCRIPTISSURFI</td><td>5</td><td><u> </u></td><td>CL3 4084 CL3 4084</td></td<>	1         CALL EXACTLUTSURFISTATION OF CONSTRUCTION CONTRINCTION CONTRINCTION CONTRINCTION CONTRICT         CONSTRUCTSURFISTATION CONTRICT           1         CAL REACTLUTSURFISTATION OF TATAL HATERCHANCE AREA         C13 4000           2         CAL REACTLUTSURFILLS         C13 4000           2         CALL REACTLUTSULLS         C13 4100           2         CALL REACTLUTSULLS         C13 4100           3         FLARECT ASTLUTSULES         C13 410	11         CALL REALLY ISSURFIXING         COLI SCRIPTISSURFIXING         COLI SCRIPTISSURFIX         COLI SCRIPTISSURFI	5	<u> </u>	CL3 4084 CL3 4084
17         CALL REAVILY ISSURVENTIASURFILLS         000           18         CALL REAVILY ISSURVENTIASURFILLS         001           19         CALL REAVILY ISSURVENTIASURFILLS         001           21         TFFT TTAL INTERCHANCE AREA         C13 4090           25         C11 PEGURANCE AREA         C13 4090           25         C11 PEGURANCE         C13 4091           25         C11 PEGURANCE         C13 4092           26         C11 PEGURANCE         C13 4092           27         C2 CONTUNC         C13 4095           28         CONTUNC         C13 4095           29         CONTUNC         C13 4095           29         CONTUNC         C13 4095           20         CONTUNC         C13 4095           21         CONTUNC         C13 4095           22         CONTUNC         C13 4095           23         CONTUNC         C13 4095           24         CONTUNC         C13 4095           25         CNASSULATUREL         C13 4095           26         MSSULATUREL         C13 4102           27         C13 4102         C13 4102           28         CONTUNC         C13 4102           29	17         CALL REALLY INSURVISERFILLS 601         C13         006           10         CALL REALLY INSURVISERFILLS 601         C13         008           21         TEY DF CONPUTINSURFILLS 601         C13         008           23         C12         VALUE AS ENTITER         C13         009           24         C12         VALUE AS ENTITER         C13         009           27         C12         VALUE AS ENTITER         C13         009           29         CURVERANCE CF O SUBFACE FO GAS SUCCE         C13         009         C13         009           29         CURVERANCE CF O SUBFACE FO GAS SUCCE         C13         009         C13         009           20         MARCE AS ENTRIER         C13         009         C13         009           20         C14         <	17     CALL REMULY INSUMINASURFILLY 601     C1     4086       19     CALL REMULY INSUMINASURFILLY 601     C1     4085       21     C TST UF CONVILUENCE THE INTERCANCE OF ACCOUNTION OF TITEL  ACCOUNTION OF TITELY ACCOUNTION OF TITELY ACCOUNTION OF ACCOUNT OF ACCOU	4	CALL READ(1, tESURIAESURF(1), 60)	CL3 4085
5         CALL FRAX         C13 4086           21         TEST DF COMPUTION OF TITAL INTERCHANCE AREA         C13 4092           21         TEST DF COMPUTION OF TITAL INTERCHANCE AREA         C13 4092           23         C121 VELOREAS ENTITES         C13 4092           24         C121 VELOREAS ENTITES         C13 4092           25         C121 VELOREAS ENTITES         C13 4092           26         CONTINUE         C13 4093           27         CONTINUE         C13 4093           28         CONTINUE         C13 4093           29         CONTINUE         C13 4093           21         CONTINUE         C13 4093           21         CONTINUE         C13 4093           22         CNESALENTINE         C13 4093           23         CONTINUE         C13 4093           24         CNESALENTINE         C13 4093           25         VELOREANICE TO SURFACE BLOCKS         C13 4093           26         VELOREANIONE TO SURFACE	10         Call First         Call First         Call First           21         TEST OF CHARTAL INTERCHANCE AREA         C13 4000           21         TST OF CHARTAL INTERCHANCE AREA         C13 4000           24         CALL PZEALDEAL         C13 4000           25         CALL PZEALDEAL         C13 4000           26         CALL PZEALDEAL         C13 4000           27         CALL PZEALDEAL         C13 4000           28         CALL PZEALDEAL         C13 4000           29         CALL PZEALDEAL         C13 4000           20         CALL PZEALDEAL         C13 4000           21         CANTAURELLI         C13 4000           22         CANTAURELLI         C13 4000           23         CANTAURELLI         C13 4000           24         CANTAURELLI         C13 4000           25         CANTAURELLI         C13 4000           26         MSSURFLAND         C13 4000           27         CALL PZEALD         C13 4000           28         CANTAURELLI         C13 4000           29         CANTAURELI         C13 4000           20         MSSURFLAND         C13 4000           21         CANTAURELI         C13 400	State         Cold         Form         Cold         Form           1         ft	17 1 e	CALL READ(1,'ASURIJASURF(1), 60) Cali Read(1,'Tychrift), 60)	CL3 4086 Cl3 4087
21     C     TEST DF CUI-UTION OF TATAL INTERCHANCE AREA     C13 4090       23     C     1.1     SURFACE AS ENTITES       24     1.1     SURFACE AS ENTITES     C13 4093       25     D 0.21     Particular Science AS ENTITES     C13 4093       26     D 0.21     Particular Science AS ENTITES     C13 4093       27     D 0.21     Particular Science AS ENTITES     C13 4093       27     S ENTITES     C13 4093     C13 4093       28     C ENTINUE     C13 4093     C13 4093       29     S ENTITES     C13 4093     C13 409       29     S ENTITES     C13 4093     C13 409       20     C ENTINUE     C13 409     C13 409       20     S ENTITES     C13 409     C13 409       20     S ENTITES     C13 409     C13 409       21     RAFE AS MAXIOD TU 63     C13 409     C13 409       21     RAFE AS MAXIOD TU 63     C13 410     C13 410       21     RAFE AS MAXIOD TU 63     C13 410     C13 410       22     C14     C10 410     C13 410	21     T TEST DF (LDIPUTION OF TYTAL INTERCHANCE AREA     C12     4090       23     C 121     SURFICE AS EMITTER     C12     4091       23     D 0.2     Lay SUBME, L11/1 4601     C13     4093       23     D 0.2     Lay SUBME, L11/1 4601     C13     4093       24     C 0.21     VULUE AS EMITTER     C13     4093       25     D 0.2     Lay SUBME, L11/1 4601     C13     4093       27     C 0.0011018     C13     4093       28     C 0011018     C13     4093       29     C 0011018     C13     4093       21     SUBME, MENTTER     C13     4093       22     SUBME, MENTTER     C13     4102       23     SUBME, MENTTER     C13     4103       24     SUBME, MENTTER     C13     4103       25     SUBME, MENTTER     C13     4103       26     C 41     C13     4103       27     C 41     C13     4103       28     C 41     C13     4103       29     C 41     C13	1     151 UF GünPUTIUN OF TUTEL INTERCHANCE AREA     C13 000       2     11. Subare As EMITTER     000       2     11. Subare As EMITTER     013 000       2     00.1 Previewe As EMITTER     013 000       3     00.1 Previewe As EMITTER     013 000       4     00.1 Previewe As EMITTER     013 000       4     00.1 Previewe As EMITTER     013 000 <td>6.6</td> <td>CALL RRAR</td> <td>CL3 4088</td>	6.6	CALL RRAR	CL3 4088
2     (1)     VILUES SEMTTER     C1     403       2     (1)     VILUES AS EMTTER     C1     403       2     0     CALL PSTGUEB(L11, 400)     C1     403       2     0     CALL PSTGUES(L11, 400)     C1     403       2     0     NSB1(x-10)     C1     403       2     0     NAX     0     102     103       2     0     0     10     103     103       3     1     103     103     103       3     0     0     103     103       3     0     0     103     103       3     0     0     103       3     0     0 <td>3     1     12     VULUE AS ENTITE     13     403       2     12     VULUE AS ENTITE     13     403       2     20     11     PERMENTITI 6001     13     403       2     2     201 AL PERMENTITI 6001     13     403       2     2     CURTING     13     403       2     5     SURFACE TO SUFFACE TO SUFFACE TO CL3     403       2     5     CURTING     13     403       2     5     SURFACE TO SUFFACE TO CAS SUCCED     13     403       2     SURFACE TO SUFFACE TO CAS SUCCED     13     403       2     SURFACE TO CAS SUCCED     13     403       3     5     CURTING     13     403       3     SURFACE TO CAS SUCCED     13     403       3     SURFACE     CURTING     10       3     SURFACE     CURTING     CURTING       4     CURTING     CURITING       4<!--</td--><td>3     (1)     VELICE AS ENTITES     (1)     004       2     (1)     VELICE AS ENTITES     (1)     003       2     DD 65.1     10.1     003     003       2     CONTUNE     (1)     003     003       2     CONTUNE     (1)     003     003       2     CONTUNE     (1)     003     01       3     FICASURATION     (1)     01     01       4     FICASURATION     (1)<td>21 6</td><td>TEST OF COMPUTION OF TOTAL INTERCHANCE AREA</td><td>C13 4030</td></td></td>	3     1     12     VULUE AS ENTITE     13     403       2     12     VULUE AS ENTITE     13     403       2     20     11     PERMENTITI 6001     13     403       2     2     201 AL PERMENTITI 6001     13     403       2     2     CURTING     13     403       2     5     SURFACE TO SUFFACE TO SUFFACE TO CL3     403       2     5     CURTING     13     403       2     5     SURFACE TO SUFFACE TO CAS SUCCED     13     403       2     SURFACE TO SUFFACE TO CAS SUCCED     13     403       2     SURFACE TO CAS SUCCED     13     403       3     5     CURTING     13     403       3     SURFACE TO CAS SUCCED     13     403       3     SURFACE     CURTING     10       3     SURFACE     CURTING     CURTING       4     CURTING     CURITING       4 </td <td>3     (1)     VELICE AS ENTITES     (1)     004       2     (1)     VELICE AS ENTITES     (1)     003       2     DD 65.1     10.1     003     003       2     CONTUNE     (1)     003     003       2     CONTUNE     (1)     003     003       2     CONTUNE     (1)     003     01       3     FICASURATION     (1)     01     01       4     FICASURATION     (1)<td>21 6</td><td>TEST OF COMPUTION OF TOTAL INTERCHANCE AREA</td><td>C13 4030</td></td>	3     (1)     VELICE AS ENTITES     (1)     004       2     (1)     VELICE AS ENTITES     (1)     003       2     DD 65.1     10.1     003     003       2     CONTUNE     (1)     003     003       2     CONTUNE     (1)     003     003       2     CONTUNE     (1)     003     01       3     FICASURATION     (1)     01     01       4     FICASURATION     (1) <td>21 6</td> <td>TEST OF COMPUTION OF TOTAL INTERCHANCE AREA</td> <td>C13 4030</td>	21 6	TEST OF COMPUTION OF TOTAL INTERCHANCE AREA	C13 4030
26         01         C4.1         PZEquentation         C13         4094           26         BRLEALSUBEL(1)+ASURFLI)         C13         4094         C13         4094           27         SURFACE         SURFACE         C13         4094         C13         4094           27         SURFACE         SURFACE         D         C13         4094         C13         4094           29         NSELENTINE         C13         4094         C13         4094           20         NSELENTINE         C13         4094         C13         4094           20         NSELENTINE         C13         4094         C13         4094           21         MAXPHORENCE         E13         4094         C13         4102           20         NERGE         SURFACE         E10         C13         4102           21         KERCES-KHAXUSCID         E0         SURFACE         E13         4102           21         KERCES-KHAXUSCID         E13         4102         E13         4102           22         C10         G1         E13         4102         E13         4103           23         C10         G1         G13         4	26     6.1     Coll PErangentinity 6601     Cl3 4053       27     00.0     0.0     Cl3 4054       28     Suttant Line     Cl3 4054       29     Suttant Line     Cl3 4054       21     Suttant Line     Cl3 4054       29     Nissilaruius R = Sutrace To Surrace Bucks     Cl3 4054       21     Nissilaruius R = Sutrace To Surrace Bucks     Cl3 4054       23     Itik Rea, kinaxion     Cl3 4054       24     Nissilaruius R = Sutrace To Ga 4100     Cl3 4102       25     C     Nissilarui     Cl3 4102       26     Nissilarui     Cl3 4102       27     Sutrace To Ga 9100x5     Cl3 4102       28     Risk Ravion     Cl3 4102       29     Salura Salurui     Cl3 4102       29     Salura Salurui     Cl3 4102       29     Salura Salurui     Cl3 4103       20     Salura Salurui     Cl3 4103       21     Salura Salurui     Cl3 4103       20     Salura Salurui     Cl3 4103       21     Salura Salurui     Cl3 4103       21     Salura Salurui     Cl3 4103       23     Salura Salurui     Cl3 4103       24     Salura Salurui     Cl3 4103       25     Salura Salurui     Cl3 4	26         0.1.         DEFactorentinity - 0.01         0.03         0.03           26         Ref.1.5.1=5.0015         0.03         0.03           26         Statestime(1) + 4.001         0.03         0.03           26         Statestime(1) + 4.001         0.03         0.03           20         Convince         0.13         0.09           20         Statestime(1) + 4.001         0.03         0.13           20         Convince         0.13         4.03           20         Statestime(1) + 4.01         0.13         0.03           20         Statestime(1) + 4.02         0.13         4.03           20         Convince         0.13         4.03           20         Statestime(1) + 4.01         0.01         0.01           21         A.03         Convince         0.13         4.03           21         Convince         0.13         4.12         4.12           21         Convince         Convince         0.13         4.12           21         Convince         Convince         0.13         4.12           21         Convince         Convince         0.13         4.12           21         Convince	23 0	(1) SURFACE AS EMITTER (2) VGLUME AS EMITTER	CL3 4091 CL3 4092
25         B0L 65. L=LV-SUGF         CL3 4004           27         62. CUTTINLE         CL3 4005           27         CUTTINLE         CL3 4095           29         NSSBLAR-LUNER DF SURFACE BLOCKS         CL3 4095           29         NSSBLAR-LUNER DF SURFACE BLOCKS         CL3 4095           29         NSSBLAR-LUNER DF SURFACE BLOCKS         CL3 4095           20         KNSSBLAR-LUNER DF SURFACE BLOCKS         CL3 4095           21         NSSBLAR-LUNER DF SURFACE BLOCKS         CL3 4095           23         KLAR         CL3 410           24         NAATHORANA         CL3 410           25         Kurk         CL3 410           26         VAATHORANA         CL3 410           27         AU         CL3 410           28         CU ATHOR         CL3 410           29         CU ATHOR         CL3 410           20         CU ATHOR         CL3 410           20 <td>25         BQL 62. L1.ViSURF         CL3 4094           27         62. CONTINUE         CL3 4095           27         CONTINUE         CL3 4095           29         CONTINUE         CL3 4095           29         CONTINUE         CL3 4095           29         CONTINUE         CL3 4095           20         NASSLK=NUMBER OF SURFACE TO SURFACE BLOCKS         CL3 4095           20         NASSLK=NUMBER OF SURFACE TO AS BLOCKS         CL3 4095           20         NASSLK=NUMER OF SURFACE TO AS BLOCKS         CL3 4101           21         NASSLK=NUMER OF SURFACE TO AS BLOCKS         CL3 4101           22         NASSLK=NUMER OF SURFACE TO AS BLOCKS         CL3 4101           23         TO AD CS 9-11/105         CL3 4102           24         CL1 64         CL3 4102           25         CU1 10 6         CL3 4102           26         CU1 10 10         CL3 4102           27         CL1 64         100           28         CU1 10 6         CL3 4102           29         CU1 10 6         CL3 4102           20         CL 24         CL3 4102           21         CL3 4102         CL3 4102           20         CL 21 4102         &lt;</td> <td>25     B01.62.1=1.W5URFLI     CL3 4094       27     52     CONTINUE     CL3 4095       26     CURTINUE     CL3 4095       20     NSSBL##UHER OF SURFACE BLOCKS     CL3 4095       21     MASSBL##UHER OF SURFACE TO GAS BLOCKS     CL3 4095       23     TO KANDIGATA     CL3 4102       24     CL3 4102     CL3 4102       25     CURTINE     CL3 4102       26     CURTINE     CL3 4102       27     ALMANION TO 63     CL3 4102       28     CURTINE     CL3 4102       29     CURTINE     CL3 4102       20     CURTINE     CL3 4102       21     ALMANION TO 63     CL3 4102       21     ALMANION TO 63     CL3 4102       20     CURTINE     CL3 4102       21     ALMANION TO 63     CL3 4102       22     CL4 4102     CL3 4102       23     CL4 4102     CL3 4102       24     CL4 4102     CL3 4102       25     CL4 4102     CL3 4102       26     CL4 4102     CL3 4102   <!--</td--><td>24 61</td><td>CALL PZERD(BB(1+1)+ 660)</td><td>¢jā 403ā</td></td>	25         BQL 62. L1.ViSURF         CL3 4094           27         62. CONTINUE         CL3 4095           27         CONTINUE         CL3 4095           29         CONTINUE         CL3 4095           29         CONTINUE         CL3 4095           29         CONTINUE         CL3 4095           20         NASSLK=NUMBER OF SURFACE TO SURFACE BLOCKS         CL3 4095           20         NASSLK=NUMBER OF SURFACE TO AS BLOCKS         CL3 4095           20         NASSLK=NUMER OF SURFACE TO AS BLOCKS         CL3 4101           21         NASSLK=NUMER OF SURFACE TO AS BLOCKS         CL3 4101           22         NASSLK=NUMER OF SURFACE TO AS BLOCKS         CL3 4101           23         TO AD CS 9-11/105         CL3 4102           24         CL1 64         CL3 4102           25         CU1 10 6         CL3 4102           26         CU1 10 10         CL3 4102           27         CL1 64         100           28         CU1 10 6         CL3 4102           29         CU1 10 6         CL3 4102           20         CL 24         CL3 4102           21         CL3 4102         CL3 4102           20         CL 21 4102         <	25     B01.62.1=1.W5URFLI     CL3 4094       27     52     CONTINUE     CL3 4095       26     CURTINUE     CL3 4095       20     NSSBL##UHER OF SURFACE BLOCKS     CL3 4095       21     MASSBL##UHER OF SURFACE TO GAS BLOCKS     CL3 4095       23     TO KANDIGATA     CL3 4102       24     CL3 4102     CL3 4102       25     CURTINE     CL3 4102       26     CURTINE     CL3 4102       27     ALMANION TO 63     CL3 4102       28     CURTINE     CL3 4102       29     CURTINE     CL3 4102       20     CURTINE     CL3 4102       21     ALMANION TO 63     CL3 4102       21     ALMANION TO 63     CL3 4102       20     CURTINE     CL3 4102       21     ALMANION TO 63     CL3 4102       22     CL4 4102     CL3 4102       23     CL4 4102     CL3 4102       24     CL4 4102     CL3 4102       25     CL4 4102     CL3 4102       26     CL4 4102     CL3 4102 </td <td>24 61</td> <td>CALL PZERD(BB(1+1)+ 660)</td> <td>¢jā 403ā</td>	24 61	CALL PZERD(BB(1+1)+ 660)	¢jā 403ā
27     62     CONTINUE     CL3 4096       28     C     NESALE AS E-ITTEA     503       20     NESALE AS E-ITTEA     CL3 4096       30     F NASSILKELUNERE AF SUFFACE TO GAS BLOCKS     CL3 4096       30     F NASSILKELUNERE AF SUFFACE TO GAS BLOCKS     CL3 4000       30     F NASSILKELUNERE AF SUFFACE TO GAS BLOCKS     CL3 4100       31     F (K.E.E.Q.KMAX)GD TO 63     CL3 4100       32     F (K.E.E.Q.KMAX)GD TO 63     CL3 4102       33     F (K.E.Q.KMAX)GD TO 63     CL3 4102       34     CD 70 65     911/17558URLIAKALIAALL115*J-1411 9001       35     CD 70 65     911/17558URLIAKALIAALL115*J-1411 9001       36     CD 70 65     911/17558URLIAKALIAALL115*J-1411 9001       36     CD 71 64     CL3 4105       37     CD 70 65     911/1755       36     CD 71 64     CL3 4105       37     CD 71 64     CL3 4105       36     CD 71 64     CL3 4105       37     CD 71 64     CL3 4105       38     CD 71 64     CL3 4105       40     CD 66     4112       41     CD 66     4112       42     CD 71 74     CL3 4105       43     CD 71 7414     CL3 4105       44     CD 66     CL3 4	27     62     CONTINUE     C13     409       28     C NUSSEL AL FITTER     C13     409       29     C NUSSEL AL FITTER     C13     409       29     C NUSSEL AL FITTER     C13     409       20     KASSELAL     C13     C13     409       20     KASSELAL     C13     410       21     KASSELAL     C13     410       23     KKK     C14     410       24     C11     410     C13       25     C41     E4     C13     410       26     C10     64     C13     410       27     C4     D     C13     410       28     C41     E4     C13     410       29     C0     C10     41     410       20     C0     C10     410     C13       29     C0     C10     410     C13       20     C0     C10     410     C13       21     C10     410     C13     410       20     C0     10     411     C13       21     C0     110     C13     410       21     C10     C13     410       20     C11     C13	27     62     CONTINUE     C13     409       29     CONTINUE     C13     409       20     NASALKATUNEK DF SURFACE TO SURFACE BLOCKS     C13     409       20     NASALKATUNEK DF SURFACE TO SURFACE BLOCKS     C13     409       20     NASALKATUNEK DF SURFACE TO SURFACE BLOCKS     C13     409       21     NASALKATUNEK DF SURFACE TO SURFACE BLOCKS     C13     410       23     FICK-ES-KMAXJGD TO 63     C13     410       24     ALAC     C13     410       25     C14     410     C13       26     C14     410     C13       27     C10     64     C13       28     CONTINUE     C13     410       29     CONTINUE     C13     410       20     CONTINUE     C13     410       28     CONTINUE     C13     410       29     CONTINUE     C13     410       20     CONTINUE     C13     410       28     CONTINUE     C13     410       29     CONTINUE     C13     410       20     C14     410     C13       21     C10     61     411       20     C11     410       21	10 10 10	DQ 62 [#],MSURF BA(1.5)_FSURF(1)+ASURE(1)	CL3 4094 Cl3 4095
29 C     NiSSBUKA-HUMBER UF SURFACE BLOCKS     CL3 4096       30 C     NiSSBUKA-HUMBER UF SURFACE TO SURFACE BLOCKS     CL3 4096       31 KIR REVIEWAL     NiSSBUKA-HUMBER DF SURFACE TO GAS BLOCKS     CL3 4100       32 KIR KEAK     CL3 4102     CL3 4102       33 KIR KEAK     CL3 4102     CL3 4102       34 KIR KEAK     CL3 4102     CL3 4102       35 KIR KEAK     CL3 4102     CL3 4102       36 A VIR NILE     CL3 4102     CL3 4103       36 A VIR NILE     CL3 4103     CL3 4103       36 A VIR NILE     CL3 4103     CL3 4103       37 A COLL REDILLISSNILLINKLIAATILISFILI915 9001     CL3 4103       36 A VIR NILE     CL1 4103       37 A COLL REDILLISSNILLINKLIAATILISFILI915 9001     CL3 4103       38 A COLL REDILLISSNILLINKLIAATILISFILI915 9001     CL3 4103       39 65 CONTINUE     CL3 4103       41 D0 66 N=1,NISURF     CL3 4103       42 A CONTINUE     CL3 4110       43 A CONTINUE     CL3 4113       44 A C CONTINUE     CL3 4113       45 A C CONTINUE     CL3 4113       46 A C CONTINUE     CL3 4113       47 D0 72 Ja1,NISSBL     CL3 4113       48 A C CONTINUE     CL3 4113       49 A C CONTINUE     CL3 4113       40 A C C C C C C C C C C C C C C C C C C	27     NSSELWAUNSER OF SURFACE BLOCKS     C13 4036       29     NSSELWAUNSER OF SURFACE TO SURFACE BLOCKS     C13 4036       20     KASSELWAUNSER OF SURFACE TO GAS BLOCKS     C13 4000       20     NSSELWAUNSER OF SURFACE TO GAS BLOCKS     C13 4000       20     NASSELWAUNSER OF SURFACE TO GAS BLOCKS     C13 4000       21     NASSELWAUNSER OF SURFACE TO GAS BLOCKS     C13 4102       23     NFL(K-E3, KMAX)GD TO 63     C13 4102       24     C0 to 64     C13 4102       25     C0 to 64     C13 4102       26     C0 to 64     C13 4102       27     C0 to 64     C13 4102       28     C0 to 110 63     C13 4103       29     C0 to 64     C13 4103       20     C0 to 64     C13 4103       21     A10     C13 4103       29     C0 to 110 63     C13 4110       20     C0 to 110 63     C13 4110       21     C0 to 110 63     C13 4110       23     C0 to 12 63     A112       24     C0 to 141101     C13 4110       25     C0 to 12 63     A113       26     C13 4110     C13 4110       26     C13 4110     C13 4112       26     C13 4112     C13 4112       26     C13 4112 <td>29 C     NISBLARTINHER OF SURFACE BLOCKS     CL3 4096       30 C     NISBLARTINER OF SURFACE TO SURFACE BLOCKS     CL3 4096       31 RAYENSANIOR TO 63     NISBLARTINER OF SURFACE TO GAS BLOCKS     CL3 4101       32 RAYENSANIOR TO 63     CL3 4102     CL3 4102       33 KAK     NIKENSANIA     CL3 4102       34 NAY     CL3 4102     CL3 4103       35 KAK     CL1 84011.3580     CL3 4104       35 GU TO 64     CL3 4105     CL3 4105       36 CUTINE     CL3 4105     CL3 4105       37 64 DU 65 J=1.14580     CL3 4105       38 CUTINE     CL3 4105       41 REALINITSSURLIARKIJAKLIASELENIA     CL3 4105       38 CUTINE     CL3 4105       41 REALINES     CL3 4105       42 REALERANTIAR     CL3 4110       43 RELEVENTIARE     CL3 4105       44 CONTINE     CL3 4105       45 REAL REALINES     CL3 4105       46 REAL REALINES     CL3 4105       47 LEAL REALINES     CL3 4105       48 CONTINE     CL3 4115       49 T2 CONTINE     CL3 4115       40 T2 LEAL REALIJARKIJARI</td> <td>27 62</td> <td>CONTINUE CONTINUE</td> <td>CL3 4096</td>	29 C     NISBLARTINHER OF SURFACE BLOCKS     CL3 4096       30 C     NISBLARTINER OF SURFACE TO SURFACE BLOCKS     CL3 4096       31 RAYENSANIOR TO 63     NISBLARTINER OF SURFACE TO GAS BLOCKS     CL3 4101       32 RAYENSANIOR TO 63     CL3 4102     CL3 4102       33 KAK     NIKENSANIA     CL3 4102       34 NAY     CL3 4102     CL3 4103       35 KAK     CL1 84011.3580     CL3 4104       35 GU TO 64     CL3 4105     CL3 4105       36 CUTINE     CL3 4105     CL3 4105       37 64 DU 65 J=1.14580     CL3 4105       38 CUTINE     CL3 4105       41 REALINITSSURLIARKIJAKLIASELENIA     CL3 4105       38 CUTINE     CL3 4105       41 REALINES     CL3 4105       42 REALERANTIAR     CL3 4110       43 RELEVENTIARE     CL3 4105       44 CONTINE     CL3 4105       45 REAL REALINES     CL3 4105       46 REAL REALINES     CL3 4105       47 LEAL REALINES     CL3 4105       48 CONTINE     CL3 4115       49 T2 CONTINE     CL3 4115       40 T2 LEAL REALIJARKIJARI	27 62	CONTINUE CONTINUE	CL3 4096
30     K MASHLALWLER 01 SUFACE 10 GAS 0LOCKS     C13 4100       31     K KAZ-HOCK VIEL     C13 4102       33     IF (K.E0.KMAX)GD T0 63     C13 4102       34     K KAZ     C13 4102       35     GD T0 64     C13 4102       35     GD T0 64     C13 4102       36     A VAL     C13 4102       35     GD T0 64     C13 4102       36     A C4 L BEADILITSSULL     C13 4105       37     64     D1 66 /=1.105URF       38     C11 8407     C13 4105       37     64     D1 66 /=1.105URF       40     D0 66 /=1.105URF     C13 4105       41     D0 66 /=1.105URF     C13 4105       42     B8(L,KK)=B8(L,KK)+AA(N,L)     C13 4105       43     B8(L,KK)=B8(L,KK)+AA(N,L)     C13 4105       44     C11 417     C13 4115       45     C1 4118     C13 4116       46     C11 4117     C13 4116       47     C1 2 4118     C13 4116       48     C11 READILITERLEIA     C13 4116       49     C11 READILITERLEIA     C13 4116       47     C12 4118     C13 4116       48     C11 READILITERLEIA     C13 4116       49     C11 READILITERLEIA     C11 4116       40 <td>0     KHAZHAR WHER OF SUFACE TO GAS BLOCKS     C13 409       23     KHAZHANAL     C13 410       23     IF(FEQ.KHAZ)GG TO 63     C13 4102       24     KHAZ     C13 4102       25     CU TO 64     C13 4102       25     CU TO 64     C13 4102       26     VIA 4     C13 4102       27     64     D1 65 Jail/HSBLK       26     CONTINE     C13 410       27     04     D1 65 Jail/HSBLK       28     CONTINE     C13 410       29     CONTINE     C13 410       29     CONTINE     C13 410       20     D1 65 Lail/HSBLA     C13 410       29     CONTINE     C13 410       20     CONTINE     C13 411       21     C11 411       22     C11 411       23     C11 411       24     C12 411       25     C13 411       26     C13 411       27     C13 411       28     C11 2 411       29</td> <td>0     KHARAYAL     CL3 4100       32     KHARAYAL     CL3 4102       33     F(K,E3,KHAX)GD TD 63     CL3 4102       34     KFA     CL3 4102       35     KT 4     CL3 4102       35     KT 4     CL3 4102       36     KT 4     CL3 4102       37     64     CL3 4103       36     CU10 64     CL3 4103       37     64     CL3 4103       36     CU1111558LL     CL3 4103       37     64     CL3 4103       36     CU11114E     CL3 4103       41     CL3 4103     CL3 4103       43     B6LL/KK1+AALLJ1554L=191, 9001     CL3 4103       44     D1 66 N=1,11558L=141, 9001     CL3 4113       45     CU1114E     CL3 4113       46     CU1114E     CL3 4113       47     D1 66 N=1,11554L=141, 9001     CL3 4113       48     CUNTINUE     CL3 4113       49     CUNTINUE     CL3 4113       49     CUNTINUE     CL3 4113       40     CU1 4113     CL3 4113       41     CL3 4113     CL3 4113       41     CL3 4113     CL3 4113       41     CL3 4113     CL3 4113       41     CL1 4113     CL3 4113</td> <td>20</td> <td>NSSBLK=NUMBER OF SURFACE TO SURFACE BLOCKS</td> <td></td>	0     KHAZHAR WHER OF SUFACE TO GAS BLOCKS     C13 409       23     KHAZHANAL     C13 410       23     IF(FEQ.KHAZ)GG TO 63     C13 4102       24     KHAZ     C13 4102       25     CU TO 64     C13 4102       25     CU TO 64     C13 4102       26     VIA 4     C13 4102       27     64     D1 65 Jail/HSBLK       26     CONTINE     C13 410       27     04     D1 65 Jail/HSBLK       28     CONTINE     C13 410       29     CONTINE     C13 410       29     CONTINE     C13 410       20     D1 65 Lail/HSBLA     C13 410       29     CONTINE     C13 410       20     CONTINE     C13 411       21     C11 411       22     C11 411       23     C11 411       24     C12 411       25     C13 411       26     C13 411       27     C13 411       28     C11 2 411       29	0     KHARAYAL     CL3 4100       32     KHARAYAL     CL3 4102       33     F(K,E3,KHAX)GD TD 63     CL3 4102       34     KFA     CL3 4102       35     KT 4     CL3 4102       35     KT 4     CL3 4102       36     KT 4     CL3 4102       37     64     CL3 4103       36     CU10 64     CL3 4103       37     64     CL3 4103       36     CU1111558LL     CL3 4103       37     64     CL3 4103       36     CU11114E     CL3 4103       41     CL3 4103     CL3 4103       43     B6LL/KK1+AALLJ1554L=191, 9001     CL3 4103       44     D1 66 N=1,11558L=141, 9001     CL3 4113       45     CU1114E     CL3 4113       46     CU1114E     CL3 4113       47     D1 66 N=1,11554L=141, 9001     CL3 4113       48     CUNTINUE     CL3 4113       49     CUNTINUE     CL3 4113       49     CUNTINUE     CL3 4113       40     CU1 4113     CL3 4113       41     CL3 4113     CL3 4113       41     CL3 4113     CL3 4113       41     CL3 4113     CL3 4113       41     CL1 4113     CL3 4113	20	NSSBLK=NUMBER OF SURFACE TO SURFACE BLOCKS	
Dig Schwartight         Dig Schwar	00     69     xeijveny       03     1F(K.E0.KMAX)GD TD 63     Cla 4102       04     Col TO 64     Cla 4102       05     CUL REANLIJSSBLK     Cla 4103       06     Native     Cla 4103       07     Cla 1105     Cla 4103       07     Native     Cla 4103       06     N=1,HSURF     Cla 4103       07     Net Net     Cla 4103       06     N=1,HSURF     Cla 4103       07     Contrive     Cla 4103       06     N=1,HSURF     Cla 4113       06     N=1,HSURF     Cla 4113       06     N=1,HSURF     Cla 4113       07     Contrive     Cla 4113       08     Clarente     Cla 4113       06     N=1,HSURF     Cla 4113       07     J=1,NSURF     Cla 4113       08     Clarente     Cla 4113       07     J=1,NSURF     Cla 4113       07     J=1,NSURF     Cla 4113       08     Clarente     Cla 4113       07     J=1,NSURF </td <td>00     11     11     10       03     17     10     10       04     10     10     10       05     10     10     10       05     10     10     10       05     10     10     10       05     10     10     10       05     00     5     10       05     00     5     10       06     00     5     10       07     10     10     10       08     00     10     10       09     00     10     10       01     10     10     10       01     0     10     10       02     00     10     10       04     00     10     10       05     00     10     10       06     00     10     10       07     00     10     10       07     00     10     10       07     00     10     10       07     00     10     10       08     00     10     10       09     00     10     10       01     10     10</td> <td>30 6</td> <td>NGSBLK=UUNBER DF SUZFACE TO GAS BLOCKS KMAV=NGRAY+1</td> <td>Cl3 4100 Cl3 4100</td>	00     11     11     10       03     17     10     10       04     10     10     10       05     10     10     10       05     10     10     10       05     10     10     10       05     10     10     10       05     00     5     10       05     00     5     10       06     00     5     10       07     10     10     10       08     00     10     10       09     00     10     10       01     10     10     10       01     0     10     10       02     00     10     10       04     00     10     10       05     00     10     10       06     00     10     10       07     00     10     10       07     00     10     10       07     00     10     10       07     00     10     10       08     00     10     10       09     00     10     10       01     10     10	30 6	NGSBLK=UUNBER DF SUZFACE TO GAS BLOCKS KMAV=NGRAY+1	Cl3 4100 Cl3 4100
33       IF(K.EQ.KMAX)GD TD 63       C13 4102         36       KK=K       C13 4103         36       KX=K       C13 4104         35       CD TO 64       C13 4104         35       KX 4       C13 4104         35       KX 4       C13 4104         37       64       D0 65 J=1,MSBLK         37       65       CDNT NUE         39       65       CDNT NUE         41       D0 66 N=1,MSURF       C13 4106         42       D0 66 N=1,MSURF       C13 4106         43       B8(L*KK)=B8(L,KK)+AA(N)L)       C13 4110         44       D0 66 N=1,MSURF       C13 4110         45       66       C111 4111         46       CONTINUE       C13 4110         47       D0 72 J=1,MSURL       C13 4112         48       CONTINUE       C13 4115         49       T E(KKENALG) TD 90       C C13 4115         49       T E(KLENALG)       C C13 4115         40       T CONTINUE       C C13 4115         41       D1 72 J=1,MSSBLK       C C13 4115         42       D1 72 J=1,MSSBLK       C C13 4115         43       C CALL READ(L1, TCSNH(L, KK), AA(L),L)SEL=141, 9001	33     IF(K.E3.KMAX)GD TD 63     Cl3 4102       36     64     Cl3 4103       36     50     5     Cl3 4103       36     60     5     Cl3 4103       37     64     Cl3 4103       38     65     Cl1 4103       37     64     Cl3 4105       38     65     Cl1 4105       39     65     Cl3 4105       31     64     Cl3 4105       35     65     Cl3 4105       36     64     Cl3 4105       37     64     Cl3 4105       45     67     Cl1 4112       46     66     F114       47     00     61 4112       48     Cl3 4112       49     Cl3 4112       40     Cl3 4112       41     Cl3 4113       45     Cl3 4113       46     Cl3 4113       47     D0 72 J=1,NGSBLK       47     D0 72 J=1,NGSBLK       47     D0 72 J=1,NGSBLK       47     D1 72 J=1,NGSBLK       47     Cl3 4113       47     Cl3 41	33     IF(K.EQ.KHAX)GD TO 63     G13 4102       36     60 TO 64     613 4103       36     60 TO 64     613 4105       36     60 LO 5 J=JHKSBLK     613 4105       37     64 OL 65 J=JHKSBLK     613 4105       37     64 OL 65 J=JHKSBLK     613 4105       39     65 CONTINUE     613 4105       37     64 OL 65 J=JHKSBLK     613 4105       39     65 CONTINUE     613 4105       41     01 65 J=JHKSBE     613 4105       41     01 65 J=JHKSBE     613 4110       42     60 N=JHKSBE     613 4110       43     60 N=JHKSBE     613 4110       44     60 N=JHKSBE     613 4110       45     61 4111     613 4112       46     60 N=JHKSBE     613 4112       47     70 72 J=J=JNGSBLK     613 4112       49     72 CONTINUE     613 4113       49     60 N=JHKSBE     613 4113       49     60 N=JHKSBE     613 4113       49     72 CONTINUE     613 4113       40     72 L=J=JNSCSBLK     613 4113       41     72 L=J=JNSCBE	32	DD 69 KalakiAX	
5       CU 10 64         5       KK=4         3       63       KK=4         3       64       CLL READILITSSNHLIKKLAATLJ5#J=14). 900)         3       65       CUNTINUE         3       65       CUNTINUE         41       DD 66 N=1/HSURF         42       DD 66 N=1/HSURF         43       BB(L+KK)=BB(L-KK)+AA(N)L)         44       66         57       CONTIVUE         66       CONTIVUE         67       0113         68       CONTIVUE         64       60         65       CONTIVUE         66       CONTIVUE         67       0113         68       CONTIVUE         66       CL3 4113         67       014         68       CALL READILITERALIATER         69       CALL READILITERALIATER         69       CALL READILITERAL         69       CALL READILITERAL         69       CALL READILITERAL         60       CALL READILITERE         61       CL3 4118         62       CL3 4118	5       CD T0 64         35       CD C1 S 4105         37       64       Cold S Varia         38       CD C1 S Varia         39       65       CONTINUE         41       D0 66 N=1/HSURF       C13 4105         41       D0 66 N=1/HSURF       C13 4100         42       66       C13 4110         44       66       C13 4110         45       C10NTINUE       C13 4110         46       C10NTINUE       C13 4110         47       D0 166 N=1/HSURF       C13 4110         46       C0NTINUE       C13 4110         47       D0 72 J=1/HSURF       C13 4110         47       D0 72 J=1/HSURF       C13 4113         47       C0NTINUE       C13 4113         47       D0 72 J=1/HSURF       C13 4113         47       D0 72 J=1/HSURF       C13 4113         47       D0 72 J=1/HSURF       C13 4113         48       T14 (11416       C13 4113         49       C13 4113       C13 4113         49       C13 4113       C13 4113         40       C13 4113       C13 4113         40       C13 4113       C13 4113 <t< td=""><td>5       CD T0 64       C12 4104         16       F 10 11       C12 4105         17       64       C11 8EAN11.1584L41.451.4001       C13 4105         17       64       C11 8EAN11.1584L41.451.4001       C13 4105         17       64       C11 8EAN11.1584L41.451.4001       C13 4105         18       C007TINUE       C13 4109       C13 4109         10       66 N=1.1183URF       C13 4101       C13 4110         10       66 N=1.1183URF       C13 4110       C13 4110         11       11       C13 4110       C13 4112         12       611       611       611         13       611       612       4112         14       C13 4113       C13 4112         15       C13 4112       C13 4113         16       C13 4112       C13 4113         17       C13 4113       C13 4113         18       C13 4113       C13 4113         19       C13 4113       C13 4113         10       72 J=1.0501K1, KK1, AA11, J184J=141, 9001       C13 4113         10       74 L=1.050K1, KK1, AA11, J184J=141, 9001       C13 4113         10       74 L=1.050K1, KK1, AA11, J184J=141, 9001       C13 4113      <t< td=""><td>66</td><td>1F(K.EQ.KMAX)GD TD 63 XV-V</td><td>CL3 4102 CL3 4102</td></t<></td></t<>	5       CD T0 64       C12 4104         16       F 10 11       C12 4105         17       64       C11 8EAN11.1584L41.451.4001       C13 4105         17       64       C11 8EAN11.1584L41.451.4001       C13 4105         17       64       C11 8EAN11.1584L41.451.4001       C13 4105         18       C007TINUE       C13 4109       C13 4109         10       66 N=1.1183URF       C13 4101       C13 4110         10       66 N=1.1183URF       C13 4110       C13 4110         11       11       C13 4110       C13 4112         12       611       611       611         13       611       612       4112         14       C13 4113       C13 4112         15       C13 4112       C13 4113         16       C13 4112       C13 4113         17       C13 4113       C13 4113         18       C13 4113       C13 4113         19       C13 4113       C13 4113         10       72 J=1.0501K1, KK1, AA11, J184J=141, 9001       C13 4113         10       74 L=1.050K1, KK1, AA11, J184J=141, 9001       C13 4113         10       74 L=1.050K1, KK1, AA11, J184J=141, 9001       C13 4113 <t< td=""><td>66</td><td>1F(K.EQ.KMAX)GD TD 63 XV-V</td><td>CL3 4102 CL3 4102</td></t<>	66	1F(K.EQ.KMAX)GD TD 63 XV-V	CL3 4102 CL3 4102
37     64     DD 65     J=1/MSSBLK       37     64     DD 65     J=1/MSSBLK       38     Call READILJESSUN(JJKK)AA(1)JEStJ=14), 900)     Cl2 4105       39     65     CDWTINUE     Cl2 4105       41     DD 66 N=1/HSURF     Cl2 4110       43     BB(LJKK)+BB(L)KK)+AA(NJL)     Cl2 4110       44     DD 66 N=1/HSURF     Cl2 4110       45     CONTINUE     Cl2 4110       45     CONTINUE     Cl2 4110       46     CONTINUE     Cl2 4112       47     D1 72     J=1/NSSBLK       48     CALL READ(1,JKK),AA(1,JS*J=141, 9001     1       49     CONTINUE     Cl2 4116       49     CONTINUE     Cl2 4116       49     CONTINUE     Cl3 4116	37       64       DD       65       J=1,MSSBLK         38       6       CALL READILITSENLAKILISEL=161, 9001       CL3 4105         40       DD       65       N=1,MSURF         41       DD       66       N=1,MSURF         41       DD       66       N=1,MSURF         42       DD       66       N=1,MSURF         43       BR(L,KK)=BB(L,KK)=AA(N,L)       CL3 4110         44       66       CONTINUE       CL3 4112         45       67       CONTINUE       CL3 4113         45       67       CONTINUE       CL3 4114         46       FE(K.EQ.KHAX)3DL TD 90       CL3 4114         47       DD 72       J=1,NGSBLK         47       DD 72       J=1,NGSBLK         47       DD 74       L1         48       CD 72       L1         49       CD 74       L1         40       CD 74       L1         41       <	37       64       D0       65       J=1,MSSBLK         39       65       CALL READILITSSNILLIKKI, AAKILJIS#J=141       9001       C13       4105         40       67       CALL READILITSSNILLIKKI, AAKILJIS#J=141       9001       C13       4105         40       60       61       H10       C13       4105         41       00       64       C13       4110         45       67       C0NTINUE       C13       4112         46       66       C0NTINUE       C13       4112         47       00       7       4113       4113         46       66       C13       4112       6114         47       00       7       4114       6114         48       67       C0NTINUE       C13       4115         47       00       72       4114       6114         48       72       C0NTINUE       C13       4115         49       74       113       4116       6114         41       611       6114       6114       6114         41       611       6114       6114       6114         411       611       6116	92 95 7		
39 65 CONTINUE 40 00 67 L=1,HSURE 41 DD 66 N=1,HSURE 42 DD 66 N=1,HSURF 43 BB(L,KK)=BB(L,KK)+AA(N)L) 43 BB(L,KK)=BB(L,KK)+AA(N)L) 44 66 CONTINUE 45 67 CONTINUE 45 67 CONTINUE 45 67 CONTINUE 45 67 CONTINUE 46 15 KKEO,KMAX)CD 72 J=1,HSURE 47 DD 72 J=1,HSURE 49 72 CONTINUE 49 72 CONTINUE 50 DT 74 L=1,HSURE 50 DT 74 DT 74 L=1,HSURE 50 DT 74	39       65       CONTINUE         41       D0       66       N=1,HSURF         42       D0       66       N=1,HSURF         43       BB(LeKK)=BB(LeKK)+AA(N)L)       C13       4110         43       BB(LeKK)=BB(LeKK)+AA(N)L)       C13       4112         44       67       C13       4112         45       CONTINUE       C13       4113         45       CONTINUE       C13       4114         46       C13       4115       C13       4115         47       D1       C13       4115       C13       4115         48       CALL       RATIONSBLK       C13       4115       C13       4115         49       CONTINUE       C13       4115       C13       4115       C13       4115         41       CALL       RATIONSBLK       C13       4115       C13	39     65     CONTINUE       41     D0     66       42     D0     66       43     10       44     0     613       45     67     613       46     67     613       411     6     613       45     64     613       46     613     4113       47     0     72       41     613     4114       48     61     613       41     613     4115       49     72     613       61     6115     613       61     6115     613       61     6115     613       61     613     4115       61     613     4115       61     613     6116       61     613     4115       61     613     4115       61     613     4115       61     613     613       61     613     4115       61     613     4115       61     613     4115       61     613     4119       61     613     4119       61     613     4119       61     613	37 64	00 65 JelyMSSBLK Fall DESART - LEGNART - 1541 - 1561 - 2001	CL3 4106
41 DD 66 N=1,HSURF 42 DD 66 N=1,HSURF 43 BB(LrKK)=BB(LrKK)+AA(NJL) 44 66 CONTIVICE 45 67 CONTIVICE 45 67 CONTIVICE 46 7 CONTINCE 47 DD 72 J=1,NGSBLK 47 DD 72 J=1,NGSBLK 48 CALL REACLJFGSNH(J,KK),AA(1,15#J=141, 900) 49 72 CONTINE 49 72 CONTINE 50 74 LEL NSURF 50 75	41       D0 66 N=1,HISURF         43       BB(LrKK)=BB(LrKK)+AA(N,L)         44       CINTIVUE         45       CONTIVUE         46       CINTIVUE         47       D0 72 J=1,NGSBLK         47       D0 72 J=1,NGSBLK         47       D0 72 J=1,NGSBLK         47       D0 72 J=1,NGSBLK         47       D0 72 J=1,NSURE         49       T2 CONTINUE         49       T2 CONTINUE         49       T2 CONTINUE         49       T2 CONTINUE         4110       C12 4115         4116       C12 4116         4117       C12 4118         4114       C12 4118	41       D0 66 N=1,HSURF         42       D0 66 N=1,HSURF         43       BB(L*K)=BB(L/KK)+AA(N)L)         44       65         45       CONTINUE         45       CONTINUE         45       CONTINUE         46       CONTINUE         47       D0 72 J=1,NCSBLK         47       D0 72 J=1,NCSBLK         48       CALL READ(1, ICSNM(J,KK), AA(1,15*J=14), 900)         49       72 CONTINUE         47       D0 72 J=1,NSBLK         48       CALL READ(1, ICSNM(J,KK), AA(1,15*J=14), 900)         49       72 CINTINUE         40       72 J=1,NSURF	39 65	CONTINUE DD 1471 - 11 - 146406	CL3 4108 C13 4108
43 BB(L_KK)=BB(L_KK)+AA(N_L) 44 66 CONTIVUE 45 67 CONTINUE 45 67 CONTINUE 46 T F(K_EQ_KMAX)GD TD 90 46 T F(K_EQ_KMAX)GD TD 90 47 DD 72 J=1,NGSBLK 48 CALL READ(1,TGSNM(J,KK1,AA(1,15*J=14), 900) 49 72 CONTINUE 49 72 CONTINUE 50 DD 74 L=L-NSUBF	43       BB(LeKK)=BB(LeKK)=AG(NeL)         44       66       CDNTIVUE         45       67       CDNTIVUE         45       67       CDNTINUE         46       15       CL3 4114         47       00       72         48       CALL READ(L)CSNH(L)KK1, AA(1,)5*L=141, 9001       1         49       72       CL1         49       72       CDNTINE         49       72       CL1         49       72       CL1         49       72       CL1         49       72       CL1         40       74       116         40       74       118         40       74       118         40       74       118         40       74       119         40       74       119	43       BB(L*KK)=BB(L*KK)+AA(N,L)         44       66       CONTIVUE         45       67       CONTIVUE         45       67       CONTIVUE         45       67       CONTIVUE         45       15(K.EQ.KMAX)OD TO 90       CL3 4114         47       00       72       J=1,N058LK         47       00       72       J=1,N058LK         49       72       Call READ(1, JCSNH(1, JKK), AA(1, J)5*J=141), 9001       CL3 4116         49       72       Call READ(1, JCSNH(1, JKK), AA(1, J)5*J=141), 9001       CL3 4118         49       72       Call READ(1, JCSNH(1, JKK), AA(1, J)5*J=141), 9001       CL3 4118         49       72       Call READ(1, JCSNH(1, JKK), AA(1, J)5*J=141), 9001       CL3 4118         50       74       L11, NSUBE       CL3 4118	41	DD 66 N=1,MSURF	
45 67 CONTINUE 46 T F(K.EQ.KMAX)GD TD 90 47 DD 72 J=1,NGSBLK 48 CALL REAO(1,TGSNH(J,KK),AA(1,15*J=14), 900) 49 72 CONTINUE 49 72 CONTINUE 50 DD 74 L=1.NSURF	45 67 CONTINUE 46 IF(K.EQ.KMAX)GD TD 90 47 DD 72 J=13NGSBLK 48 CALL READ(1,JGSNM(J,KK1,AA(1,J5#J=141, 900) 49 72 CONTINUE 49 72 CONTINUE 50 74 L=1.MSURE 50 74 L=1.MSURE 50 74 L=1.MSURE	45 67 CONTINUE 46 I F(K.EQ.KMAX)GN TD 90 47 DD 72 J=1,NGSBLK 48 CALL READ(1, TCSNH(J,KK),AA(1,15#J=141, 900) 49 72 CONTINUE 49 72 CONTINUE 50 DD 74 LELPISURE 50 DD 74 LELPISURE	43	88(L,KK)=88(L,KK)+44(N,L) Continue	CL3 4112 CL3 4112 CL3 4112
47 DD TASEVENMANIUL TU YU 47 DD TAJEVENMANUL U YU 48 CALL REAO(1,TCSNH(J,KK),AA(1,15*J=14), 900) 49 72 CONTINUE 50 DD 74 LEL-NSURF	47 DD TR. EVENMAN SUL IU YU 47 DD TR. SAMAKU, HU YU 48 TZ CALL READ(1, TCSNM(U, KK1, AA(1, 15*J=14), 900) 49 TZ CONTINUE 49 TZ CONTINUE 50 DD 74 Leluisure 50 DD 74 Leluisure	47 DD 72 J=1/MCSBLK 47 DD 72 J=1/MCSBLK 48 CALL READ(1,TCSNH(4),KK1,AA(1,15#1=141, 9001 CL3 4117 49 72 CONTINUE 50 DD 74 Le1/MSURE CL3 4119 50 DD 74 Le1/MSURE	45 67		CL3 4114 CL3 4114
48	48 CALL REAV(1,ICSNH(4,KK1,AA(1,15#J=141, 900) . CL3 4117 49 72 CONTINUE 50 DD 74 LelyNSURF . CL3 4119	48 CALL REAU(1,ICSNH(4,XK1,AA(1,15#4=141, 900) . CL3 4117 49 72 CONTINUE 50 DD 74 Lel.MSURE . CL3 4119 51 DD 74 Lel.MSURE	47	DO 72 J=1, NGS8LK	
			49 72 50	CALL KEAU(1, ICSMM(4,KK1,AA(1,13%4=141, 900) Continue Dn 74 lei-Msurf	CL3 4117 CL3 4119 CL3 4119

		Ì						***
	FOR	TRAN	IV (VER 143) SOURCE LISTING 1 CL3	SUBROUTINE	03/05/74	PAGE 0100		
•	15		DD 73 N=1/MVJL Bail-Kki=Bail-Kki+AAin-!}			CL3 4120 C13 4121		
ŀ	53	73	CONTINUE CONTINUE CONTINUE			CL3 4122 C13 4122 C13 4123		
	5	<b>.</b>	GAS AS ENTTER GAS AS ENTTER Moreover					
	22		NSGBLK-HUNBER DEGAS TO SURFACE BLOCH	KS		CL3 4126 CL3 4126		
	65			0001		CL3 4128 CL3 4128		
	323	1 76				CL3 4130 CL3 4130		
	1 (1) 2 (1) (1) (1	0.4	DD 78 N=1,PV0L BR/1			CL3 4132 CL3 4132		
	5 4 9 4	7 70	CONTINUE CONTINUE			CL3 4134 C13 4135		
	19 19		DO 81 Jal-NSG8LK CALL DEAR VILLEONUAL-VVILLAVILLEA	1000		CL3 4136 CL3 4136		
	696	186						
	25		DD 25 Neljisurf Bali -knjesi -knjeaaine!			CL3 4140 C13 4141		
	12;	885				CL3 4142 713 4142		
	5;	- -	COV#4 **X* (XX) *XO*YO					
	<b>۲</b>		Ra(L, KT+1)=CUN			CL3 4146 CL3 4146		
	12							
	19.	161	FORMAT(); FUR EACH CHARACTERIST GAS T - F ADEA WITH THE CAS WHINE AS THE EM	HE SUN DF ALL	TOTAL INTERC	2HANGCL3 4150 2001/2013 4150		
	E 8	6	2 DF THE EMISSIVITY AND THE AREA!//10 2 DF THE EMISSIVITY AND THE AREA!//10	X, IGRAY CAS 1	1,5% 16RAY 6/	15 2.613 4152 11 2 41 52		
	58		WRITE(X2,92)(1,08(1,M))/41,99) le1/V	SURF)				•
	200							
	686		LE AREAS VITH A GAS VOLUME ALST VASA LE AREAS VITH A GAS VOLUME AS THE EMI D DS THE LAG ADACADATION CHEREICIENT A	TTER MUST EQU	AL THEI/I PRO	JOUCTOLIS 4158 20 CTCL3 4158 27 CL3 4158		
	160		1 CONSTANT OF 4/1//23x/16RAY 645 11/2	5X, IGRAY GAS	2,1,25%,16RA	/ GASC13 4160	e divînê e ber de de le de	
	66		31,10%,11,17,18, AEA1,6%,14,18, 4 VOL1//)					
	56	46 10 10	FORMAT(/(IS,3(5x,2F15,5)))					
	16	10	END		-	cl3 4105		
					•			
					•			
· ·						· · · · · · · · · · · · · · · · · · ·		

1     CHRINER STREAME AND STORE ON DISK 1     NUMBALON       1     CHRINER STREAME AND A FUTTER     NUMBALON       1     CHRINER STREAME AND STORE ON DISK 1     NUMBALON       1     CHRINE STREAME AND STORE AND DISK 1     NUMBALON       1     CHRINE STREAME AND STORE AND DISK 1     NUMBALON       1     A NORTH STREAME AND STORE AND DISK 1     NUMBALON       1     A NORTH STREAME AND DISK 1     NUMBALON       1     A NORTH STREAME AND DISK 1     NUMBALON       1     A NORTH STORE AND DISK 1     NUMBALON       1     A NORTH STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH TOUR STORE AND DISK 1     NUMBALON       1     A NORTH DISK 1     NUMBALON       1     A NORTH DISK 1     NUMBALON       1     A NORTH DISK 1	<ol> <li>SUBRUUTINE RNR</li> <li>C CUMPUTES SUBEACE REFLECTIVITES AND STORE ON DISK 1</li> <li>C (1) - SURFACE AREA AS EMITTER</li> <li>C (1) - SURFACE AREA AS EMITTER</li> <li>C (2) - GAS VOLUME AS EMITTER</li> <li>C COMMON // DUMMY(3) KK J (CODE HCODE)</li> <li>C A TAU(9) / VAKEA, HAREA XLV XK(3), ACOEF(8,31)</li> <li>A TAU(9) VAKEA, HAREA XLV XK(3), ACOEF(8,31)</li> <li>A TAU(9) VAKEA, HAREA XLV XK(3), ACOEF(8,31)</li> <li>A TAU(9) VAKEA, HAREA KLUE(5), XMWX, TSINK,</li> <li>A NCR HOUTY HTVALE FRATES KEUEL VAIRE FTEMP,</li> <li>A NSBLK, NGSBLK, NGGBLK, NSURF HVOL</li> <li>A START, TCCUE, SCODE, NGPAY, JHCHC.</li> </ol>	RRR4167	
5     (1)     - Suprace, Ale Furta     Reserved       5     (1)     - Suprace, Ale Furta     Reserved       5     (1)     - Suprace, and a function     Reserved       5     (1)     - Suprace, and a function     Reserved       6     (1)     - Suprace, and a function     Reserved       1     - Suprace, and a function     Reserved     Reserved       1     - Reserved     Reserved     Reserved	3 C (1) - SURFACE, AREA AS EMITTER 4 C (2) - GAS VOLUME AS EMITTER 5 COMMON // DUMMY(3),KK, JCODE, HCODE, 6 A TAU(9), VAREA, HAREA, XLY, XK(3), ACOEF(8,31) 7 A TAU(9), VAREA, HAREA, XLY, XK(3), ACOEF(8,31) 7 A TAU(9), VAREA, HAREA, XLY, XK(3), ACOEF(8,31) 8 A NCR, HOUTY, HTVAL, ERATE, KEUEL, XAIR, FTEMP, 9 A NSSBLK, NGSBLK, MSGALK, NGGBLK, NSURF, HVOL, 10 A XSURFX(9), X(1, VO, ZLONG, NGPAY, JHCHC, 11 A RSTART, TCEUE, SCODE, NGPAY, JHCHC,	RRKR4168	
5     Context // Wanderford, Montext, Mo	<ul> <li>COMMON // NUMMY(3) KK, ICODE, HCODE,</li> <li>COMMON // NUMMY(3) KK, ICODE, HCODE,</li> <li>A TANIDG, PRES, HAREA, KLY, XK(3), ACOBF(8,3),</li> <li>A TANIDG, PRES, HAREA, KLUE(5), XMWX, TSINK,</li> <li>A NCR, HDUTY, HIVAL, ERATE, KLUEL, XAR, FTEMP,</li> <li>A NCR, HDUTY, HIVAL, ERATE, KLUEL, NSURF, HVAL,</li> <li>A NSBLK, NGSBLK, MSGBLK, NSURF, HVAL,</li> <li>A NSTART, TCUDE, NGPAY, JHCHC,</li> </ul>	RRRR4169	
1     A MENDON WARKS FLAFF, FLAFF, MAN, STERFAR, STERFAR, MAN, STERFAR, MAN, STERFAR, STERFAR, STERFAR, STE	<ul> <li>A TAU(9), VAREA, HAREA, XLY, XK(3), ACGEF(8,3),</li> <li>A TBRIDG, PRES, FLUET, FLUE(5), XMWX, TSINK,</li> <li>A NCR, HOUTY, HIVAL, ERATE, KEUEL, XAIR, FTEMP,</li> <li>A NCSBLK, NGSBLK, NGGBLK, NSURF, HVDL,</li> <li>A NSSBLK, NGSBLK, NGGBLK, NSURF, HVDL,</li> <li>A XSURFX(9), XU, YD, ZLUNG, NGLL, HDGW, MXXXN,</li> <li>A RSTART, TCEUE, SCODE, NGPAY, JHCHC,</li> </ul>	RRR4171	
9     A KURBENC MURAUN ANDUN ON THE MERNEN WARKEN MARKEN     REREALTS       11     A KURBENC MURAUN ANDUN AN	9 A NSSBLK, NGSBLK, NGGBLK, NGGBLK, NSURF, HVDL, 10 A XSURFX(9), XU, YU, ZLUNG, NGDL, UPDY, HVDL, 11 A RSTART, TCEDE, SCODE, NGPAY, JHCHC,	KRK4173 KRR84173 BR204.17	
11     A 6479477     Techer, 550012, wite/col     Techer, 550012, wite/col       12     Intracted Score, 100012     Techer, 510012     Techer, 510012       13     Communications     Techer, 510012     Techer, 510012       14     Communications     Techer, 510012     Techer, 510012       15     Communications     Techer, 510012     Techer, 510012       16     Communications     Techer, 510012     Techer, 510012       17     Communications     Techer, 510012     Techer, 510012       18     Communications     Techer, 510012     Techer, 510012       19     Communications     Techer, 510012     Techer, 510012       11     Communications     Techer, 510012     Techer, 510012       11     Techer, 510012     Techer	11 A RSTART, TCEDE, SCODE, NGPAY, JHCHC,	RRRR4175 RRRR4175	
1     C     Interest score function and state and s		RERATION RERATION	
13     Communication Sciencing and Communication Sciencing and Sciencing a	13 C	RARK4179 RRRK4179	
17CommunicationReserved18CommunicationReserved10ReflectivityState11ReflectivityReflectivity12CReflectivity13CReflectivity14ReflectivityReflectivity15CReflectivity16ReflectivityReflectivity17ReflectivityReflectivity18ReflectivityReflectivity19ReflectivityReflectivity19ReflectivityReflectivity19ReflectivityReflectivity19ReflectivityReflectivity19ReflectivityReflectivity10ReflectivityReflectivity11ReflectivityReflectivity12ReflectivityReflectivity13ReflectivityReflectivity14ReflectivityReflectivity15ReflectivityReflectivity16ReflectivityReflectivity17ReflectivityReflectivity18ReflectivityReflectivity19ReflectivityReflectivity10ReflectivityReflectivity11ReflectivityReflectivity12ReflectivityReflectivity13ReflectivityReflectivity14ReflectivityReflectivity15ReflectivityReflectivity16ReflectivityReflectivity17Reflectivity <t< td=""><td>Image: Structure Struct</td><td>I) RRARIEL RRARIEL</td><td></td></t<>	Image: Structure Struct	I) RRARIEL RRARIEL	
AF     Different Frankeren     BREARIER       21     GENERET FRANKELEETIVITY ÄRT     BREARIER       23     CENERET FRANKELEETIVITY ÄRT     BREARIER       23     CENERET FRANKELEETIVITY ÄRT     BREARIER       24     REARIER     BREARIER       25     CENERET FRANKELEETIVITY ÄRT     BREARIER       26     RERIJJATION     BREARIER       27     ERTIJJATION     BREARIER       28     CONSTRUCT     BREARIER       29     CONSTRUCT     BREARIER       20     DI OLIALARIER     BREARIER       21     BREARIER     BREARIER       22     CONSTRUCT     BREARIER       23     FRIJJATION     BREARIER       24     CONSTRUCT     BREARIER       25     CONSTRUCT     BREARIER       26     CONSTRUCT     BREARIER       27     CONSTRUCT     BREARIER       28     CONSTRUCT     BREARIER       29     CONSTRUCT     BREARIER       29     CONSTRUCT     BREARIER       20     CONSTRUCT     BREARIER       20     CONSTRUCT     BREARIER       21     DI RODON     BREARIER       22     CONSTRUCT     BREARIER       23     CONSTRUCT     BRE		REPRA183	
21CNELLETINITYNHO22CNELLETINITYNHO23CNELLETINITYNHO24A.R.L.A.FIJSINITY/TELECTIVITYRENALEDRENALED25NO (JU) 11-5-NUERENALEDRENALED27A.R.L.A.L.A.L.A.L.A.L.A.L.A.L.A.L.A.RENALEDRENALED29A.R.L.A.L.A.L.A.L.A.L.A.L.A.L.A.L.A.L.A.	19 DIMENSION RELATION PROFESSION CONTRACTION CONTRACTOR	RKHK4455 RRKR4185 RD004184	
23CAEA * FNISTBITYARELECTIVITYAEPREREATES24DO 10JULITAUNEREREATES25ND10JULITAUNEREREATES26FULUTIANEREREATESREREATES27RETULUTEATREREATESREREATES28R.GATINISREREATESREREATES29R.GATINISREREATESREREATES29R.GATINISREREATESREREATES29R.GATINISREREATESREREATES29R.GATINISREREATESREREATES20R.GATINISREREATESREREATES20R.GATINISREREATESREREATES20R.GATINISREREATESREREATES20REREATESREREATESREREATES21RATROUALS SET ON REALREREATES22RATROUALS SET ON REALREREATES23C27REREATESREREATES24C118REREATESREREATES25CREREATESREREATESREREATES26CREREATESREREATESREREATES27CCREREATESREREATES28CCREREATESREREATES29CCREREATESREREATES20CTOREREATESREREATES29CCREREATESREREATES20CTOREREATESREREATES20CTOREREATESREREATES20C <td< td=""><td>21 C REFLECTIVITY RHD</td><td>RRR4187</td><td></td></td<>	21 C REFLECTIVITY RHD	RRR4187	
2He (H) (H) (H) (H) (H) (H)2FUG (H) (H) (H) (H) (H)2FUG (H) (H) (H) (H) (H)2FUG (H) (H) (H)2FUG (H) (H) (H)2FUG (H) (H)3FUG (H) (H)4FUG (H) (H)3FUG (H) (H)4FUG (H) (H)4	23 C AREA / HETEGINITY 23 C AREA # FNISSIBITY/REFLECTIVITY AEP		
274EP (JU)=FACTR(JU)=FECTR(LU)=FECTR(LU)=FECTR(LU)=FECTR(LU)=FECTR(LU)=FECTR(LU)RERRA1952810CONTANGERERRA195RERRA1952912KWASALEUSAVRERRA195RERRA1952012KWASALEUSAVRERRA195RERRA195211010RERRA104RERRA1952311FE(K.FOLKHAX)GD TO 16RERRA197RERRA1972411PEGOLANICRERRA201RERRA203251516RERRA203RERRA203261018RERRA203RERRA203275219MTTIX AND INVERT FOR EACH CHARCTEISTIC GASRERRA203295210MTTIX AND INVERT FOR EACH CHARCTEISTIC GASRERRA203295210MTTIXRERRA203205210MTTIXRERRA203201314141420131414201414142014141420141414201414142014141421141414221414142314141424141414251414142614141427141414281414142914141420141			
29 CKKeGK NUMER29 CKKeGK NUMERKMARLERANKARRA19530 12KMARLERAN31 12KMARLERAN32 FALLERANRARA19933 FALLERANRARA19933 FALLERANRARA19934 FALLERANRARA19935 FALLERANRARA20135 GG TO 18RARA20136 GG TO 18RARA20137 C SET UP MATAL AND INVERT FIR EACH CHARACTEISTIC GAS38 FALLERANGE ABAUGE ABAATEISTIC GAS39 C DIAGONAL TERKS ADUGETO FOR AREAVERLECTIVITY TEAN40 C SILLAREALLASTANALLISTALALAL SOCI41 B42 C DIAGONAL TERKS ADUGINE43 C DIAGONAL TERKS ADUGINE44 C DIAGONAL TERKS ADUGINE AND FAUE45 C DIAGONAL TERKS ADUGINE AND FAUE46 C DIAGONAL TERKS ADUGINE AND FAUE47 C DIAGONAL TERKS CONTOLUTE48 C DIAGONAL TERKS CONTOLUTE49 C FUR NOTH INVERSE OF CUTAULE49 C FUR NOTH REALLAST49 C FUR NOTH EXITERSI SURFACE AND GAS VOLUTE49 C FUR NOTH EXITTERSI SURFACE AND GAS VOLUTE40 C FUR NOTH EXITTERSI SURFACE AND CAS VOLUTE40 C FUR NOTH EXITTERSI SUR		RARA193 RRR4193	
31D0 B0 Kaijkenax32FALL DESCURANTI-11- 3600133FALL RESCARAX/050 T0 1634KERK35GG T0 1836GG T0 1837C SET UP MATAL37C SET UP MATAL36C T0 1837C SET UP MATAL37C SET UP MATAL36C MATAL37C SET UP MATAL37C SET UP MATAL38C DIAGNAL39C DIAGNAL40LB41B42C ONTINE43C ONTINE44C NARAZOS45C ANTAL45C ANTAL46C ANTAL47C ONTINE47C ONTINE47C ONTINE47C ONTINE47C ONTINE47C ONTINE47C ONTINE48RARAZOS49C FUR NOTINE49C FUR NOTINE49C FUR NOTE49C FUR NOTE49C RARAZOS49C RARAZOS49C RARAZOS49C RARAZOS49C RARAZOS49C RARAZOS40C RARAZOS40C RARAZOS41C NORENO42C RARAZOS44RARAZOS45C RARAZOS46RARAZOS47C RARAZOS48RARAZOS49C RARAZOS49C RARAZOS		RRR4195 Berg4195	
33IF(K E0, KHAX)6D TD 16REREAJON34KKark13KKark355 ST UP MATUX AND INVERT FON EACH CHARACTEISTIC GASREREA201360 Kar13REREA201375 ST UP MATUX AND INVERT FON EACH CHARACTEISTIC GASREREA203360 IAGDIAL TERMS ADJUSTED FON AREA/WEFLECTIVITY TERMREREA204390 IAGDIAL TERMS ADJUSTED FON AREA/WEFLECTIVITY TERMREREA205390 IAGDIAL TERMS ADJUSTED FON AREA/WEFLECTIVITY TERMREREA205401800 0 = 1, NUMBERREREA20541800 0 = 1, NUMBERREREA207420 0 = 1, NUMBERREREA207REREA2074320 0 = 1, NUMBERREREA207REREA20744450 = 1, NUMBERREREA207450 = 1, NUMBERREREA207REREA207450 = 1, NUMBERREREA207REREA207460 = 1, NUMBERREREA207REREA207470 = 1, NUMBERREREA207REREA207480 = 1, NUMBERREREA207REREA207490 = 1, NUMBERSUMERT FOR EACHREREA213490 = 1, NUMBERSUMERT FOR EACHREREA213490 = 2, RUMERISTIC CASSUMERA213490 = 2, RUMERISTIC CASREREA213400 = 2, RUMERISTIC CASREREA213400 = 1, NUMERISTIC CASREREA213410 = 2, RUMERISTIC CASREREA213420 = 2, RUMERISTIC CASREREA213440 = 2, RUMERISTIC CAS <td>31 DD 80 K=1,KMAX</td> <td></td> <td></td>	31 DD 80 K=1,KMAX		
3566 T0 1836KK#436KK#437C ST UP ATAIX AND INVERT FIR EACH CHARACTEISTIC GAS38C MATAIX S=0 DIRECT INTERCHANGE AREA WITH39C DIAGNIAL TERMS ADUUSTED FOR AREAVER39C DIAGNIAL TERMS ADUUSTED FOR AREAVER39C DIAGNIAL TERMS ADUUSTED FOR AREAVER39C DIAGNIAL TERMS ADUUSTED FOR AREAVER40B41B42CALL REAULISSEMALLAKULAATILIS*J=1411 900143CALL REAULISSMALLAKULAATILIS*J=1411 900144CALL REAULISSMALLAKULAATILIS*J=1411 900145CALL REAULISSMALLAKULAATILIS*J=1411 900146CALL REAULISSMALLAKULAATILIS*J=1411 900147C DIALINAL48CALL REAULISSMALLAKULAATILIS*J=1411 900144CALL REAULISSMALLAKULAATILIS*J=1411 900145CALL REAULISSMALLAKULAATILIS*J=1411 900146CALL REAULISSMALLAKULAATILIS*J=1411 900147C DIALINAL48CALL REAULISSMALLAKULAATILIS*J=1411 900148CALL REAULISSMALLAKULAATILIS*J=1411 900149CALL REAULISSMALLAKULAATILIS*J=1411 900140CALL REAULISSMALLAKULAATILIS*J=1411 900144CALL REAULISSMALLAKULAATILIS*J=1411 900145CALL REAULISSMALLAKULAATILIS*J=1411 900146CALL REAULISSMALLAKULAATILIS*J=141147C DIALINUE48CALLARAZIL48CALLARAZIL49CALLARAZIL40CALLARAZIL41CHARAZIL42CALLARAZIL44 </td <td>33 IF(K.EQ.KMAX)GD TD 16</td> <td>RA:R4199 BB:: 0.2.00 BB:: 0.2.00</td> <td></td>	33 IF(K.EQ.KMAX)GD TD 16	RA:R4199 BB:: 0.2.00 BB:: 0.2.00	
37575704ATTAIX AND INVERT FIREACH CHARACTEISTIC GASRERAZOS386NATEL FEULALS S-S DIRECT INTERCHANGE AREA WITHRERAZOSRERAZOS39CDAGMAL TERN'S ADJUSTED FOR AREAVRETLECTIVITY TERMRERAZOS40CJASBALKANUSABA DI SURFACE BLOCKSRERAZOS41BUD 20 J=1,MSSBALKSURFACE BLOCKSRERAZOS41BUD 20 J=1,MSSBALKSURFACE BLOCKSRERAZOS42C CALL REAULLASSUMLARKHAAATIALS*J=141, 9001RRRAZOSRRRAZOS43ZO CONTINUERERAZOSRRRAZOS43ZO CONTINUERRRAZOSRRRAZOS44C UGTIALIARRRAZOSRRRAZOS45C GUTTAULERRRAZOSRRRAZOS46C CIMITAULERRRAZOSRRRAZOS47C USTIMILARKI STUCE IT CAN BE USEDRRRAZIZ49C FUR NOTH ENTTERSI SURFACE AND GAS VOLUME'RRRAZIZ49C FUR NOTH ENTTERSI SURFACE AND GAS VOLUME''5023KUDE=0RRRAZIS'5023KUDE=0'''5023KUDE=0'''5024SURFACE AREA AND GAS VOLUME''5023KUDE=0'''5024SURFACE AREA AND GAS VOLUME''5024SURFACE AREA AND GAS VOLUME''5024SURFACE AREA AND GAS VOLUME''5024 <td></td> <td></td> <td></td>			
39 C0 Idential Terws adjusted Function39 C0 Idential Terws adjusted Function40 C0 Idential Terws adjusted Function41 IB00 ZO42 Call Heading43 ZOCall Feaultassum(14 kkl) addial Statale 14 is 900;44 DO ZI Jule45 DO ZI Jule45 DO ZI Jule46 ZI46 ZI47 C49 C40 Full Feaultassum41 Statal Feaultassum42 DO ZI Jule44 DO ZI Jule45 DO ZI Jule45 CORTINUE46 ZI47 C48 CHARTENSTIT FOR EACH49 C40 CHARTENSTIT Case40 C41 C42 CHARTENSTIC Case44 C45 CHARTENSTIC Case46 C47 C48 CHARTENSTIC Case48 CHARTENSTIC Case49 C40 C40 C41 C41 C42 C44 C44 C45 C46 C47 C48 RAF421348 C49 C40 C40 C40 C41 C41 C42 C44 C44 C45 C46 C47 C48 RAF421348 RAF421348 RAF421348 RAF421348 RAF421449 C40 C40 C40 C40 C41 C41 C41 C42 C44 C<	37 C SET UP MATUIX AND INVERT FOR EACH CHARACTEISTIC GAS	RR86203	
4118UG20 J=1,MSS6LK42Call REAULIASSHHLJAKKIAAA(1415*J=14), 900;RRR42044320CUNTINUE44DI<21 JJ=1AASIR	39 C DIAGNAL TERES JUNEL IN FRIMERE ARTAVITY TERM 39 C DIAGNAL TERES ADJUSTED FOR AREA/REFECTIVITY TERM 16 Discripte of Subsact In Subsact Dires	RREA205 RREA205 BB224215	
4320CONTINUERARA42094421JJ=146URFRAR4210450021JJ=146URF45CONTINUERRR421045CONTINUERRR421146CRRR421247CUSTAIN INVERSE OF GUTGOING FLUX DENSITY FOR EACH47CUSTAIN INVERSE OF GUTGOING FLUX DENSITY FOR EACH47CUSTAIN INVERSE OF GUTGOING FLUX DENSITY FOR EACH47CUSTAIN INVERSE OF GUTGOING FLUX DENSITY FOR EACH48CCHARACTERISTIC CAS = SAVE SINCE IT CAN BE USED49CFUR HOTH ENTTERS( SURFACE AREA AND GAS VOLUME )40CRRR421540CRRR421540CRRR421540FURERRR421540CRRR4215	41 18 UD 20 Jel,NSSBLK 41 18 UD 20 Jel,NSSBLK 42 15 15 15 15 15 15 15 15 15 15 15 15 15	RRAK-207 RERE-207 RERE-207	
45 AA(JJJJJ)=AA(JJJJJ)=FACTR(JJ) 46 21 CQUTINUE 47 C UBTAIN INVERSE JF GUTGOING FLUX DENSITY FDR EACH 47 C UBTAIN INVERSE JF GUTGOING FLUX DENSITY FDR EACH 48 C CHARACTERISTIC CAS = SAVE SINCE IT CAM BE USED 49 C FUR NOTH EMITTERS( SURFACE AREA AND GAS VOLUME ) 50 23 KUDE=U 50 23 KUDE=U	43 20 CONTINUE 43 20 CONTINUE 43 20 DD 31 ALLE	RRR84209 R8884209	
40 21 COUTINUE 47 C UBTAIN INVERSE DE GUTOR FLUX DENSITY FOR EACH 48 C CHARACTERISTIC CAS == SAVE SINCE IT CAN BE USED 49 C FUR HOTH EMITTERS( SURFACE AREA AND GAS VOLUME ) - RRRR4215 50 23 KUDE=U MRR4215 50 23 KUDE=U MRR4215	42 DA (24-24-24-24-24-24-24-24-24-24-24-24-24-2	RRR4211	
49 C FUR HOTH EMITTERS (SURFACE AREA AND GAS VOLUME ) . RRRR4215 50 23 Kude=u Rrr4216 Brrr4216	47 C UBTAIN INVERSE OF OUTGOING FLUX DENSITY FOR EACH	RRR4212 RRR4213 Beeverst	
	49 C FUR NOTH EMITTERS( SURFACE AREA AND GAS VOLUME ) 50 23 Kude=0	RRRR4215 RRRR4215 RR884215	
			•

03/05/74 PAGE 0102	RRPR4217 RDSB4218	RRR4219 Deperator	RRRF4221 RBRR42221 RBR4272	RKRR4223 RBRR4224	RRR4225	XKRX42/0 XXCX4221 00000000000000000000000000000000000	RARR4229 RERR4230 REFEA230	KRRR4231 Representation	RR4R4233		RRFR4236 RRPR4237	RR.R4238	RRR4239 RRR4240	RRR4241 Bobb2223	RRRR4243 Brrs4243		RRAR4247 RRR4247 RRR4247	RRRR4249		RRAK4/04 RRAK4/03 D1002/03				RRRA4261 Beder4261	: RRKR4263	
A FORTRAM IV (VER L43) SOURCE LISTING! RRRR SUBROUTINE	51 CALL INVERT(HSURF, 60, AA, CC, KODE) 52 24 TE/VONE HE 10, 60 TO 31	53 WRITE(K2,29) 52 O COUNTYLITEOUDIC IN TUVEET)!!	55 STUP 56 STUP 57 DECLEDIVITES WITH SUB-AFE AS EMITTED	57 C DBTAINED BY MATRIX VECTOR MULTIPLICATION 57 C DBTAINED BY MATRIX VECTOR MULTIPLICATION 58 C MATBIY DBEVIDING MUVERS	59 C VECTUR NEGATIVIVE US S-S DIRECT INTERCHANGE	60 C AREA - EMISSIVITY OF ENTITER 61 C MSSBLK - NUMBER OF SURFACE TO SURFACE BLOCKS	63 CALL REAL(1)SSNH(JJKK)JBB(1)1) 900) 63 CALL REAL(1)SSNH(JJKK)JBB(1)1) 900) 64 UIJSER(1)1)	65 [F(J,EQ,NSSBLK)60 TO 33 65 JJM6X=15		69 34 DD 38 JJ=1,JAAX		72 BU(N: 11)=BB(N: 11)#ESURF(12)	73 36 CONTINUE 74 38 CONTINUE	75 CALL PZEPU(CC(1,1), 900)	77 DD 44 Nel, HSURF	79 CC [20, J, ]=CC [N, J, ]=AA(N, L, )#BB(L, J, J) 00 20 CC [20, J, ]=CC [N, J, ]=AA(N, L, )#BB(L, J, J, ]		83 CALL WRITE(1,SRSHM(J,KK),CC(1,1), 900)	· 85 C TEST TO SEE IF WE HAVE FINISHED THE CLEAR GAS		89 C RETELLUTION AN UN AN UN ANTIN CONTINUE DE LA CATION 89 C RETEINED BY MATKIX VECTOR RULLELLIARS IN SUKRAUE 80 C MATRIX DE EVILUEU CATION	91 C VECTOR NEGATIVE OF GAS DIRECTIONS 91 C VECTOR NEGATIVE OF GAS DIRECTINERCHANGE AREA	93 00 05 05 05 05 05 05 05 05 05 05 05 05	95 IF(J,EQ.456BLK)60 TD 52		99 54 CALL PZERD(CC(1,1), 900)

and the second

SUBRCUTINE     03/05/74     PAGE     0103       RRRR4269     RRRR4269       RRRR4269     RRRR4271       RRRR4271     RRRR4274       900)     RRRR4274       RRR84274     RRR84274	.ISTINGJ RRR SUBRUUTINE 03/05/74 PAGE 0103 RRRR4269 (A(N/L)*BB(LJJJ) RRR4269 RRR4271 RRR4273 (JJKK)JCC(1J1)5 900) RRR4273 RRR4275 RRR4275 RRR4275 RRR4275 RRR4275 RRR4277 RRR4777 RRR4277 RRR4277 RRR4777 RR87777 RR8777 R8777 R8777 R87777 R87777 R87777 R87777 R877777777
SUBRGUTTINE 03/05/74 PAGE 0103 RRRR4267 RRR4269 RRR4269 RRR4271 RRR4271 RRR4273 9001) RRR4273 RRR4277	JSTINGJ RRR. SUBRGUTINE 03/05/74 PAGE 0103 RRR4269 RRR4269 RRR4269 RRR4272 UJKKJJCC(11,1), 900) RRR4272 RRR4272 RRR4272 RRR4277 RRR4277 RRR4277 RRR4277 RRR4277 RRR4277 RRR4277
SUBRGUTINE 03/05/74	ISTINGA RARA SUBRGUTINE 03/05/74
SUBRGUTINE 900)	ISTINGI RRR SUBROUTINE A(N/L)*BB(LJJ) JJKK)JCC(1,11)J 900) CC(1,11)J 900)
	ISTINGA RARA A(NoL)#BB(LoJJ Jokk)oCC(1e1)0
/ (VER L43) SOURCE 1 DD 64 N=1,15URF CONTINUE	

A FORTRAN	IV (VER L43) SOURCE LISTING: INVERT SUBROUTINE 03	/05/74 PAGE 0104	
	SUBROUTINE INVERT (NEG,MAX,A,E,KERR) Real atmax,1),e(1)	INVE4278 INVE4279	
5	KERRaO Naeneo	INVE42BO INVE42BI	
5 10 5	ND 16 THIMMS	INVE4282 INVE4282	
	IF(Q.NE.0.0)60 T0 12	INVE4284	
<b>6</b> 101		INVE4285 INVE4286 INVE4286	
11	A(1, 1)#A(1, 1)/Q Contruit	INVE4288 110454288	
61	A(1,1)=1,/Q TE/T SC AN(CD TP SC	INVE4290	
51		. INVE4292 Tane2333	
61		INVE4294 INVE4294	
6.0	DO 14 JE12NN : ACK 11 EACK 12 - 13 ACK 11 EACK 12 - 13	INVE4296 INVE4296	
21 14	CONTINUE	INVE4298 INVE4298	
23 15	CONTINUE .	INVE4300	
25 20	00 24 L=2, NN		
22		INVE4303 INVE4304	
56		006430N1	
31 21			
6	00 22 MeK, 4N	INVE4310	
35 22			
37 24			
39	END	INVE4315	
		••	

A FORTMAN IV VER LAS) Souke LISTING A FORTMAN IV VER LAS) Souke LISTING A THEORY TO THE FUEL - FOR EACH CHARGERSTIC ALS A THEORY TO THE FUEL - MAIN - FEREA- A THEORY TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A THEORY - TO THE FUEL - MAIN - FEREA- A STREAM - TO THE FUEL - MAIN - FEREA- A STREAM - TO THE FUEL - MAIN - FEREA- A STREAM - TO THE FUEL - MAIN - FEREA- A STREAM - TO THE FUEL - MAIN - FEREA- A STREAM - TO THE FUEL - MAIN - TO THE ACT A STREAM - STREAM - TO THE FUEL - MAIN - TO THE ACT A STREAM - STREAM - MAIN - TO THE ACT A STREAM - STREAM - MAIN - TO THE ACT A STREAM - STREAM - MAIN - TO THE ACT A STREAM - STREAM - MAIN - TO THE ACT A STREAM - STREAM - TO THE ACT A STREAM - STREAM - MAIN - TO THE ACT A STREAM - STREAM - MAIN - STREAM - TO THE ACT A STREAM - TO THE ACT A STREAM - STREAM - TO THE ACT A STREAM - STREAM - TO THE ACT A STREAM - TO STREAM -				
1     Conditing 1717     TTTT9317       1     Conditing 1717     TTTT9318       1     Conditing 1717     TTTT9318       1     Conditing 1717     TTTT9318       1     A factor burder (Table 1.1000)     TTTT9312       1     A factor burder (Table 1.1000)     TTTT9312       1     A factor burder (Table 1.1000)     TTTT932       1     Condition 1.1000     TTT1932       1     Condition 1.1000     TTT1932       1     Condition 1.1000     TTT1932       1     Condition 1.1000     TTT1933       1     Condition 1.1	A FORTRAN	I IV (VER L43) SOURCE LISTING! 03/05/74	PAGE 0105	
1         COMMENT         THTT4510         THT74510           2         TARNEDY PRESS, FUCUE, MARCE MARCE         THT7421         THT7421           2         A TARNEDY PRESS, FUCUE, MARCE MARCE         THT7421         THT7421           2         A TARNEDY PRESS, FUCUE, MARCE MARCE         THT7421         THT7422           3         A MAL HOUT PRESS, FUCUE, MARCE         THT7422         THT7422           4         A MAL HOUT PRESS, FUCUE, MARCE         THT7422         THT7422           4         A MAL HOUT PRESS, FUCUE, MARCE         THT7422         THT7422           1         C. COMMONAZEDS SERVICE MARCE         THT7422         THT7422           1         C. COMMONAZEDS SERVICE MARCE         THT7422         THT7422           1         C. COMMONAZEDS SERVICE MARCE         THT7423         THT7423           1         C. COMMONAZEDS SERVICE MARCE         THT7424         THT7424           1         C. COMMONAZEDS SERVICE MARCE         THT7424         THT7424           1         C. COMMONAZEDS SERVICE MARCE         THT7424         THT7424           1         THT7424         THT7424         THT7424           1         C. COMMUNAZEDS SERVICE MARCE         THT7424         THT7424           1         THT7424 </td <td></td> <td>SUBROUTIME TITT Compute total Tateschange abea for fach charafteristic gas</td> <td>TTT4317 TTTT4318</td> <td></td>		SUBROUTIME TITT Compute total Tateschange abea for fach charafteristic gas	TTT4317 TTTT4318	
5     A TANIDER MERA-ALVA-MERA-ALVA-ALVA-ALVA-ALVA-ALVA-ALVA-ALVA-AL	m	COMMUN // DUMMY(3),KK, ICPOE, HCODE,	11114319	
7     A NEW, TOURS IN, MARS, FEILE, B     TTT 222       7     A NEW, TOURS IN, MARS, FARTE, FEILE, B     TTT 222       1     A NAY TY, TURS IN, MARS, MARS, MARS, INT 223     TTT 223       1     A NAY TY, TURS IN, MARS, MARS, MARS, MARS, INT 223     TTT 223       1     A NAY TY, TURS IN, MARS, MARS, MARS, MARS, MARS, INT 223     TTT 223       1     CUMMUNECTANT FUELT INT 224     TTT 223       1     CUMMUNECTANT FUELT INTERVIEWED AND AND AND AND AND AND AND AND AND AN	d ur	A TAVIS), VAREA, HAREA, XLX, XKI3), ACUEF(8,3), A THRIDC, DRFS, FILIET, FLLIPIS), XHWX, TSINK,	TTTT4320 TTTT4321	
7         A NESNEY, NISOLY, NI	••	A NCR. HDUTY. HTVAL. FRATE. KFUEL. XAIR. FTEMP.	11114322	
0         A R3 Tear, Ficher, Store History, Bicke, Store History, Bicke, Store History, Store	<b>P-</b> 00	A NSSBLK, NCSBLK, NSGBLK, HCGBLK, HSURF, NVDL, A yshrkyed, xn, vn, tipng, ncht, hedw, nxsyn,	TTTT4323 TTTT4324	
11         C. MARGE, SCHE, FCHE, SCHER, 2015, SCHME 2.915, SCHME	<u>م</u>	A RSTART, TCUDE, SCODE, NGRAY, JHCHC, A VI, V.S. PCEDICIO, TCEVICO, DEBWICKO, NDENT	TTT4325 TTTT2325	
<pre>13 CUMBNN_JUZZDYSKN(1994)SERVICE_01_0_3)_SGN(10_3)_SGN(10_4)_FTTT425 13 CUMBNN_JUZZDYSKN(1994)SERVICE_01_01_STTT4001 17 COMMUNITY_ENDER_ENDER_01_01_STTT401 17 COMMUNITY_ENDER_01_01_STTT401 17 COMMUNITY_ENDER_01_STTT401 17 COMMUNITY_ENDER_01_01_COMMUNITY_ENDER_01 17 COMMUNITY_ENDER_01_STTT401 17 COMMUNITY_ENDER_01_COMMUNITY_ENDER_00 17 COMMUNITY_ENDER_01_COMMUNITY_ENDER_00 17 COMMUNITY_ENDER_01_COMMUNITY_ENDER_01 17 COMMUNITY_ENDER_01_COMMUNITY_ENDER_01 17 COMMUNITY_ENDER_01_COMMUNITY_ENDER_01 17 COMMUNITY_ENDER_01_COMMUNITY_ENDER_01 17 COMMUNITY_ENDER_01_COMMUNITY_ENDER_01 17 COMMUNITY_ENDER_01_COMMUNITY_ENDER_01 17 COMMUNITY_ENDER_01 17 COMMUN</pre>	11		TTTT4227	
Image: Second	n n n	UNEVER SCUVESTANTIACUVE COM (8,3), CGMA(8,3), CGMA(8,3), SRSVM(8,4), CUMON/JAZZ3/SSVM(8,4), CSMA(8,3), SGMA(8,4), C	TTT4329	
1         COMMUNIZEGATIAN GULALIA         TITTA333           1         CumMUNZEGATIAN GULALIA         TITTA333           1         CumMUNZEGATIAN GULALIA         TITTA333           2         Cul PERCUTANIA         TITTA333           2         D 60 KALMAN         TITTA333           2         D 60 KALMAN         TITTA333           2         Cul PERCUTANIA         TITTA333           2         FUK-FGLAMMANGN - FD -         TITTA333           2         FUK-FGLAMMANGN - FD -         TITTA334           2         FUK-FGLAMMANGN - FD -         TITTA343           2         FUK-FGLAMMANGN - FD -         TITT344           2         FUK-FGLAMMANGN - FD -         TITT3443           2         FUK-FGLAMMANGN - FLAMANANANANANANANANANANANANANANANANANANA	5		11114330 111145321	and a second
15     C.MAL PAGENT     TITI 12335       19     C.MAL PAGENT     TITI 12335       21     DU BON PALYKUX     TITI 12335       22     R.MAL PAGENT     TITI 12335       23     R.MAL PAGENT     TITI 12335       24     R.MAL PAGENT     TITI 12335       25     C.MAL PAGENT     TITI 12335       25     C.MAL PAGENT     TITI 12335       26     MALTERTALINTING 555 REFLECTIVITY BY AEP OF THE RECEIVER     TITI 12334       27     C.MAL PAGENT     TITI 12334       28     M.MULTENTYING 555 REFLECTIVITY BY AEP OF THE RECEIVER     TITI 13343       29     M.MALTENTING     TITI 13343       20     C.MAL REALTLANLIALIALENALIANLIARIALIANS     TITI 13345       29     C.MAL REALTLANLIARIALIANS     TITI 13345       20     C.MAL REALTLANLIARIALIANS     TITI 13345       21     C.MAL REALTLANLIARIALIANS     TITI 1335       21     C.MAL REALTLANLIARIALIANS     TITI 1335       22     C.MAL REALTLANLIARIALIANS     TITI 1335       23     C.MAL REALTLANLIARIALIANS     TITI 1335	9-1-	<u>Сонмыл/SPCE3/AA1 60, 601,684 болі5).CC( 60,15)</u> Соммонисту/ FIXSC 66.4).71 бої	TTTT4332 TTTT4333	
19         CALL PZEO(FIXS(1)1)2240)         TTT [4335           21         00 60 K=1,KMX         TTT [4337           22         04 60 K=1,KMX         TTT [4337           23         05 60 K=1,KMX         TTT [4335           23         05 60 K=1,KMX         TTT [4335           24         05 Keat         TTT [4334           25         0 WATA PP TO-SUBSACE TOTAL INTERCHANCE AREA         TTT [4342           26         0 WATA PP TO-SUBSACE TOTAL INTERCHANCE AREA         TTT [4342           27         0 WATA PP TO-SUBSACE TOTAL INTERCHANCE AREA         TTT [4343           27         0 WATA PP TO-SUBSACE TOTAL INTERCHANCE AREA         TTT [4343           27         04 MATA PP TO-SUBSACE TO SURFACE BLOCKS         TTT [4344           28         04 MATA PP TO-SUBSACH AREA         TTT [4344           29         01 IN MATA INT INT INT INT [4349         TTT [4345           30         11 MATA INT INT [4449         TTT [4349           31         12 J = J INSCRUM (JJ KM JAALLJ J SALJ = J 41)         9001           32         CALL REATL J SSUM (JJ KM JAALLJ I SALJ = J 41)         9001           33         12 ALL REATL J SSUM (JJ KM JAALLJ I SALJ = J 41)         9001           33         13 ALL REATL J SSUM (JJ KM JAALLJ I SALJ = J 41)         9001	18	KKE GAS NUMBER 1951 UUSTEL UUT	1114334	
21         00 60 kaliken         11116337           23         Ktest, Maxida TB         11116342           23         Ktest, Maxida TB         11116342           23         Ktest, Maxida TB         11116342           24         Steam         11116342           25         C         Steam         11116342           27         C         Steam Serrerstructure         11116342           28         C         Steam Serrerstructure         11116344           29         C         Steam Serrerstructure         11116344           20         Steam Serererstructure         11116344 <td>61</td> <td>CALL PZERD(FIXS(1,1),240)</td> <td><b>TTTT</b>4335 TTTT4335</td> <td></td>	61	CALL PZERD(FIXS(1,1),240)	<b>TTTT</b> 4335 TTTT4335	
23         Ktek         11110330           23         Ktek         11110330           24         Ktek         11110330           25         SUBEACE TOTAL INFERMANCE ARA         11110332           26         SUBEACE TOTAL INFERMANCE ARA         11110332           27         C         BTAIN EFFLECTIVITY BY AEP OF THE RECEIVER         11110342           27         C         MARDER MULTELACTUVITY         BY AEP OF THE RECEIVER         11110342           27         C         MARDER MUSIER OF SUFFACE FLOCIVITY         BY AEP OF THE RECEIVER         11110342           28         C         MARDER MULTELACTUVITY         BY AEP OF THE RECEIVER         11110344           29         C         MARDER MULTELACTUVITY         BY AEP OF THE RECEIVER         11110344           29         C         MARDER MULTELACLEVITY         BY AEP OF THE RECEIVER         11110344           29         C         MARDER MULTELACTUVITY         TTTT032         11110326           29         D13         MARDER MULTELACLEVITY         TTTT032         11110326           29         D13         MARDER MULTELACLEVITY         TTTT032         11110326           29         D13         MARDER MULTELACLEVITY         TTTT032         11111032	21	00 60 K=1,KHAX	71174337	
28         KKee         TITT4340           26         C         SIEKACE TOTAL INTERCHANCE AREA         TITT4342           27         C         BIEKACE TOTAL INTERCHANCE AREA         TITT4342           28         C         BIEKACHANIARE OF SURFACE TO SURFACE BLOCKS         TITT4342           21         Call RESTOLATION DE SURFACE TO SURFACE BLOCKS         TITT4344           21         Call SECURATUSENDALL         TITT4344           23         L         Call SECURATUSENDALL         TITT4345           23         CALL RESULTANTIALITERLISTS POOL         TITT4345           24         D17 HALL         TITT4345           25         CALL RESULTANTALLISTS POOL         TITT4345           26         TALANISACLISTS POOL         TITT4345           27         TITT4345         TITT4345           28         DO 16 Lastras         TITT4350           29         TALANISACHASTANALLISTS POOL         TITT4350           20         DO 16 Lastastastastastastastastastastastastast	53		1114488	
26 C     SUBEGGE=TD=SUBEACE     TITT6345       27 C     01 10 VLTELYING     TITT6345       29 C     NSBULANUNBER DF     SUFACE BLOCKS     TITT6345       20 11 0 SEULANUNBER DF     SUFACE BLOCKS     TITT6345       20 11 0 SEULANUNBER DF     SUFACE BLOCKS     TITT6345       20 11 0 SEULANUNBER DF     SUFACE BLOCKS     TITT6345       21 0 12 PST0LAAULALEADALLALSADALALISED-141 9001     TITT6345       23 0 11 051 12 VALUE     TITT6345       24 0 11 Natureation     TITT6345       25 0 10 10 1=1.1.500F     TITT6355       26 0 11 Natureation     TITT6355       27 0 11 Natureation     TITT6355       28 0 10 10 1=1.1.500F     TITT6355       29 11 0 1=1.1.500F     TITT6355       20 11 1 Natureation     TITT6355       21 1 0 2011011     TITT6355       21 1 0 10 1=1.1.500F     TITT6355       21 1 0 10 10 10 10 10 05     TITT6355       21 1 0 10 10 10 10 10     TITT6355       21 1	25 8	<u>44 14 14</u> KKs4	TTTT4341	
27       C       DBTAIN BY MULTIPYING SAS REFLECTIVITY BY AEP OF THE RECEIVER       TTT1444         29       C       RESAURATIVE SASE REFLECTIVITY       TTT1444         29       C       RESAURATIVE SASE REFLECTIVITY       TTT1444         20       12       39.104AA(1)=13=40       TTT1444         31       D312       31.25       17.117445       TTT1444         32       CALL REACLISSERFLACTIVITY       BOOD       TTT1444       TTT1444         33       12       D17 Mailuster       TTT1444       TTT1444         33       12       CONTRUE       TTT1444       TTT1444         33       12       CONTRUE       TTT1444       TTT1444         33       12       CONTRUE       TTT1444       TTT1444         34       D1       17.11415       TTT1444       TTT1444         35       D0       10       17.11415       TTT14455         36       D1       17.11415       TTT14555       TTT14555         37       FIX5(NAK4)=FIX5(NAK1)=AA(1,0)       TTT14555       TTT14555         36       D1       11714555       TTT14555       TTT14555         37       FIX5(NAK4)=FIX5(NAK1)=FIX5(NAK1)=FIX5(NAK1)=FIX5(NAK1)=FIX5(NAK1)=FIX5(NAK1)=FIX5(NAK1)	29 29	SURFACE-TO-SURFACE TOTAL INTERCHANGE AREA	TTT14342	
29 C     NSSBLK-RUWHER OF SURFACE TO SURFACE BLOCKS     TTTT4345       30 10 12 PERCURANTIALY     TTTT4345       31 00 12 PERCURANTIALY     TTTT4345       33 12 CONTINUE     TTTT4345       33 12 CONTINUE     TTTT4345       33 12 CONTINUE     TTTT4345       34 12 SSUR     TTTT4345       35 00 16 L=1/ISSUR     TTTT4351       36 17 CONTINUE     TTTT4351       37 17 CONTINUE     TTTT4351       38 16 CONTINUE     TTTT4351       39 17 CONTINUE     TTTT4351       31 17 CONTINUE     TTTT4351       31 17 CONTINUE     TTTT4351       32 17 CONTINUE     TTTT4351       33 18 10 10 14 L=1/ISSBLK     TTTT4351       39 17 CONTINUE     TTTT4351       39 17 CONTINUE     TTTT4351       41 17 CALL ARTE(1JTSSIM(J)KK)JAA(IJJ154J=14) 900)     TTTT4355       42 17 CONTINUE     TTTT4355       41 17 CALL ARTE(1JTSSIM(J)KK)JAA(IJJ154J=14) 900)     TTTT4355       42 17 CONTINUE     TTTT4355       41 17 CALL ARTE(1JTSSIM(J)KK)JAA(IJJ154J=14) 900)     TTTT4355       42 17 CALL ARTE(1JATSSIM(J)KK)JAA(IJJ154J=14) 900)     TTTT4355       41 17 CALL ARTAJSSIM(J)KKJJAACE AS     TTTT4355       42 17 CONTINUE     CONTINUE       44 17 CASIL ARTAJSSIM(J)KKJJAACE AS     TTTT4355       45 17 ISSIM(J)KKJJA	27 C	OBTAIN BY MULTIPLYING S→S REFLECTIVIY BY AEP OF THE RECEIVER AFP=AFP¥FMISSIVITY/REFLECTIVITY	TTTT4343 TTTT4345	
31       0.11       11.14347         31       0.11       14.145804         32       CALL REACLISSEMM(JKK).AALLIJE*Jel41. 900)       11114340         33       12       CUNTINUE         33       12       CUNTINUE         34       ALLUNI ALLENTAREPLI       11114340         35       00       16       L=J.550K         37       FIXSINACLIPITAREPLI       11114352         38       16       CUNTINUE       11114352         39       17       CUNTINUE       11114352         39       17       11114352       11114352         39       17       11114352       11114352         31       CUNTINUE       11114352       11114355         31       CUNTINUE       11114354       141174355         31       CUNTINUE       11114355       11114355         40       CAL       RETECLOSTSSIM(JOKK)AALLON)       11114355         41       CAL       17114355       11114355         42       CENTINUE       FIELCISSIMORE AREA       11114355         43       CAS       11114355       11114356         44       CAS       11114356       11114356	29 C	NSSBLK=NUMBER DF SURFACE TO SURFACE BLOCKS	TTTT4345	
32     CALL REACLISESUMCLICKLIAACTICIESLIALS 9001     TITT4348       33     12     CUNTINUE       35     DD 16 L=1/-SURF     TITT4349       35     DD 16 L=1/-SURF     TITT4351       35     AALLANISACLIAULSERLU     TITT4351       36     AALLANISACLIAULSERLU     TITT4352       37     RIXSINAKY:=FIXS(NAK1+AA(LAN)     TITT4352       38     CUNTINUE     TITT4352       39     CONTINUE     TITT4352       31     CUNTINUE     TITT4352       39     CONTINUE     TITT4352       31     CUNTINUE     TITT4355       32     CONTINUE     TITT4355       33     CONTINUE     TITT4355       34     CONTINUE     TITT4355       41     CONTINUE     TITT4355       42     CONTINUE     TITT4355       43     CONTINUE     TITT4355       44     CONTINUE     TITT4355       45     CONTANANICO TO 65     TITT4365		DO 12 J=105SBLK	TTT4347	
33       12       CONTINUE         34       D0       11       H=1.4:SURF         35       D0       1       H=1.4:SURF         36       D1       1       H=1.4:SURF         37       FIX5(N)=AA(1_M)=AA(1_M)=AA(1_M)       TTT14350         37       FIX5(N)=KX1=KX1=KX1=KX1=KX1=KX1=KX1=KX1=KX1=KX1	32	CALL REAPCIJSRSNMCJJKKJJAA411215#J=14), 9001	TTT4348	
35       DD 16 L=1.450RF         36       AA(LAN)=AA(LAN)=AA(LAN)         37       FIXS(N,kK)=FIXS(N,kK)+AA(LAN)         31       FIXS(N,kK)=FIXS(N,kK)+AA(LAN)         31       FIXS(N,kK)=FIXS(N,kK)+AA(LAN)         37       FIXS(N,kK)=FIXS(N,kK)+AA(LAN)         39       17       CONTINUE         39       17       CONTINUE         41       CalL AFTE(L)TSSIM(J,KK)+AA(L)=900)       TTTT4355         42       19       CONTINUE         41       CALL AFTE(L)TSSIM(J,KK)+AA(L)=900)       TTTT4355         42       19       CONTINUE         41       CALL AFTE(L)TSSIM(J,KK)+AA(L)=900)       TTTT4356         42       19       CONTINUE         42       19       CONTINUE         44       CALL AFTE(L)TSSIM(J,KK)+AA(L)=19<900)	33 12	CONTINUE DD 17 N=1.1SURF	TTTT4349 TTTT4350	
37       FIXS(N,KK)=FIXS(N,KK)=AL(AN)         38       15       CUNTINUE         39       17       CUNTINUE         39       17       CONTINUE         39       17       CONTINUE         39       17       CONTINUE         40       10       19       J=124538LK         40       10       19       J=124538LK         40       11       1114356       TTTT4355         41       CALL *RITE(1)TSRIM(J,KK), AA(1,154,J=14), 900)       TTTT4356         42       CALL *RITE(1)TSRIM(J,KK), AA(1,154,J=14), 900)       TTTT4356         43       C       TEST TU       TTTT4356         43       C       THENCHARDARDED       TTTT4359         43       C       THENCHARDED       THE CLEAR GAS         43       C       THENCHARDED       TTTT4359         43       C       TTTT4359       TTTT4359         43       C       TTTT4350       TTTT4350         43       C       TTTT4350       TTTT4350         45       C       TTTT4350       TTTT4350         45       C       ACK CALANDE ARE AREADARD       TTTT4365         45       C       TTTT4365	58.	DD 16 LelevsURF	TTT4351 TTT74351	•
3816CUNTINUE39170017114355401019J=1.45Salk41Call wRTE(1.75Sim(J.kk).AA(1.15*J=14).900)171143564219CONTINUE171143564219CONTINUE1711435643CTEST TU SEE IF WE HAVE FINISHED THE CLEAR GAS1711435944CTHEH CUMPUTION IS FINISHED1711435945CTHEH CUMPUTION IS FINISHED1711435945CTHEH CUMPUTION IS FINISHED1711436945CTHEH CUMPUTION IS FINISHED1711436945CAS FICKED.KMAX)GU TO 631711436146CAS FICKETOVING GAS REFLECTIVITY BY AEP OF THE RECEIVER1711436348CMSGALK=NUMERE OF GAS TO SURFACE ALCOND1711436549CNSGALK=NUMERE OF GAS TO SURFACE ALCOND17114365	37	FIXS(NøKK)=FIXS(NøKK)+AA(LøN)	TTT4353	
39       17 <td< td=""><td>38.16</td><td>CONTINUE</td><td>11114354</td><td></td></td<>	38.16	CONTINUE	11114354	
41 CALL WRITE(1)TSSUM(J,KK),AA(1,15*J=14), 900) 42 19 CONTINUE 43 C TEST TJ SEE IF WE HAVE FINISHED THE CLEAR GAS 44 C THEN COMPUTION IS FINISHED 45 C TEST TJ SEE ANAX)GU TD 63 46 C GAS TD SURFACE TOTAL INTERCHANCE AREA 47 C DETAIN BY FULTIPLYING G=S REFLECTIVITY BY AEP OF THE RECEIVER TITT4363 48 C AEP V AREA*ENISSIVITY/REFLECTIVITY 49 C NSCALK=NUMERE OF GAS TD SURFACE BLICKS 49 C NSCALK=NUMERE OF GAS TD SURFACE BLICKS 49 C NSCALK=NUMERE OF GAS TD SURFACE BLICKS	11 6E		11114355 TTT4356	
4217111433843CTEST TU SEE IF WE HAVE FINISHED THE CLEAR GASTITT435944CTTT4450TTTT436045CIF(K.EO.KMAX)GU TU 6345CGAS TU SURFACE TOTAL INTERCHANCE AREA46CGAS TU SURFACE TOTAL INTERCHANCE AREA47CGAS TU SURFACE TOTAL INTERCHANCE AREA48CAEP V AREALLISTVITV GAS TU SURFACE BLOTIVITY49CNSCALK=NUMERE OF GAS TU SURFACE BLOCE	41	CALL ARITE(1. TSSIM(J.KK), AA(1. 15*J.14), 900)	TTT 4357	
45 C THEN COMPUTION IS FINISHED 45 21 IF(K.EQ.KMAX)GU TO 63 46 C GAS TO SURFACE TOTAL INTERCHANGE AREA 47 C DETAIN BY PULTIPLYING G=S REFLECTIVITY BY AEP OF THE RECEIVER 7 TITT4363 48 C AEP V AREA*ENLYEFLECTIVITY 49 C NSCALK=NUMERE OF GAS TO SURFACE BLOCKS 49 C NSCALK=NUMERE OF GAS TO SURFACE BLOCKS	43 64	TEST TU SEE IF WE HAVE FINISHED THE CLEAR GAS	TTT4359	
45 21 IF(K.EO.KMAX)CU TU 63 46 C CAS TO SURFACE TOTAL INTERCHANGE APEA 47 C D6TAIN BY MULTIPLYING G=S REFLECTIVITY BY AEP OF THE RECEIVER / TITI4363 48 C AEP V AREA¥ENISSIVITY/REFLECTIVITY 49 C NSGBLK=NUMERE OF GAS TO SURFACE BLOCKS		THEN COMPUTING IS FINISHED	TTT4360	
47 C DETAIN BY FULTPLYING GES REFLECTIVITY BY AEP OF THE RECEIVER TITT4363 48 C AEP V AREAMENISSIVITY/REFLECTIVITY 49 C NSCALK=NUMERE OF GAS IN SURFACE BLICKS	45 21	IF(K.EQ.KMAX)GU TO 63 Cas to sup-are total thtedrinance abea	TTTT4361 TTTT4362	
49 C NSCRIKeNURER OF GAS IN SURFACE BLICKS	44 44	DETAIN BY FULTIPLYING G_S REFLECTIVITY BY AEP OF THE RECEIVER : Aep v areamentsstvity/defictivity	TTT4363 TTTT4363	
	0 0 7 0 7 1	NSGBLKAMUMBER OF GAS TO SURFACE BLICKS	1114365	

PAGE 0106	TTT:4367	77174368	TTTT4369 TTTT4370	TTT4371 		TTTT4375 TTTT4375 TTTT4375	TTTT4377 TTTT4377	TTT4379	TTTT4281 TTTT4281 TTTT4281	TTTT4342 TTTT4343 TTTT4244	TTTT4385 TTTT4385	TTTT4387 TTTA248	11114389	11114391 11114391 111144391	TTTT4393 TTTT4393	TTTT4395 TTTT4395		TT114399 TTT14399	TTTT4401	TTT14403 TTT2403	TTT4405 TTT4405		TTTT4409 TTTT4409	TTT4411 TTTT4411 TTTT4411	TTTT4413
, FDATRAN IV (VER L43) SQURCE LISTING! TTT SUBRQUTINE 03/05/74	51 DD 22 JalansGBLK	52 CALL REAUCI, SRGNMCJ, KK), AA(1,15±J=14), 900)	53 22 CONTINUE 54 DA 25 Nei - NVAI	55 DO 24 LeleNSURF	57 24 CONTINUE	59 DO 27 J=1,415GaLK 40 CAIL WAITE/1,15G4H(J,4KK).AA(1,15=J=16). 900)	61 27 CONTRUE 43 F SUBEAFEJULEAS TOTAN INTEBRUANGE ABEA		65 C REGELERIN SURFACE IN CAS REDCKS 65 C REGELER DE SURFACE TU GAS BLOCKS 44 20 BLOCKS			71 AA(t,L)=AA(L,N) 72 AA(t,L)=AA(L,N)		75 12.11.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	77 C NVOL.61.NSURF 78 23 NSTART=1	79 LSTARTHIZ	BIC NSURF, GT, NVOL					91 DU 371-LalyNVQL	93 371 CLASTHUR STUDANTARILINU 93 371 CONTINUE 54 372 CONTINUE	95 DD 39 Jel/(GSBLK 95 DD 39 Jel/(GSBLK 96 CAL WRITE().TGSIM(I.VK).AA().15±1.14). 900)	97 39 CONTINUE

1 .

1.1.1     1.1.1	3     6.1     FIXEINANCA ESURCEANESSER[101/FIXE(0.064)     FITTAGE       3     6.11     FIXEINANCA ESURCEANESSER[101/FIXE(0.064)     FITTAGE       4     0.71     FIXEINANCA ESURCEANESSER[101/FIXE]     FIXEADE       5     0.71     FIXEINANCA ESURCEANESSER[101/FIXE]     FIXEADE       1     0.71     FIXEADE     FIXEADE       1     2     COLUMATICALINAL ESURCEANESSER[101/FIXEADE     FIXEADE       1     2     COLUMATICALINAL ESURCEANES     FIXEADE       1     2     FIXEADE     FIXEADE       1     2     FIXEADE     FIXEADE       2     2     FIXEADE     FIXEADE       2     2     FIXEADE     FIXEADE       2     2     FIXEADE        2	LUN JAAS	IV (VER L43) SUURCE LISTING! TITT SUBRUUTINE US/US/	74 PAGE 0108	
12         0.00         11111440           12         0.01         1111440           13         0.01         1111440           14         0.01         1111440           15         0.01         1111440           15         0.01         1111440           15         0.01         1111440           15         0.01         1111440           15         0.01         1111440           15         0.01         1111440           16         0.01         1111440           17         0.01         1111440           18         0.01         1111440           18         0.01         1111440           18         0.01         1111440           18         0.01         1111440           19         0.01         1111440           19         0.01         1111440           19         0.01         1111440           19         0.01         1111440           19         0.01         1111440           19         0.01         1111440           19         0.01         1111440           11         1111440 <td< td=""><td>1         10.44. FERGUOATILI 1. 5000         1111440           1         10.45. FERGUOATIL 1.159-1417         1111440           1         10.75. FERGUOATIL 1.159-1417         1111440           1         1111410         1111440           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441</td><td>151 67</td><td>F1XS(N,KK)=ESURF(N)+ASURF(N)/F1XS(N,KK) Cuntinue</td><td>11114467 11114467</td><td></td></td<>	1         10.44. FERGUOATILI 1. 5000         1111440           1         10.45. FERGUOATIL 1.159-1417         1111440           1         10.75. FERGUOATIL 1.159-1417         1111440           1         1111410         1111440           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441           1         1111441         1111441	151 67	F1XS(N,KK)=ESURF(N)+ASURF(N)/F1XS(N,KK) Cuntinue	11114467 11114467	
54     Contraction     Tittering       59     Contraction     Tittering       50     Tittering     Tittering       51     Tittering     Tittering       52     Tittering     Tittering       50     Tittering     Tittering       51     Tittering     Tittering       52     Tittering     Tittering       53     Tittering     Tittering       54     Tittering     Tittering       55     Tittering     Tittering       56     Tittering     Tittering       57     Titteri	4         Contract         Titrest           1	153	CAL PZERD(AA(1,1), 3600) DA AB 145564	TTTT4469 TTTT4400	
1     00     1     1111445       1     2     ALL     1111445       1     2     ALL     111445       2     ALL     111445     111444       2     ALL     111445     111444       2     ALL     111445     111444       2     ALL     111445     111444       2     ALL     111444     111444	1     1 <td>155</td> <td>CALL REAU(1,1555NH(J,0KK),0AA(1,15*J=14), 900)</td> <td>11114471 114471 114471</td> <td></td>	155	CALL REAU(1,1555NH(J,0KK),0AA(1,15*J=14), 900)	11114471 114471 114471	
1         1	9.     Attraction = 138 (1, web)     1111 (14)       1.7     COTTAINS     1111 (14)       1.8     COTTAINS     1111 (14)       1.9	157	00 12 Nel/PSURF	1111476 1111422 4422	
172     Continue       183     Continue       184     Continue       184     Continue       185     Continue       186     Continue       187     Continue       188     Continue	17     Contract     TTTTACH       18     Cont. write(LTSSNN(LAKL).Jar15-L4), 900)     TTTTACH       18     PART PRIVICAL SCALL PART SCALL     TTTTACH       18     PART PRIVICAL SCALL PART SCALL     TTTTACH       18     PART PRIVICAL SCALL PART SCALL PART SCALL PART SCALL PRIVICAL SCALL PART PART SCALL PART PART SCALL PART PART PART PART PART PART PART PART	159	A4(L,M)=AA(L,N)*F1XS(N,KK) CANTTONE	TTT4475 TTT4475	
103     Contraction     1111.441       103     Contraction     1111.441       104     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     14143     1111.441       105     1414     1111.441       117     1411.441     1111.441       117     1411.441     1111.441       117     1411.441     1111.441       117     1411.441     1111.441       117     1411.441     1111.441       117     1411.441     1111.441       117     1411.441     1111.441       117     1411.441     1111.441       117     1111.441     1111.441       117     1111.441     1111.441       1111.441     1111.441     1111.441       1111.441     11111.441     1111.441	32     Charlen fraging     1111449       103     Charlen fraging     1111448       104     All Fraging     1111448       105     All Fraging     1111448       105     Charlen fraging     1111448       106     Charlen fraging     1111449       107     Charlen fraging     1111449       107     Charlen fraging     1111449       107     Charlen fraging     1111449       107     Charlen fraging     1111449       108     Charlen fraging     1111449       109     Charlen fraging     1111449    <	161 72			
10.     11114401       10.     11114401       10.     11114401       10.     11114401       11.     14113       11.     14113       11.     14113       11.     14113       11.     14113       11.     14113       11.     14113       11.     14113       11.     14113       11.     1411       11.<	67         11114401         1111440           101         1111440         1111440           101         1111440         1111440           101         1111440         1111440           101         1111440         1111440           101         1111440         1111440           101         1111440         1111440           111         1111440         1111440           111         1111440         1111440           111         1111440         1111440           111         1111440         1111440           111         1111440         1111440           111         1111440         1111440           111         1111440         1111440           111         1111440         1111440           111         1111440         1111440           1111440         1111440         1111440           1111440         1111440         1111440           1111440         1111440         1111440           1111440         1111440         1111440           1111440         1111440         1111440           1111440         1111440         1111440           1111440	163	CALL #FITE(1, TSSWH(J, KK), AA(1, J*15+14), 900)		
10.     This will find the second of an analysis of the second of an analysis of the second of a sec	101     Finite Finite State 100, 100, 101, 101, 100, 101, 101, 100, 10	165	IF(NPRWT.E0.1) CD T0 74		
10.     7.11.3     111.14       11.1     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       12.     14.     111.14       13.     10.     111.14       14.     14.     111.14       14.     14.     14.       14.     14.     14.       14.     14.     14.       14.     14.     14.       14.     14.     14.       14.     14.     14.       14.     14.     14.       15.     14.     14.       14.     14.     14.       14.     14.     14.       15.     14.     14.       16.     14.     14.       17.     111.440       17.     1111.440       17.     1111.	0     Cuttany NGURF/NG	167 4001	FURMAT(1H1,19X,1SURFACE TO SURFACE TOTAL INTERCHANGE AREA	11114464 11210X21K 7114483	
111     111 <td>11     14     1471.452     1171.462       12     10     14.1100     171.460       13     10     14.1100     171.460       13     17     14.1100     171.460       13     17     14.1100     171.460       14     17     14.1100     171.460       17     14.1100     171.460     171.460       17     14.1100     171.460     171.460       18     171.1100     171.460     171.460       19     171.1100     171.460     171.460       10     71     14.1100     171.460       11     171.460     171.460     171.460       11     111.460     171.460     171.460       11     111.460     171.460     171.460       12     14.11     171.460     171.460       13     14.11     171.460     171.460       14     14.11     171.460     171.460       15     14.11     171.460     171.460       16     14.11     171.460     171.460       171.460     171.460     171.460       18     14.11     171.460       19     14.11     171.460       111.460     171.460     171.460</td> <td>169</td> <td>CALL PRINT(AA,NSURF) CALL PRINT(AA,NSURF)</td> <td>11144444 71772 71774</td> <td></td>	11     14     1471.452     1171.462       12     10     14.1100     171.460       13     10     14.1100     171.460       13     17     14.1100     171.460       13     17     14.1100     171.460       14     17     14.1100     171.460       17     14.1100     171.460     171.460       17     14.1100     171.460     171.460       18     171.1100     171.460     171.460       19     171.1100     171.460     171.460       10     71     14.1100     171.460       11     171.460     171.460     171.460       11     111.460     171.460     171.460       11     111.460     171.460     171.460       12     14.11     171.460     171.460       13     14.11     171.460     171.460       14     14.11     171.460     171.460       15     14.11     171.460     171.460       16     14.11     171.460     171.460       171.460     171.460     171.460       18     14.11     171.460       19     14.11     171.460       111.460     171.460     171.460	169	CALL PRINT(AA,NSURF) CALL PRINT(AA,NSURF)	11144444 71772 71774	
173     00 % Second     1111445       173     00 % Second     1111445       174     00 71 Second     1111445       175     00 71 Second     1111445       177     00 71 Second     1111445       177     00 71 Second     1111445       177     00 77 Second     1111445       178     00 71 Second     1111445       179     17     1111445       170     17     1111445       171     17     1111445       171     17     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     1111445       171     171145     111145       171     171145     111145       171     171145	17     00 Th Junicipity     000 Th Junicipity     000 Th Junicipity       17     00 Th Junicipity     00 Th Junicipity     000 Th Junicipity       17     00 Th Junicipity     1111449       18     00 Th Junicipity     1111449       19     00 Th Junicipity     1111449       19     00 Th Junicipity     1111449       10     01 Th Junicipity     1111449       11     01 Th Junicipity     1111449       12     01 Th Junicipity     1111449       13     12     11144       14     1111449     1111449       14     1111449     1111449       14     1111449     1111449       14     1111449     1111449       14     1111449     1111449       14     1111449     1111449       14     1111449     1111449       15     12     1111449	171 74	IF(K, EQ, KMAX)GO TD 99		
17     17     1711 <td< td=""><td>17     7     CONTINUE     1111449       17     00     7     1111449       17     00     7     1111449       17     00     7     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       18     00     1     1111449       19     01     1     1111490       11     1111490     1111490       11     1111490     1111490       19     01     1111490       11     1111490     1111490       11     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111440</td><td>173</td><td>CALL PZEHU(AA(1,21), 3600) DD 76 Jely1055LK</td><td>111 4489</td><td></td></td<>	17     7     CONTINUE     1111449       17     00     7     1111449       17     00     7     1111449       17     00     7     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       17     00     1     1111449       18     00     1     1111449       19     01     1     1111490       11     1111490     1111490       11     1111490     1111490       19     01     1111490       11     1111490     1111490       11     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111490       111     1111490     1111440	173	CALL PZEHU(AA(1,21), 3600) DD 76 Jely1055LK	111 4489	
177     177 <td>111         111<td>175 76</td><td>CALL READ(1,16SNH(4,KK),AA(1,15#4=14), 900) CONTINUE</td><td>16449111</td><td></td></td>	111         111 <td>175 76</td> <td>CALL READ(1,16SNH(4,KK),AA(1,15#4=14), 900) CONTINUE</td> <td>16449111</td> <td></td>	175 76	CALL READ(1,16SNH(4,KK),AA(1,15#4=14), 900) CONTINUE	16449111	
177     77     71111443       180     79     7111443       181     70     7111443       183     70     7111443       183     70     7111443       184     70     7111443       185     601     7111443       184     7111443     7111443       184     7111443     7111443       184     7111443     711145       184     7111443     711145       184     711145     711145       187     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       181     711145     711145       183     711145     711145       193     71145     711145       193     711145 <td>179     77     CONTINUE       179     77     CONTINUE       180     79     1711449       187     007     7111449       187     007     7111449       187     007     7111449       187     007     7111449       187     001     7111449       187     011     1111449       187     011     1111440       187     011     1111440       187     011     1111440       187     011     1111440       187     011     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       183     011     1111440       183     011     1111440       184     1111440     1111440       185     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     11111</td> <td>176</td> <td>00 78 (H11AVSURE 00 77 Lalanvol Aari - Alaasaansaa</td> <td>1114492 1114693 11114692</td> <td></td>	179     77     CONTINUE       179     77     CONTINUE       180     79     1711449       187     007     7111449       187     007     7111449       187     007     7111449       187     007     7111449       187     001     7111449       187     011     1111449       187     011     1111440       187     011     1111440       187     011     1111440       187     011     1111440       187     011     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       183     011     1111440       183     011     1111440       184     1111440     1111440       185     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     1111440     1111440       181     11111	176	00 78 (H11AVSURE 00 77 Lalanvol Aari - Alaasaansaa	1114492 1114693 11114692	
18.1     0.0     79.1%     11114497       18.7     Contraust     11114497       18.7     Contraust     11114499       18.7     Contraust     11114499       18.7     FELONBALLEC, 1)GO TA BO     11114499       18.7     FELONBALLEC, 1)GO TA BO     11114490       18.7     FELONBALLEC, 1)GO TA BO     11114490       18.7     FELONBALLEC, 1)GO TA BO     11114490       18.7     ALL     11114400       18.8     ALL     11114500       18.9     ALL     11114500       18.9     ALLALL     11114500       18.9     ALLALLAL     11114500       18.9     ALLALLALAL     11114500       18.9     ALLALLALAL     11114500       18.9     ALLALLALALALAL     11114500       18.9     ALLALALALALALALALALALALALALALALALALALA	10.     00.     11114497       10.     7     Cutture     11114491       10.     1114491     11114910       10.     11114491     11114910       10.     11114910     11114910       10.     11114910     11114910       10.     11114910     11114910       11.     11114910     111149	179 77			
18       79       CUVITIUE       11114499         18       15.400       NATTERCHART.FEL.116.0       NATTERCHART.FEL.116.0         18.400       NATTERCHART.FEL.116.0       NATTERCHARCE TO VOLUME TOTAL INTERCHARGE AREAL-LOX-LATTITASO         18.7       1.15       TITTASO         18.7       1.17       TITTASO         18.7       1.17       TITTASO         18.7       1.17       TITTASO         18.7       1.17       TITTASO         18.8       NOLONAREL       TITTASO         18.9       NOLONAREL       TITTASO         18.9       NOLONAREL       TITTASO         18.9       NOLONAREL       TITTASO         18.9       ANULNISS       TITTASO         18.9       ANULNISS       TITTASO         18.9       ANULNISS       TITTASO         19.9       TITTASO       TITTASO         19.8       CONTINUE       TITTASO         19.8       TITTASO<	183     79     CUNTINUE       104     TERMENT.L.     1111440       104     TERMENT.L.     1111400       104     TERMENT.L.     1111400       104     TERMENT.L.     1111400       105     ADIL FERRET.A.UNUL.N.L.     1111400       108     LOIL PERTITATION     1111400       108     LOIL PERTITATION     1111400       109     ADIL PERTITATION     1111400       109     Lanual     1111400       101     Lanual     1111400       103     SAVEANUL     1111400       104     1111400     1111400       105     ADILLALA     1111400       106     ADILLALA     1111400       107     ADILLALA     111	181	00 79 Jælj4(6/8LK 711 2017-1946/8LK		
185       A010       WRITE(W2-44011)KK         181       A011       FERMET(1)+1-9X-1SUBRACE TU VOLUME FUTAL INTERCHANGE AREAL-JOX, IK-11714502         181       1/11       PRIVELANSURE)         181       A11       PRIVELANSURE)         181       A11       PRIVELANSURE)         181       A11       PRIVELANSURE)         181       A11       PRIVELANSURE)         182       A11       PRIVELANSURE)         193       B0       NL = H1401.SCURE ANDL)         193       L2=N=1       TTT14503         193       A11       TTT14503         193       A11       TTT14503         193       A11       TTT14503         193       A11       TTT14503         194       L2=N=1       TTT14503         195       A11       TTT14513         195       A11       TTT14513         195       A11       TTT4513         195       M1       TTT4513         195       M1       TTT4513         195       M1       TTT4515         196       M1       TTT4515         197       M1       TTT4515         200       MSUBE.GTANDI	18       40.0       ARTE(K2:45011)KK       11114501         10       ARTE(K2:45011)KK       11114502         10       1.11       11114502         11       1.11       11114503         11       1.11       11114503         11       1.11       11114503         11       1.11       11114503         11       11114503       11114503         11       11114503       11114503         11       11114503       11114503         11       11114503       11114503         11       11114503       11114503         11       11114503       11114503         111       11114503       11114503         11114504       11114513       11114513         11114513       11114513       11114513         11114514       11114513       11114513         11114514       11114513       11114513         11114515       11114513       11114513         11114514       11114513       111145143         11114514       111145143       111145143	183 79	CONTINUE TEXNOBUT EC LICT TO BC	1114499 TTTA4690	
187     1,15)     11114503       188     CALI PELTIAAJUNUL NSUBEL     11114503       190     R0     NETINASUL       191     L2 = N1     11114503       193     L2 = N1     11114503       193     SAVE=AA(1), L1     11114503       194     R1     11114513       195     R1, N1=SAVE     11114513       197     R1     11114513       197     R1     11114513       197     R1     11114513       197     R1     11114513       198     R1     11114513       197     R1     11114513       198     R1     11114513       199     IFINUL-HISURF)83s870s84     11114515       200     NSUBE_GT_NUL     11114515	187     1,15)     1111500       188     1,15)     1111500       180     0,1-8110(.5,345,4001.)     1111500       191     0,5345,4001.0     1111500       193     0,2814.1     1111500       193     0,2814.1     1111500       193     0,2814.1     1111500       193     0,2814.1     1111500       194     1,2114.1     1111500       195     1,214.1     1111500       195     1,214.1     1111512       195     1,114.1     1111512       195     1,114.1     1111512       196     1,1114.1     1111512       197     1,114.512     11115514       198     1,114.512     11115514       199     1,114.512     11115514       199     1,114.512     11115514       199     1,1114.515     11115514       199     1,1114.515     11115514       199     1,1114.515     11114.515	185 4010	D WEITE(K2:4/01)XC	10571K=1114502	
189     80     NL=HIN0(SSURF, NUCL)       191     12.8N=1       192     12.8N=1       193     52.81=1.12       193     54.8=4.07       195     54.8=4.01       195     Ad(LAN)=SAVE       195     Ad(LAN)=SAVE       197     171745.09       198     CONTINUE       199     171745.13       199     171745.13       199     171745.13       199     171745.13       199     171745.13       199     171745.13       199     171745.13       199     171745.13       199     171745.13       199     171745.13       199     171745.13       199     171745.15       199     171745.15       199     171745.15       199     171745.15       199     171745.15	189     R0     NL=HINO(NSURF, NUCL)       191     U_2 = 2       192     U_2 = 1, 1, 2       193     L1 = 1, 1       193     SXVE=AA(1), 1)       193     SXVE=AA(1), 1)       193     SALU-N) = SAVE       194     TTT 4500       195     AA(L-N) = SAVE       197     B2       197     B2       197     CONTINUE       197     TTT 4510       197     TTT 4512       197     TTT 4513       197     TTT 4515	187	1.15     0.1 </td <td>5057111 5057111 5057111</td> <td></td>	5057111 5057111 5057111	
191       L2=N=1         193       524         193       500         194       541         195       541         193       541         194       7174509         195       541         195       541         195       541         195       541         195       7174512         195       7174512         196       1774512         197       1774513         198       1774515         199       1774515         198       1774515         199       1774515         199       1774515         200 C       NSUBF.GT.NVOL	191     L2=N+1       192     D0 81 L=1+12       193     SA(N=LAGA(1)-1)       194     A(N=LAGA(1)-1)       195     A(N=LAGA(1)-1)       195     A(L=N(1)-1)       195     A(L=N(1)-1)       195     A(L=N(1)-1)       195     TTT14510       195     TTT14512       197     TTT14512       198     N_M=1       198     N_M=1       198     TTT14513       199     TTT14513       199     TTT14513       199     TTT14514       199     TTT14515       199     TTT14515       200     NSURF.GT_NVOL	169 80	NL=HINO(NSURF,NVDL)	1114505 1114505	
193 5AVE=AA(IJL) 194 AA(L-1)=AA(I-L) 195 AA(L-1)=SAVE 195 B1 CONTIAUE 197 B2 CONTIAUE 197 B2 CONTIAUE 198 NJ=M(+) 199 TF(NVUL=FISURF)B3_BT0_84 199 TF(NVUL=FISURF)B3_BT0_84 101 FF(NVUL=FISURF)B3_BT0_84 101 FF(NVUL=FISURF)B3_FF(NVULFIFISURF)B3_FF(NVUL=FISURF)B3_FF(NVULFISURF)B3_FF(NVUL	193     5AFE=AA(1,1,1)       194     AX(1,4,1)       195     AX(1,4,1)       197     B1       197     B2       197     B2       198     TTT 4513       199     TTT 4513       199     TTT 4515       200 C     NSURE_GT_WORL	161		TTTT4507 TTTT4508	
195 AA(L-N)=SAVE 195 B1 CONTINUE 196 B1 CONTINUE 197 B2 CONTINUE 198 NI_ML+1 198 NI_ML+1 199 IF(NVUL+"SURF)83,870,84 199 IF(NVUL+"SURF)83,870,84 11714515 11714515 11714515 11714512 11714512 11714512 11714512	195 AA(L-M)=SAVE 196 B1 CONTINUE 197 B2 CONTINUE 197 B2 CONTINUE 197 B2 CONTINUE 198 NI-ML+1 199 IF(NVGL+*!SURF)B3,B70,B4 100 C MSURE.GT_NVOL 11114516	193		TTTT+509	
197 82 CDWTINUE 198 82 MZ-ML+1 199 IF(NVUL-#HSURF)83,870,84 200 C NSURF.GT.NVDL 200 C NSURF.GT.NVDL	197 82 CDMTINUE 198 M2-ML+1 199 IF(NVIL-#ISURF)83J870J84 200 C NSURF.GT.NVnL 200 C NSURF.GT.NVnL	195 195 81		TTT4512 TTT4512 TTT4612	
199 IF (NUCL #!SURF)83,870,84 200 C NSURF.GT.NVIL 200 C NSURF.GT.NVIL	199 IF (NVUL + N: SURF) 83, 870, 84 200 C NSURF. GT_NVOL 200 C NSURF. GT_NVOL	197 82			
		199 199 200 C	IF (NUCL=MSURF) 83, 870,84 NSURF.GT.NVDI	- 11114515 - 11114515 11114516	

	(ER 643) SOURCE LISTING1 TITT	SUBROUTINE 03/	\$174	PAGE 0109		
201 83 NST	TARTEL - ARTEL			TTT4517 TTT74518		
203 GU				TTT4519 TTT4519		
205 84 NST	1ARTEN2		.   .	1114521		
207 85 00	67 15 15 15 15 15 15 15 15 15 15 15 15 15			TTT4523		
209 AA(	(L,N)=AA(N,L)			TTT4525 TTT4525		
211 86 CON 212 87 CON				TTT4527 TTT4528		
213 870 PD	89 N#1,4VGL			TTT4529 TTT14520		
215 00	BO LELTYSURF			TTT453		.*
				TTTT4533		
219 00 220	90 JaljfiS68LK	-141- 8001		TTT4535		
221 90 (01	1 <b>1</b> 14UE			1114537		
223 4020 WRI	ITE (K2,4021)KK			1114539		
225 4021 FUR 225 1,15	30000000000000000000000000000000000000	TUTAL INTERCHANGE AN	4541 <b>91</b> 0X91	TTT4540		
227 - CAL	LL PRIVISION (1971) LL PRIVISION (1971) LL CANADAVIAN (1971)			TTTT4543 TTTT4543		
229 CAL	LL PZEKU(AA(1,1), 3600)					
231 CAL	LL READ (1) TGGWH ( J, KK) , AA ( 1) 15+J.	1006 -141.		TTT4547		
233 41 101 233 91 00	JUNNELS 10 10 10 10 10 10 10 10 10 10 10 10 10			71114549		
235 00 235 00 275	92 L=1,4V0L 77±AA41 -443			11114551 11114551 11114552		•
237 92 CON	4116UE 41609-7 (K) 277			TTT4553 TTT4553		
239 DO	93 LalskVCL 1 start NVCL			11114555 17774555		
241 93 CON	NTINUE ATTRIJE			TTT4557 TTTT4558	ne na sana ang ang ang ang ang ang ang ang ang	
243 DD 244 CAL	95 J=1,01666LK LL WRITE(1,TG60M(1,KK),AA(1,15%)	J=14), 900)		TTTT4559 TTTT4560		
245.95 CUN 246 IF(	NTINUE (NPRNT.EG.1)GD TO 9A			TTTT4561 TTTT4562		
247 4030 WR1	ITE(K2,4031)KK	TÚTAL TNYERÊUÂUANSE ARÊ		11114563		
249 1151				1114565		

·.

*.* .

	•			•					
A FURTRAN	IV (VER L43) S	UURCE LISTING	TTT	SUBROUTINE	03/03/74	PAGE 0110			
251 96	CONTINUE					77774567 77774567			
253	END	×				TTT4569			
		•							
			·						•
-									
									1
· · · · · · · · · · · · · · · · · · ·								-	
		•••							
									1
			•					•	
									1
					•				
									1
•	<b>.</b>								
•									
									· ·
					••		•		
					•				
				•					
					-				
				-			-		

ORTRAN IV (VER	L43) SOURCE LISTING; LOC	FUNCTION 03/05/74	PAGE OIII		
FUNCT	TON LUG (KIK)	NULL	LUC 4570		
	K GAS YOLUNE NUMBER N // NINMY/21.4/2 FODE. HCDDE		LOC 4572		
5 A TAUC	9) VAREA, HAREA, XLX, X(3), 9) VAREA, HAREA, XLX, X(3),	ACOEF(8,3), Teiny	LUC 4574		
7 A NCR	HOUTY, HTVAL, FRATE, KFUEL, X HOUTY, HTVAL, FRATE, KFUEL, X V. MCSHIK, NSCAKK, NGCOLK, NE	AIR, FTEMP,	LUC 4576		
A XSUR	FX(9), XO, YO, ZLENG, NCOL, NR 21, TEPDE, SEIDE, NEEAV, HEHE	DW NXSXN	LUC 4578		-
11 A K1,	K2, KCRU(10), TDEP(100), PEANC	200)	LDC 4590		
13 INTEG	EK SCUDE, TCUDE, RSTAKT, HCUDE	VTEST - A1 EA ( - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2	LDC 4582		
	3) (AX (120) (AY (120) +C( 60) )	x1. JX2. JY1. JY2	LUC 4584		
17 10 K#KIK	D756/1/11/14/54/14/5/			•	
	PZERU(BETA(1), 2) PZERU(BETA(1), 2)		LDC 4588		
21 CALL	PZEFD(DELT(1),3)		L0C 4590		-
23 C FOR 645 23 C JR	VELUNE OBTAIN POL NUMBER		LUC 4592		
25 C JR=0	COLUMN NUMBER		LDC 4593		
27 12 JREJR	(+) 		LUC 4596		
			Luc 4598		
31 C BULK FL	DW INVICIES		LUC 4600		
			LUC 4602		
35 C JY2	007 012-114(14001-11)-10		LUC 4604		-
	1+1×1				
39 JY2=K					
41 16 1F(JR 41 16 1F(JR 43 1F(JC	C. MALUE VE L ANU NALEMAKAANNILEN Kensing 21. Taking To 37.		LCC 4610		
43 C SURF VQ			LUC 4612		
49. NX1=2	24NC 5L+1		LDC 4614		
47 NV1=1 48 NV1=1			- LUC 4616	•	•
49 GO TU	] 61		LOC 4616		

A	FORTRAN	IV (VER L43) SUURCE LISTING, LDC	FUNCTION	03/05/74	PAGE 0112		
	51 5	IF (NXSXN, NE, 0) GO TO 31			LDC 4620		
	53 18				LOC 4622		
	55	NX284+1			LOC 4624		
·.	22.0				LUC 4626		
	26 16				LOC 4628		
	61	VI = V = V = V = V = V = V = V = V = V =			Lüc 4630 Lirc 4631		
	69				LUC 4632	-	
	65 65	60 70 101 161 70 101			LDC 4634		
	67 67 84	IF(JC.WE.1)6U TO 22			LUC 4635		
	69 C	SURR VOL VOL SURF 101=2#15CH +NROW			LDC 4638 LDC 4638		
	24	142=K+1 141=K=NC11			LDC 4640		
	13	HY2=NC0L+1			LOC 4642		
	75 22.	IF(JCEQ_NCRL)60 T0 24			LDC 4644		
	77 23 78 C				LUC 4646 LUC 4646		
	79	NX1=X=1 NX1=X=1 HX2=X+1			LDC 4648		
	18	NY1=KANCOL NY1=KANCOL NY2=UFO1 + JC			LOC 4650 LOC 4650		
	83 84 24	GD TU 201			LUC 4652 LUC 4652		
	, 85 C	Val SURF Val SURF			LDC 4654		•
	5 7 8 8 8				LUC 4656 LUC 4656		
	6.8	142=24NGCL 67 10 221			LUC 4658 LDC 4658		
	91 25	IF(JC.NE.1)6U TO 26			LOC 4660 1 rr 4641		
	93 C 94	SURF VDL VUL VOL NY1=2#%Cfil+18			LDC 4662 LDC 4663		
	95 95	NX2=K+1 NY1=K-HCF1			LDC 4664		
	7.0	NY2=K+NCAL GOTTO 301		•.	LOC 4666		
	99 26	IF(JC.NE.NCOL)GD TO 27	•	•	LDC 4668 LTC 4669		
	•						
	· · ·		-				
					-		

.

FORTRAN IV (VER 443) SOURCE LISTING: LOC FUNCTION	03/05/74 PAGE 0113	
101 C VOL SURF VOL VUL 102 Nx1=K-1	LOC 4670 LOC 4671	
103 NX2=2=NCGL+RRDH+JR	LDC 4672	
	LOC 4674 100 4674	
107 27 IF(NXSXN.NE.0)GD TD 31	LDC 4676 LDC 4676	
109 C VOL VOL VOL VAL	LOC 4678 LNC 4678	
111 XX2=K+1 121 XX2=K+1	LUC 4680	
115 C INTERMEDIATE SURFACE PRESENT 115 C INTERMEDIATE SURFACE PRESENT 114 C SUBSACE DU LEET STRE DE GAS UNITIME	100 4084	
117 C [all.018.13.018.15	LOC 4636 LOC 4636	
119 00 32 Jely/YX5XN 119 00 32 Jely/X5XN 1300 Telasyiyiyesyiyi ci ytestich to a2		
	106 4 6 9 0	
123 32 CONTINUE 123 32 CONTINUE		
125 33 1F(JR.NE.1)GU TO 34		
127 C SURF VOL SURF VOL 127 C SURF VOL SURF VOL	LDC 4696 - DT 4695	
129 NX2=K+1 129 NX2=K+1 130 NX2 - K	LDC 4698	
131 NY2#K+NCFL	LDC 4760	
133 34 1F(JR, NE, NROW) GD TD 35	LGC 4742 LDC 4742	
135 ( (?) VOL VOL VULLAU		
139 HY2=K+NCUL 140 50 50 50 50 50 50 50 50 50 50 50 50 50	100 4708 101 4708	
143 NA = NGR+15N#NRDW		
145 NY1=K=P.6(1	LDC 4714	
147 GT 341 147 GT 341 148 C SUREACE GUD STAF DE GAS VOLUME		
149 C L=10.0k.12.0R.14 150 41 XX=XX+X0		

191     10.4.5.4     10.4.5.4     10.4.5.4       191     10.4.5.4     10.4.5.4     10.4.5.4       191     11.4.5.4     10.4.5.4     10.4.5.4       191     11.4.5.4     10.4.5.4     10.4.5.4       191     11.4.5.4     10.4.5.4     10.4.5.4       191     11.4.5.4     10.4.5.4     10.4.5.4       191     11.4.5.4     10.4.5.4     10.4.5.4       191     10.4.5.4     10.4.5.4     10.4.5.4       191     10.4.5.4     10.4.5.4     10.4.5.4       191     10.4.5.4     10.4.5.4     10.4.5.4       191     10.4.5.4     10.4.5.4     10.4.5.4       191     10.4.5.4     10.4.5.4     10.4.5.4       191     10.4.5.4     10.4.5.4     10.4.5.4       191     10.4.5.4     10.4.5.4     10.4.5.4       191     10.5.4     10.4.5.4     10.4.5.4       191     10.5.4     10.4.5.4     10.4.5.4       191     10.5.4     10.4.5.4     10.4.5.4       191     10.5.4     10.4.5.4     10.4.5.4       191     10.5.4     10.4.5.4     10.4.5.4       191     10.5.4     10.4.5.4     10.4.5.4       191     10.5.4.5.4     10.4.5.4.5     10.4.5.4.5	A FORTRA	H IV (VER L43) SUURCE LISTING	LUC FUNCTION	03/03/74	PAGE 0114		
33         000000000000000000000000000000000000	151	00 42 JELARXXN			100 4720		
15     42     Contract     100     100     100       15     164     100     100     100     100       15     164     100     100     100     100       15     164     100     100     100     100       15     164     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100     100     100       15     100     100     100	153	<u>IF(AB5(XX=X5URFX(J)), 61, 775</u> NSN=J	51 10 43		LDC 4722 LDC 4722		
37         11:10:10:10:10:10:10:10:10:10:10:10:10:1	155 42						
59     43     164 a Mit 4.100 TD 4.4     100 4730       101     2015     9015     901       102     102 400     102 4730       103     104 500     102 4730       104     104 500     104 4730       105     104 500     104 4730       105     104 500     104 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     100 4730       105     104 703     1	157	IF(JR, EQ, NRDW)GD TO 23					
10.1     0.10,     50,4     0.01     50,4     0.01       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.11,     0.10,     0.10,     0.10,       10.1     0.11,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,     0.10,     0.10,       10.1     0.10,     0.10,	159 43	IF(JR.NE.1)GT TO 44			LOC 4728		
1000         1000         4734         1000         4734           100         4734         1000         4734         1000         4734           100         473         1000         4734         1000         4734           100         473         1000         4734         1000         4734           100         473         1000         4734         1000         4734           111         1000         4744         1000         4744         1000         4744           111         1000         4744         1000         4744         1000         4744           111         1000         4744         1000         4744         1000         4744           111         1000         4744         1000         4744         1000         4744           111         4100         4100         4100         1000         4744         1000         4744           111         4100         4100         4100         4100         4100         4100           111         4100         4100         4100         4100         4100         4100           111         4100         4100         4100 </td <td>161 C</td> <td>VOL SURF SURF VOL</td> <td></td> <td></td> <td></td> <td></td> <td></td>	161 C	VOL SURF SURF VOL					
Bit         Optimized (1)         Optimized (1) <thoptimized (1)<="" th="">         Optimized (1)</thoptimized>	163	NX2=NC+ (NSU=1)+NRUW+1					
100         4.0         100         4.35         100         4.35           100         5.00         100         4.35         100         4.35           111         10.2         10.2         4.40         100         4.35           112         10.2         10.2         4.40         100         4.42           113         10.2         10.2         4.42         100         4.42           113         10.2         10.2         4.42         100         4.42           113         10.2         10.2         4.42         100         4.42           113         10.2         10.2         4.42         100         4.42           114         10.2         4.44         100         4.44         100         4.44           114         10.2         4.44         100         4.44         100         4.44           117         10.2         4.44         100         4.44         100         4.44           117         10.2         4.44         100         4.44         100         4.44           117         10.2         4.44         100         4.44         100         4.44      <	165	NY28K+NC0L STT 24			LOC 4734		
100         C vol.         Vul.         Vul. <t< td=""><td>167 44</td><td>. IF(JR.60.NRDM)60 T0 45</td><td></td><td></td><td>LOC 4736</td><td></td><td></td></t<>	167 44	. IF(JR.60.NRDM)60 T0 45			LOC 4736		
171     100     474       173     100     474       173     100     474       175     0.0     100       175     0.0     100       177     0.0     100       177     0.0     100       177     0.0     100       177     0.0     100       177     100     476       177     100     476       179     100     476       179     100     476       179     100     476       170     100     476       181     0.00     476       181     0.00     476       181     0.00     476       181     0.00     476       181     0.00     476       182     0.00     476       183     0.00     476       184     100     476       185     100     476       186     100     476       187     100     476       188     100     476       189     110     471       180     100     478       181     100     478       182     100     478	169 C	Val SURF Val Val			LUC 4738		
173     (1/2 model)       174     (1/2 model)       175     (1/2 model)       176     (1/2 model)       177     (1/2 model)       181     (1/2 model)       182     (1/2 model)       183     (1/2 model)       184     (1/2 model)       185     (1/2 model)       181     (1/2 model)       182     (1/2 model)	171	NX2=104+(NS2=1)#NRD2+CR			LUC 4740		
17     41     41       17     41     41       17     41     41       17     41     41       17     41     41       17     41     41       18     41     100       19     41     100       10     41     100       11     41     100       11     41     100       11     41     100       11     41     100       11     41     100       11     41     100       11     41     100       11     41     100       11     41     100       11     41     41       12     41     41       13     41     41       14     41     41       15     41     41       16     41     41       17     41     41       18     41     41       19     41     41       10     41     41       11     41     41       12     41     41       13     41     41       14     41     41       1	173	HY2=K+NCUL GTTC32			LOC 4742		•
177     WX = K-1     LOC 4740       178     WY = MCH     LOC 4740       178     WY = MCH     LOC 4740       191     WY = MCH     LOC 4740       191     WY = MCH     LOC 4740       191     COUNTE LEAT TRANSER AND BULK FLOW TEANS     LOC 4740       191     COUNTE LEAT TRANSER AND BULK FLOW TEANS     LOC 4740       191     COUNTE LEAT TRANSER AND BULK FLOW TEANS     LOC 4740       193     FLAU     LOC 4740       194     H THE-HART(NNLL)-HWATS(NYLJ1)     LOC 4740       195     CC 471     LOC 4740       196     HTT=-HART(NNLL)-HWATS(NYLJ1)     LOC 4740       197     GC 471     LOC 4740       198     GT 471     LOC 4740       199     GT 4713-SCHTY(K×11)     LOC 4740       191     GT 4713-SCHTY(K×11)     LOC 4740       193     GT 4713-SCHTY(K×21)     LOC 4740       193     GT 4713-SCHTY(K×21)     LOC 4740       193     GT 4713-SCHTY(K×21)     LOC 4740       194     GT 4713-SCHTY(K×21)     LOC 4740	175 45	i Le14 Vai cube voi cibe			LDC 4744		
175     WYJERWICH, MARKEL, MYJERWICH, MYJERWICH, MYJERWICH, MYJERWICH, MZ       181     C. 00 TT J. C. 00 TT 20 4723       183     L. Luin, FLIAL TRANSER AND BULK FLOW TRANS     UCC 4723       184     L. MYLERKINK, J.J. HVATSIRYJJJ     UCC 4723       185     HYHC(HX1)XKD     UCC 4723       186     HYHC(HX1)XKD     UCC 4724       187     HT=HXHX     UCC 4724       188     HYHC(HX1)XKD     UCC 4724       189     GC 4714     UCC 4724       189     GC 4714     UCC 4724       189     GC 4714     UCC 4724       181     LECALD-CONKLATJ)     UCC 4724       182     ALEAL31-CONKLATJ)     UCC 4724       183     LECAL31-CONKLATJ)     UCC 4724       184     ALA123-CONKLATZ)HOLOKATV(KAJ)     UCC 4724       189     GC 4714     UCC 4724       181     ALA131-CONKLATZ)HOLOKATV(KAJ)     UCC 4724       183     ACHAKINZ2HOLOKATV(KAJ)     UCC 4724       184     ACHAKINZ2HOLOKATV(KZJ1)     UCC 4724       185     GC 4704     UCC 4704       187     GC 4704     UCC 4704       189     GC 4704     UCC 4704       189     GC 4704     UCC 4704       195     GC 4704     UCC 4704       196	177	NX1=K*1			LOC 4746		
181     CONTUNCT     100     4750       183     C.ONGUTE     Line     4751       184     H. HARL((KX11#V)     Line     4752       185     H.Yank((KX11#V)     Line     4754       186     H.Tankton     Line     4754       187     HTTENKATSINALD1     Line     4754       189     GZ     System (XI)X13+FV(TKAJ1)     Line     4754       189     GZ     System (XI)X12+FF(TV(KAJ1))+GX#TV(K)_J)     Line     4754       191     GL     GL     Tine     4754       192     SA     SA     Line     4754       193     SA     SA     Line     4754       193     SA     SA     Line     Line       193     SA     SA     Line     Line       194     SA     Line     Line     4756       195     SA     Line     Line     4756       193     SA	521						
185 C     Let     100 4732       184 H     HXHC(HX11 NK)     L0C 4735       185 HTT=HXKHX     HYHC(HX11 NK)     L0C 4755       187 HTT=HXKHX     L0C 4755       189 62 GXCHX11162_66.43     L0C 4756       189 62 GXCHX12116     L0C 4758       191 ALEA(2)=CMX(JX1) HVCTV(K+1)     L0C 4758       192 64 GTA(2)=-CMX(JX1) HVCTV(K+1)     L0C 4764       193 63 ALEA(2)=CMX(JX1) HVCTV(K+1)     L0C 4764       194 64 GTA(2)=-CMX(JX1) HVCTV(K+1)     L0C 4764       195 64 GTA(2)=-CMX(JX1) HVCTV(K_21)     L0C 4764       197 64 GTA(2)=-CMX(JX1) HVCTV(K_21)     L0C 4764       198 66 GTA(3)=-CMX(JX1) HVCTV(K_21)     L0C 4764       198 67 GXGHX(JX2) HVCTV(K_21)     L0C 4764       199 6	181 182 C	GO TO 321 Complete HEAT TRANSFER AND BUIL	K FLOW TERMS		LOC 4750 LDC 4750		
185       HY=HK:[HY11#XU         187       HT=HX#HS         187       HT=HX#HS         189       HT=HX#HS         181       HT=HX#HS         182       HT=HX#HS         189       CS         189       CS         189       CS         181       HT=HX#HS         182       MTE=HX=HS         189       CS         191       ALEAL2:ECK         192       ALEAL2:ECK         193       ALEAL2:ECK         194       ALEAL2:ECK         195       ALEAL2:ECK         195       ALEAL2:ECK         196       CTO: 40         197       ALEAL2:ECK         198       CS         197       CAMARIJ:ECF(TV(MZ_J1))         198       CS         199       CS         199       CS         191       CS         192       CAMARIJ:ECF(TV(MZ_J1))         193       CS         194       CS         195       CS         196       CTO: 4759         197       CS         198       CS         199<	183 C				LOC 4752		
187     HTT=-HX4T5(NA1_21)=HY4T5(NA1_21)       188     FECON(LY11)E02,66,63       189     62       180     GEGIN(LY11)E07,11)=FOT(TV(K_21))       180     GEGIN(LY11)E07,11)=FOT(TV(K_21))       181     FECON(LY11)E07,04,63       181     GEGIN(LY11)E07,04,63       181     GEGIN(LY11)E07,04,64       191     GT f1 (3)=-GHX(LY1)+HV(TV(K_31))       193     63       193     64       194     64       195     54       195     64       194     64       195     54       196     675       197     64       198     64       198     65       194     64       195     55       196     675       197     60       198     60       199     60       199     60       199     60       199     60       199     60       199     60       199     60       199     60       199     60       199     60       199     60       199     60       199     60       199	185	HYBHC (171)#XU			LOC 4754		
169     62     6x=61x(1)x(1)x(x-11)       190     ALEA27=CX       191     ALEA27=CX       191     ALEA27=CX       191     ALEA27=CX       192     60       193     63       194     64       195     65       195     65       195     65       195     65       195     67       196     106       197     61       198     60       199     65       191     106       195     65       196     106       197     60       198     60       199     65       198     106       198     60       199     65       198     106       199     107       199     65       191     106       192     107       193     106       194     106       195     106       197     107       198     106       199     106       191     106       192     107       193     107       194     106 </td <td>187</td> <td>HTT=+HX+TS(NX1,L)++TS(NY1</td> <td>11</td> <td></td> <td></td> <td></td> <td></td>	187	HTT=+HX+TS(NX1,L)++TS(NY1	11				
191     ALFAI3)=-GMX(JX1)+HV(FY(K,J1))+GX#TV(K,J1)       192     Gu T() 64       193     63       194     64       195     65       195     65       196     GX461(JZ2))+60       197     GA14(2)=-67       197     GA14(2)=-67       197     GA14(2)=-67       197     GA14(2)=-67       197     GA14(2)=-67       198     GU T() 67       199     66       199     60       199     60       199     60       199     60       190     60       191     4766       192     60       193     60       194     100       195     61       196     6769       197     100       198     60       199     60       199     60       100     4766       100     4766       101     4769       101     4769	190 62	C Gx=GHX(JX1)+CP(TV(K+1))			LUC 4758		
193       63       AIFA(13)=-GFX(JX1)*HV(FTEMP)         194       64       100       4762         195       65       GX=GHX(JX22)+GF(TV(MX2,11))       LUC       4764         197       GX=GHX(JX21)+GF(TV(MX2,11))=GX*TV(NX2,1))       LUC       4764         197       GATA(2)=GX       LUC       4764         197       GATA(2)=GX       LUC       4764         198       GO       TO       4765         199       66       TO       LUC       4766         198       GO       TO       4764         199       60       GX=GHX(JX2)+GP(TV(N_XZ+1))=GX*TV(N_XZ+1))       LUC       4766         199       60       GX=GHX(JX2)+GP(TV(K+1))       LUC       4766         200       GAHA(1)=-GX       LUC       4769       LUC       4769	191	ALFA(3)=-GMX(JX1)*HV(TV(K))	))+GX#TV(K#1)		LOC 4760		•
195 65 GX=GHX[J,X2]*GP(TV[NXZJ]) 196 GAMA(2)==GX 197 GAMA(2)==GX 198 GO TO 67 199 60 TO 67 199 60 GX=GHX[JX2)*GP(TV[N,Z2J]) =GX*TV[N_XZJ]) 199 60 GX=GHX[J]X2)*GP[TV[N_XZJ]) 200 GAMA(1)==GX 200 GAMA(1)==GX	194 64	ALFA(3)=-GFX(JX1)+HV(FTEMP)			LOC 4752 LOC 4752		
197 GATA(3)=GMX(JX2)*HV(TV(NX2,1))=GX*TV(NX2,1) , LOC 4766 198 GO TO 67 199 66 GX#GHX(JX2)#CP(TV(K,1)) 200 GAMA(1)=-GX 200 GAMA(1)=-GX	195 65	5 GX=GHX(JX2)+CP(TV(NX2,1)) CAMA(2)=-CV		•	LUC 4764		-
199 66 GX#GHX(JXZ)#CP(TV(K,1)) 200 GAMA(1)=-GX 6AMA(1)=-GX 10C 4768	197	GAHA(3)=GMX(JX2)+HV(TV(NX2)	1))=6x+TV(Nx2#1)	-	LDC 4766		
	199 66	5 GX#GHX(JX2)#CP(TV(K,1)) GAMA(1)==GX		•	LUC 4768 LUC 4768		
						-	
	•						
							<u>чр</u> .

GAMA(3)=GMX(1)X3)#UV(TV(X = ))=GX#TV(X = ))						
	Lac 4770 1 nc 4771					
GY=GHY(JYI)*CP(TV(K,1)) BETA(2)=GV	LGC 4772 LDC 4773					
8 ETA(3) = - GMY(JY1) + HV(TV(K, 1)) + GY + TV(K, 1) Gn Tu 70	LOC 4774 LDC 4775					
BETA(3)==GHY(JY1)=HY(FTENP) TETCHYL1Y2117.000=73	LDC 4776 LDC 4776					
GY=GMY(JY2)*CP(TV(NY2,1))	LDC 4778					
DELT(3)=6HY(JY2)*HV(TV(NY2,1))=6Y*TV(NY2,1)						
54 644 ( 4 7 2 ) # C P ( T V ( K > 1 ) ) D E I T · · · I = C V						
DELT(3)=+GMY(JY2)+HV(TV(K,1))-GY+TV(K,1) GR TR 900						
		-				
GX#GMX(JX1)#CP(TV(K>1))						
ALFALLITIN ALFA(3)==GHX(JX1)+HV(TV(K,1))+GX+TV(K,1)						
04 14 64 0.×60×(J×1)*CP(TV(NX1,J)) 1.5×1,1-+CV						
ALFA(3)=-GMX(JX1)+HV(TV(NX101))+GX+TV(NX101) Letonv(1x2)/85-87-84	LDC 4795					
GX=GGAX(JX2)+CP(TV(NX2,1))	LUC 4798					
GAMAI≤1==+×× GAMAI≤1==6×× Cate ()=GM×(JX2)*HV(TV(NX2,1))=GX*TV(NX2,1)						
GX = GHX ( 3 X 2 ) * C P ( T V (K J 1 ) ) G X = GHX ( 3 X 2 ) * C P ( T V (K J 1 ) ) G A X A ( 1 ) =						
GAMA(3)=6MX(JX2)#HV(TV(K#1))=GX#TV(K#1) THT/CXV1/141-0H0						
GY=GNY(JY1)*CP(TV(K,1)) BETA(S)CV						
BETA(3)=-GHY(JY1)+HV(TV(K,1))+GY+TV(K,1)	LUC 4808 - Do 4808					
RETA(3)=-GNY(JY1)#HV(FTENP)						
1+104+14+21+44949442 64=64*(1/2)*66(TV(UY2s1))						
DELT(3)=GMY(JV2)*HV(TV(NV2,1))=GY#TV(NY2,1) Gr tr coo						
GV=GMY(JY2)*CP(TV(K,1)) Deit()*==CV	LOC 4816					
DELT(3)=+GrY(JY2)#HV(TV(K,1))~GY#TV(K,1) GO _O GOG						
4	OR TRAN	IV (VER L43) SUURCE LISTING! LOC FUNCTION	03/05/14	PAGE OIIG	•	
--------------	--------------------	--	--	-----------------------	---	---
~	51 C			LOC 4820		
	53			LUC 4822		
1	54	HTRAHXaHY	~	100 4823		
~ (	52	HTTE-HX#TS(NX2)1)HY#TS(NY1)1)		LUC 4824		•
	157 102	GX_GMX(JX1)+CC+104+104 GX_GMX(JX1)+CP(TV(K+1))		LOC 4826		
1	58	ALEA(2)=CX		100 4827		
20	259 160	ALFA(3)=-GHX(JX1)+HV(TV(Kj1))+GX*TV(Kj1) Gn T11,104	•	LUC 4828 1 nc 4829		
	103	GX=GHX(JXI)+CP(TV(NXI,1))		L0C 4830		
	163	ALFA(3)=-6%X(JXL)+HV(TV(HXL,1))+6%+TV(NXL,1) ALFA(3)=-6%X(JXL)+HV(TV(HXL,1))+6%+TV(NXL,1)		LDC 4832		
	102 102	<u>Г ( сих ( их ) 1055 1075105</u> бама ( 3 )= GMX ( JX2 ) *HV ( F ТЕМР )		LDC 4634		
	266 267 106	68 TU 107 6x=64x(Jx2)*CP(TV(K,1))		LOC 4835		
	108	CAMARIANET I I I I I		100 4837		
	269	GA <sup>H</sup> A(3)=GHX(JX2)#HV(TV(K,1))=GX#TV(K,1) Te.GIV:VIV:		LOC 4838		
	11 108	GY=GHY(JY1)+CP(TV(K,1))		LDC 4840		
	12	DETA(2)=GY		LOC 4841		
6 <b>1</b> 6	273 276	BETA(3)=-GNY(JYL)4HV(TV(K,1))+GY+TV(K,1) CD		LUC 4842		•
	275 109	BETA(3) =- GHY(JYL) +HV(FTEMP)				
	276 116 277 111	IF(GMY(JY2))111,999,112 GY≈GMY(JY2)#CP(TV(NY2,1))		LDC 4845		
	278	DELT(2)seGY		LDC 4847		
cu (	279 280	DELT(3)=6MY(JY2)4HV(TV(NY2,1))=6Y#TV(NY2,1) 6n Tn 949		LDC 4848 LDC 4849		
	281 112	GY=GNY(JY2)+CP(TV(K,1))		L0C 4850		
	283	DELT(3)=+GMY(JY2)+HV(TV(K,1))=GY+TV(K,1)				
	285 C			- DC 4854		
	287 288	TTTETTETT         TTTETTETT           TTTETTETS         1.01		LUC 4856		193. 197
	289 122	GX=GHX(JX1)+GP(TV(K)1))		LDC 4858		
	162	ALFA(3)==GHX(JX1)#HV(TV(K,1))+GX#TV(K,1)	والمراجع المراجع		s An Andrew Stand Barran and Andrew Stand and an	a de la companya de l
	293 121	GD-TU 124 ALFA(3)==GHX(JX1)+HV(FTEHP)				
	295 129	IF(GMX(JX2))125,127,126 GX=GMX(JX2)+CP(TV(NX2,1))		LUC 4864		
	296	GA!!A{2}=GX		LDC 4865		
	297 298	GAMA(3)=GMx(Jx2)#HV(TV(Nx2)])=Gx#TV(Nx2)]) 60 T0 127	-	LDC 4866 LDC 4867		
	299 126	GX=6HX(JX2)+CP(TV(K,L))	•	LOC 4868		•
				2006 1111		

ť,

	11 JULE 1.01 FRUDER LOCATING. LDF - EUNOTORU	DACE	
A FUNIANA	th they for anothe fisiting the resting Optical to	TAUC ULL	
301 127	GAMA(3)#GMX(JX2)#HV(TV(K#1))=GX#TV(K#1) If/GMY(JY1)1128+130+129	LDC 4870 LDC 4871	•
303 128	GY=GMY(JYI)+CP(TV(K#1)) BetA/0)=+CV	LOC 4872	
305	BETA(3)==GNY(JY1)=HV(TV(K_1))+GY=TV(K_1) 60 to '30		
307 129	GY=GMY(JY1)+CP(TV(NY1,1)) GY=GMY(JY1)+CP(TV(NY1,1))		
309. 10, 130	BETA(3)=-684(JY1)#HV(TV(841,1))+54#TV(NY1,1) fering(2)=-684(JY1)#HV(TV(841,1))+54#TV(NY1,1) fering(2)=-684(JY1)=-688-133	LOC 4878 - 00 4878 - 01 4878	
161 116	GY=GHY(JYZ)*CP(TV(NYZ#1)) Del T/2)*CP(TV(NYZ#1))		
313	DELT(3)=6MY(JY2)#HV(TV(NY2,1))m6Y#TV(NY2,1) 60 to 930		
315 132	GV=GMY(JY2)¢CP(TV(K,1)) 551+7+1-7	LUC 4854	
317	DELT(3)=+GHY(JV2)+HV(TV(K_J1))=GY+TV(K_J1) GC +C GOODELT(3)=+GHY(JV(TV(K_J1))=GY+TV(K_J1)		
319 5			
321 321	HTT=0.0 TE(GUX(.X1))142-144.143	LDC 4890 LDC 4851	
323 142	GX=GHX{JX]}=CP(TV(K,1))	LOC 4892	
100 100 100 100 100 100 100 100 100 100	ALF4(3)==64X(JX1)+HV(TV(K,1))+6X+TV(K,1)		
327 143	GX=GHX(JX1)*CP(TV(NX1,1))		
329	ALFA(1) = 64X(JX1)+HV(TV(NX1,1))+6X+TV(NX1,1) TE/CHX/1Y2/1/2/1/2/1/6/1/2/1/6		
391 145 222	GX#G4X(JX2)#CP(TV(NX2,1)) GX#G4X(JX2)#CP(TV(NX2,1))		
295 295 295	64H4(3)=CHX(JX2)+HV(TV(NX2+1))=6X+TV(NX2+1) 60 to 1.4	LOC 4902	
-335 146	GX=GHX(JX2)+CP(TV(K,1)) CANAX:)-CC		-
337	GAMA(1)=GAV(JX2)*HV(TV(K,1))=GX#TV(K,1) tercavilian(JX2)*HV(TV(K,1))=GX#TV(K,1)		
339 148	GY=GAY(JY1)+CP(TV(K,1)) Betaroiato		
341 196	RETAILS)=-GHY(JY1)+HV(TV(K,1))+GY+TV(K,1) GO TO 150		
343 149	GY=GNY{JY1)=CP{TV{NY1,1}}		
345 345 150	8ETA(3)=-GHY(JY1)*HV(TV(NY1,1))+GY*TV(NY1,1) Teichviivaiii:000,152	LOC 4914	
151 74E	GV=GHY(JY2)+CP(TV(NY2,1))		
349	DELT(3)=5MY(JY2)*HV(TV(NY2,1))#6Y4TV(NY2,1) 60 t0 999	LDC 4918 1 0C 4919	•
			- -

Ŧ

•

-----

-

A faffara IV vice (143) Societ (157) Fortu(11)-Grenv(r,1) (157) (1				
33.1.12     Operative (V)	A FURTRAN	IV (VER L43) SOURCE LISTING! LOC FUNCTION	03/05/74	PAGE 0118
333         Indiction exerts         Los         Constraints         Los         <	351 152	GY4GHY(JY2)+CP(TV(K,1)) Dei t(1)=-CV		LDC 4920
335     14.     Left     100     4000       335     14.     Left     100     4000       335     14.     Left     100     4000       335     13.     100     4000     4000       335     13.     100     4000     4000       335     13.     100     4000     4000       335     14.     100     4000     4000       335     10.     4000     4000     4000       335     10.     4000     4000     4000       335     10.     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000     4000       335     4000     4000     4000 <td< td=""><th>353. 356</th><td>DELT(3)=+GHY(JY2)+HV(TV(K,1))-GY+TV(K,1) GD TT 999</td><td></td><td>Lac 4922 I nr 4923</td></td<>	353. 356	DELT(3)=+GHY(JY2)+HV(TV(K,1))-GY+TV(K,1) GD TT 999		Lac 4922 I nr 4923
857     INTENTIFICATION     ICC 4000       819     125     CACOMMUNICATION (111)     ICC 4000       810     120     CACOMMUNICATION (111)     ICC 4000       811     120     CACOMMUNICATION (111)     ICC 4000       811     120     CACOMMUNICATION (111)     ICC 4000       812     ALANDA CACOMMUNICATION (111)     ICC 4000       813     ALANDA CACOMMUNICATION (111)     ICC 4000       814     ALANDA CACOMMUNICATION (111)     ICC 4000       815     ALANDA CACOMMUNICATION (111)     ICC 4000       816     ALANDA CACOMMUNICATION (111)     ICC 4000       817     ICC 4000     ICC 4000       818     ICC 4000     ICC 4000       819     ICC 4000     ICC 4000       811     ICC 4000     ICC 4000       812     ICC 4000     ICC 4000       813     ICC 4000     ICC 4000       814     ICC 4000     ICC 4000	355 C	La6 41		
959     162     0.00000000000000000000000000000000000	357	HTEHTETCOLOGY		100 4926
101         104         105         005         106         005           103         104         105         105         105         105         105           103         104         105         105         105         105         105         105           104         105	359 162	GX=GHX(LX1)+CP(TV(K)1))		LDC 4923
555     165 <th>361</th> <td>ALF4(2)=-GXX(JX1)+HV(TV(K,1))+GX+TV(K,1) ALF4(3)=-GXX(JX1)+HV(TV(K,1))+GX+TV(K,1)</td> <td></td> <td></td>	361	ALF4(2)=-GXX(JX1)+HV(TV(K,1))+GX+TV(K,1) ALF4(3)=-GXX(JX1)+HV(TV(K,1))+GX+TV(K,1)		
Model         Model <th< td=""><th>363 163</th><td>GX = GHX [JX1)*CP(TV(NX1,1))</td><td></td><td>LUC 4932 I DC 4932</td></th<>	363 163	GX = GHX [JX1)*CP(TV(NX1,1))		LUC 4932 I DC 4932
307         150         66/46/39, GANGLARD NAVI/FEPP1         100         633           310         100         100         633         100         633           311         100         100         633         100         633           311         100         100         633         100         633           311         100         100         633         100         633           311         100         100         633         100         633           311         100         100         633         100         633           311         100         100         633         100         100         633           311         100         100         633         100         100         633           311         100         100         100         632         100         100         633           311         100         100         100         100         633         100         100         633           311         100         100         100         100         633         100         100         633           311         100         100         100 </td <th>365</th> <td>ALFA(3)==GFX(JXI)*HV(TV(IXI)))+GX#TV(NXI)]</td> <td></td> <td>LOC 4934</td>	365	ALFA(3)==GFX(JXI)*HV(TV(IXI)))+GX#TV(NXI)]		LOC 4934
300     100     6456       311     Constation (Vor(L1))-Construct)     100       311     Frequenting (Vor(L1))-Construct)     100       312     100     6440       313     100     6440       314     Frequenting (Vor(L1))-Construct)     100       315     100     6440       315     100     6440       315     100     6440       315     100     6440       317     100     6440       318     111     100       319     111     100       311     111     100       311     111     100       311     111     100       312     111     111       313     111     111       311     111     111       312     111     111       313     111     111       314     111     111       315     111     111       316     111     111       317     111     111       318     111     111       319     111     111       311     111     111       312     111     111       313     1111	367 165	5446(3)= GMX(JX2)#HV(FTEPP)		
311     FERMI35 = CANTURED = MUTURA1D = GATUNA1D     1000     4400       313     160     FERMI35 = CANTURED = MUTURA1D = GATUNA1D     1000     4400       313     161     FERMI3 = CANTURED = MUTURA1D     1000     4400       313     161     FERMI3 = CANTURED = MUTURA1D     1000     4400       313     161     1001     4400     4400       314     1001     1000     4400     4400       315     111     1000     4400     4400       311     111     1000     4400     4400       311     111     1000     4400     4400       311     111     1000     4400     4400       311     111     1000     4400     4400       311     111     1000     4400     4400       312     111     1000     4400     4400       313     111     1000     4400     4400       314     111     1000     4400     4400       315     111     1000     4400     4400       318     1111     1000     4400     4400       318     1111     1000     4400     4400       318     1111     1000     4400 <t< td=""><th>369 166</th><td>GX=GMX(JX2)+CP(TV(K)1))</td><td></td><td>L0C 4938</td></t<>	369 166	GX=GMX(JX2)+CP(TV(K)1))		L0C 4938
775     164     674-6871/3711.567174/34.113     106     589-6       773     169     674-6871/34.113     106     589-6       773     169     674-6871/34.113     106     589-6       773     169     674-6871/34.113     106     589-6       773     173     169     674-671/34.113     106     589-6       773     173     173     166     679-6       773     173     173     107     599-6       774     173     173     107     599-6       775     774     173     107     599-6       775     774     107     599-6     107       775     774     107     599-6     107       775     774     107     599-6     107       775     774     107     599-6     107       775     774     107     599-6     107       775     774     107     599-6     107       775     774     107     599-6     107       775     774     107     599-6     107       775     774     107     599-7     107       775     774     107     599-7     107       775	1/5	GAPA(3)=CHX(JX2)+HV(TV(K#1))=GX#TV(K#1)		
373     567.0.5     56.0.4       377     169     67.0.5       377     169     67.0.5       377     169     67.0.5       371     169     67.0.5       373     161.0.5     100       374     169     67.0.5       373     161.0.5     100       383     171.0     07.0.5       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       383     172     100       384     187     100       385     187     100       384     187     100       385     187     100       384     187     100       385     187     100       386     187     100       384     187        384     187 <th>373 168</th> <td>L+ (CMY(4Y1)+COA) + (V)+COA GY = CMY(4Y1)+CP(TV(K,1)) Dr T×10,0000</td> <td></td> <td></td>	373 168	L+ (CMY(4Y1)+COA) + (V)+COA GY = CMY(4Y1)+CP(TV(K,1)) Dr T×10,0000		
377     140     G*ediv(i/v1)=CP(V(N1_11))       377     140     G*ediv(i/v1)=CP(V(N1_11))       379     EFEA(1)=CV     100       381     171     VEGNV(JV2)=HV(TV(N1_11))       383     171     VEGNV(JV2)=HV(TV(N1_11))       383     171     VEGNV(JV2)=HV(TV(N1_11))       383     171     VEGNV(JV2)=HV(TV(N1_1))       383     171     VEGNV(JV2)=HV(TV(N1_1))       384     171     VEGNV(JV2)=HV(TV(N1_1))       385     171     VEGNV(JV2)=HV(TV(N1_1))       386     171     100       386     111     100       387     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111     100       388     111       389     112       388     111<	375	8ETA121=00 8ETA(3)=06HY(JY1)*HV(TV(K,1))+6Y*TV(K,1)		
379     9674(3)==64Y(4Y1)=4Y(FV(FVL11))=6Y*TV(HYLJ1)     1000 4990       381     171     0FEUR(4)F2)=44Y(FV(FVL11))     1000 4991       383     172     0FE(FT2)=54AY(-YZ2)=44Y(FV(FVL1))     1000 4992       383     172     0FE(FT2)=54AY(-YZ2)=44Y(FV(FVL1))     1000 4992       384     172     0FE(FT2)=54AY(-YZ2)=44Y(FV(FVL1))     1000 4992       384     172     0FE(FT2)=54AY(-YZ2)=44Y(FV(FL1))     1000 4992       384     172     0FE(FT2)=54AY(-YZ2)=44Y(FV(FL1))     1000 4992       384     172     0FE(FT2)=54AY(-YZ2)=44Y(FV(FL1))     1000 4992       384     0FE(FT2)=54AY(-YZ2)=44Y(FV(FL1))     1000 4992       384     0F     0F     1000 4992       385     0F     0F     1000 4992       384     0F     0F     1000 4992       385     181     0FE(FT2)=54AY(FV(FL1))     1000 4992       385     182     0FE(FT2)=54A(FV(FL1))     1000 4992       385     181     0FE(FT2)=54A(FV(FL1))     1000 4992       385     182     0FE(FT2)=54A(FV(FL1))     1000 4992       385     182     0FE(FT2)=54A(FV(FL1))     1000 4992       385     0FE(FT2)=54A(FV(FL1))     1000 4992       385     0FE(FT2)=54A(FV(FL1))     1000 4992       385 <t< td=""><th>377 169</th><td>GY=GMY(JY1)*CP(TV(NY1,1)) BFTA(1)*CP(TV(NY1,1))</td><td></td><td>1 DC 4945</td></t<>	377 169	GY=GMY(JY1)*CP(TV(NY1,1)) BFTA(1)*CP(TV(NY1,1))		1 DC 4945
381     171     0Y=GNY (JYZ) + GPT (Y(WZ,J1))       383     76 [1(2) = GWY (UYZ,J1))       384     76 [1(2) = GWY (UYZ,J1))       385     75 [1(2) = GWY (JYZ)       385     70 [1(1) = GWY (JYZ)       386     11(2) = GWY (JYZ)       387     70 [1(1) = GWY (JYZ)       388     70 [1(1) = GWY (JYZ)       388     11(1) = GWY (JYZ)       389     181       47     100       393     182       484     100       393     182       484     100       393     182       484     100       393     182       484     100       393     182       484     100       393     182       484     100       393     182       484     100       393     182       484     100       393     182       484     100       393     182       484        494	379	BETA(3)=+GHY(JY1)#HV(TV(NY1,1))+GY#TV(NY1,1) TECGMV/10010113000-142		
313       nETTij=cMr(JV2)*HV(TV(HV2,11)=GV*TV(HV2,11)       UID       455         314       CG       TO       455         315       TELTIJ=cMr(JV2)*CPTV(K,11)       UID       455         316       EELTIJ=cMr(JV2)*CPTV(K,11)       UID       455         317       CG       TO       455         318       EELTIJ=cMr(JV2)*HV(TV(K,11))       UID       455         318       EELTIJ=cMr(JV2)*HV(TV(K,11))-GV*TV(K,1)       UID       455         319       CL       T       UID       455         310       LaT       UID       455       VARIAC(HX1)*MO         310       LaT       UID       455       VARIAC(HX1)*MO         310       LaT       UID       455       VARIAC(HX1)*MO         320       HTH=HX#YS       UID       455       VARIAC(HX1)*MO         331       HTH=HX#YS       UID       456       VARIAC(HX1)         332       HTT=HX#YS       UID       456       VARIAC(HX1)         333       HTT=HX#YS       UID       456       VARIAC(HX1)         334       ALAGAX(HX1)       UID       456       VARIAC(HX1)         335       GX GMX(HX1)       UID       456	381 171	GY=GNY(JY2)+CP(TV(NY2,1)) . Del T(0)-CP(TV(NY2,1))		
385       172       GY=GHY(LYZ)*HV(TY(K,1))=GY+TV(K,1)         387       DELTT13=GV         389       C       La         389       C       La         389       C       La         389       C       La         389       La       La         389       La       La         391       HX=HC(HX1)=MU       Luc         392       HY=HC(HX1)=MU       Luc         393       HY=HC(HX1)=MU       Luc         393       HT=HX=HY       Luc         393       HT=HX=HY       Luc         393       HT=HX=HY       Luc         394       HT=HX=HY       Luc         395       LECXXIX111822-184:183         395       LECXXIX111822-184:183         395       LECXXIX111122-184:183         395       LECXXIX111182-187:183         395       LECXXIX111182-187:184         396       LECXXIX111182-187:184         397       Luc       494         398       ALFA(13)=CHX(1X1)=HYK1V(K_11)         399       LECXXIX111184         399       LECXXIX111184         399       LECXXIX111184         391	333	DELT(3)=6HY(JY2)#HV(TV(NY2,1))=6Y#TV(HY2,1)		LUC 4952
337       DELT(3)++GWY(JV2)*HV(TV(K_J1))-GY*TV(K_J1)       UC       4996         386       C       L=T       UC       4996         387       Lat       Lat       UC       4996         381       HX#HC(HXL)#VU       UC       4996         391       HX#HC(HXL)#VU       UC       4996         392       HT=HX*HZ       UC       4960         393       HTT=HX*HZ       UC       4961         393       HTT=HX*HZ       UC       4961         394       HTT=HX*HZ       UC       4961         395       HE       UC       4961         395       HE       UC       4961         397       ALEA(2)=-GX       UC       4964         397       ALEA(2)=-GX       UC       4966         397       ALFA(3)=-GXX(JX1)+WV(FV1)       UC       4964         397       ALFA(3)=-GXX(JX1)*HV(FV1)       UC       4966         398       HS       GX       UC       4966         399       183       ALFA(3)=-GXX(JX1)*HV(FV1)       UC       4966         399       183       ALFA(3)=-GXX(JX1)*HV(FTEHP)       UC       4966         399       184	.385 172 386	GY=GNY(JY2)*CP(TV(K,1)) DF1 T(1)=CC DF1 T(1)=CC		
369 C       L=7       Lof 4958         370 181       HX=HC(IX1)=VU       Lof 4950         391       HT==HX=HX       Lof 4950         393       HTT==HX=HX       Lof 4951         393       HTT==HX=HX       Lof 4951         393       HTT==HX=HX       Lof 4951         393       HTT==HX=HX       Lof 4952         394       ALEA(2)       Lof 4952         395       Le (2XXL)11022.Le(X)       Lof 4952         397       GL Fd(3)=-GXX(JXI)=HV(FV(A)1)       Lof 4955         397       GL Fd(3)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         397       GL Fd(3)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         398       ALFA(2)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         397       GL Fd(3)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         398       ALFA(3)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         399       Lof 496       FOC         391       ALFA(2)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         393       ALFA(2)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         394       ALFA(2)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         395       ALFA(3)=-GXX(JXI)=HV(FV(A)1)       Lof 4965         396       ALFA(3)=-GXX(JXI)=HV(FV(A)1)       Lof 4965	337 388	DELT(3)=+6 <sup>M</sup> Y(JY2)#HV(TV(K,1))=GY#TV(K,1) 60 T1 999		LIIC 4956
391       HY=HC(NY2)*XD         392       HT=HX=HY         393       HT=HX=HY         393       HTT=HX=FS(NY2,1)=HY#FS(NY2,1)         394       HTT=HX=FS(NY2,1)=HY#FS(NY2,1)         395       182       GX=GMX(JX1)=HY#FS(NY2,1)         395       182       GX=GMX(JX1)=HY#FS(NY2,1)         395       182       GX=GMX(JX1)=HY#FS(NY2,1)         397       ALFA(2)= GX       LOC 4963         397       ALFA(2)==GXX(JX1)=HY(TY(K,1))+GX*TV(K,1)       LOC 4964         397       ALFA(2)==GXX(JX1)=HY(TY(K,1))+GX*TV(K,1)       LOC 4965         397       ALFA(2)==GXX(JX1)=HY(TY(K,1))+GX*TV(K,1)       LOC 4965         398       ALFA(2)==GXX(JX1)=HY(TY(K,1))+GX*TV(K,1)       LOC 4965         399       183       ALFA(2)==GXX(JX1)=HY(TY(K,1))+GX*TV(K,1)       LOC 4965         399       184       TF(GMX(JX2))]_{354}R7_{18}       LOC 4969	389 C 390 181	L=7 Hx-HC (NX1)-VI)		LOC 4958 1 nc 4959
393       HTT=-HX#T5(NX1,1)=HY#T5(NY2,1)         394       FE(G4X(UX1))=2,184,183         395       182       GX=GMX(UX1)=40183         395       182       GX=GMX(UX1)=40183         397       ALFA(2)= GX         397       ALFA(3)=-GMX(JX1)=4V(TV(K_J1))+GX=TV(K_J1)         397       ALFA(3)=-GMX(JX1)=4V(TV(K_J1))+GX=TV(K_J1)         399       184         184       FE(GMX(JX2))=3-GMX(JX1)=6X=TV(K_J1)         400       184         184       FE(GMX(JX2))=3-GMX(JX1)=6X=TV(K_J1)	165 195	HY=HC(NYZ)+XD		LDC 4960
395       182       Gx=GmX(JX_1)*CP(TV(K,1))         396       ALFA(2)= Gx         397       ALFA(2)==Gx         397       ALFA(2)==Gx         398       GU TO 164         399       183         41       F(GNX(JX_2))135,187,186         400       184         184       F(GMX(JX_2))135,187,186	393	HTT=+HX#TS(NX1,1)=HY#TS(NY2,1) tststy/1/1/102-105.002		
397 ALFA(3)=-GMX(JXL)*HV(TV(K_JL))+GX*TV(K_JL) 398 GU TO 184 399 183 ALFA(3)=-GMX(JXL)*HV(FTEMP) 399 184 IF(GMX(JX2))185+187+186 400 184 IF(GMX(JX2))185+187+186	395 182	GX=GMX(JX1)+CP(TV(K,1)) Alfa(2)= GX Alfa(2)= GX		LDC 4964 LDC 4964
399 183 ALFA(3)=-GHX(JX1)*HV(FTEMP) 400 184 IF(GMX(JX21)185+187+186 400 184 IF(GMX(JX21)185+187+186	397 398	ALFA(3)=-GMX(JXL)+HV(TV(K,L))+GX+TV(K,L) GU TO 184	••	LDC 4966 LDC 4967
	399 183 400 184	ALFA(3)=-GMX(JX1)*HV(FTEMP) IF(GMX(JX2))]35+187+186	•	LOC 4968 LOC 4969
	•			

5%=Ghx(Jxz)*CP(TV(K=1))         5%=Ghx(Jxz)*CP(TV(K=1))         5AA(1)*=CX         5AA(1)*=CX         5AA(1)*=CX         5AA(2)*+GP(TV(K=1))         54EAP(JY1)*CP(TV(K=1))         54EAP(JY1)*CP(TV(K=1))         54EAP(JY1)*CP(TV(K=1))         54EAP(JY1)*CP(TV(K=1))         54EAP(JY1)*CP(TV(K=1))         54EAP(JY1)*CP(TV(K=1))         54EA(2)*CP(TV(K=1))         54EA(3)*=GhY(JY1)*HV(TV(HYL)1))         54EA(3)*=GhY(JY2)*HV(TV(K+1))         54EA(3)*=GhY(JY2)*HV(TV(K=1))         54EA(4)         54EA(4)         54EA(4)         54EA(4)         54EA(4)         54EA(4)         54EA(4)         54EA(4)         54EA(4)         54EA(4)	Luc 4972 Luc 4974 Luc 4974 Luc 4974 Luc 4977 Luc 4977 Luc 4977 Luc 4977 Luc 4977 Luc 4977 Luc 4999 Luc 4999 Luc 4999 Luc 4999 Luc 5999 Luc 5001 Luc 5000 Luc 5000	
AMA(1)==UX 3AMA(3)=+G4X(JX2)+HV(TV(K ,1))-GX+TV(K ,1) [F(G4Y(4Y1)1208*210,209 5Y=G4Y(JY1)+CP(TV(K ,1))	100 5010 100 5012	
аста(2)=+6V аста(3)=-6MV(JYl)+HV(TV(K »l))+6Y+TV(K »l) 60 T0 2lu GY=6MY(JYl)+CP(TV(NYl,l)) GY=6MY(JYl)+HV(TV(NYl,l))+6Y+TV(NYl,l) Beta(3)=-6HY(JYl)+HV(TV(NYl,l))+6Y+TV(NYl,l) FE(EMV(LY2))211.009.212	100 2019 100 2019 100 2019	

. )

- using an any second party of a second s

11 211 12 212 53 212		-61/CO/CO	PAGE 0120	-
53 212	DELT(3)=+GHY(JY2)+HV(FTEMP) 60 to 900		LEC 5020	
	GY=GMY(JY2)+CP(TV(K1))		LDC 5022	
22	РЕЕТ (])=+GKY(JY2)+HV(TV(K,I))=GY#TV(K,I) 60 то 800			
57 C Le	0 10			-
59	HY#HC(172)#X0		LOC 5028	
19	HITETHXETX HITETHXXX4TS(EX2s1)#HY4TS(2Y2s1) HITETXXX4TS(EX2s1)#HY4TS(2Y2s1)			
63 222	1 + 101 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1			
65	ALFA(3)=-64X(JX1)*HV(TV(K,1))+6X*TV(K,1) 66 for 335			
67 223	GX=GHX(JX1)+CP(TV(NX1,1))			
69	A6+A4-43)#-63X(JXI)#HV(TV(PXI#I))+62X#TV(NXI#1) 			
71 225	64/4X/4X2)/429/42/9220 64/14(3)=+6/1X(JX2)#HV(FTENP)			
73 226	01 = 01 = 01 = 01 = 01 = 01 = 01 = 01 =			
75 223	000044/1000400 100040(0)8+0004(0x2)#HV(TV(K %1))+0X#TV(K %1) 1100404(0)2412412412412412412412412412412412412412			
77 228	GY=GHY(JY])+CP(TV(K _ J))			
64	BETA(3)=+6Y(JY1)+HV(TV(K +1))+6Y+TV(K +1)			
81 229 82	64_647 (\$41)*6P(TV(NY1,1)) 67=647 (\$41)*6P(TV(NY1,1)) 86=74(\$400000000000000000000000000000000000			
85 86 230	BETA(3)=+6×Y(JV1)#HV(TV(NV1♪1))+6Y#TV(NY1♪1) T+/6#MV1×2) *209,223			
85 231 86	DELT(3)=+6KY(JY2)#HV(FTEMP) 60 TF 909			
87 232	GY=GHY(JY2)*CP(TV(K J1))			
89	DELT(3)#+6MY(JY2)#HV(TV(K,1))#6Y#TV(K,1) 60 TT 800		100 5058 100 5058	
91 C LI	110 HX-Hf (HY2)±V1/2			
93	HY #HC (NY 1) #X0 HY #HC (NY 1) #X0		LUC 5062 - DC 5062	
56	HTT==HX+TS(NX2,1)=Hy+TS(Ny1,1) Terchy(1x1)220,244,244			
97 242 08	GX=GHX(JX])+CP(TV(K+1)) AIEA(2)= GX	-	LOC 5066	
66	ALFA(3)=-GMX(JX1)+HV(TV(K=2))+Gx+TV(K=1) 60 TU 246	•	LDC 5068 LDC 5069	
				.`

• • •

03/05/74 PAGE 0121	LUG 5070 LDG 5071	LOC 5072 LOC 5073	LDC 5074	LDC 5076	LDC 5078	0805 201					0605 201			LDC 5097 LDC 5097	LuC 5098		100 5102 LDC 5102	10C 5104	LOC 5106	10C 5108			LOC 5114	, . LOC 5116	
[V (VER L43) SUURCE LISTING; LOC FUNCTION	GX=GHX(JX1)+CP(TV(NX1,1)) A1FA(1)=CX	ALFA(3)=-GHX(JX1)+HV(TV(!;X1=1))+GX+TV(NX1=1) TECCHX(JX2))245.247.246	GX=GMX(JX2)+CP(TV(K+1,1)) GAMA(2)=-CY	GAMA(3)=+GMX(JX2)#HV(TV(K+101))=GX#TV(K+101) GG TG 22	GX=GHX(JX2)+CP(TV(K ,1))	GAHA(1)==GX(JX2)+HV(TV(K #1))-GX+TV(K #1) GAHA(3)=+GrX(JX2)+HV(TV(K #1))-GX+TV(K #1)	- LF (5HY (- 1/1) / 4H > (5) / 44 > (5) /	HETA(3)==611Y(JVL)#HV(TV(K #L))+6Y#TV(K #1)	BETA(3)==-GKY(JY1)#HV(FTEMP) BETA(3)==-GKY(JY1)#HV(FTEMP)	64604(1/2)*6P(TV(NY2,1))	DELT(3)=+6Hy(Jy2)#Hy(Ty(Ny2+1))+6y#Ty(Ny2+1)	64.64Y.(JZ2)*CP(TV(K J1)) 57.54Y.(JZ2)*CP(TV(K J1))	DELT(3)=+6MY(3Y2)++V(TV(K,1))=6Y+TV(K,1) 60 T0 399	Lell HX=HC{NX1)*VG/2.	HY=HC(NY1)*XD	HTT#-IX#TS(ZX1,#1)#HY#TS(Zv1,#1) HTT#-IX#TS(ZX1,#1)#HY#TS(Zv1,#1)	GX#GHX(JX1)#CP(TV(K,1)) AIEA(2)= GX AIEA(2)= GX	ALFA(3)==GHX(JXI)+HV(TV(K#1))+GX#TV(K#1) GG t1 3/44	GX=GMX(JX1)=CP(TV(K=1,1)) AIEA()=CV	ALFA(3)==GMX(JXI)+HV(TV(K=1,1))+GX+TV(K=1,1) ***********************************	GXEGIX(4X2) 4CP(TV(NX2)))	GAMA(3)=+GHX(JX2)++V(TV(NX2,1))=GX+TV(NX2,1) Gr t1 247	GX=GMX(JX2)+CP(TV(K J1)) GAMA(1)=_CV	GAMA(3)=+GFX{JX2}+HV(TV(K "1))=GX+TV(K "1) TefGMY{JV1:7268-270-249	GY=GHY(JY1)+CP(TV(K
A FORTRAN I	501 243	503 504 244	505 245	507 508	509 246	511	513 248	515	517 249	519 251	521	523 252	525	527 C L	529	531	533 262 534	.535 535	537 263	539	541 205	543	545.266	547 548 267	549 268

· ·

	- LOC 5168 LOC 5169	599 C Lela 600 301 HTR-HC(NX1)#Y0/2.
•	·	597 DELT(3)=+64Y(JY2)#HV(TV(K_1))=6Y#TV(K,1) 598 60 70 999
	LOC 5164 LOC 5165	595 292 6Y=6MY(JY2)*CP(TV(K J1)) 596 DELT(1)==6Y
	LOC 5162 LOC 5163	593 DELT(3)#+GMY(JV2)#HV(TV(NY2/1))=GY#TV(NY2/1) 594 60 70 999
	LDC 5160 LDC 5161	591 291 6Y=GMY(JY2)*CP(TV(NY2,1)) 592 Delt(2)*=GY
	LOC 5158 LOC 5159	589 BETA(3)==6MY(JY1)#HV(TV(NY1/1))+6Y#TV(NY1/1) 590 293 IF(GMY(JY2))291/9994,292
	LDC 5136 LDC 5137	587 289 6Y=GMY(JY1)+CP(TV(NY1,1)) 584 beta(1)=+6Y
	LOC 5154 LOC 5153	-585 BETA(3)=-GMY(JY1)#HV(TV(K ,1))+GY#TV(K ,1) 586 60 73 290
	LOC 5152 LDC 5153	583 288 GY=GMY(JY1)*CP(TV(K1)) 584 BFTA(2)=4CV
	LDC 5150 1 nc 5151	581 GAHA(3)=+GMX(JX2)*HV(TV(K "1))-GX*TV(K "1) 482 287 TE/GHV/JV1111288-290.289
	LDC 5148 LDC 5149	979 286 6X=64X(JX2)+CP(TV(K J1)) 580 6A44(1)=-6X
	LDC 5146 LDC 5147	577 GAMA(3)=+GMX(JX2)+HV(TV(K+1,1))-GX+TV(K+1,1) 578 GG +D 287
	LOC 5144	575 285 GX_GAX(JX2)*CP(TV(K+L_L))
	LOC 5142 LDC 5143	573 ALFA(3)=-GHX(JXL)#HV(TV(NXLJL))+GX#TV(NXLJL) 574 TE(GHX(JX2))285.257.256
	LUC 5140	571 283 GX=GMX(JX1)=CP(TV(NX1,J1)) 573 A(5A(1)+CV
	LUC 5138	569 ALFA(3)=-6HX(JX1)#HV(TV(K,1))+6X+TV(K,1) 570 60 TO 384
	LOC 5136	567 282 GX=GYX(JX1)#CP(TV(K,1))
	LOC 5134 LOC 5135	565 HTT= HT+TS(NX2,1) 565 FTT= HT+TS(NX2,1) 566 FE(GMX [Y111)222,266 283
	LOC 5132	563 C La12 844 281 HT-40 (NY2)1470/2
	LDC 5130 LDC 5131	561 DELTISTACHY(JV2)#HV(TV(K.1))=GY#TV(K.1) 561 DG(T) 846HY(JV2)#HV(TV(K.1))=GY#TV(K.1)
	LOC 5128 1 DC 5139	559 272 GY=GHY(JY2)*CP(TV(K J))
	LOC 5126	557 DELT(3)=+GNY(JY2)*HV(TV(NY2,1))=GY*TV(NY2,1)
	LOC 5124	555 271 6Y=6HY(JY2)+6P(TV(HY2,1)) 856 Del T(2)=-6V
	LOC 5122 Inc 5123	553 269 BETA(3)==GMY(JY1)#HV(FTEHP) 554 270 TE(GMY/JV21)271.909.272
	LDC 5120 LDC 5121	551 BETA(2)==GHY(JY1)*HV(TV(K J1))+GY*TV(K J1) 552 Gn Tn 270
	33/05/74 PAGE 0122	A FORTRAN IV (VER L43) SOURCE LISTING! LOC FUNCTION O

601 602 603 605 605 605 605 605 605 605 605 605 605	TT= HT+TS/NX1.1)		LDC 5170	
603 302 606 302 606 605 606 303 607 303 60 303 60 60 609 303 60 60 609 303 60 60 609 303 60 60 609 303 60 60 60 60 60 7 80 60 60 7 80 60 7 80 60 7 80 60 80 7 80 7 80 60 80 7 80 7 80 7 80 7 80 7 80 7 80 7 80	EICHXIIX11302.306.303		Lnc 5171	
605 606 607 803 603 803 60 803 60 803 803 60 803 803 803 803 803 803 803 803 803 80	X=GHX(JX1)+CP(TV(K,1))		LOC 5172	
607 303 67 608 303 67	LFA(3)=-GHX(JX1)+HV(TV(K,1))+GX+TV(K,1)	•		
609 A	X=GMX(JX1)+CP(TV(K=1,1))			
	LFA(3)==6KX(JX1)=HV(TV(K+1,1))=0X=TV(K=1,1) LFA(3)=-6KX(JX1)=0CF-3CF-3CF		LOC 5178	
611 305 G	X=64X(JX2)+66P(TV(NX2,1)) X=64X(JX2)+66P(TV(NX2,1))		LUC 5180	
613 613	AHA11111111111111111111111111111111111	•	LUC 5182	
615 306 G	X#GMX(JX2)#CP(TV(K ±1)) AMA(1)		LDC 5184 LDC 5185	
617 6.	AMA(3)=+6HX(JX2)+HV(TV(K , ))=6X+TV(K ,)			
5 80E 619	+ + + + + + + + + + + + + + + + + + +			
621 621 8	ETA(S)=+6HY(JY])+HV(TV(K J])+6Y+TV(K J]) ETA(S)=+6HY(JY])+HV(TV(K J))+6Y+TV(K J)		LDC 5190	
623 309 G	V=04Y(JY1)*CP(TV(NY1,1))			
625 625 310 8	ETA(2)==GHY(JY1)=HV(TV(NY1_1))+GY=TV(NY1_1) ETA(2)==GHY(JY1)=HV(TV(NY1_1))+GY=TV(NY1_1)		LOC 5194	
627 311 G	V=6MY(JY2)*CP(TV(NY2,1))			
629	1511(3)=+6MY(JY2)#HV(TV(NY2,1))=6Y#TV(NY2,1) 1511(3)=+6MY(JY2)#HV(TV(NY2,1))=6Y#TV(NY2,1)			
631 312 6	V 11 VV2 V=6HY(1/V2)+CP(TV(K ,1))		LOC 2193 LOC 5200	
	1511(3)#+GMY(JY2)#HV(TV(K,]))=GY#TV(K,]) 1511(3)#+GMY(JY2)#HV(TV(K,]))=GY#TV(K,])		LOC 5202	
635 C L=1	4 4 4		LOC 5204 LOC 5204	
637 H H	IY=HC(NY2)+XU F=-HX-HV		LDC 5206 LDC 5205	
H 669	itt=+HX+TS(NX2»1)+HY+TS(NY2»1) Escent ://:		LDC 5208	
641 322 G				
140 144 144 144 144 144 144 144 144 144	15 41 3) = - 5 4 15 41 3) = - 5 4 4 (JX1) + HV(TV(K,J)) + 5 X + TV(K,J) 15 41 32 4		LOC 5212	
645 323 G	:X=GHX(JX1)+CP(TV(NX1,1)) :X=GHX(JX1)+CP(TV(NX1,1))		LOC 5214	
647 648 324 1	.LFA(3)=-6HX(JX1)*HV(TV(NX1,1))+6X#TV(NX1,1) .Erchvrivs1335.327.326	••	LOC 5216 1 nc 5217	
649 325 6	X#GMX (JX2) #CP (TV (K+1.))	<b>b</b> .		

• -\*

A 8000 A	TH AVED I ADA EQUIDE ELECTING: 1 OF ELEVEN	03 /06 /74	BAGE 0125			
101 35	L DELT(3)=GMY(JY2)+HV(PTEMP)		LDC 5270			
703 35	2 GV=GMY(JY2)+CP(TV(K _1))		LOC 5271			
705	DELT(1)#467 DELT(3)=CMY(JY2) #HV(TV(K#1))=67#TV(K#1)		LOC 5273	-		
707	PETURN Store		LUC 5275 LUC 5276		-	
907			//76 101			
-			•			
					-	
				•	•	月 
				•		
•						•
					•	
•••						
		•	••	•		
		•		•		
•						
						18 J.
		•				7
•						

FORTRAN IV	(VER L43) SOURCE LISTING: 03/03/74	PAGE 0126
L S 2 C CDM	SUBROUTINE CL4 Aputtom ne total interchange area real gas	CL4 5278 CL4 5279
9 C C C F	APUTION HAS TWO PARTS Mende-o Tvital Callia Ation of Cas volime Interfuance Areas	GL4 5280 C14 5281
	=10 UPDATE INTERCHANGE AREAS WITH NEW TEMPERTURES	CL4 5282
0 0 0		CL4 9284
80	TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3), TAU(9), VAREA, HAREA, XLX, XK(3), ACDEF(8,3),	CL4 5285
10 11	TBRIDG, PRES, FLUET, FLUELSJ, XHWX, TSTHK, NCR. WHITV. MTVAI, EPATE, KFUEL, XAIR, FTEMP.	C14 3287 C14 5288
	NSSBLK, NOSCLK, NSGBLK, NGGBLK, NSURE, NVGL,	CL4 5289
13 A A	XSURFX(9), XO, YO, ZLONG, NCOL, NROW, NXSXN, Betart frone scone, nebay, JHCHC.	CL4 5290 CL4 5291
15	KI, K2, RCRD(10), TDEP(100), PERN(200),NPRNT	CL4 5292
	INTEGER SCODE, TCODE, RSTART, HCODE	
0.0	COMMUN/SPCE4/AA1.00, 601,881.00115) COMMON/JAZZ4/TSSUN(8,4), TGSNN(8,3),TSGNM(8,3),TGGNM(8,3),	
21	DIMENSION T( 60),21 60)	CL4 5298 CL4 5298
23	cals.reaut.s.xuuntactitts.out	CL4 5300
20	IF(1JK,EQ.0)60 T0 11 IF(HCODE.EG.10)60 T0 11	CL4 5301 CL4 5302
1	IF(ICODE,E0,10)60 TO 31	C14 5303
27 11 (	CONTINUE Call Read/2.1temc1.t(1). 60)	CL4 5304 C14 5305
29	CALL WRITE(3) ITEMGIST(1) 60)	
31 C CA!	S TU SURFACE INTERCHANGE AREA	CL4 5308
33	CALL PIERD(AA(1/1), 3600) D3 13 Kk=l/NGRAY	CL4 5310 CL4 5310
	00 17 JFLANSGBLK	CL4-5311
00	имецэт(J-L) Call READ(1,JJSGiqu(1,5 КК),088(1,01),0 900)	CL4 5313
24	IF(J.EQ.WSGBLK)GO TO 13 NMAX-15	C[4 5314 Ci4 5315
39	60 T0 14 Nuar-Nucri / Niccel /	C[4 53]6 71 4 5317
41 14		
2	ZZ=EXP(EQUA(T(M)/1000, ACDEF(1,KK)))*Z(M)	
a	UL 12 LE16424KF AA(L+M)=AA(L+M)+BB(L+N)+ZZ	
47 16 47 16 48 17		514 5324 514 5324 514 5324
81 64	CONTINUE DD 19 JE1 HSGBIK	CL4 5326 CL4 5326

1:

1     CALL WRITESSGUIJAMILISAN-141, 0001     CAL WRITESGUIJAMILISAN-141, 0001     CAL WRITESGUIJAMILISAN-141, 0001       2     District Estanting Control C	
<ul> <li>5 doon intrivents.feet.regn.freent.rung. 16 (* 530)</li> <li>5 doon intrivents.feet.rung.freent.rung.</li> <li>5 foot intrivents.feet.rung.freent.rung.freent.rung.free.son</li> <li>5 foot intrivent.freent.rung.freent.rung.freent.rung.freest.freest.rung.freest.rung.freest.rung.freest.freest.rung.freest.freest.rung.freest.f</li></ul>	
<ul> <li>5 3001 JOUNATTI, J., J., J., J., J., J., J., J., J., J.</li></ul>	
27         26513         100 <td></td>	
90         0001         Februaries	
61 C.     Cd5 TRD rd3. Mirel Given of Latest     Cd5 TRD rd3. Mirel Given of Latest       61 C.     Cd5 TRD rd3. Mirel Given of Latest     Cd5 TRD rd3. Mirel Given of Latest       61 C.     Cd5 TRD rd3. Mirel Given of Latest     Cd5 TRD rd3. Mirel Given of Latest       61 C.     Cd5 TRD rd3. Mirel Given of Latest     Cd5 TRD rd3. Mirel Given of Latest       61 TRD rd3. Mirel Given of Latest     Cd5 TRD rd3. Mirel Given of Latest     Cd5 TRD rd3. Mirel Given of Latest       61 TRD rd3. Mirel Given of Cd5 TRD rd3. Mirel Given of Cd5 S30     Cd5 TRD rd3. Mirel Given of Cd5 S30     Cd5 S30       61 TRD rd3. Mirel Given of Cd5 Mirel Given of Cd5 S30     Cd5 S30     Cd5 S30       71 A.     Cd5 S30     Cd6 Mirel Given of Cd5 S30       71 A.     Cd5 S30     Cd6 Mirel Given of Cd5 S30       71 A.     Cd6 Mirel Given of Cd5 S30     Cd6 Mirel Given of Cd5 S30       71 A.     Cd7 S30     Cd6 Mirel Given of Cd5 S30       71 A.     Cd7 S30     Cd6 Mirel Given of Cd5 S30       71 A.     Cd7 S30     Cd7 S30       72 A.     Cd1 Mirel Given of Cd5 Mirel Given of Cd5 S30       73 A.     Cd1 Mirel Given of Cd5 Mirel Given of Cd5 S30       74 A.     Cd1 Mirel Given of Cd5 Mirel Given of Cd5 S30       75 A.     Cd1 Mirel Given of Cd5 S30       75 A.     Cd1 Mirel Given of Cd5 S30       75 A.     Cd1 Mirel Given of Cd5 S30	
55     10     15     15     15     15       65     11     15     15     15       75     10     16     15     15       75     10     16     15     15       75     10     16     15     15       75     10     16     15     15       75     10     16     15     16       75     10     16     15     16       75     10     16     15     16       75     16     16     15     16       75     16     16     15     16       75     16     16     16     16       75     16     16     16     16       75     16     16     16     16       75     16     16     16     16       75     16     16     16     16       75     16     16     16     16       75     16     16     16     16       75     16     16     16     16       75     16     16     16     16       76     16     16     16       76     16     16	
60         The Fight F	
01     100.11.11.11.11.11.11.11.11.11.11.11.11.	44 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
07         03         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         05         04         06         05         06 <th06< th="">         06         06         06<!--</td--><td>0 - = 0</td></th06<>	0 - = 0
71     24     00126     Naliniak       73     25     412400     1124       73     25     412400     114       73     25     412400     114       73     26     6017100     114       77     26     6017100     114       77     26     6017100     114       77     26     6017100     114       73     26     6017100     114       74     26     6017100     114       75     6017100     114     114       8     30     17700     114       8     30     17700     114       8     30     17700     114       8     30     17700     114       8     30     114     114       8     101     114     114       8     101     114     114       8     114     114     114       8     114     114     114       8     114     114     114       8     114     114     114       8     114     114     114       8     114     114     114       8     114     114<	0 0 C -N M 3 4 0 P
13     22=cx^fEcuarT(H)/:000,ACGF[LJKK])P22(H)     11, 2310       17     22=cx^fEcuarT(H)/:000,ACGF[LJKK])P22(H)     11, 2310       17     25     ALL(L)/1981(L_A)/P222*L[L)     11, 231       17     25     CONTINUE     11, 231       18     CONTINUE     11, 232     11, 232       19     CONTINUE     11, 233     11, 233       10     FITERAT-EGG(J) an TD 30     11, 233     11, 2233       10     FITERAT-EGG(J) an TD 30     11, 2233     11, 2233       11     ALL     ALL     11, 2233     11, 2233       12     CONTINUE     11, 2233     11, 2233       13     ACLL     11, 2233     11, 2233       14     23     11, 2233     11, 2233       15     CONTINUE     11, 2233     11, 2233       15     CONTINUE     11, 2233     11, 2233       15     CONTINUE     11, 2233     11, 2233       16     Saturt (ALL     11, 2233     11, 2233       17     Saturt (ALL     11, 2333     11, 2333       17     Saturt (ALL     11, 2333	C
73     Multi-Mit-Bell_Mit-Mit-Bell_Mit-Bell_Mit-Mit-Bell_Mit-Mit-Bell_Mit-Mit-Bell_Mit-Mit-Bell_Mit-Mit-Bell_Mit-Mit-Bell_Mit-Mit-Bell_Mit-Mit-Bell_	
17     26     CUNTINUE     CUNTINUE       17     27     CUNTINUE     CUNTINUE       19     27     CUNTINUE     CUNTINUE       19     27     CUNTINUE     CUNTINUE       10     10     10     10       11     CUNTINUE     CUNTINUE     CUNTINUE       12     11     ANDITION     CUNTINUE       13     11     NOT CUNTINUE     CUNTINUE       14     29     CUNTINUE     CUNTINUE       15     200     CUNTINUE     CUNTINUE       16     200     CUNTINUE     CUNTINUE       17     200     CUNTINUE     CUNTINUE       18     CUTINUE     CUNTINUE     CUNTINUE       17     26     200     CUNTINUE       18     CUTINUE     CUNTINUE     CUNTINUE       19     CUTINUE     CUNTINUE     CUNTINUE       10     CUNTINUE     CUNTINUE     CUNTINUE       11     CUNTINUE     CUNTINUE     CUNTINUE       11     CUNTINUE     CUNTINUE     CUNTINUE       11     CUNTINUE     CUNTINUE     CUNTINUE       12     CUNTINUE     CUNTINUE     CUNTINUE       13     CUNTINUE     CUNTINUE       14	666 17
17       23       Cürtikie         13       23       Cürtikie         14       Call Martic/Sold(J/Ad(1)/Sol-14), 9001       Cit 5355         15       Call Martic/Sold(J/Ad(1)/Sol-14), 9001       Cit 5355         15       Fathore       Cit 5355         15       Fathore       Cit 5355         16       Call Martic/Sold(J/Ad(1)/Sol-14), 9001       Cit 5355         17       Fathore       Cit 5355         18       ADD       Cit 5355         19       Solo Fathore       Cit 5365         10       Fathore       Cit 5365         11       Fathore       Cit 5365         17       Contribut       Cit 5365         18       Control       Cit 5365         19       Control       Cit 5365         10       Control       Cit 5365         10       Cit 6537       Cit 5365         10       Cit 6537       Cit 5375         10       Cit 6537       Cit 5375         10       Cit 6537       Cit 5376         10       Cit 6537       Cit 5376         10       Cit 6537       Cit 5376         10       Cit 6537       Cit 65376	56
61     Call wittistadeuly air fistants       82     6001       84     6011       84     6011       84     6011       84     6011       84     6011       85     6002       84     6011       85     6003       84     6011       85     6003       84     6011       85     6003       84     6011       85     6011       86     6011       87     601       89     601       80     601       81     601       81     601       81     601       81     601       81     601       82     601       83     601       84     601       85     601       84     601       85     601       86     611       87     611       81     611       81     611       81     611       82     611       83     611       84     611       84     611       81     611       81     6	
63       IFURMIN, Eq. JIGD TO 30       614 550         84 6010       MATELIX/20002)       505         85 602       EMATELIX/2002)       505         84 6010       EMATELIX/2002)       505         85 602       EMATELIX/2002)       505         86 602       CURTURE       FLATA/WULANUCLI         87 30       CURTURE       CLA 506         88       IETLIX/E0010       CLA 506         90       FATL 2       SURACE AREA TEMPERTATURE DEPENDENT         91       31       CALL RELOUZ/FIENS/1110 601         91       CALL RELEQUATION 601       CLA 506         91       CALL RELEQUATION 601       CLA 506         92       SUFFACE TU SURFACE INTERCHANCE AREA       CLA 506         93       SUFFACE TU SURFACE INTERCHANCE AREA       CLA 506         94       DAL HE FLEQUATION 601       CLA 506         93       SUFFACE TU SURFACE INTERCHANCE AREA       CLA 506         94       DAFUEL ANDEL       CLA 506         95       VALUE       CLA 507         96       FALL 2       SUFFACE TU SURFACE INTERVALUE         97       DU 45 K412/111/1 000       CLA 507         98       FLAL 2       SURAL 2         99 <td></td>	
85       6002       FUHHATI/11       1.20X.:VOLUME       INTERCHANGE       AREAINDLANNULANDLI         85       CALL       ENLITIAANNULANDLI       CL4       5963         87       30       CALLINE       CL4       5963         90       CAL       ENLITAANNULANDLI       CL4       5963         91       TELLINE       CL4       5969       CL4       5969         91       CALL       REAULE       CL4       5969       CL4       5969         91       CALL       REAULE       CL4       5969       CL4       5969         92       CALL       REAULE       CL4       5969       CL4       5969         93       CALL       REAULE       FLANCLE	0.0
a7 30       CGWTINE       CT 10 K = 0.100 TO 31         89       TC 11 W = 0.010 FO       CT 14 5305         89       FC 11 W = 0.010 FO       CT 14 5305         80       Call RET(2)TERSJ.111.0 60)       CT 14 5305         91       Call RET(2)TERSJ.111.0 60)       CT 45 5305         92       Call RET(2)TERSJ.111.0 60)       CT 4 5305         93       Call RET(2)TERSJ.111.0 60)       CT 4 5305         95       Call RET(2)TERSJ.111.0 60)       CT 4 5375         93       Call RET(2)TERSJ.111.0 60)       CT 4 5375         94       T0 AS ±14RAX100 TD 33       CT 5 5374         97       DC 45 ±14X105 TD 33       CT 5 5374         98       T1 4 5375       CT 5 5374         90       NG 41 31       CT 5 5374         9100       CD 70 33       CT 5 5374         92       New       CT 5 5374         93       New       CT 5 5374         94       T1 4 5375       CT 5 5374         97       New       CT 5 5374         98       New       CT 5 5374         99       New       CT 5 5374         9100       CD 70 34       CT 5 5374	
69       60 10 67       60 10 67       61 5366         91       31       Call RRITE SURFACE TREAFEATURE DEPENDENT       C14 5367         92       Call BRITE(3,1TENS),111), 601       C14 5368         92       Call BRITE(1,111, 500)       C14 5370         93       C SURFACE INTERCHANGE AREA       C14 5370         94       CALL PZERCUANCE AREA       C14 5370         95       C ALL PZERCUANCE AREA       C14 5370         96       TL PZERCUANCI 11) 36001       C14 5372         97       D0 45 Feit/RAU       C14 5372         98       TELK-EQ:MAXIGD 7D 33       C14 5373         97       D0 45 Feit/RAU       C14 5375         98       TELK-EQ:MAXIGD 7D 33       C14 5375         99       Keck       C14 5375         90       C14 5376       C14 5375         9100       C0 7D 34       C14 5376         92       Keck       C14 5377	
91     1     Call REJURACE AREA TIME DEFENDENT       92     1     Call REJURACE AREA TIME DEFENDENT       92     Call WRITE(3)TENSIJT(1), 601       93     C SUFACE TU SURFACE INTERCLANDO       94     C NUE DEFENDINT       95     C SURFACE INTERCLANDO       96     Call PRITE(3)TENSIJT(1), 601       97     Call PZERD(AA(1)1), 3600)       97     D(4) S Kelk       98     KMAX21MCRAV       99     KKAK       91     D(4) S Kelk       92     Call PZERD(AA(1)1), 3600)       93     Call PZERD(AA(1)1), 3600)       94     Call PZERD(AA(1)1), 3600)       95     KKAK       96     NAX21100       97     D(4) S Kelk       98     KKAK       99     KKAK       90     Cl4 5373       910     G(10)       92     Cl4 5375       93     Cl4 5375       94     Cl4 5375       95     KKak       96     Cl4 5375       97     Cl4 5375       98     Cl4 5375       99     Cl4 5375       90     Cl4 5375       9100     Cl4 5375       9100     Cl4 5375	90
93 C       SURFACE INTERCHANGE AREA       C14 5370         94 C       KK=GAS HUHBEH       C14 5371         95 CALL PINERO(AKI1)1) 3600)       CL4 5372         97 D0 45 K=1yKHAX       CL4 5373         98 IF(K_EQ+KHAX)GD 7D 33       CL4 5373         99 KK=K       CL4 5373         97 D0 45 K=1yKHAX       CL4 5373         98 KK=K       CL4 5375         99 KK=K       CL4 5375         90 GD 7D 33       CL4 5376         90 GD 7D 34       CL4 5376	58 69
95 CALL PZERD(AA(1,1), 3600) 96 KHAX=1+NGRAY 97 DU 45 K=1,KHAX 98 KK=K 98 KK=K 99 KK=K 100 GD TD 34 100 GD TD 34 100 GD TD 34 100 CL4 5375 100 CL4	022
97 DD 45 K=1,KHAX 98 IF(K:E4;KHAX)GD 7D 33 (CL4 5374 99 KK=K 100 GD 1D 34 CL4 5375 101 34 CL4 5375 101 34 CL4 5377	22
99 KK=K 100 GD TD 34 CL(4 5376 CL(4 5376	25 26
	17 17
	100000000000000000000000000000000000000

|--|

PAGE 0129	CL4 5428 CLA 5429	CL4 5430	CL4 5432	CL4 5434 r14 1435	CL4 5436 CL4 5436	CL4 5438	CL4 5440									j.				
SUBRDUTINE 03/05/74					INTERFUANCE AREAL											-	•			
(VER L43) SOURCE LISTING; CL4	CONTINUE	CONTINUE	10 59 JelyNGSBLK 21 59 JelyNGSBLK 22 1 Dottors of 12 AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	CONTINUE CON	ARITE(K2,7011) 	CALL PRINT (AA, NVL) NSURF)	END													a na an ann an an ann an ann an ann an a
A FORTRAW IV	151 55 CI	153 57 CI		157 59 CL	159 7010 WI	161 C	163				•		•		•					

1         Constraint, F. Denving,	FORTRI	IN IV (VER L43) SOURCE LISTING!	03/05/74	PAGE 013	<b>9</b> 0 .	
3     TURONI, // ENERTIA, // COLECTION, CAREERIA, // COLE 2000       3     A TURONI, // KULA, TULETON, CAREERIA, // COLE 2000       4     A TURONI, MICLA, TULETON, CAREERIA, // COLE 2000       7     A REAL DATA STATE TORA       1     C REAL STATE STATE TORA       1     C REAL STATE STA		SUBROUTINE CLS Cas voi the Heat Bai Ance		CL5 54	14	
7     A TARATON FORSA FALLE ATTAIL FREE     C10     SAC       7     A TARATON FORSA FALLE ATTAIL FREE     C10     SAC       7     A TARATON FORSA FALLE ATTAIL FREE     C10     SAC       7     A TARATON FORSA FALLE ATTAIL FREE     C10     SAC       7     A TARATON FORSA FALLE ATTAIL FREE     C10     SAC       7     A TARATON FORSA FALLE ATTAIL FREE     C10     SAC       1     CONTRACTON FALL ATTAIL AT	m.	CONHGN // DUNHY(3),KK, ICUDE, HCODE, A TANION, VIESS VIADEA VIV, VETAL, ACTEE/8,3/		CL5 544	6.9 •	
7     7     8     8     8     8       9     7     8     8     8     8       9     7     8     8     8     8       9     7     8     8     8     8       10     1     1     1     1     1     8     8       11     1     1     1     1     1     1     1       11     1     1     1     1     1     1     1       11     1     1     1     1     1     1     1       11     1     1     1     1     1     1     1       11     1     1     1     1     1     1     1       12     1     1     1     1     1     1     1       13     1     1     1     1     1     1     1       14     15     1     1     1     1     1     1       15     1     1     1     1     1     1     1       16     1     1     1     1     1     1     1       17     1     1     1     1     1     1     1	. 	A TARIDG, PRES, FLUET, FLUER, AND		CL5 54		
0       A NAT WAY FERDER SCHOLANDAY FERDER S	.   ~ (	A NSSBLK, NCSRLK, NSGRLK, NGGRLK, NSURF, NVOL,		CL5 54/		
1     C     INTEGER SCORF ACCORF STATE ACCORF     C(1) 5451       1     FEULIVARIATION (FEURITOR) (FERRILLOS) (	0	A RSTART TO DE SCORE NGRAY JHCHC. A R1. R2. REDUE, SCORE, NGRAY JHCHC. A R1. K2. REDUID. TDEPIJODJ. PERHIZODJ.NORNT		CL5 54	6.6	
111	11	INTEGER SCHDE TCHDE ESTAKT HCHDF		CL5 54	51	
1         1	EI	EQUIVALENCE (DUMRY(1),NENAX),(PERM(199),DHTCL5) COMMINISASS XXNY2.NY2.NY2.NT.XTEST.ALEA(2).	JAMAJ.(2).GAMA(	CL5 54	59	
17     Community Latter Science (Science)     Community Latter Science (Science)     Community Latter Science (Science)       18     Optensity wit (Science)     Community Latter (Science)     Community Latter (Science)       18     Diversity wit (Science)     Community Latter (Science)     Community Latter (Science)       18     Diversity wit (Science)     Community Latter (Science)     Community Latter (Science)       18     Diversity wit (Science)     Community (Science)     Community (Science)       18     Science     Community (Science)     Community (Science)       18     Science     Community (Science)     Community (Science)       18     Science     Community (Science)     Community (Science)       19     Science     Community (Science)     Community (Science)       19     Science     Community (Science)     Community (Science)       19     Science     Community (Science)     Community (Science)       10     Science     Community (Science)     Community (Science)       11     Community (Science)     Community (Science)     Community (Science)       11     Science     Community (Science)     Community (Science)       11     Science     Community (Science)     Community (Science)       11     Science     Community (Science)     Community (Sci	5	IDELT(3), GHX(120), GMY(120), HC( 60), JX1, JX2, JY1, JY2	2	CL5 54	59	
9Djeleistijty akt 60, rollynstif 601, Jakat 60, 61, Jakat 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,		COMMUNIATION (11/1/1/1/1/1/1/2/2/1/2/2/2/2/2/2/2/2/2/				
1         10001 Miles         10001 Miles         10001 Miles         10000           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Miles         10000 Miles         10000 Miles         10000 Miles           2         10000 Mi	0.0	DIMENSIUN AA( 60, 60), RHS( 60), AAA( 60, 61), ET( 6	MM ( 109 ) ZZ ( 109	1 40CL5 54	<b>6</b> .0	
27         HCORE         CC         CC         SC           26         XTEFT*-1:WAC         CC         SC         SC           27         XTEFT*-1:WAC         CC         SC         SC           26         XTEFT*-1:WAC         CC         SC         SC           27         XTEFT*-1:WAC         CC         SC         SC           26         SUK FLUE ANTERE         ANTERE ANTERE         CC         SC           27         SUK FLUE ANTERE         CC         SC         SC           28         SUK FLUE ANTERE         CC         SC         SC           29         SUK FLUE ANTERE         CC         SC         SC           20         SUK FLUE ANTERE         CC         SC         SC           21         SALL REACL         CC         SC         SC           22         SALL REACL         CC         SC         SC           23         SALL REACL         CC         SC         SC           24         SALL REACL         CC         SC         SC           25         SC         SC         SC         SC           26         SC         SC         SC         SC	21-20	EQUIVALENCE (AA(1,1),AAA(1,1)),(RHS(1),AAA(1, 01)	1)#H##(1)ZZ)#((	1) CL5 54	61	
25     XTESTST-119-40     CUS 5465       27     SINFACE AND VOLUME TEMPERATURES     CUS 5465       29     UIK FLUE PATER     CUS 5465       29     SINFACE AND VOLUME TEMPERATURES     CUS 5465       29     SINFACE AND VOLUME TEMPERATURES     CUS 5465       20     GAX = SUSCATE HEAD TANKER CUEFTION     CUS 5462       20     GAX = SUSCATE HEAD TANKER CUEFTION     CUS 5425       20     CAX = SUSCATE HEAD TANKER CUEFTION     CUS 5421       21     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       22     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       23     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       24     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       25     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       26     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       27     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       28     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       29     CAUL READ(2) TEMOS FET(1), 60)     CUS 5421       20     CAUL READ(2) TEMOS FET(1), 700     CUS 5421       21     CAUL READ(2) TEMOS FET(1), 700     CUS 5421       21     CAUL READ(2) TEMOS FET(1), 700     CUS 5421       21     COUNTE FET/READ(2) TEMOS FET(2)     CUS 5421       21	23			CL5 54	69	
27 C       SWRFACE AND VALUME TEMPERATURES       C15 5407         28 C       UK FLUX PATTERN       C15 5407         29 C       UK FLUX PATTERN       C15 5470         29 C       GAL READ(2) TEMO(1) TEMO(	52			CL5 54	65	
29 C     BUK FLUW PATERN       30 C     GAS     SUK FLUW PATERN       31 CALL REACT TERRS (FTERS) (FTE		SURFACE AND VOLUME TEMPERATURES		CL5 54	67	
31       Call REACE TENGUTTULLD 601       C15 5473         33       Call REACE TENDS OF TENGUTTULLD 601       C15 5473         34       National Science Tends of Tengustures and tendus       C15 5473         35       Call REACES TENDS OF TENDS O	0 0 0 0 0 0 0	BULK FLOW PATTERN BULK FLOW PATTERN GAS SUBERN TANSEED FDEESTERN			6 6 6	
33     CALL REAP(2) HGAS) FT(1) > 60)     C15 5473       34     WARGINGLENTARCH     C15 5473       35     CALL REAP(2) GMA 1658(11) * NCI     C15 5473       35     CALL REAP(2) GMA 1658(11) * NCI     C15 5473       37     CALL REAP(2) GMA 1658(11) * NCI     C15 5473       39     CALL REAP(2) GMA 1658(11) * NCI     C15 5473       39     CALL REAP(2) CMA 1658(11) * NCI     C15 5473       39     CALL REAP(2) CMA 1658(11) * NCI     C15 5463       41     C     C15 5463       42     C     C15 5463       43     TC(1) 1 * 1.1/VCL     C15 5463       44     C     C15 5463       45     D     C1 5463       46     D     C1 5463       47     T1 2017142     C1 5463       47     T1 2017142     C1 5463       47     D     C1 5463       48     D     C1 5463       49     D3 15 4-14/05     C1 5463       49     D3 15 4-14/05     C1 5463	1	CALL READ(2, 17EMC1, TV(1,1), 60)		CL5 54	11	
35       NY=(IRUN+1)+NCCL       37       CLL       5475         37       CALL       REACT2-GNY       1.46:X11), NX1       CLL       5477         37       CALL       REACT2-GNY       1.46:X11), NX1       CLL       5477         39       CALL       REACT2-GN       1.46:X11), NX1       CLL       547         39       CALL       REACT2-GN       1.46:X11), NX1       CLL       547         39       CALL       REACT2-GN       1.46:X11), 111       CLL       547         41       C       CONPUTE-TELREATURE       FACT0011       1.41       1.41         42       D1       J=J=J=SUSL       1.545       5481       5482         43       CONTRUE       CLS       5482       5483       5483         45       D0       1.1       1.11/UCL       CLS       5483       5483         45       L1       CONTRUE       AA       CLS       5483       5483         46       CONTRUE       AA       CLS       5483       5483         47       CONTRUE       AA       CLS       5483       5483         47       L       CONTRUE       AA       CLS       5483	33	CALL READ(2, HGAS1, ET(1), 60)		15 54	73	
37       CALL REALLS'GIM JG-X(1), NXJ       CL5 547         38       CALL REAU(2) '10' 140(11), 00)       NXJ       CL5 547         39       CALL REAU(2) '10' 140(11), 12)       CL5 547         41       C CUPRUTE TELPERATURE FACTORS (1**3 ANDT**4)       CL5 549         42       00 4 Jai.NAURE       CL5 5483         43       TS(JJ)2)=TS(JJ)2)=X       CL5 5483         43       TS(JJ)2)=TS(JJ)2)=X       CL5 5483         44       CNTIMUE       CL5 5483         45       TO 11 J=L/VCL       CL5 5483         46       TO/L111**3       CL5 5483         47       CL5 5483       CL5 5483         48       C PUT SUREACE TO GAS INTERCHANCE AREA IN AA       CL5 5483         47       CL1 SURAULS       CL5 5483         48       C PUT SUREACE TO GAS INTERCHANCE AREA IN AA       CL5 5483         49       CALL PRENDAA(LJ))       CL5 5483         49       CALL PRENDAA(LJ))       CL5 5483         49       CALL PRENDAA(LJ))       CL5 5483         40       CL5 5483       CL5 5483         41       CNULUUE       CL5 5483         41       CNULUUE       CL5 5483         42       DUT SUREACE TO GAS INTAA       CL5 5483 </td <td>120</td> <td>NY=(HCUL+L)*/COL NY=(RCU+1)*/COL</td> <td></td> <td></td> <td>75 75</td> <td></td>	120	NY=(HCUL+L)*/COL NY=(RCU+1)*/COL			75 75	
39       CALL READ(2) 'CP '.CPC'(1).11)         40       CALL READ(2.14V I.HWAV(1).12)         41       C ON VIE TELATURE FACTORS (1**9 ANDT**4)         42       C ON VIE TELATURE FACTORS (1**9 ANDT**4)         43       TS(J.2)=TS(J.J.1;2*)         43       TS(J.2)=TS(J.J.1;2*)         45       TS(J.2)=TS(J.J.1;2*)         45       TS(J.2)=TS(J.J.1;2*)         45       TS(J.2)=TS(J.J.1;2*)         45       TS(J.2)=TS(J.J.1;2*)         45       TS(J.2)=TS(J.J.1;4*3         45       TS(J.2)=TS(J.J.1;4*3         45       TS(J.2)=TS(J.J.1;4*3         45       TS(J.2)=TS(J.J.1;4*3         45       TS(J.2)=TS(J.J.1;4*3         45       TS(J.2)=TS(J.J.1;4*3         47       TS(J.2)=TS(J.J.1;4*3         47       TS(J.2)=TS(J.J.1;4*3         47       TS(J.2)=TS(J.J.1;4*3         47       TS(J.2)=TS(J.J.1;4*3         48       C OLS 5486         49       C OLS 5486         49       C OLS 5486         49       C OLS 5489         49       C OLS 5489         49       J J J J J J J S J J J J J J J S J J J J	37.0	CALL REAL(2) GMX 1) GAX(1) NX)		CL5 54	77	
41 C COMPUTE TENPERATURE FACTORS (T**3 ANDT**4) CL5 5481 42 DO 4 J#1ANSURE 43 T5(JJ2)=T5(JJ1)#43 44 T5(JJ2)=T5(JJ1)#43 45 DO 11 J=1JAVCL 46 DO 11 J=1JAVCL 47 11 CONTIAUE 47 11 CONTIAUE 47 11 CONTIAUE 48 C PUL PZERCHARIGE AREA IN AA 47 15 J=1JACSBLK 1) 3600) 49 CJ1 SURPERCHARIGE AREA IN AA 40 DJ 15 J=1JACSBLK 1) 3600)	66	CALL READ(2,1CP 1,CPCP(1),11) CALL READ(2,1CP 1,CPCP(1),11) CALL READ(2,1CP 1,UVU/1),139)		CL5 54	62	
43       T5(JJ)2)=T5(JJ)1;243         44       CONTINUE         45       10         45       10         45       10         45       10         46       TV(JJ)1##3         47       11         48       11         49       CALL PZERD(AAIGE AREA IN AA         49       CALL PZERD(AAIGE AREA IN AA         49       CALL PZERD(AAILGE AREA IN AA	41 C	COMPUTE TELPERATURE FACTORS (1##3 ANDT##4) DD A 1-1 MELVER		CL5 54	19	
45 10       D0 11 J=1.01VGL         46       TV(JJ22)=TV(JJ1)**3         46       TV(JJ22)=TV(JJ1)**3         47 11       CDNTINUE         47 11       CDNTINUE         48 C       PUT SURFACE TD CAS INTERCHARIGE AREA IN AA         49       CALL PZERD(AA(1J1)) 3600)         49       CALL PZERD(AA(1J1)) 3600)         49       CI5 5489         50       D3 15 J=1,MSSBLK	1 1 1 1 1 1 1			CL5 54		
47 11 CONTINUE 48 C PUT SURFACE TU GAS INTERCHANIGE AREA IN AA . CL5 5487 49 C ALL PZERD(AA(1,1), 3600) 49 CJL PZERD(AA(1,1), 3600) 50 DJ 15 J=1,465BLK 3600) 50 DJ 15 J=1,465BLK 3600)	1 5 4				82 85	
49 CALL PZERD(AA(1,1), 3600) - CL5 5499 50 D3 15 J-1,4658LK C15 5490	1 1 4 4 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1 CONTINUE 1 CONTINUE DIT SUBFACE TO GAS INTERCHANIGE ABEA IN AA	••	CL5 54		
	5 d	CALL PZERD(AA(1)) 3600) DJ 15 J=1.MGSBLK	•	CL5 54	89 90	

91         Call resolution         Constraints         Constraints <t< th=""><th></th><th></th></t<>		
<ul> <li>3. C. CONNEL Sec CHURTING, ETA FRINGEATURE OF CIT 53:00 9. 10. 17:12.0.001</li> <li>9. 10. 10. 17:12.0.001</li> <li>11. 12. 10. 10. 12.0.001</li> <li>12. 12.0.001</li> <li>13. 10. 10. 12.0.001</li> <li>14. 12. 12.0.001</li> <li>15. 12.0.001</li> <li>15. 12.0.001</li> <li>16. 12.0.001</li> <li>17. 12.0.001</li> <li>18. 12.0.001</li> <li>19. 12.0.001</li> <li>10. 12.0.001</li> <li>11.12.0.001</li> <li>11.12.0.001</li> <li>12.12.0.001</li> <li>13.12.0.001</li> <li>13.12.0.001</li> <li>13.12.0.001</li> <li>13.12.0.001</li> <li>13.12.0.001</li> <li>13.12.0.001</li> <li>14.12.0.011</li> <li>15.12.0.001</li> /ul>	CALL READ(2,6S(J),AA(1,15*J+14), 900)	CL5 5491 CL5 5492
Solution         Constraint         Constrain	C COMPUTE S-G CONTRIBUTION TO RHS SUM DVER SURFACE EMITTER FOR	CL5 5493 CL5 5493
1         0.0.15 <th0.0.15< th=""> <th0.0.15< th=""></th0.0.15<></th0.0.15<>		CL5 5495
50     10     <	DD 16 JelyNSURF	CL5 5496 CL5 5497 CL5 5407
61     17     11     17     11     17     11     15     11     15     11     15     11     15     11     15     11     15     11     15     <	16 CONTINUE 16 CONTINUE 15 STATINUE	15 5499 15 5500
53     fourty Fred Work (1:11 * 5-500)     city 5:50       613     Cutt Ref N(7:55(1), An(1), 1:3+0-1:4)     city 5:50       615     Cutt Ref N(7:55(1), An(1), 1:3+0-1:4)     city 5:50       616     Cutt Ref N(7:55(1), An(1), 1:3+0-1:4)     city 5:50       617     Cutt Ref N(7:55(1), An(1), 1:3+0-1:4)     city 5:50       616     Cutt Ref N(7:55(1), An(1), 1:3+0-1:4)     city 5:50       617     Cutt Ref N(7:55(1), An(1), 1:3+0-1:4)     city 5:50       71     Zity 1:0+0.     city 5:30       71     Zity 1:0+0.     city 5:31       71     Zity 2:0+0.     city 5:31       71     Zity 2:0+0.     city 5:31       72     City 7:1+0.     city 5:31       73     Zity 2:0+0.     city 5:31       74     Zity 2:0+0.     city 5:31       74     Zity 2:0+0.     city 5:31       75     City 7:0+0.     city 5:31       76     City 7:0+0.     city 5:31       71     Zity 2:0+0.     city 5:31       71     City 7:0+0.     city 5:31       71     City 7:0+0.     city 5:31       71     City 7:0+0. <td>17 CONTINUE Duit cis viceire verview AA</td> <td>CL5 5501 CL5 5501</td>	17 CONTINUE Duit cis viceire verview AA	CL5 5501 CL5 5501
0.1         Cult. Ref. (12)-AG(1).JAC(1).1243-1417         5001         CULL. Ref. (12)-AG(1).JAC(1).1243-1417         5001         CULL. Scientificurity. To FIGEDRAL DF MATRX AA. AND SAVE IN         CUL 3007         CUL 3007         5001         5	CALL PZERU(AA(1,1), 3600)	
77 C     Cummer Ges Cummer and Surger IN     CH 300       71 C     Cummer Ges Cummer and Surger In 2200     Cummer And Surger In 220       71 22(1)=7(1)=7(1)=7(1)=7(1)=7(1)=7(1)=7(1)=7	00 22 441445484K Call Rean(2,5G(4))sAA(1,15*4=14)s 900) 23 FruitsAnie	CL5 5505 CL5 5505 CL5 5505
00         61         510         61         510           11         20(1)*0.         61         511           12         20(1)*0.         61         511           12         20(1)*0.         61         511           12         20(1)*0.         61         511           12         20(1)*0.         61         511           12         20(1)*2.         61         511           12         20(1)*2.         61         511           12         20(1)*1.         5000         61         511           17         Call Freedware are 10         A         61         511           17         Call Freedware are 10         A         61         511           17         Call Freedware. Stand ADD         61         511         511           17         Call Freedware. Stand ADD         61         521         511           17         Call Freedware. Stand ADD         61         521         512           10         Call Freedware. ADD         74         61         522           11         Freedware. ADD         74         61         552           12         Call Freedware. ADD <t< td=""><td>C CUMPUTE G-S CONTRIBUTION TO DIAGONAL DF MATRIX AA AND SAVE IN C TENDERARY STORAGE - SIM NYER SUBFACE RECEIVER FOR FACH GAS</td><td></td></t<>	C CUMPUTE G-S CONTRIBUTION TO DIAGONAL DF MATRIX AA AND SAVE IN C TENDERARY STORAGE - SIM NYER SUBFACE RECEIVER FOR FACH GAS	
71         22.1.1.0.1         CG 5511           72         22.1.1.0.1         CG 5511           73         22.1.1.0.1         CG 5511           74         21.1.1.1         CG 5511           75         9.1         CG 7.1.1.1.1.1           77         0.1.1         7.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	C EMITTER AND STURE IN 22	CL5 5509
73       21(1)=12(1)34M(1.0)         73       21(1)=12(1)34M(1.0)         71       61(1) FFEULAL ILLEAUGE AEA IN AA         71       6.1(1) FFEULAL ILLEAUGE AEA IN AA         71       6.1(1) FFEULAL ILLEAUGE AEA IN AA         71       6.1(1) FFEULAL ILLAND         71       6.1(1) FFEULAL ILLAND         71       6.1(1) FFEULAL ILLAND         71       6.1(1) FFEULAL ILLAND         71       6.1(1) FFEULAL         71       6.1(1) FFEULAULAL         71       7.1(1) FFEULAULAL         71       7.1(1) FFEULAULAL         71		
7)     <		
77     Call Prevaluation     CL 5517       79     02.7 HayLocidity, Anti, 1384-141, 9001     CL 5518       79     02.7 HayLocidity, Anti, 1384-141, 9001     CL 5518       81     C concorrent control anti, 1284-141, 9001     CL 5518       81     C concorrent control anti, 1284-141, 9001     CL 5518       81     C concorrent control anti, 1284-141, 9001     CL 5518       82     Freeners visions and control anti co	23 CUNTINUE 23 CUNTINUE 2 DUT C.C. TOTAL INTEDCHANCE ADEA IN AA	
79Call Reduct, JGG(J), AAIL, 139-1-14), 9001Cill Reduct, JGG(J), AAIL, 139-1-14), 9001Cill Sig8027CONTRIAUTION TO DIAGONAL DF MATRIX AA AND SAVE INCL5 552081CCONTRIAUTION TO DIAGONAL DF MATRIX AA AND SAVE INCL5 552082CREEUREAK STRAGAG ALMA ATTER AA AND SAVE INCL5 552383CREFUSAK STATACUS 552384CSI 141, VOLCL5 552385D)29 411, ANDCL5 552386D)29 411, ANDCL5 552387CUJ1*22(J)+AA(LJJ)CL5 552788CCL15 552487CUJ1*22(J)+AA(LJJ)CL5 552787CUJ1*22(J)+AA(LJJ)CL5 552788CCL11*25(J)+AA(LJJ)90Z2(J)+24(LJJ)+4CL15 553191Z2(J)+24(LJJ)+4CL15 553592D0122/21/21+4CL15 553593CUTTINUECL25 553593CUTTINUECL25 553594CUTTINUECL35 553595CUTTINUECL35 553595CUTTINUECL35 553595CUTTINUECL35 553595CUTTINUECL35 553595CUTTINUECL5 553595CUTTINUECL35 553595CUTTINUECL5 553595CUTTINUECL5 553595CUTTINUECL5 553595CUTTINUECL5 553595CUTTINUECL5 553595CUTTINUECL5 553595	CALL PZERD(AA(1,1), 3600)	CL5 5517 CL5 5517
Bit CCumburts GenCumburts Gen <thc< td=""><td>CALL READ(2,66(J),AA(1,15*J-14), 900)</td><td></td></thc<>	CALL READ(2,66(J),AA(1,15*J-14), 900)	
85       RICETUER FIR EACH GAS EMITTER AND IN TEMPDRARY STORAGE ZZ       CLS 552         86       012 SH 1= No.Null.       CLS 552         87       22 4= 1= No.Null.       CLS 552         88       012 SH 1= No.Null.       CLS 552         89       22 (1) = No.Null.       CLS 553         80       22 (1) = No.Null.       CLS 553         81       2 (1) = No.Null.       CLS 553         82       013 (1) = NULL       CLS 553         93       01 (1) I= NULL       CLS 553         93       01 (1) I= NULL       CLS 553         93       01 1 = I = NULL       CLS 553         93       01 1 = I = NULL       CLS 553         94       01 1 = I = NULL       CLS 553         95       CUNTINE       CLS 553         95       CUNTINE       CLS 553         96       CUNTINE       CLS 553         97       CUNTINE       CLS 553         98       CUNTINE       CLS 553	C COMPUTE G-C CUNTRIBUTION TO DIAGONAL DF MATRIX AA AND SAVE IN C tenderary storage ainda with G-S fraterantions - som dver gas	
65       97       29       91       24       1.0001         88       00       28       1.0001       5526         89       210110rz(0)+44(10.1)       01       5527         89       210110rz(0)+44(10.1)       01       5529         89       210110rz(0)+44(10.1)       01       5529         91       00       21       1.0001       01         91       00       21       1.0001       01         92       00       21       1.0001       01         93       00       21       1.0001       01         94       00       21       1.0001       01         93       00       21       1.0001       01         94       00       21       1.0001       01         95       00       21       1.0001       01         94       00       21       1.0001       01       1.0001         95       00       21       1.0001       01       1.0001         94       01       01       1.0001       01       1.0001         95       00       01       01       01       01       01	C RECEIVER FUR EACH GAS EMITTER AND ADD IN TEMPORARY STORAGE ZZ C Maen Flaished Muittely by Minus Stora	CL5 5523 C15 5523
d7       ZZ(J)=ZZ(J)+AA(IJJ)       CI5 5527         BH 2R       CONTINUE       CI15 5528         89       ZZ(J)=ZZ(J)*(-SIG)       CI25 5528         91       C NUTTPLY       CI15 5529         92       CONTINUE       CI25 5531         93       D0 32 J=12,WUL       CI25 5533         93       D0 32 J=12,WUL       CI5 5533         93       D0 32 J=12,WUL       CI5 5533         93       D0 32 J=12,WUL       CI5 5533         94       D1 112,WUL       CI5 5533         95       CUTTINUE       CI5 5533         97       C EACH GAS VILUME HUST BE ANALYED INDIVOLLY TO DEATERMINS       CI25 5535         97       C EACH GAS VILUME HUST BE ANALYED INDIVOLLY TO DEATERMINS       CI15 5536         97       C EACH GAS VILUME HUST BE ANALYED INDIVOLLY TO DEATERMINS       CI25 5535         97       C MULTINUE       CI5 5536         98       C UNVECTIVE ADASTER INTO GAS VOLUME       CI5 5536         99       C       CI5 5536         99       C       CI5 5536         90       C       CI5 5536         91       C       CI5 5536         92       CUNECTIVE HEAT FRANSTER INTO GAS VOLUME       CI5 5540	DR 29 JeljNVJL Ar 28 JeliNVJL	CL5 5525 ris 5525
89       ZZ(J)=ZZ(J)*(-SIG)         90       29       CONTINUE         91       C NUTTELY AA BY SIMGA       CL5 5530         92       DD 32 J=J,N:VUL       CL5 5531         93       DD 31 J=J,N:VUL       CL5 5532         94       AA(IJ)=AA(IJ)*SIG       CL5 5534         95       31       Curtinue         95       31       Curtinue         95       31       Curtule         95       31       Curtuve         95       31       Curtuve         95       31       Curtuve         95       31       Curtuve         95       32       Curtuve         97       C EACH MAT TRANSFER TEAMS       CL5 5535         97       C EACH MAT TRANSFER TEAMS       CL5 5535         97       C UNVECTIVE HEAT TRANSFER TRUT GAS VOLUMES       CL5 5535         97       C = SURFACE HEAT TRANSFER TRUT GAS VOLUMES       CL5 5539         98       C = SURFACE HEAT TRANSFER TRUT GAS VOLUMES       CL5 5539         99       C = = SURFACE HEAT TRANSFER TRUT GAS VOLUMES       CL5 5539	22 (1) = 22 (1) + 44 (1.0.1)	
91 C       NULTIPLY AA BY SIMGA         92 DD 32 JF1/HVDL       DD 32 JF1/HVDL         93 DD 31 I=1/MVUL       CL5 5533         94 DA 11/J1*SIG       CL5 5533         95 31 CGNTINUE       CL5 5534         95 32 CGNTINUE       CL5 5535         97 C       EACH GAS VILUME HUST BE ANALYED INDIVULY TO DERTERMINE       CL5 5535         97 C       EACH GAS VILUME HUST BE ANALYED INDIVULLY TO DERTERMINE       CL5 5535         98 C       CONVECTIVE HEAT TRANSFER TEAMS       CL5 5537         99 C       1 == BULK FLOW ADJAGENT SURFACE AND VOLUMES       CL5 5539         99 C       2 == SULR FLOW ADJAGENT SURFACE AND VOLUMES       CL5 5539         100 C       2 == SULR FLOW ADJAGENT SURFACE AND VOLUME       CL5 5539	Z(J)=ZZ(J)=(=SIG) 22(J)=ZZ(J)=(=SIG) 20 CHNTINIE	(15 5529 (15 5529 (15 5529
93 DD 31 I=I.h.Vul 94 AATIJJ=AATIJJ=SATIJJ=SIG 95 31 CGHTINUE 96 32 CONTINUE 96 32 CONTINUE 96 32 CONTINUE 97 C EACH GAS VOLUME HAT TRANSFER INDIYDUALLY TO DERTERMINE CL5 5536 98 C CUNVELTUM HUST BE ANALYED INDIYDUALLY TO DERTERMINE CL5 5536 99 C 1 TUME HUST BE ANALYED TRANSFER INTO GAS VOLUME CL5 5539 100 C 2 SURFACE HEAT TRANSFER INTO GAS VOLUME CL5 5539 100 C 2 SURFACE HEAT TRANSFER INTO GAS VOLUME	C HULTIPLY AA AY SIMGA DD 32 JF1-GVD1	CL5 5531 CL5 5531
95 31 CGMTINUE 96 32 CONTINUE 97 C EACH GAS VOLUME HUST BE ANALYED INDIYDUALLY TO DERTERMINE CL5 5535 97 C EACH GAS VOLUME HEAT TRANSFER TERMS 99 C 1 BULK FLOW ADJACENT SURFACE AND VOLUMES CL5 5539 100 C 2 SURFACE HEAT TRANSFER INTO GAS VOLUME CL5 5539 100 C 2 SURFACE HEAT TRANSFER INTO GAS VOLUME	DD 31 1=1,NVUL AA(1,.1)=3A(1,.1)+STG	CL5 5533 CL5 5533
97 C EACH GAS VOLUME HUST BE ANALYED INDIVDUALLY TO DERTERMINE . CLS 5537 98 C CUNVECTIVE HEAT TRANSFER TERMS 99 C 1 BULK FLOW ADJACENT SURFACE AND VOLUMES . CLS 5539 100 C 2 SUBFACE HEAT TRANSFER INTO GAS VOLUME 100 C 2 SUBFACE HEAT TRANSFER INTO GAS VOLUME	31 CONTINUE 32 CONTINUE	CL5 5535 C. F. 5535 C. F. 5535
99 C 1 BULK FLOW ADJACENT SURFACE AND VOLUMES - CL5 5539 100 C 2 SURFACE HEAT TRANSFER INTO GAS VOLUME CL5 5540	C EACH GAS VOLUME HUST BE ANALYED INDIVOUALLY TO DERTERMINE	
	C 1 BULK FLOW ADJACENT SURFACE AND VOLUMES C 2 Surface Heat transfer into gas volume	CL5 5539 CL5 5539 CL5 5540

1 1 1

-

: • •

one is not to be a reaction of the second 
Mikit Jamar (1)         Mikit Jama		CL5 5541	
0         Tri(51.55/55.54.55/56.56/57/56.56/57/56.56/56/56/56/56/56/56/56/56/56/56/56/56/5	20. 4.4.1.4.1.1.1.4.4.1.4.4.4.4.4.4.4.4.4.	1.22)+22(1)CL5 5543 (1.21)5543	
51     Antip/W21=Antip/W21=Ref Alg(1/TVIW2_2)     C15     5547       52     Antip/W21=Antip/W21=Ref Alg(1/TVIW2_2)     C15     5559       54     L1=3     C15     5559       54     L1=4     C15     5559       55     Antip/W21=Antip/W1W2_22     C15     5559       56     L1=4     C15     555       56     L1=4     C15     555       57     Antip/W21=Antip/W1W2_22     C15     555       56     L1=4     C15     555       56     C10     555     555       56     C10     555     555       56     C10     555       57		11L CL5 5545 CL5 5545	
GG TU 66       GG TU 66       GG TU 66       GG S50         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILLANTYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILPHYLL AMILPHYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILPHYLL AMILPHYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILPHYLL AMILPHYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILPHYLMYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILPHYLMYLWYLLED       GL 5 550       GL 5 550         A MILPHYLL AMILPHYLMYLWYLLED       GL 5 550       GL 5 557         A MIL	51 AA(IJNX2)=AA(IJNX2)+GAPA(2)/TV(NX2)2)	CL5 5547 CL5 5547	
52     *Af(1)K1) + Af(1)/TV(KN1/2)     CD 5551       54     Af(1)K2) = Af(1)/TV(KN2/2)     CD 5551       54     Af(1)K2) = Af(1)/K2     CD 5551       55     Af(1)K2) = Af(1)/K2     CD 5551       56     L1*     CD 5551       57     Af(1)K2) = Af(1)/K2     CD 5551       56     L1*     CD 5552       61     L1*     CD 5552       76     L1*     CD 5552       77     L1*     CD 5552       76     L1* <td></td> <td>CL5 5549 CL5 5549 At R RERO</td> <td></td>		CL5 5549 CL5 5549 At R RERO	
Attinity://attinity://unxis.el/fri//futur2.2)         (15 559           Attinity://attinity://unxis.el/fri//futur2.2)         (15 559           Attinity://attinity://unxis.el/fri//futur2.2)         (15 559           Attinity://attinity://attinity.//attinity	52 AA(I, 4X1) = AA(I, NX1) + ALFA(1)/TV(NX1,2)	CL5 5551	
G       LF3       Atti-WX11+AAFA11/TVUNY2,22       CL5       5559         Atti-WX11+AAFLANY21+DELT(2)/TVUNY2,22       CL1       CL5       5559         Atti-WX21+AAFLANY21+DELT(2)/TVUNY2,22       CL5       5559         Atti-WX21+AAFLANY21+DELT(2)/TVUNY2,22       CL5       5559         Atti-WX21+AAFLANY21+AETA11/TVUNY2,22       CL5       5559         Atti-WX21+AAFLAUX21+AETA11/TVUNY2,22       CL5       5560         Atti-WX21+AAFLAUX21+AETA11/TVUNY2,22       CL5       5560         Atti-WX21+AAFLAUX21+AETA11/TVUNY2,22       CL5       5560         Atti-WX21+AAFLAUX21+AETA11/TVUNY2,22       CL5       5560         Atti-WX21+AAFLAUX1+X1+AL       CL5       5560         Atti-WX21+AAFLAUX1+X1+AN+2       CL5       5560         Atti-WX21+AAFLAUX1+X1+X2       CL5       5550         Atti-WX21+AAFLAUX1+X1+X2       CL5       5550         Atti-WX1+AAFLAUX1+X1+X2       CL5       5550         Atti-WX1+AAFLAUX1+X1+X2       CL5       5551         <	A4(],HX2)=AA(],NX2)+GAPA(2)/TV(NX2,2) A4(],HY2)=AA(],HY2)+DELT(2)/TV(NY2,2)	CL5 5552 CL5 5553 CL5 5553	
addit/WY21+Addit/WY21+Addit/WY222         addit/WY21+Addit/WY222         ct/s 5550           cd         TO 500         addit/WY21+Addit/WY222         ct/s 5550           addit/WY21+Addit/WY11+Addit/WY11+21         ct/s 5550         ct/s 5550           addit/WY21+Addit/WY21+Addit/WY11+21         ct/s 5550         ct/s 5550           addit/WY21+Addit/WY11+21         ct/s 5550         ct/s 5550           addit/WY21+Addit/WY11+21         ct/s 5550         ct/s 5550           addit/WY21+Addit/WY11+21         ct/s 5550         ct/s 5550           addit/WY21+Addit/WY11+22         ct/s 5550         ct/s 5560           addit/WY21+Addit/WY11+EETAL11/TV11W2+22         ct/s 5560         ct/s 5560           addit/WY21+Addit/WY21+Addit/WY22         ct/s 5560         ct/s 5560           addit/WY21+Addit/WY21+Addit/WY22         ct/s 5572         ct/s 5573           addit/WY21+Addit/WY21+Addit/WY22         ct/s 5573         ct/s 5573           addit/WY21+Addit/WY21+Addit/WY22         ct/	C LL=3 5 AAAY-AVY1-AAAT-AVY1-AAEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	CL5 5555 CL5 5555 CL5 5555	
C LL <sup>4</sup> AKI/JW21=AKI/JW21=BETA(1)/V(KW22,2) C TT 60 C T 60	A (1, NY2) = AA(1, NY2) + 2ELT(2)/TV(NY2, 2)		
Ad(1):I(Y) = ad(1)/IY(INY12)       C(1)       5561         60       C(1)       5563         60       C(1)       5564         60       C(1)       5565         61       C(1)       5565         60       C(1)       5566         60       C(1)       5566         61       C(1)       5566         61       C(1)       5566         61       C(1)       5566         61       C(1)       5570         61       C(1)       5570 <t< td=""><td></td><td>CL5 5599 CL5 5559 CL5 5559</td><td></td></t<>		CL5 5599 CL5 5559 CL5 5559	
G0 10 60       G1 10 60       G1 10 60         5 Addin(x)(x) = Add(x)(x)(x)(x)(x)       G1 (x) (x)       G1 (x) (x)         60 10 60       Add(x)(x)(x)       G1 (x) (x)       G1 (x) (x)         60 10 60       Add(x)(x)       G1 (x) (x)       G1 (x) (x)         60 10 60       Add(x)(x)       G1 (x) (x)       G1 (x) (x)         60 10 60       Add(x)(x)       G1 (x) (x)       G1 (x) (x)         60 11 60       Add(x)       G1 (x) (x)       G1 (x) (x)         60 11 60       Add(x)       G1 (x)       G1 (x)         60 11 60       Add(x)       G1 (x)       G1 (x)         61 10 60       Add(x)       G1 (x)       G1 (x)         61 11 60       Add(x)       G1 (x)       G1 (x)         61 11 60       G1 (x)       G1 (x)       G1 (x)         61 11 60       G1 (x)       G1 (x)       G1 (x)         61 11 60       G1 (x)       G1 (x)       G1 (x)         61 11 60       G1 (x)       G1 (x)       G1 (x)         61 11 60       G1 (x)       G1 (x)       G1 (x)         61 11 70       G1 (x)       G1 (x)       G1 (x)         61 11 70       G1 (x)       G1 (x)       G1 (x)         61 1	AA(1,0V1)=AA(1,0V1)+3ETA(1)/TV(NY1,2) AA(1,0V2)4/000000000000000000000000000000000	CL5 5561 Ale Bakes	
5       AA(1)/WX1)=AA(1)/WX1/HX2/20       CU5 5565         60       TU 60       CU5 5565         61       TU 60       CU5 5572         61       TU 60 <td></td> <td></td> <td></td>			
Addinwy]=addinwy]+eddiny/TV(NY1,2)       C(5) 5565         Addinwy]=addinwy1+agTadin/TV(NY1,2)       C(15) 5567         60 T0 60       C(15) 5569         61 INV1)=addinwy1+agTadin/TV(NY2,2)       C(15) 5569         61 INV1)=addinwy1+agTadin/TV(NY2,2)       C(15) 5569         61 INV2)=addinwy1+agTadin/TV(NY2,2)       C(15) 5573         61 INV2)=addinwy1+agTadin/TV(NY2,2)       C(15) 5573         61 INV2)=addinwy1+agTadin/TV(NY2,2)       C(15) 5573         61 INV2)=addinwy1+agTadin/TV(NY2,2)       C(15) 5573         61 INV2)=addin/Y21+agTadin/TV(NY2,2)       C(15) 5573         61 INV2)=addin/Y21+agTadin/TV(NY1,2)       C(15) 5573         61 ILe7       C(15) 5573         61 INV2)=addin/Y21+agTadin/TV(NY1,2)       C(15) 5573         61 ILe8       C(15) 5573         61 INV2)=addin/Y21+agTadin/TV(NY1,2)       C(15) 5580         61 INV2)=addin/Y1+addin/TV(NY1,2)       C(15) 5580         61 INV2)=addin/Y1+addin/TV(NY1,2)       C(15) 5580         61 ILe8       C(15) 5580         61 INV2)=addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+addin/Y1+Addi	55 AA(I_NX1)=AA(I_NX1)+ALFA(1)/TV(NX1,2)	CL5 5565	
Ad(1,W2)=Ad(1,W2)+5E(T(2)/TV(NY2,2)       C(15 5569         60       T(1,W2)=Ad(1,W2)+5E(T(2)/TV(NY2,2)       C(15 5572         50       Ad(1,W2)=Ad(1,W2)+5E(T(2)/TV(NY2,2)       C(15 5572         60       T0 60       C(15 1,W2)=AE(1)/TV(NY2,2)         60       T0 60       C(15 5572         61       T0 60       C(15 5573         62       T0 60       C(15 5573         63       T0 60       C(15 5573         64       L1=8       C(15 5573         63       T0 60       C(15 5573         64       L1=8       C(15 5573         64       L1=8       C(15 5573         64       L1=8       C(15 5582         64       L1=9       C(15 5582         64       L1=8       C(15 5582         64       L1=9	<u>A4(1+MX2)=A4(1+MX2)+64KA(2)/TV(1X2+2)</u> A4(1+MY1)=A4(1+MY1)+8ETA(1)/TV(NY1+2)	CL5 5546 CL5 5567	
56       AA(1,NX1) + ALFA(1)/TV(NX1,2)         56       AA(1,NY1) = AA(1,NY1) + ALFA(1)/TV(NY2,2)         60       T0       60         61       LL=8       CL5         63       T0       60         64       L1=8       CL5         66       T0       60         61	A4(1-NY2)=AA(1-NY2)+DE4T(2)/TV(NY2-2) 60 T0 60	CL5-5568 CL5-5569 CL5-51369	
AA(1,WZ)=AA(1,NVZ)+DELT(Z)/TV(NYZ,Z)       CL5 5573         GD T0 6G       CL 5 5575         C LL=7       CL 5 5575         GT (1, WZ)=AA(1,NYZ)+SAFA(2)/TV(NYZ,Z)       CL 5 5575         C LL=8       CL 5 5575         AA(1, WZ)=AA(1,NY1)+AETA(1)/TV(NY1,Z)       CL 5 5575         C LL=8       CL 5 5575         C LL=8       CL 5 5575         C LL=8       CL 5 5580         C AA(1, WX1)=AA(1, NX1)+ALEA(1)/TV(NY1, 2)       CL 5 5580         C LL=8       CL 5 5580         AA(1, WX1)=AA(1, NY1)+ALEA(1)/TV(NY1, 2)       CL 5 5580         C AA(1, WY1)=AA(1, NY1, 2)       CL 5 5580	56 AA(I.MXI)=AA(I.MXI)+A[FA(I.)/TV(NXI,2) AATT.NY.1-AATT.NY.14574.1/TVNY.22)		
C       LL=7       CLS 557         57       AA(1,1X2)=AA(1,NY1)+BETA(1)/TV(NY2,2)       CLS 557         60       T0 60       CLS 557         61       LL=8       CLS 557         63       T0 60       CLS 557         64       LL=8       CLS 557         63       T0 60       CLS 557         64       LL=8       CLS 558         64       CLS 558       CLS 558         60       T0 60       CLS 5583         61       LL=10       CLS 5583	A4(1,4Y2)=A4(1,4Y2)+DELT(2)/TV(NY2,2) Ca to to to	CL5 5573 CL5 5573	
AA(1,) IV1) = AA(1,) NV1) + BETA(1)/TV(NV1,2)       CL5 5577       CL5 5579         C       LL=B       CL5 5579         58       AA(1,) IX1) = AA(1,) NX1) + A(EA(1)/TV(NX1,2)       CL5 5580         60       AA(1,) IX1) = AA(1,) NX2) + GAMA(2)/TV(NX2,2)       CL5 5581         60       T0 60       CL5 5583	6 LL=7 5 1-24 (1.NX2)+54 MA(2)/TV(NX2.2)		
C       LL=8         58       AA(1,1)X1)=AA(1,NX1)+A(EA(1)/TV(NX1,2)         58       AA(1,1)X2)=AA(1,NX2)+GAMA(2)/TV(NX2,2)         AA(1,1)X2)=AA(1,NX2)+GAMA(2)/TV(NX2,2)       CL5 5581         C       C15 5582         C       C15 5582         C       C15 5582         C       CL5 5583         C       C15 5583         AA(1,NY1)=AA(1,NY1)+AEFA(1)/TV(NY1,2)       CL5 5585         C0       T0       CL5 5583         C1       CL5 5583	AA(1,1141)=AA(1,1441)+BETA(1)/TV(NY1,2) 61 TO 40	CL5 5577 CL5 5577	
AA(I, hX2) = AA(I, hX2) + GAMA(2)/TV(hX2,2)       CL5 5582         AA(1, i)Y1) = AA(I, hY1) + SETA(1)/TV(hY1,2)       CL5 5583         C UL=9       CL5 5583         59 AA(I, hY1) = AA(I, hY1) + BETA(1)/TV(hY1,2)       CL5 5583         60 T0 60       CL5 5585         61 T0 60       CL5 5585         61 T0 60       CL5 5585         61 T0 60       CL5 5585	C LL=8 58	CL5 5579 CL5 5580	
C 11=0 59 AA(I/NX1)+ALFA(1)/TV(NX1,2) 59 AA(I/NX1)=AA(I/NY1)+AETA(1)/TV(NY1,2) 60 TO 60 5 LL=10 5 LL=1	AA(I,NX2)=AA(I,NX2)+GAMA(2)/TV(NX2,2) AA(1,1)/1,44(1,1)/1+64AA(1)/TV(NY),2)	CL5 5581 CL5 5581	•
59			
60 10 60	59	CL5 5585 C15 5586	
	60 70 60 6 11 - 10		
510 AA(IsNXI)=AA(IsNXI)+ALFA(I)/TV(NX122) Aakiitsieaa(iitsi)eaakas)/TV(Isiis) Ciff 5590	510 AA(I*NX1)=AA(I*NX1)+ALFA(L)/TV(NX1-2) AA(I*I*1)=AA(I*I*1+1+CAAA(-)/TV(I+1+2)	- CL5 5589 CL5 5589	

FURTRAN	A LAEN BASI SUCKE FISITING CES SUCKED SIL	PAGE 0133	
151	AA(1,HY2)=AA(1,NY2)+DELT(2)/TV(NY2,2) Gn tn 60	CL5 5591 C15 3592	
153 C	LL=11 44(T·1=1)=64(T·1=1)+6(T)/TV(T=1.2)	CL5 5593 CL5 5594	
155	AA(IJNX2) HAA(IJNX2) +GAMA(2)/TV(NX2)2)	CL5 5595	
157		CL5 5597	
159 512	AA(1,4X1)=AA(1,4X1)+ALFA(1)/TV(N×1,2)	CL5 5599	
161		CL5-5600	
163		CL5 5602 CL5 5603	
165 513	AA(I.J.H.1)=AA(I.J.H.1)+ALFA(1)/TV(I-1.2)		
160	A4(1,1,1,2)=AA(1,1,1,2)+6A(2)/1V(1V2,2) A4(1,1)1)=AA(1,1,1)+9ETA(1)/TV(NV1,2)	CL5 5607	
169	AALISHY2)=AALISHY2}\$9ELT(2)/TV(HY2\$2)	6000 2000 2000	
171 514	AA([J: X])=AA([J.NX])+A[FA(])/TV(NX],2)		
173	AA(19491)=AA(19491)+BETA(1)/1V(4V192) AA(1942)=AA(19441)+BETA(1)/1V(4V192)		
175 C		CL5 5615	
177	AA(1,412) = AA(1,412) + GAPA(2)/1V(1X2,2)	CL5 5617	
179 60	ATTPUTLIEATTPUTTEREIATIVINTEREI [F1].EQ.MVGL)GU TO 61	CL5 5619 CL5 5619	
181	G TO 50 Env vriitins sittu siinven terbebatilde set ntagnaal ne aa follai	Th CL5 5621	
183 6	1.0 AND RHSHT##4	(L5 5623	
185 185	00 63 1=100000 = 000 15.000 53 1=100000 = 000	CL5 5625	
167	. DD 65 Jairy 14 95 AATT 1500L	CL5 5627	
169 62	CONTINUE	CL5 5629 C15 5630	
191	RHS (1)=TV(1,) ++4 CONTINUE CONTINUE		
193 C	SULVE FUR TEMPERATURE OF GAS VOLUME RAISED TO THE FORTH POWER THAN EXTRACT THE EDURTH ROOT	R AND CL5 5633 C15 5633	
195	1+16AN=N	CL5 5635 C15 5635	
197		CL5 5637	
199	IF(NPRNT.E0.1)GD 70 681 Write(x2.6000)	CL5 5639 CL5 5640	
•			

A FDRTRAN	V IV (VER 143) SOURCE LISTING! CL5 SUBROUTINE 03/05	15/74	PAGE 0134
201 600	DO FORMAT(141,19%,1GAS VOLUME ENERGY BALANCE1) Call Detations avoi 240		CL5 5641 Cl5 5642
203 681	L CALL ISIMEQ(AAA, 60, 61,NVDL)		CL5 5643 C15 5443
205	DD 69 1=1,NV0L		
207 207	DT=24411=244115441154411547111 DT=244421(AES(RHS(1)+TV(1)),DT) DE1=2442111-11111	•	
209	TV(1,1)=TV(1,1)+SIGN(AMIN1(ABS(DEL),250,0),DEL)		CL5 5649 F1 5 5569
211 71	NFIXe(FIX+1 If X=1/F X=1 If CAT I'T K = ADUATI K AD NELVY (AD TA DI		
213			CL5 5653 CL5 5653
215 C	CUMPLRE TEAPERATURES OBTAINED FROM GAS VALUME HEAT BALANCE Those need the dutating gas voi nue temperature dependent	CE WITH	CL5 5655 CL5 5655
217 C	INTERCHANGE AFEA (C.G. AND C.S. AND EARLY INTERCHANGE AFEA (C.G. AND C.S. CALL BEARLY INTERVISE AND CALL		CL5 2657 C15 2657
219 219		:	
221	DT=AMAX1(APS(ZZ(I)-TV(I,L)) ,DT)		CL5 5661
222 82	IF(DT.LT.DHTCL5)+1C0DE=2		CL5 2663
225 85	CALL #RITE(2)17E451, TV(1, 1, 1, 00) WRITE(5, 3003) 0T		
227	WRITE(K2)	1 . 8 . 4 .	CL5 5667
229			CL5 5669
231	<u>03 - FURBATTAVX, TAX TERPERPTURE UIFFERENCE FUNU-11-CURPUTT</u> 14E1/F10,3) 	INC CAS	
233	END		CL5 5673
•			
		••	
		۰	
	•		

0 7 T	SUBROUTINE CL6 Subrace Ayea Heat Balance	CL6 5674 CL6 5675	-
6	COMMON // DUMMY(3)/KK, ICODE, HCDDE,	CL6 5676	
<b>a n</b>	A LAUISTS VAREAL HANEAP ALAY AN SID ALUEFIGESTS A TBRIDG, PRES, FLUET, FLUETS), XNWX, TSINK,	CL6 5678	
	A NCR, HUNTY, HTVAL, FRATE, KEUEL, XAIR, FTEMP,	CL6 5679	
- H	A NSSBLKA NGSBLKA NSGBLKA RUGHLKA NSUMLA NVOLA A vehreveal. va. vi. 310nst. uchi. uchu. nvevn.	CL6 2680 C16 5681	
0	A RSTARTA TCCIDE, SCODE, NGRAYA JHCHCA	CL6 5682	
	<u>A KIP KZP RChu(1015 10EP(10015 PEFII(20015MPRNT</u>	C14 5484	
د ۲۰۰	INTEGER SCUDE, TCODE, RSTART, NCODE	LL0 2084 CL5 5685	
<b>.</b>	EQUIVALENCE (DUMIY(2) JAFUAX)) (PERM(200) JHTCL6)		
	DIFENSION AAT 60. 60), RHS( 60), AAAT 60. 61), ET ( 60), 221 60), PH	1( ¢0CL6 5688	
0 r- 0		() CL6 5690 C16 5690	
000		CL6 5692 C16 5692 C16 5693	
0	RETRIEVE DATA	CLE 5694	
20	HEAT RELEASE PATTERIA	CL6 5696	
2	ALL THREE HEAT TRANSFER COEFFICIENTS	CL6 5697	•
5	CALL READ(2,1TEMG1,TV(1,1), 60) Call READ(2,1TEMS1,TS(1,11, 60)	CL6 5698 Cl6 5699	
~ =	CALL REAF(2) TEMPISTP(1), 60) CALL REAF(2) TEMPISTP(1), 60)	CL6 5700	
0.0	CALL READ(2) (HC 1)HC(1)1), 60)	CL6 5702	
	CALL READ(2) HCPP1/HC(1/3)/ 60)	CL6 5704	
   	DO B JELANOL	CL6 5706	
8-	Contractervise interview	CL6 5708	
		CL6 5710 CL5 5710 CL 5 5710	
<b>U</b> 5 C	PUT GAS TU SURFACE INTERCHANGE AREA IN AA Cali Diericaaci, 13 - 36003	CL6 5712 CL6 5713	
	DU 13 JelyNSGBLK	CL6 5714	
3 13	CONTINC CLE ENVEDENTION TO DUE CLM DUED FAE FUTTED ENE EAC		
10	SURFACE RECEIVER ACCOUNTING FUR TEMPERATURE OF ENTITER DOI 16 TEI-MSURF	CL6 5718 CL6 5719	
~ ~	RHS(1)=0,0 DD 15,1=1.0VGH	CL6 5720 CL6 5721	
	RHS([)#RIJS(])+AA(]vJ)#TV(vv2)	GL6 5722	

-----

52 10 CONTINUE 53 C PUT SURFACE TO GAS INTERCHANGE AREA IN AA 54 Call PZERU(AA(1,21), 3600)	C16 5724
53 Č PUT SURFAČE TO GAS INTERCHANGE AREA IN AA 54 call Pzeru(Aa(1,11,+3600)	VL9 2/27 CL6 5725
	CL6 5726 CL6 5727
55 DO 21 J#1/46SALK	CL6 5728 CL4 5728
57 21 CONTINUE CONTINUES ON DIACTURE CAMPER AND SAVE THE CONTINUES OF	CL6 5730 CL6 5730
59 C TEHPINERY STIRAGE SUM DVER GAS RECEIVER FOR EACH SURFACE EMITTER (	CL6 5732
	160 2133 CL6 5734 CL6 5734
63 [10 22 1#1/NUL 63 77 1.277 1.2001 1.	CL6 5736 CL6 5736 CL6 5737
65 22 CONTINUE	(16 5738 rit 1720
67 C PUT SURFACE TO SURFACE INTERCHANGE AREA IN AA	
	CL6 5141 CL6 5742
71 27 CONTINUE 21 27 CONTINUE 20 C CONDITE G-E FEATOINTIAN TO DIAGONAL DE MATORY AA AND SAUE IN	CL6 2744 r1 4 5745
73 C TEHPORARY STURAGE ALONG WITH S-G CUNTRIBUTION SUM OVER SURFACE (	CL6 5746 CL6 5746
14 C MELETVEM FUK ENCH SUKFACE EVITTEN AND STUKE IN EZ-9 WAGN	146 9141 616 9148 614 5740
77 00 28 [#1],SURF 77 00 28 [#1],SURF 77 11527 (146471 1)	CL6 5750 CL6 5750
19 28 CONTIVUE 20 77/11/25/11/25/20	CL6 5752 CL6 5752
	CL6 5754 CL6 5754
	CL6 5756
27 37 CONTINUE 29 2 CUMPLETE MATEIX AND RHS IN TWD SYEDS	CL6 5760 C1 6 5760
89 C 1 RADIANT AND SOURCE TERMS	CL6 5762
91 DU 34 Imland	
92 AA(1,1)=AA(1,1)+XZ(1) 93 RHS(1)=RHS(1)NET(1) 23 CONTRUE	-CL6. 5765 CL6. 5765 CL6. 5765
95 0049 1=1.NSUKF 05 0049 1=1.NSUKF 04 16AST1.K.11.121	CL6 5768 CL6 5768 CL6 5768
97 [F(1.6T=2*N:CJL)GU TD 39	CL6 5770 CL6 5770
	cte 5112

and the second secon

States and Arrest

......

|--|

Į .

TTIME TANKE TA																			
TTINUE T MALFELS.TFEIRL.SEL1.11. 601 TELE.2007L01 COUE=2 TELE.2007L01 COUE=2 TELE.2001L01 TO RA TELEVISION TO TO TO RA TELEVISION TO TO TO RA TELEVISION TO TO TO RA TO TO TO RA TO TO T											-	•				-			
TTINE TAKAT EC. 175005-2 TOTELES-ONTCLOBE-2 TOTELES-ONTCLOBE-2 TOTELES-ONTCLOBE REMAT(7/2001) TESNAL/1:1,100 REMAT(7/2001) TESNA REMAT(7/2001) TESNA TESNA REMAT(7/2001) TESNA REMAT(7/2001) TESNA	CL6 5824 CL6 5824 CL6 5825	CL6 5826 CL6 5827 CL6 5828	F156L6 5830	UN CL6 5832 CL6 5832	CL6 5834 CL6 5835			•											
TTINUE TTINUE THE CALLED TO BA TELEVALACOLODICA TELEVALACOLODICA TELEVALACOLODICA SEMAT(//2004/COMPUTED SUFFACE AREA TEMPERATURES SEMAT(//2004/COMPUTED SUFFACE AREA TEMPERATURES SEMATUR			,DEG_R!//(25X,6	E ARAE CALULATI	grinn	-										••	•		
TTINUE TTINUE TELE(2): TEUSL: TEUSL: TEULE TELE(2): 3002101 TELE(2): 3002101 TELE(2): 3002101 TELE(2): 2001) TENPERATURE DIFFER MATT(//20X:CUMPUTED SURFACE ARE MATT(//20X:CUMPUTED SURFACE ARE TELE(2): X, I HAX TEMPERATURE DIFFER TELE TURN TURN			A TEMPERATURES.	ENCE IN SURFAC					•										
ИТИЧЕ 1. ЖЫТЕСЭ. ТЕНО 1. ЖЫТЕСЭ. ТЕНО 1. КРАМТ. ЕС. 1 100 ТО 1. КМАТ (//20X10.004) 150 ТО 1. КМАТ (27X. 14АХ ТЕНР 1. 12. 3) 1. 12. 3)	12(1+11+ 601	E=2 86	ed Surface Are	ERATURE JIFFER															
	TINUE	(01.LE.DHTCL6)1CDD 11E(k2.3002)01 (NPRNT.E0.1)60 T0	176(K2,3001) (75(N 18447(//20X1C0HPUT	2 MAT (2"X" 14AX TEHP	TURN								•						

PAGE 0139	16455836 ARIGA55437	16455838 16455438	16AS5840 16AS5840	16455842 164555842	16AS5844		16453044	16455850 16455850 1-455851	16455852 16455852	10455856	16455858 16455858	16455860 16AS5860	16455862 16455862	16455864 16455864	10453602 10453806 10454806	16455868 16455868	IGAS5870	16455872 16455872	16455874	16A32875 16A55876	16455875 16455875 16455875	16AS5880 16AS5880	16A55882 16A55883	16455884 16455884
SUBROUTINE 03/05/74	VOLUMES ADJACENT TO SURFACE	11 INEC	LUMES	ACUEF(8,3), TSTNK.	AIR, FTEHP,	DVJ NXSXNJ	200)																	
ER L43) SUURCE LISTING! IGAS	ROUTINE IGAS(11,KKK,IG1,IG2) Routin Computes the Index of Gas	SURFACE AREA INDEX	1.2 INDEX OF AJACENT GAS VO 1.1.2 INDEX OF AJACENT GAS VO 1.1.1 INDEX OF AJACENT GAS VO	U(9), VAREA, HAREA, XLX, XK(3), U(9), Varea, Harea, XLX, XK(3), Viotes, Diret, Flicts), XHV	R. HJUTY, HTVAL, FRATE, KFUEL, X Ediv, Utcut, U. Utcut, Utcut, Utc	SUCREASE AS AN ACCESS OF A CESS OF ACCESS OF ACCESS OF A ACCESS OF		EGER SCUDE, TCUDE, RSTART, HCDDE		F FURHACE	T0 19	1.01.54464646444444445 14 01 FURNACE 14 10 FURNACE						T-NCR Strotester Henre Two CAE Vol 1460		<pre>i = 1 * HCUL+INT(XSURFX(J)/XD+.1)</pre>	TU 19	11180E	[a]] be12	rurn J
A FURTRAN IV (V	2 C SUP	3 C 4			50 V 6			15 111 15 111	17 11 12	21 C TUP (1	23 60	25 C RUTTO	27 60			33 C RIGT	· 35 60		399 UU 39		42 42 42 43 60 44 18 11	45 17 CON	47 161 47 161 48 162	49 RET 50 END

	<pre>(V(N).FQ.0.010 B2 TTWN=460. TTWN=460. TTWN=460. FTMN=450. S N=1,NSURF B5 N=1,NSURF B5 N=1,NSURF B5 N=1,NSURF FENLUE HARAL FENLUE FEN</pre>	CL7 5936 CL7 5939 CL7 5941 CL7 5941 CL7 5944 CL7 5944 CL7 5944 CL7 5945 CL7 5946 CL7 5946 CL7 5946 CL7 5946 CL7 5946 CL7 5946 CL7 5946 CL7 5956 CL7 5957 CL7 5956 CL7 50
C017 00 90 90		CLT 5972 CLT 5972 CLT 5973 CLT 5974 CLT 5974
HECUT HECUT	SUC#HPKGC+HTDEH(N)#YC#YAREA JTINUE JUT=ELUET#XMWX#HV(TAR+460.) ET=HCUNB+KFIN+HAMB-HPRNC=HFQUT ET=HCUNB+KFIN+HAMB-HPRNC=HFQUT	CL7 5975 CL7 5976 CL7 5976 CL7 5978 CL7 5978
2011 2011 2011 2011 2011 2011 2011 2011	LEINCOSDIMLUMUON ILLUNATION LAULANTAULINNEI Feupruc Amatilisiaxe Furnace Overall Meat Balancebbtu/Hr/FODT De Fur /15x556(1-')///20xeiheat IN//25xeicombustion/521.0/25xeiflue 1.523.0//20xeiheat Outl//25xeitanbietle/224.0/25xeiprucess Flui 8.0/25xeiflue GASisf23.0//20xeihetetleAt Balance(Heat In-Heat C 250.01	CLT 5940 CLT 5980 KACCLT 5981 E GCLT 5982 D14CLT 5984 CLT 5984 CLT 5984

03/05/74 PAGE 0142	JVAREA CL7 5986					5,100 CL7 5996	COMPUTED1/15X42(1-1)CL7 5998		115× 35(1_1)/20× 18017 6002	L TEHPERATURE, DEG FICL7 6004	CL7 6056 CL2 6056			CL7 6012 CL7 6012	CL7 6014 CL7 6014		CL7 6018 CL7 6018 UEAT DATAI/:=x400(1-C17 6019	(. ISPECFIC HEATSBTU/LCL7 6U2C)	CL7 6022 CL7 6022				
IV (VER L43) SOURCE LISTING! CL7 SUBROUTINE	IF(HPRDC_LE=0.0)WRITE(K2,103)HPRDC,XU,YU,HAREA Fubwat(! Hobuc= 1.55 3.1 Yn= 1.52 3.1 Yom= 1.56	1 VAREA* 1, F8,3)	KITE(K2-597) FURMAT(111)	ENTHEREAT/FLUET/XMMX		IF (hava (HV(TT+460,), ENTH, TOL, TT, TSTOP, 1) 99, 10	FORMAT(15X, 18, 10, 10, MALL TEMPERATURE CANNOT BE		VRITE(K2)106)E4THJTT VRITE(K2)106)E4THJTT EADPAAT418V-1404DE6 AA41 TEMBE8ATHBF CAMBUTION1	LEQUIRED ENTHALPYSETULE: FZO.3/20X, BRIDGE WAL				2(N)= CP(TT+460.)	16(11,665,4000,166 10 130 N=841	60 TU 120 60 TU 120	WRITE(K2,131)(T(N),V(N),Z(N),N=1,NN) Write(K2,131)(T(N),V(N),Z(N),N=1,NN) Fribmat(1),1,4,2,15,115,255 Enthaldvand) Sderfft	1')///20% ITENP.DFG F 1.5% IEVTHALPY.BTU/LB1.5%					
A FORTRAN I	101	103	105 97	107	109	111 99	101 611	115	117 105	119	121 110	123	125 120	120	129	191	133	-135 -135	137 999				

									•																
PAGE 0143	44746024 44746025	WAYA6026 Wava6027	- WAYA6028	MDWAYA6029 IP WAYA603C	WAYA6031 WAYA6032 Waya6032	MAYA6034	4AYA6036	MAYA6038	НА ТАСОЗЗ На тасозз Катара	WAYA6042 Waxa6042	WAYA6044 Waya6045	HAYA6046	WAYA6041 WAYA6043 WAX46040	MAYA6050 Waya6051	WAYAGU52	MAYA6054	MAYA6056	MAYA6U58 WAYA6U58 WAYA6058	MAYA6060 Waya6061	WAYA6062	WAYA6064	HATABUGS KAYA6J66 MAYA6D67	HAYA6068 Waya6069	MAYA6070 Waya6071	(L)WAYA6072 EAVA6072
LISTING: WAYA FUNCTION 03/05/74	IS, TOL, START, STAP, LEVEL) DN SINGLE VALUED FUNCTION	JE NF DEPENJENT VARIABLE Je ne dependent variable		J <u>e op independent variarleja retter value retir</u> Jependent variaale answer between start and sto	NDEX FOR MULTILEVEL USE - Betheen ITS Initial Value and Stop Until - Betheen its Initial Value and Stop Until	PERSONAL PARTY AND A REAL VALUE TO STAD	INITS DR 30 TRIALS TAKEN	LEAGE STAKLUK STUP WILL BE INTTAL VALUE .esser Errurjur Its Initial Value IF Level IS	<pre>(2(10)*\1(10)*\2(10)*KDNN1(10)</pre>				50 TO 70	10 ALL SEE LE V AND VIII BRACKET ANSKER	10 20 20 HIGUES CALL	20 TO 30 20 TO 30 20 AT 31/201 TE FUAT 11/17 IS FLORED NO TE LEVE		11111111000000000000000000000000000000	X AND V IN YOU YAND YOU'S			IA GUN A IN AND AND AND AND AND AND AND AND AND AN		GO TO 50 No fentiuur de quit depending an kountly'	)=\ <sup>1</sup> (T))+X5(T)*{\5(T)*3**\7(T)))/(+*{\5(T)-\1
IV (VER L43) SOURCE	FUNCTION WAYA(A,A) ROUTINE TO CONVERGE	A = CURRENT VALI	TOL ETULERANCE	START -CURRENT VALI STOP -LINIT OF IN	HEVEL EL-2,3 AS A HAVA WILL VARY STAR	DN EXIT WÂYA IS - ENP NHT FJWVER	OUVERGED IN L	WHICHEVER GIVES	DIMENSION X1(10),	SET X JY , AND LEVE	YEANS-A I-TARYIEVEL	WAYAEL U	IF (ABS(Y).LE.TOL)	IF (KOURT(L)) 40,30 Second on Minger	IF(Y*Y](L).LT.0.0	IF (KOUNT(L).6T.1)		X4X1(L) X4X1(L) Kniintel 11	60 TJ 60 V -V1 30ACKET STDBE	X2(L)=X V2(L)=V		STORE RESULT	Y1(L)=Y V=ST70	IF (KOUNT(L).EQ.0)	X=(X](L)+(3.+Y2(L
A FORTRAN	2 C	0 L M 4	50	-10					14	19 C	- 12	53	25 25	27 27 28 C	29 10	31 5	33 C	, 35 25	37 7 8 6	39 20		2 7 7 7 7 7 7 7 7	5 4 5 4 7	47 48 C	49 40

	[ [		]	1	1	1 ·	<b>j</b>			1	1	!	I	I						1	ĺ				· ·				<b>I</b> .	1
																		•												
											·								ł											
								ł	.										.											
																									•					
	:																													
								İ				}																		
				1							l ·															ļ				
																													Į	
				l								}																		
				·																									ļ	
						ł							1																	
												{																		
																								•						
																												ļ		
•	4 In					1.5									İ															
14	200	100	20	800	HO H	809								ľ																
5	Y AC	YAC	Ϋ́Α	AA AA	A A A A	ΥA				1																				
AGE	M M	A N	<b>4 4</b> · • <b>3</b> ·	₫ ₫ ₫ ≹ 7: 3	333	3											l									ľ				
a																														
			.	ļ																			1	••						İ
44																								-	•					
05/													ł															•	Į	
25			ĺ														•													
0																														
				ľ																										
z													Ì			[														
		I																												
2																1														
ב ו																														
					<b>.</b>	ļ						•																		
1 Y A					1																									
M					ł																						ļ			
5	70		Ľ.																									ļ		
Ž	2		AI																								·			
IS.			-		Į.																									
<u>_</u>			AN		Ŧ						İ																			
URC .	E • 3 T / I		Σ		İ			l								a														
SUI	19 ° (	•	10		Ĭ										ĺ														1	
n :	3		ag E	0	Ĩ																									
4	111		<b>}</b> 🗄		╡ <sub>┷</sub>	ļ																				ł				
/ER	UX)	A V									·	ł						-	•	ŀ										
5	1F	4			15 TS											;														
2			3		Ť											.				<b>.</b> .						1			i	
۲.4	20	20			0			Í		l				ŀ								·								
<b>R T</b>	120	<u> </u>	łn,	4 m	0					}									l						l					
Ľ.			]	-, <i>u</i> , '	Ī	Ī										[														
A		,																			ł					1				
					ł			1		.	1	1		I					l					Ι.	1	1	ł		1	

										ł		1	•	;				<u>.</u> .			
							•														
											•										
·															-			•			
6085 6286	6087 6083	6089 6090	6091 6092	6093 6094	-																
PZ6R PZER	P2ER P2ER	PZER PZER	926 772 770	PZER PZER																	
		•																••	6		
																		•			
					•																
																			•		
		•	-																		
( 4 ° N )		-																			
NE PZERU	N	FRI ( IM . N	z																		
URROUTI	U 1 K#1	ETURN NTRV NZ	0 2 K=1	ETURN		•				-			•				•				
57 C	1 D		13								•		·								
- 0	τų.	n c	~ ~	69									•				-				

FUNCTION FITT         NUN         <	FURTION FITT ( X, Y, NO, MAX, C, LIV, A )         FIT ( SOB         FIT ( X, Y, NO, MAX, C, LIV, A )         FIT ( SOB           0         C <t< th=""><th>Function Firth ( <math>M</math>, <math>M</math>, <math>M</math>, <math>M</math>, <math>M</math>, <math>M</math>, <math>M</math>, <math>M</math>,</th><th>A FURTRAN</th><th>IV (VER L43) SUURCE LISTING! FITIT FUNCTION 03/0</th><th>05/74 PAGE 0146</th><th></th></t<>	Function Firth ( $M$ , $M$ , $M$ , $M$ , $M$ , $M$ , $M$ , $M$ ,	A FURTRAN	IV (VER L43) SUURCE LISTING! FITIT FUNCTION 03/0	05/74 PAGE 0146	
7     VILLE TO NUMBER OF AND A (14%, LT 2) TO NO Y RETURNET 1000       7     VILLE TO NUMBER OF AND A (14%, LT 2) TO NO Y RETURNET 14 ARXY       7     C. IN FRINK LEDED AY FUNCTION ENV, SUMBER OF AND       7     LI + LOC TANSGERMATIA CORE + + VIC, X       11     101       12	5     0     0     0     0       5     C     18     18     0     0       1     1     10     1     10     1     0       1     1     10     1     10     1     10       1     1     10     1     10     1     10       1     1     10     1     10     1     10       1     1     10     1     10     1     10       1     1     10     1     10     1     10       1     1     1     10     1     10     10       1     1     1     1     10     1     10       1     1     1     1     1     10       1     1     1     1     1     1       1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1     1     1     1       1     1     1     1	1     1 <td>  r</td> <td>FUNCTION FITIT, ( X# Y# ND# MAX# C# LN# A )</td> <td>FIT 6095 FIT 6096</td> <td></td>	 r	FUNCTION FITIT, ( X# Y# ND# MAX# C# LN# A )	FIT 6095 FIT 6096	
0         C. N. FARMA LEGEN SY FUNCTION FOUND	c         C         C         F	1         1		WILL FIT PULYNDMIAL DE DRDER MAX ( MAX "LT" 7 ) TU NU Y Points supplied in Abbays y and y. Chfeiffent beturne	/ VS. X CATAFIT 6097 En 12 Array Fit 6098	
7     11     11     11     11     11     100       7     11     11     11     100     2     11     100       7     11     11     11     100     2     11     100       11     11     11     11     11     100       12     1     11     100     11     11       13     11     11     11     100       14     11     11     11     100       15     11     11     11     100       14     11     11     11     100       15     11     11     11     11       16     11     11     11     11       17     11     11     11     11       18     11     11     11     11       17     11     11     11     11       18     11     11     11     11       18     11     11     11     11       18     11     11     11     11       19     11     11     11     11       11     11     11     11     11       11     11     11     11   <	7       (14 + 105 Transferential, Cold. 1 + V/S, V       (17 + 105         11 $3 + V/S$ , V/S, V/S, V/S, V/S, V/S, V/S, V/S, V/S	1     1 <td>- U (</td> <td>C IN FURM NEEDED BY FUNCTION EQUA. STANDARD DEVIATION D</td> <td>JF Y RETURMEELT 6099</td> <td></td>	- U (	C IN FURM NEEDED BY FUNCTION EQUA. STANDARD DEVIATION D	JF Y RETURMEELT 6099	
0     2 - U/N YUS, US, X     F1 0105       11     01115     4 - U/N YUS, US, X     F1 0105       12     01115     F1 0105     F1 0105       13     01115     F1 0105     F1 0105       14     01115     F1 0105     F1 0105       17     01115     F1 0105     F1 0105       18     01115     F1 0105     F1 0105       19     01115     F1 0105     F1 0105       10     01116     F1 0115     F1 0115       11     01106     F1 0115     F1 0115       12     011016     F1 0115     F1 0115       13     01101     F1 0115     F1 0115       14     1101     F1 0115     F1 0115       15     01101     F1 0115     F1 0115       16     01101     F1 0115     F1 0115       17     01101     F1 0115     F1 0115       18     0111     F1 0115     F1 0125       19     0111     F1 0125     F1 0125       1011     F1 0125     F1 0125     F1 0125       111     0111     F1 0125     F1 0125       111     0111     F1 0125     F1 0125       111     0111     F1 0125     F1 0125       1	9     2 = 1 + VY     VS <td>0          <ul> <li></li></ul></td> <td></td> <td>1 4 - 1 76 TEANGEDEWATION FORE 1 - V VS. V</td> <td></td> <td></td>	0 <ul> <li></li></ul>		1 4 - 1 76 TEANGEDEWATION FORE 1 - V VS. V		
11     4 - 14' Yu', Yu', X     11     111       12     A - 14' Yu', X', X'     11     111       13     County E Sector AutuateD     11     111       14     County E Sector AutuateD     11     111       17     County E Sector AutuateD     11     111       17     County E Sector AutuateD     11     111       17     County E Sector AutuateD     11     111       17     County E Sector AutuateD     11     111       17     County E Sector Auto Auto     11     111       17     County E Sector Auto Auto     11     111       17     County E Sector Auto Auto     11     111       18     Auto Auto     11     11     11       18     Auto Auto     11     11     11       18     Auto Auto     11     11     11       18     Auto Auto     11     11     12       18     Auto Auto     11     12     11       19     Auto Auto     11     12     11       19     11     12     11     12       19     11     12     11     12       19     11     12     12        11     12	1     A = 101767677 CORE STORO = 1017 CORE STORO = 1017 CORE     A = 101767677 CORE STORO = 1017 CORE       1     1011667677 CORE STORO = 101756067     A = 101767677     A = 101767677       1     1011665677     A = 101767677     A = 1017       1     1011665577     A = 101767677     A = 1017       1     1011665577     A = 1017     A = 1017       1     101165577     A = 1017     A = 1017       1     10117     A = 1010     A = 1010       1     10117     A = 1010     A = 1010       1     10107     A = 1010     A = 1010       2     10104     A = 1000     A = 1000       2     10104     A = 1000	11     4 - 101 Y Vai. A.X     11 1010       12     A - 101 Y Color 2000 - 101 4 Color     11 010       13     1000 H E REERISTON - 105 AND     11 010       14     1000 H E REERISTON - 105 AND     11 010       15     0000 H E REERISTON - 105 AND     11 010       16     0100 H E REERISTON - 105 AND     11 010       17     0100 H E REERISTON - 105 AND     11 010       18     0100 H E REERISTON - 105 AND     11 010       19     0100 H E REERISTON - 105 AND     11 010       10     0100 H A + 1 N, 7     11 010       11     010 H A + 1 N, 7     11 010       12     11 0 10     10 010       13     11 0 10     10 010       140     10 0 1 0     10 0 01       11     10 0 0     10 010       12     10 0 01     10 010       13     10 0 01     10 010       14     10 0 01     10 00       13     10 0 01     10 00       14     10 00     10 00       14     10 00     10 00       11     10 00     10 00       12     10 00     10 00       13     10 00     10 00       14     10 00     10 00       14     10 00     10 00 </td <td>0 C</td> <td></td> <td>F17 6103 F17 6106</td> <td></td>	0 C		F17 6103 F17 6106	
10     14     14     14     14       10     14     14     14     14       11     14     14	15     A. INTEGERT CODE Eaco INTERCEPT - 0.0     117 6107       17     DUNLE SECTION GARGE ALTOUNTS     117 6106       17     DUNLE SECTION GARGE ALTOUNTS     117 6106       17     DUNLE SECTION GARGE ALTOUNTS     117 6106       18     Extended a Luce     117 6106       19     STL CONTENS AUTO ALTOUNTS     117 6115       10     STL CONTENS AUTO ALTOUNTS     117 6115       11     RAIMA ALLO     117 6115       12     N = 100     117 6115       12     N = 100     117 6115       13     N = 100     117 6115       14     N = 100     117 6115       15     N = 100     117 6115       16     N = 100     117 6115       17     N = 100     117 6115       18     N = 100     117 6115       18     N = 100     117 6115       18     N = 100     117 6115       18     N = 100     118 611       18     N = 100     118 611       18     N = 100     118 612       18     N = 1000     118 612<	15     A. INTERCENT COLE ZEG. INVERCENT - 0.0     F1 010       17     ROUBLE SECTION OFFICIAL OFTI, ST71, XT7771     F1 010       18     RAINEN UNXIL, VILL, CLU, OTT, ST71, XT7771     F1 010       19     Str CONTROLS - 40 - FERG ATT XY     F1 0112       10     Str CONTROLS - 40 - FERG ATT XY     F1 0112       11     RAINEN UNXIL, VILL, CLU, OTT, ST71, XT7771     F1 0112       11     RAINEN UNXIL, YL     F1 0112       12     Str CONTROLS - 40 - FERG ATT XY     F1 0112       13     N = 40     F1 0112       14     N = 40     F1 0112       15     N = 40     F1 0112       16     N = 40     F1 0112       17     N = 40     F1 012       18     K10 10 - 10 - 10     F1 012       19     N = 40     F1 012       10     N = 40     F1 012       11     N = 40     F1 012       12     N = 40     F1 012       13     N = 40     F1 012       14     N = 40     F1 012       15     N = 40     F1 012       16     N = 40     F1 012       17     N = 40     F1 012       18     N = 40     F1 012       19     N = 40     F1 012       10		4 8 LV Y V5 - LX X	F17 6105 E17 6106	
1     0 <td>1     Contact Function     11     11       1          0<td>13 0</td><td>A = INTERCEPT CODE ZERD = INTERCEPT = 0.0</td><td>FIT 6107</td><td></td></td></td>	1     Contact Function     11     11       1 <td>1     0<td>13 0</td><td>A = INTERCEPT CODE ZERD = INTERCEPT = 0.0</td><td>FIT 6107</td><td></td></td>	1     0 <td>13 0</td> <td>A = INTERCEPT CODE ZERD = INTERCEPT = 0.0</td> <td>FIT 6107</td> <td></td>	13 0	A = INTERCEPT CODE ZERD = INTERCEPT = 0.0	FIT 6107	
17     Direction with with with with with with with with	17     Director Artistic Mitha Grila S(7), X(7571)     F11 0111       19     Status Luc     F11 0113       10     Status Luc     F11 0113       10     Status Luc     F11 0113       10     Status Luc     F11 0113       10     Status Luc     F11 0113       11     Status Luc     F11 0113       11     Status Luc     F11 0113       11     Status Luc     F11 0113       11     Status Luc     F11 0113       11     Status Luc     F11 0113       11     Status Luc     F11 0113       11     Status Luc     F11 0123	17     Diffest First Number Stript NTP-11     F11     Diffest First Number Stript NTP-11       17     Diffest First Number Stript NTP-11     F11     Diffest First Number Stript NTP-11       17     Stript NTP-11     F11     Diffest First Number Stript NTP-11       17     Stript NTP-11     F11     Diffest First Number Stript NTP-11       17     Stript NTP-11     F11     Diffest First Number Stript NTP-11       18     Stript NTP-11     F11     Diffest First Number Stript NTP-11       19     Stript NTP-11     F11     Diffest First Number Stript NTP-11       10     Stript NTP-11     F11     Diffest First Number Stript NTP-11       11     Diffest First Number Stript NTP-11     F11     Diffest First Number Stript NTP-12       11     Stript NTP-11     Stript NTP-12     F11     Diffest First NTP-12       11     Stript NTP-11     Stript NTP-12     F11     Diffest First NTP-12       11     Stript NTP-12     Stript NTP-12     F11     Diffest First NTP-12       11     Stript NTP-12     Stript NTP-12     F11     Diffest First NTP-12       11     Stript NTP-12     Stript NTP-12     F11     Diffest First NTP-12       11     Diffest Stript NTP-12     Stript NTP-12     F11     Diffest First NTP-12       11     Diffest Stript NTP-	12		FIT 6109	
15     5:1     6:1     6:1     6:1     6:1       21     1:0     1:0     1:1     1:1       23     1:0     1:0     1:1     1:1       23     2:0     1:0     1:0     1:1       23     2:0     1:0     1:0     1:1       23     2:0     1:0     1:1     1:1       24     2:0     1:0     1:1     1:1       25     2:0     1:0     1:1     1:1       25     2:0     1:0     1:1     1:1       25     2:0     1:0     1:1     1:1       26     1:0     1:1     1:1     1:1       27     1:0     1:0     1:1     1:1       26     1:0     1:1     1:1     1:2       27     1:0     1:0     1:1     1:2       28     1:0     1:1     1:1     1:2       29     1:0     1:1     1:1     1:2       21     1:0     1:0     1:1     1:1       29     1:0     1:1     1:1     1:2       31     0:0     1:1     1:1     1:1       32     0:0     1:1     1:1     1:1       31     0:0 <td< td=""><td>15     5<!--</td--><td>1     5<td>• •</td><td>DIMENTE THE CIPIN UPSETTATION DIMENTE STORE X4(7,7) DIMENSION X(1), Y(1), C(1), D(7), S(7), X4(7,7) DEALER LINE</td><td>FIT 6111 FIT 6111 FIT 6112</td><td></td></td></td></td<>	15     5 </td <td>1     5<td>• •</td><td>DIMENTE THE CIPIN UPSETTATION DIMENTE STORE X4(7,7) DIMENSION X(1), Y(1), C(1), D(7), S(7), X4(7,7) DEALER LINE</td><td>FIT 6111 FIT 6111 FIT 6112</td><td></td></td>	1     5 <td>• •</td> <td>DIMENTE THE CIPIN UPSETTATION DIMENTE STORE X4(7,7) DIMENSION X(1), Y(1), C(1), D(7), S(7), X4(7,7) DEALER LINE</td> <td>FIT 6111 FIT 6111 FIT 6112</td> <td></td>	• •	DIMENTE THE CIPIN UPSETTATION DIMENTE STORE X4(7,7) DIMENSION X(1), Y(1), C(1), D(7), S(7), X4(7,7) DEALER LINE	FIT 6111 FIT 6111 FIT 6112	
21     0     1     1     1     1       22     N = 100     1     1     1     1       23     Z = N     1     1     1     1       23     Z = N     1     1     1     1       23     Z = N     1     1     1     1       24     Z = N     1     1     1     1       25     Z = N     1     1     1     1       24     D = 10     1     1     1     1       25     Z = N     1     1     1     1       26     D = 10     1     1     1     1       27     D = 10     1     1     1     1       28     D = 10     1     1     1     1       29     D D = 10     1     1     1     1       21     AND ACCUMULATE SUMS, SQUARES, FADECTS FI 612     1     1     1       21     D D = 10     N     1     1     1       21     D D = 10     N     1     1     1       21     D D = 1     N     1     1     1       21     D D = 1     N     1     1     1       22	21     N = 4100     FT = 0115       22     N = 4100     FT = 0119       23     Z = N     FT = 0119       24     Z = N     FT = 0119       25     Z = N     FT = 0119       26     Z = N     FT = 0119       27     S(1) = 0.0     FT = 012       28     D = 0.4 + N     FT = 012       29     D = 0.4 + N     FT = 012       21     S(1) = 0.0     FT = 012       23     FBK EddN DarTup.     FT = 012       29     D = 0.4 + N     FT = 012       21     S(1) = 0.0     FT = 012       22     N = 0.0 SK + ND     Accumunate Suiss. Squases, AND Fencers ET = 012       29     D = 0.4 + N     FT = 012       21     N = 0.0 SK + ND     FT = 012       23     D = 0.4 + N     FT = 012       24     D = 0.4 + N     FT = 012       25     D = 0.4 + N     FT = 013       26     D = 0.4 + N     FT = 013       27     D = 0.4 + N     FT = 013       28     D = 0.4 + N     FT = 013       29     D = 0.4 + N     FT = 013       20     D = 0.4 + N     FT = 013       21     S = 0.0 + N     FT = 013       20     D = 0.1 + N     FT = 013	21     N = 10     FT 0119       22     N = 10     FT 0119       23     2 = N     FT 0119       24     N = 10     FT 0119       25     2 = N     FT 012       26     10     FT 012       27     5010     FT 012       28     10     FT 012       29     10     FT 012       20     10     FT 012       21     10     FT 012       21     11     12       22     10     FT 012       23     10     FT 012       24     10     FT 012       25     10     FT 012       26     10     FT 012       27     11     12       28     11     12       29     11     12       21     11     12       22     11     12       23     11     12       24     11     12       25     11     12       26     11     12       27     11     12       28     11     12       29     11     12       21     11     12       21     11     12    <	2 6 T			
23       N = NINO ( NX + 1, N, 7)       FIT 0117         23       Z = N       FIT 0119         23       Z = N       FIT 0119         23       Z = N       FIT 0119         23       Z = N       FIT 0121         24       Dato 1 = 1       H         25       Still - 0.6       FIT 0123         29       LO XT(1) - 1) = 6.0       FIT 0123         21       ENERNDTUN FOVE Y AND ACCUMULATE SUMS. SQUARES: AND CODES FEADINCTS FIT 0123         21       ENERNDTUN FOVE Y AND ACCUMULATE SUMS. SQUARES: AND CODES FEADINCTS FIT 0123         21       ENERNDTUN FOVE Y AND ACCUMULATE SUMS. SQUARES: AND CODES FEADINCTS FIT 0123         23       D 80 K = 1, N       FIT 0123         33       D 80 K = 1, N       FIT 0123         34       D 10 K = 1, N       FIT 0123         35       D 80 K = 1, N       FIT 0123         36       D 10 K = 1, N       FIT 0123         37       D 10 K = 1, N       FIT 0123         38       D 10 K = 1, N       FIT 0123         39       D 10 K = 1, N       FIT 0123         31       D 10 K = 1, N       FIT 0124         32       D 11 K = 1, N       FIT 0124         41       D 11 K = 1, N	23     N = 4100 ( Ax - 1x - 4, 7)     FIT 0117       23     2 = N     FIT 0118       24     2 = N     FIT 0128       25     2 = N     FIT 0128       26     10 - 10 - 1     FIT 0128       27     501 - 0 - 0     FIT 0128       28     10 - 10 - 1     FIT 0128       29     10 - 10 - 1     FIT 0128       21     501 - 0 - 0     FIT 0128       29     10 - 10 - 1     FIT 0128       21     501 - 0 - 0     FIT 0128       21     501 - 0 - 0     FIT 0128       21     501 - 0 - 0     FIT 0128       21     501 - 0 - 0     FIT 0128       21     501 - 0 - 0     FIT 0128       21     10 - 1 - 0 - 0     FIT 0128       21     011 - 0 - 0     FIT 0128       21     011 - 0 - 0     FIT 0128       21     011 - 0 - 0     FIT 0128       21     011 - 0 - 0     FIT 0128       21     011 - 0 - 0     FIT 0128       22     011 - 0 - 0     FIT 0128       23     011 - 0 - 0     FIT 0128       24     011 - 0 - 0     FIT 0128       25     011 - 0 - 0     FIT 0128       26     011 - 0 - 0     FIT 0128       2	23     H = HINO (1 Max + 1, M, T)     F11 0117       24     2 = MINO (1, Max + 1, M)     F11 0119       27     5(1) + 0.00     F11 012       28     10 + 0.00     F11 012       29     10 + 0.00     F11 012       29     10 + 0.00     F11 012       29     10 + 0.00     F11 012       29     10 + 0.00     F11 012       29     10 + 0.00     F11 012       20     10 - 0.00     F11 012       29     10 - 0.00     F11 012       20     10 - 0.00     F11 012       20     10 - 0.00     F11 012       20     10 - 0.00     F11 012       20     01 - 0.00     F11 012       20     01 - 0.00     F11 012       20     01 - 0.00     F11 013       21     01 - 0.00     F11 013       21     01 - 0.00     F11 013       21     01 - 0.00     F11 013       21     01 - 0.00     F11 013       22     01 - 0.00     F11 013       23     01 - 0.00     F11 013       24     00 - 0.00     F11 013       25     01 - 0.00     F11 013       26     01 - 0.00     F11 013       26     01 - 0.00     F11	51 C			
23     2 = N     1 = 0.0     1 = 0.0       24     511 = 0.0     1 = 0.0       25     10 × V(1) × 1) = 0.0     11 = 0.0       26     10 × V(1) × 1) = 0.0     11 = 0.0       27     20 = 0 × 1 × N     11 = 0.0       29     10 × V(1) × 1) = 0.0     11 = 0.0       21     6.0     6.0     11 = 0.0       23     6.0     10 × 1 × N     10 × 1 × N       23     7 N = 0.0     11 = 0.0       24     10 × 1 × N     10 × 1 × N       25     10 × 1 × N     10 × 1 × N       26     10 × 1 × N     11 = 0.0       27     10 × 1 × N     11 = 0.0       28     0 × 0 × 1 × N     11 = 0.0       29     0 × 1 × N     11 = 0.0       20     0 × 1 × N     11 = 0.0       21     11 = 0.0     11 = 0.0       21     11 = 0.0     11 = 0.0       21     10 = 0.0     11 = 0.0       21     10 = 0.0     11 = 0.0       21     10 = 0.0     12 = 0.0       21     10 = 0.0     12 = 0.0       21     10 = 0.0     12 = 0.0       21     10 = 0.0     12 = 0.0       21     10 = 0.0     12 = 0.0       20     10 = 0.0     12 =	25     2     N </td <td>25     2 = N     2 = N     2 = N     2 = N       27     5(1) = 0,0     5(1) = 0,0     5(1) = 0,0       29     10     7(1) = 0,0     5(1) = 1,0       29     10     7(1) = 0,0     5(1) = 1,0       29     10     7(1) = 1,0     5(1) = 1,0       29     10     5(1) = 1,0     5(1) = 1,0       31     7     10     10     11       32     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       34     9     80%     5(1) = 1,0       35     0111 = 1,06     10111     1012       41     30     1011 = 1,06     10111       42     0111 = 1,06     10111     101       43     50     100     11     101       44     30     1011     101     101       44     30     101     10       45</td> <td>23</td> <td>M = MINO ( MAX + 1, 2, 7)</td> <td>FIT 6117</td> <td></td>	25     2 = N     2 = N     2 = N     2 = N       27     5(1) = 0,0     5(1) = 0,0     5(1) = 0,0       29     10     7(1) = 0,0     5(1) = 1,0       29     10     7(1) = 0,0     5(1) = 1,0       29     10     7(1) = 1,0     5(1) = 1,0       29     10     5(1) = 1,0     5(1) = 1,0       31     7     10     10     11       32     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       33     9     80%     5(1) = 1,0       34     9     80%     5(1) = 1,0       35     0111 = 1,06     10111     1012       41     30     1011 = 1,06     10111       42     0111 = 1,06     10111     101       43     50     100     11     101       44     30     1011     101     101       44     30     101     10       45	23	M = MINO ( MAX + 1, 2, 7)	FIT 6117	
27       5(1) + 0.0       61       612       61       612         28       10 × 10.0       4 × 10       10.0       61       612       61       612         29       10 × 10.0       4 × 10       10.0       61       61       612       61       612         29       10 × 10.0       10 × 100       100       100       101	27       5(1) + 0,0       5       5(1) + 1,0         28       10 × 10,1       10       11 × 123         29       10 × 10,1       10       11 × 123         21       50 × 10,1       10 × 10,0       11 × 123         21       50 × 10,0       50 × 10,0       51 × 105         21       50 × 10,0       50 × 10,0       51 × 105         23       10 × 1,0       11 × 100       125         23       10 × 1,0       11 × 100       11 × 101         23       0.00 × 1,0       11 × 101       125         24       0.01 × 1,0       11 × 101       125         25       0.01 × 1,0       11 × 101       121 × 123         26       0.01 × 1,0       11 × 101       123         27       0.01 × 1,0       11 × 101       123         28       0.01 × 1,0       11 × 101       123         29       0.01 × 1,0       11 × 101       123         29       0.01 × 1,0       121 × 101       11 × 103         29       0.01 × 1,0       121 × 101       11 × 103         20       0.01 × 1,0       11 × 101       11 × 103         21       0.01 × 1,0       11 × 101       11 ×	27       5(1) + 0,0       610       612         29       100       10       10       10         20       100       10       10       10         20       100       10       10       10         20       100       10       10       10         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         21       100       100       100       100       100         20       100<	25			
29       10 XY(1; J) = 0.0         21       FIX FLAM         23       C       NS EAND XY.         23       C       NS AND XY.         23       C       NS AND XY.         24       FIX FLAM       ACCUMULATE SUNS, SQUARES, AND CROSS FROMCTOR FIT 6125         25       IN S AND XY.       FIX 6125         26       IN S AND XY.       FIX 6125         27       FIX 6126       FIT 6125         28       D1011 = Y(K1)       FIX 6128         29       D0 0K =1, N       FIT 6128         20       D111 = Y(K1)       FIT 6128         21       P121 = Y(K1)       FIT 6128         23       D111 = Y(K1)       FIT 6128         24       FIX 6129       FIT 6128         27       D111 = UGC ( D(11) )       FIT 6128         28       D111 = UGC ( D(11) )       FIT 6128         29       D111 = UGC ( D(11) )       FIT 6128         20       D121 = UGC ( D(11) )       FIT 6128         29       D111 = UGC ( D(11) )       FIT 6128         41       30 D(11 = UGC ( D(11) )       FIT 6128         42       50 D(0 0 1 = 00       FIT 6128         41       D111 = UGL ( D(11 + D(11)	29       10 KV(1, J) = 0.0         31 C       FUR EACH VAND ACCUMUATE SUMS, SQUARES, AND CRUSS IF NEEDED IF 0.125         31 C       FUR EACH VAND ACCUMUATE SUMS, SQUARES, AND CRUSS IF NEEDED IF 0.125         31 C       AND XY.         32 C       IN S AND XY.         33 C       IN S AND XY.         34 D       XY.         35 D       D 80 K = 1, M         37 D       D 10 1 × 1.0         38 D       D 10 1 × 1.0         39 D       D 10 1 × 1.0         39 D       D 10 1 × 1.0         39 D       D 10 1 × 1.0         41 D       D 10 1 × 1.0         42 SO 10 50.       E 10 513         43 SO 10 0 50 1 = 3, H       E 11 6130         44 D       D 01 1 × 1.0         45 D 01 0 1 = 1.0       E 11 6130         46 D 01 0 1 = 1.0       E 11 6130         47 D 00 0 1 = 3, H       E 11 6130         48 D 01 0 1 = 1.0       E 11 6130         49 D 01 0 1 = 1.0       E 11 6130         40 D 01 1 = 1.0       E 11 6130         41 D 01 1 = 1.0       E 11 6130         41 D 01 1 = 1.0       E 11 6130         42 SO 01 60 1 = 3, H       E 11 6130         44 D 01 1 = 1.0       E 11 6130	29       10 XY11, J) = 0.0       FIT 012         21       FOR EACH DATUM. FOVE Y AND ACCUMULATE SUMS. SQUARES! AND CROSS FEDDUCTS FIT 012         23       10 ND BOCK = 1, N       FIT 012         24       10 BOCK = 1, N       FIT 012         25       10 BOCK = 1, N       FIT 012         26       10 BOCK = 1, N       FIT 012         27       20 BOCK = 1, N       FIT 012         28       011 = X(K)       FIT 012         29       20 N11 = (101 )       FIT 012         20 N11 = (105 COL 20. 40. 30 )       FIT 012         212 = X(K)       FIT 012      212 = X(K)       FIT 012         20 N11 = (105 COL 20. 40. 30 )       FIT 012         212 = X(K)       FIT 012         210 ND 10 = 1.9 MU       FIT 012 </td <td>270</td> <td></td> <td>FIT 6121</td> <td></td>	270		FIT 6121	
31 C       FOR EACH DATUM, MOVE Y AND XTU 0(1) AND 0(2), GET LOGS IF NEEDED FIT 0127         32 C       IN S AND XY.         33 C       IN S AND XY.         34 C       IN S AND XY.         35 C       1N S AND XY.         35 C       1N S AND XY.         35 C       1N S AND XY.         35 DU 80 K +1; N         37 D(1) = Y(K)         37 D(1) = Y(K)         38 D(1) = Y(K)         39 Z0 D(1) = Y(K)         39 Z0 D(1) = LOG ( D(1) )         41 30 D(1) = LOG ( D(1) )         41 30 D(1) = LOG ( D(1) )         41 30 D(1) = LOG ( D(1) )         41 30 D(1) = LOG ( D(1) )         41 30 D(1) = LOG ( D(1) )         41 30 D(1) = LOG ( D(1) )         42 50 D(0) 1 = 30 H 1 = 1)         43 50 D(0) 1 = 30 H 1 = 1)         44 30 D(1) = S(1) + D(1)         45 50 D(0) 1 = 10 H 1         46 7 0 D(1) = S(1) + D(1)         47 0 D(1 7 - S(1) + D(1)         48 50 D(1 0 + 1) + D(1)         49 60 C(011 NE         49 60 C(011 NE         40 70 C(1 0 + 1) + D(1)         41 70 D(1 7 - 1) + D(1)         42 70 XY(1 + 1) + D(1)         43 80 C(011 NE	31       C       FOR EACH DATUM, HOVE Y AND ACCUMULATE SUMS, SQUARES, AND CROSS EADLOUTS       FIT 6126         33       TO BOK K13 M       FIT 6127       FIT 6127         33       DT BOK K2       MD       AND ACCUMULATE SUMS, SQUARES, AND CROSS EADLOUTS       FIT 6127         33       DT BOK K13 M       FIT 6129       FIT 6129       FIT 6129         33       DT BOK K2       FIT 6129       FIT 6129         34       DT D1 = Y(K1)       FIT 6129       FIT 6129         37       DT D1 = Y(K1)       FIT 6131       FIT 6131         37       DT D1 = Y(K1)       FIT 6132       FIT 6133         37       DT D1 = Y(K1)       FIT 6133       FIT 6133         37       DT D1 = UG ( DT D1 )       FIT 6133       FIT 6133         39       C0 TD 50       FIT 6133       FIT 6133         40       DT D1 = UG ( DT D1 )       FIT 6133       FIT 6133         41       DT D1 = UG ( DT D1 )       FIT 6133       FIT 6133         42       DT D1 = UG ( DT D1 )       FIT 6133       FIT 6133         43       DT D1 = UG ( DT D1 )       FIT 6134       FIT 6134         44       DT D1 = UG ( DT D1 )       FIT 6134       FIT 6134         45       DT D1 = UG (	31 C       FIR EACH DATUM, FOVE Y AND X TU D(11) AND 0(21), GET LODE       FIT 0127         33 C       1 N S AND XY.       FIT 0127       FIT 0127         34 C       1 N S AND XY.       FIT 0127       FIT 0127         35 D(11) = X(K)       NO       FIT 0131       FIT 0131         37 D(11) = X(K)       FIT 0131       FIT 0131         37 D(11) = X(K)       FIT 0131       FIT 0131         37 D(11) = X(K)       FIT 0131       FIT 0131         38 C0 T(1) = X(K)       FIT 0131       FIT 0131         39 Z0 D(11) = LUG ( D(11) )       FIT 0132       FIT 0133         41 30 D(11) = LUG ( D(11) )       FIT 0133       FIT 0133         42 30 D(21) = LUG ( D(21) )       FIT 0133       FIT 0133         43 50 D(21) = LUG ( D(21) )       FIT 0133       FIT 0133         44 30 D(21) = LUG ( D(21) )       FIT 0139       FIT 0139         45 50 D(21) = LUG ( D(21) )       FIT 0139       FIT 0139         46 50 D(21) = LUG ( D(21) )       FIT 0139       FIT 0139         47 50 D(21) = S(1) + D(1)       FIT 0141       FIT 0141         48 70 U(11) = XY(10 U1 + D(11) + D(		10 XY(1, J) = 0.0	FIT 6123 EIT 6123	
33       C       IN S AND XY.         34       UP B 0 K = 1, N       FIT 6129         37       U(1) = ('KK)       FIT 6129         37       U(1) = ('KK)       FIT 6131         37       U(1) = ('KK)       FIT 6132         39       Z0 011 = ('LC 011)       FIT 6132         39       Z0 011 = (LC 011)       FIT 6132         40       B0 011 = (LC 011)       FIT 6133         41       30 010 = LC (011)       FIT 6133         42       50 020 = 1 = 3       FIT 6133         43       50 020 = 1 = 3       FIT 6135         44       50 10 = 1 = 1       FIT 6136         45       50 10 = 1 = 1       FIT 6136         46       50 10 = 1 = 1       FIT 6136         47       D0 70 = 1 = M       FIT 6136         49       B0 C0171NUE       FIT 9142         49       B0 C0171NUE       FIT 9142	33 C       1N S AND XY.       FIT 6127         34 C       90 80 K = 1.0       FIT 6128         37 D(1) = '(1K)       FIT 6131         37 D(1) = '(1K)       FIT 6131         37 D(1) = '(1K)       FIT 6131         38 C       D(1) = '(1K)         39 Zn D(1) = '(1K)       FIT 6131         39 Zn D(1) = Luc ( D(1) )       FIT 6132         41 30 D(1) = Luc ( D(1) )       FIT 6133         42 50 D(2) = Luc ( D(1) )       FIT 6133         43 50 D(10 1 = 3) H       FIT 6133         44 30 D(1) = Luc ( D(1) )       FIT 6133         45 50 D(2) 1 = 1.0 H       FIT 6133         46 00 T 70 1 = 1.0 H       FIT 6133         47 00 T 70 1 = 1.0 H       FIT 6139         48 70 CUHTNUE       FIT 6149         50 C 80 CUHTNUE       FIT 6143	33 C       IN S AND XY.       FIT 6127         35       90 80 K = 1 N       FIT 6129         37       011) = (KR)       FIT 6131         37       011) = (KR)       FIT 6131         37       011) = (KR)       FIT 6131         39       20 R01 = (D01 1)       FIT 6131         40       30 R11 = (D01 1)       FIT 6132         41       30 R11 = (D1 1)       FIT 6133         42       50 R01 = 1 M       FIT 6135         43       50 R01 = 0 = 2 M H       FIT 6135         44       50 R01 = 0 = 2 M H       FIT 6136         45       60 R12 = 1 M H       FIT 6136         46       70 R1 = 1 M       FIT 6139         47       50 R01 = 1 M       FIT 6139         48       70 S411 = 1 M       FIT 6139         49       60 C0HTRUE       FIT 0140         50 C0HTRUE       FIT 0140       FIT 0143		FOR EACH DATUM, HOVE Y AND X TO D(1) AND D(2), GET LOGS AND POWERS OF X. AND ACCIMUMATE SUMS. SOUNDES, AND APPE	S IF NEEDED FIT 6125	
35       90 80 K =1. M         37       0(1) = '(K)         37       0(1) = '(K)         37       0(1) = '(K)         39       20 0(1) = (10 (-0.1))         39       20 0(1) = (-0.1))         41       30 0(1) = (-0.1))         42       40 0(2) = 1.0 (-0.1))         43       50 00 0(0 + 3) H         44       50 10 0 - 1 = 3.4 H         45       50 10 0 - 1 = 1.0 H         46       5(1) = 0(1) - 5(2) + 0(1)         47       50 10 - 1 = 1.0 H         48       5(1) = 0.1 + 0(1)         49       50 00 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H         49       50 01 - 1 = 1.0 H	35     90 80 K = 1, N     FIT 6129       37     0(1) = '(K)     FIT 6131       39     20 TO (50, 20, 40, 30 M)     FIT 6131       39     20 TO (50, 20, 40, 30 M)     FIT 6131       40     20 TO (50, 101)     FIT 6132       41     30 D(1) = LUG (D(1))     FIT 6133       43     50 D0 60 I = 3, M     FIT 6135       43     50 D0 60 I = 3, M     FIT 6135       44     511 = 2(1) + D(1)     FIT 6135       45     5(1) = 5(1) + D(1)     FIT 6135       46     5(1) = 2(1) + D(1)     FIT 6135       47     00 T0 = 1 + D(1)     FIT 6139       48     5(1) = 2(1) + D(1)     FIT 6139       49     00 C01TINUE     FIT 6140       49     00 C01TINUE     FIT 6140	33       90 80 K = 1, N         31       0(1) = '(K)         32       0(1) = '(K)         33       0(1) = '(K)         34       0(1) = '(K)         35       0(1) = '(K)         39       20 0(1) = '(K)         39       20 0(1) = (100 ( 0(1) )         41       30 0(1) = (100 ( 0(1) )         42       50 0(5) = 10 ( 0(1) )         43       50 0(5) = 10 ( 0(1) )         44       30 0(5) = 10 ( 0(1) )         45       50 0(5) = 10 ( 0(1) )         45       50 0(5) = 10 ( 0(1) )         46       70 0(7) = 10 ( 0(1) )         47       50 10 (0) = 10 ( 0(1) )         48       70 0(7) = 10 ( 0(1) )         49       50 10 (0) = 10 ( 0(1) )         40       50 10 (0) = 10 ( 0(1) )         41       10 7 0 1 = 1 M         42       50 10 (0) = 10 ( 0(1) )         43       50 10 (0) 1 = 1 M         44       10 10 1 = 1 ( 0(10) ( 0(1) )         45       50 10 (0) 1 = 1 M         46       10 10 1 = 1 ( 0(10) ( 0(1) )         47       50 10 (0) 1 = 1 ( 0(1) )         48       70 10 10 1 = 1 ( 0(1) )         49       50 10 ( 0(1) = 1 ( 0(1) ) <t< td=""><td>33 0</td><td>IN S AND XY.</td><td>FIT 6127 EIT 6128</td><td></td></t<>	33 0	IN S AND XY.	FIT 6127 EIT 6128	
37       0(2) = X(K)         39       20 0(1) = Luc ( 0(1) )         41       30 0(1) = Luc ( 0(1) )         42       30 0(1) = Luc ( 0(1) )         43       50 00 01 =3 H         45       50 00 (1) = 10(2) ±         45       50 01 (1) = 10(2) ±         45       50 10 60 1 =3 H         45       50 10 01 = 10 H         46       5(1) = 10(1) ±         47       5(1) = 10(1) ±         48       70 X(10 J) = 10(1) ±         49       80 C0HTINUE         49       80 C0HTINUE	37       7(2) = X(K)         38       60 T0 (50, 20, 60, 30 ), 1         41       30 0(1) = L06 (0(1))         42       60 0(1) = L06 (0(1))         43       50 D0 60 1 = 3, M         44       50 D1 60 1 = 3, M         45       50 1 0 1 = 3, M         46       5(1) = L06 (0(1))         47       50 1 0 1 = 3, M         48       50 1 1 = 3, M         49       50 C014TINUE         49       50 C014TINUE	37       7/21 + X(K)         38       C0 TD (50, 20, 40, 30) L         39       20 N(1) + LuG (0(1))         41       30 0(1) + LuG (0(1))         42       40 0(2) + LuG (0(1))         43       50 0(5) + 10 (10)         44       50 0(1) - LuG (0(1))         45       50 0(1) - 10 (10)         45       50 0(1) - 10 H         46       50 10 0 (1 - 1)         47       50 10 0 (1 - 1)         48       50 10 0 (1 - 1)         49       50 10 0 (1 - 1)         47       50 10 (1 - 1)         48       70 XYIL 0 1         49       80 CONTINUE         49       80 CONTINUE         49       80 CONTINUE	- 35 25 25	90 80 K =1, N D(1) = 7(K)	FIT 6129 FIT 6120	
39       20 0(1) = LUG ( D(1) )         41       30 D(1) = LUG ( D(1) )         42       40 U(2) = LUG ( D(1) )         43       50 D(1 0 0 1 = 3) H         44       50 D(1 0 0 1 = 3) H         45       50 D(1 0 0 1 = 3) H         45       50 D(1 0 1 = 3) H         45       50 D(1 0 1 = 3) H         46       5(1 ) T 5(1 3 1 0 1 3 1 0 1 3 1 0 1 3 1 0 1 3 1 0 1 3 1 0 1 3 0 0 1 1 = 1 0 H         47       5(1 ) T 5(1 ) + D(1) + D(1) + D(1) + D(1) 0 1 0 1 0 0 0 0 0 1 0 1 3 0 0 0 0 0 1 0 0 0 0	39       20 N(1) = LuG ( D(1) )       FIT 0134         41       30 D(1) = LuG ( D(1) )       FIT 0135         42       50 D(2) = LuG ( D(2) )       FIT 0135         43       50 D(6) I = 3, M       FIT 0136         44       50 D(0) I = 3, M       FIT 0137         45       50 D(1) = U(2) )       FIT 0137         45       50 D(1) = U(1) M       FIT 0137         46       5(1) = S(1) + D(1)       FIT 0139         47       50 T 0 J = I, M       FIT 0139         48       5(1) = S(1) + D(1)       FIT 0140         49       80 C0HTINUE       FIT 0140         49       80 C0HTINUE       FIT 0140	39       20 N(1) = Luc ( D(1) )       FIT 0134         41       30 D(1) = Luc ( D(1) )       FIT 0134         42       40 N(2) = Luc ( D(2) )       FIT 0135         43       50 D(60 I = 3) H       FIT 0137         45       00 T0 I = 1 M       FIT 0137         45       00 T0 I = 1 M       FIT 0137         46       5(1) = S(1) + D(1)       FIT 0137         47       00 T0 J = 1 M       FIT 0140         48       70 X(10 J) = X(10 J) + D(1)       FIT 0141         49       80 C0HTINUE       FIT 0141         49       80 C0HTINUE       FIT 0141	1.00	D(2) # X(K) En Tn ' For 20, 40, 30, 1, 1	FIT 6131 FIT 6132	
41       30 0(1) - Luc ( D(2) )         42       40 0(2) - Luc ( D(2) )         43       50 D0 60 I = 3, M         45       50 D0 60 I = 3, M         45       50 D1 0 0 I = 1, M         45       50 D1 0 0 I = 1, M         45       50 D1 0 0 I = 1, M         45       50 D1 70 I = 1, M         45       51 = 5(1) = 5(1) = 1         46       5(1) = 5(1) = 1         47       50 70 J = 1, M         48       70 XY(1, J) = D(1) = D(1)         49       80 C0HTINUE	41       30 0(1) - LdC ( D(2) )       FIT 6135         42       40 0(2) = 106 ( D(2) )       FIT 6136         43       50 D0 60 I = 3, M       FIT 6137         45       50 D1 60 I = 1, M       FIT 6138         45       50 D1 70 I = 1, M       FIT 6139         48       70 XV(I, J) = XV(I, J) + D(I) = D(J)       FIT 6140         49       80 C0HTINUE       FIT 6142         50 C       80 C0HTINUE       FIT 6143	4130 0(1) = L06 ( 0(1) )4240 0(2) = L06 ( 0(2) )4350 00 60 1 = 3 M4450 00 70 1 = 1 M4500 70 1 = 1 M4601 70 1 = 1 M4700 10 J = S(1) + D(1)4870 XY(1, J) + D(1) + D(1)4960 C0HTINUE4960 C0HTINUE50 C60 C0HTINUE	96	20 D(1) = [UG ( D(1) ) Gn Tn 50	FIT 6133 FIT 6134	
43       50       DD 60       60       U(1) = U(2) = U(1 = 1)         45       60       U(1) = U(2) = U(1)       EIT 6138         45       5(1) = S(1) = D(1)       EIT 6139         46       5(1) = S(1) = D(1)       EIT 6139         47       DD 70 = I = M       EIT 6139         48       70       XY(1) J = D(1)       EIT 6141         49       B0       CDHTINUE       EIT 6143	43       50       D0       60       1 = 3; H       FIT       6138         45       60       0(1) = 3(2) + D(1)       FIT       6139         45       00       70       1 = 1; H       FIT       6139         45       5(1) = 5(1) + D(1)       FIT       6140       FIT       6140         47       00       70       1 = 1; H       FIT       6140         48       70       XY(1; J) + D(1) + D(J)       FIT       6141         49       80       C0HTINUE       FIT       6143         50       6       60       C0HTINUE       FIT       6143	43       50       D0       60       I = 1, M         45       D0       70       I = 1, M         45       D0       70       I = 1, M         45       S(I) = 0:21 ± D(I)       FIT 6139         46       S(I) = 0:21 ± D(I)       FIT 6139         47       D0       70       I = 1, M         48       70       XY(I, J) = D(I)       FIT 6141         49       B0       C0I(ITINUE       FIT 6142         49       B0       C0I(ITINUE       FIT 6143	41	30 D(1) - LUG ( D(1) )	FIT 6135 EIT 6135	
43       DD 70 I = 1. M       FIT 6139         46       S(I) = S(I) + D(I)       FIT 6140         47       DD 70 J = I.M       FIT 6141         48       70 XY(I.0 J) = XY(I.0 J) + D(I) + D(J)       FIT 6142         49       B0 CDHTINUE       FIT 6143	45       D0 70 I = 1, M       FIT 6139         46       S(I) = S(I) + D(I)       FIT 6140         47       D0 70 J = 1, M       FIT 6141         48       70 XY(I, J) + D(I) + D(J)       FIT 6142         49       80 C0HTINUE       FIT 6143         50 C       80 C0HTINUE       FIT 6144	45       D0 70 1 = 1 M       FIT 6139         46       5(1) = 5(1) + D(1)       FIT 6140         47       D0 70 J = 1 M       FIT 6141         48       70 XY(10 J) = XY(10 J) + D(1) = 0(1)       FIT 6142         49       80 CDHTINUE       FIT 6143         50 C       80 CDHTINUE       FIT 6144	64	50 DD 60 1 =3, H	FIT 6137 FIT 6138	
47 00 70 J = I, M 48 70 XY(I, J) = XY(I, J) = D(I) = D(J) 49 80 CONTINUE 49 80 CONTINUE	47 DD 70 J = 12 M 48 70 XY(12 J) + D(1) + D(J) + D(J) 49 B0 CDHTINUE 50 C B0 CDHTINUE 50 C B141 A144	47 DD 70 J = 1 M 48 70 XY(1 J) = XY(1 J) = D(1) = B(J) 49 80 CDHTINUE - FIT 6143 50 C 81 CDHTINUE - FIT 6144	5 4 4 7	00 70 1 = 1, M S/T = 5/T + D/T	FIT 6139 FIT 6140	
49 80 CDHTINUE - FIT 6143	49 80 CDHTINUE - FIT 6143 50 C 5146	49 BO CDITINUE - FIT 6143 50 C BIT 6144	44	DO 70 J = 12 M 70 XV(1 - 1) - XV(1 - 1) - D(1) - D(1)	: FIT 6141	
			- C - J	BO CDHTINUE	- FIT 6143	

.

an company was supported to a support of another state of

•

( . .

·

•

IGI FITIT FUNCTION 03/05/74 PAGE 0147 Crdss Products if a nonzerd and fuld XY   FIT 6145	FIT 6147 FIT 6147 FIT 6147	FIT 6149	FIT 6151	FIT 6153	FIT 6155 FIT 6155	AND GET STAUDARD DEVIATION DE V. ET 6157 FI 6157	FIT 6159 FIT 6160	FIT 6101 EIT 6162	FIT 6163 FIT 6163	FIT 6165				FIT 6173	DSORT(XY(1,1)/Q) FIT 6175	22RAV. FIT 6177	FIT 6179 FIT 6180				FIT 6187	· · · · · · · · · · · · · · · · · · ·
TRAN IV (VER L43) SOURCE LIST C Get Reduced Souares An	C HVER. C te v eo o ô v eo		DD 90 J = I M 90 XV(T. I) = XV(T. I) =	100 S(1) = Q	D0 120 1 = J. H	C Snive Recerts 701 WATRI	C Din 160 T = 2. M	Q = XY(1, 1) xv(1, 1) = 1.0	D 130 J = 1, H	. 00 150 K = 1 M	$\mathbf{u} = \mathbf{X} \{ \mathbf{K} \mathbf{v} \mathbf{I} \}$	DD 140 J = VY/V - I) = VY/V - I) =	150 CONTINUE 150 CONTINUE	CE (MAX0(N-H, 1))	IF(XY(1,1),6T,0,)FITI	C STORE COEFFICIENTS IN		00 170 1 = 2, M	170 C(1 + 1) = XY(1, 1)	RETURN	END	

PAGE 0148	EQUA6188 FOLA6188	EQUA6190	EQUAD191 EQUAD192 EQUAD192	EQUA6194	EQUA0195	EQUADIAL EQUADIAL	EQUA6200	EQUA6202 EQUA6202 EDUA6223	EQUA6204	EQUA6206	EQUA6208 EQUA6208	EQUAS235 EQUA6210 FOUA6211	EQUA6212	EQUAS14										
FUNCTION 03/05/74		JLYNDMINAL CUEFFICIENTS BY																		•••	•			
V (VER L43) SUURCE LISTING! EQUA	FUNCTION EQUA ( X. C )	THIS FUNCTION EVALUATES A SET OF PE	-NEVIEU-EXMANSION			A1 = C(2)	A2 5 6(4)	AH = C(H+2)	REAL C(1)	五 ■ C(1)				RETURN										
A FORTRAN I	د • • ٥	 			- C	11 C	13 0	- U.L	, , , , , , , , , , , , , , , , , , ,	19	21	6 3 C	25 1	27	6.9		•							

Oneway (2000)         Constraint         Constraint         Constraint           1	COMMUNYZREAD/10         COMMUNZREAD/10           DIRENSTOR X(1),XX001,K(3),X(1150,3),NAME3(150,3)           DITA K/3*0/STRU/STRU/           DITA F/X	READ6218 READ6220 READ6221 READ6222 READ6224 READ6224 READ6224 READ6225 READ6226 READ6226 READ6229 READ6234 READ6234 READ6234 READ6234 READ6233 READ6234 READ6234 READ6234 READ6244 READ6244 READ6244 READ6244
Number         Number<	DATA         K/390/JKH/JJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940JJJ14940         If (KU) EQ.0160 TU 100           0         1	READ6220 READ6220 READ6221 READ6223 READ6224 READ6225 READ6225 READ6223 READ6233 READ6233 READ6233 READ6233 READ6233 READ6233 READ6233 READ6233 READ6233 READ6234 READ6234 READ6234 READ6234 READ6234 READ6245 READ6245 READ6245
1         141.4         14.00.22         14.00.22           1         14.00.0         10.00         10.00         10.00           1         10.0         10.0         10.0         10.00         10.00           1         10.0         10.0         10.0         10.0         10.00         10.00           1         10.0 <td>7     J=1J       8     FE(KAHE.EQ.STAR.DR.L1.EQ.%160 TD 50       9     KFK(J).EQ.0160 TD 100       1     FE(MAHE.EQ.STAR.DR.L1.EQ.%160 TD 20       1     FE(MAHE.EQ.HAHES(1.J1)160 TD 10       2     FE(MAHE.EQ.HAHES(1.J1)160 TD 10       3     CALL ERUCKIAME.KK.J)       5     10       10     D=KN(1.01)       5     10       10     D=KN(1.01)       11     D=KN(1.01)       12     D=KN(1.01)       13     D=L       14     CALL ERUCKIANI/ 60.160 TD 20       15     FE(L)10)(X(NN).NN=1.N)       16     D=L       17     J=L       11     J=L       12     J=L       13     J=L       14     D=L       15     FE(L)10)(X(NN).NN=1.N)       16     D       17     J=L       17     CONTAUL       14     S       17     CONTAUL</td> <td>READ6222 READ6222 READ6222 READ6223 READ6223 READ6233 READ6233 READ6233 READ6233 READ6233 READ6233 READ6234 READ6234 READ6240 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244</td>	7     J=1J       8     FE(KAHE.EQ.STAR.DR.L1.EQ.%160 TD 50       9     KFK(J).EQ.0160 TD 100       1     FE(MAHE.EQ.STAR.DR.L1.EQ.%160 TD 20       1     FE(MAHE.EQ.HAHES(1.J1)160 TD 10       2     FE(MAHE.EQ.HAHES(1.J1)160 TD 10       3     CALL ERUCKIAME.KK.J)       5     10       10     D=KN(1.01)       5     10       10     D=KN(1.01)       11     D=KN(1.01)       12     D=KN(1.01)       13     D=L       14     CALL ERUCKIANI/ 60.160 TD 20       15     FE(L)10)(X(NN).NN=1.N)       16     D=L       17     J=L       11     J=L       12     J=L       13     J=L       14     D=L       15     FE(L)10)(X(NN).NN=1.N)       16     D       17     J=L       17     CONTAUL       14     S       17     CONTAUL	READ6222 READ6222 READ6222 READ6223 READ6223 READ6233 READ6233 READ6233 READ6233 READ6233 READ6233 READ6234 READ6234 READ6240 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244
0         FIGNESS         FEORES           1         11-14/KK         FEORES           1         11-14/KK         FEORES           1         11-14/KK         FEORES           1         11-14/KK         FEORES           1         10-01-11         FEORES	IF(K(J).E0.0)G0 TU 100           KK=K(J).           II.I.LCK.           IF(MARE.E0.MARES(I.J))G0 TO 10           CUATING           ERRIK (MAME.KK.J)           J0.00 CALL ERRIK(MAME.KK.J)           J1=+KN(I.J)           J1=J19           S100 CALL ERNORME.KK.J)           S101 CALL ERNORME.KK.J)           S101 CALL ERNORME.KK.J)           S101 CALL ERNORME.KK.J)           S101 CALL ERNORME.KK.J)           S201 NUM=N/ 60           J21 HM1=J1           J22 NUM=N/ 60           J23 20 NUM=N/ 60           J23 20 NUM=N/ 60           J24-J19           MX=MALI-J           MX=MALI-J           MX=RAD(J'IID) (K(NN))NN=NNX/LIN           MX=MALI-J           MX=RAD(J'IID) (K(NH))NN=NNX/LIN           MX=RAD(J'IID)           MX=RAD(J'IID)           MX=RAD(J'IID)           MX=RAD(J'IID)           M	READ6224 READ6225 READ6226 READ6228 READ6231 READ6231 READ6233 READ6233 READ6233 READ6233 READ6233 READ6234 READ6234 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244
1     FUL IF Let Market Let M	1         1	READ6226 READ6228 READ6228 READ6230 READ6233 READ6233 READ6233 READ6233 READ6233 READ6238 READ6239 READ6240 READ640 READ640 READ640 READ64
1         CONTINUE         READEST           10         Derectives         READEST           11         Derectives         READEST           12         Derectives         READEST           13         Derectives         READEST           14         Derectives         READEST           15         FIFELATION AND FERRATION LIZATION AND FERRATION AND FE	3 1 CDJTINUE 5 100 CALL ERAUR(NAME,KK,J) 7 J_B=KN(1.4J) 7 J_B=KN(1.4J) 7 J_B=KN(1.4J) 7 J_B=KN(1.4J) 8 FEAD(J11D) (X(NN)JNN=1,N) 8 FEAD(J11D) (X(NN)JNN=1,N) 9 FEAD(J11D) (X(NN)JNN=1,N) 1 J_B=J_B 1 J_B=J_B 2 NUME=HAL:MAX-1 1 V_B=TURI 2 NUVE=HAL:MAX-1 1 NUVE=HAL:MAX-1 1 NUVE=HAL:MAX-1 1 NUVE=HAL:MAX-1 1 SO INUME 1 SO ID=1 1 D6228 READ6230 READ6231 READ6232 READ6233 READ6233 READ6233 READ6233 READ6239 READ6239 READ6239 READ6241 READ6241 READ6241 READ6244 READ6244 READ6244	
5 10u     Charle Revols (Induction J)     Revolation       1 10u     Charle Revols (Induction J)     Revolation       1 1 10u     Revolation (Induction J)     Revolation (Induction J)       1 1 10u     Revolation (Induction J)     Revolation (Induction J)       1 1 10u     Revolation (Induction J)     Revolation (Induction J)       2 1 10u     Revolation (Induction J)     Revolation (Induction J)       2 1 10u     Revolation (Induction J)     Revolation (Induction Revolation J)       2 1 10u     Revolation (Induction Revolat	5 100 CALL ERUR(HAME,KK,J) 6 10 10=KW(1,J) 7 1=J+19 8 FEFLJAT(N/ 60),E0,ELDAT(N)/ 60,160 TO 20 8 FEBD(J11D) (X(NN),NN=1,N) 9 FEDD(J11D) (X(NN),NN=1,N) 1 J=J-19 1 J=J-19 2 D 21 MNI=1/ 60 4 NNY=WNX=(NNI)-1) = 60+1 NNY=WNX=(NNI)-1) = 60+1 NNY=WNX=(NNI)-1) = 60+1 1 NNY=WNX=(NNI)-1) = 60+1 1 NNY=WNX=(NNI)-1) = 60+1 1 NNY=WNX=1) = 60+1 1 NNY=WNX=1) = 60+1 1 NNY=WNX=1) = 60+1 1 NNY=WNX=1) = 70+1 1 SO 10=1 1 SO 10=	READ6230 READ6233 READ6233 READ6233 READ6233 READ6233 READ6233 READ6239 READ6240 READ6240 READ6240 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244
16     10     1000000000000000000000000000000000000	6         10         10=KN(1+J)           7         J=J+19           8         F(E(JAT(N/ 60), EQ,ELAAT(N)/ 60,100 TO 20           9         FEAD(J/110) (X(NN),NN=1,N)           9         FEAD(J/110) (X(NN),NN=1,N)           9         FEAD(J/110) (X(NN),NN=1,N)           9         FEAD(J/110) (X(NN),NN=1,N)           1         J=J-19           2         NUM=N/ 60           1         J=J-19           3         ZO           1         J=J-19           1         J=J-19           2         NUM=N/ 60           1         J=J-19           3         ZO           10         ZI           11         SO           12         SO           13         ZO           1401-11         NN=NNX, NN           15         READ(J, 110)           16         READ(J, 110)           17         READ(Z3) 10) X, KU, JAHES, NMAX           17         READ(Z3) 10) S, LURP, NUA <td>READ6231 READ6232 READ6233 READ6233 READ6233 READ6233 READ6238 READ6238 READ6238 READ6240 READ6241 READ6241 READ6243 READ6244 READ6244 READ6245</td>	READ6231 READ6232 READ6233 READ6233 READ6233 READ6233 READ6238 READ6238 READ6238 READ6240 READ6241 READ6241 READ6243 READ6244 READ6244 READ6245
10         FEREINDATIAN         REND233           1         FEREINATIAN         REND233           2         1-4-19         REND234           2         NUMERY         REND234           2         REND244         REND244           2         REND244         REND244 <td< td=""><td>B         FFELTAT(N/ 60).EQ.FLDAT(N)/ 60.100 TD 20           9         READ(JILD) (X(NN)JNN=15N)           1         J=J-19           2         PETURI           3         20           1         J=J-19           2         PETURI           3         20           1         J=J-19           2         PETURI           4         NNX=(HN1-1)* 60+1           6         NNX=(HN1-1)* 60+1           6         NNX=(HN1-1)* 60+1           7         READ(JILD) (X(NH)JNN=NNXJENV)           7         READ(JILD) (X(NH)JNN=NNXJENV)           8         FIND(JILD)           1         50           1         FIND(JILD)           2         NNX=MAX           8         FIND(JILD)           9         Z1           1         50           1         50           1         FIND           1         FIND           6         K(3)=0           8         FIDS           1         743           1         743</td><td>READ6233 READ6234 READ6234 READ6235 READ6236 READ6240 READ6240 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244</td></td<>	B         FFELTAT(N/ 60).EQ.FLDAT(N)/ 60.100 TD 20           9         READ(JILD) (X(NN)JNN=15N)           1         J=J-19           2         PETURI           3         20           1         J=J-19           2         PETURI           3         20           1         J=J-19           2         PETURI           4         NNX=(HN1-1)* 60+1           6         NNX=(HN1-1)* 60+1           6         NNX=(HN1-1)* 60+1           7         READ(JILD) (X(NH)JNN=NNXJENV)           7         READ(JILD) (X(NH)JNN=NNXJENV)           8         FIND(JILD)           1         50           1         FIND(JILD)           2         NNX=MAX           8         FIND(JILD)           9         Z1           1         50           1         50           1         FIND           1         FIND           6         K(3)=0           8         FIDS           1         743           1         743	READ6233 READ6234 READ6234 READ6235 READ6236 READ6240 READ6240 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244 READ6244
1         Jun-1/5         READEST           22         1000-11         READEST           23         1000-11         READEST           24         1000-11         READEST           25         1000-11         READEST           26         1000-11         READEST           27         READEST         READEST           28         1000-11         READEST           29         1000-11         READEST           20         101         READEST           21         101-11         READEST           22         101-11         READEST           23         20         101           24         101         READEST           25         101         READEST           26         101         READEST           27         101         READEST           28         101         READEST           29         101         READEST           20         101	1       J=J-19         2       UMMEN/ 60         3       20       INUMEN/ 60         4       NNX=1/141       60+1         5       NNX=MX+1/1-1)* 60+1          6       NNX=MX+1/1-1)* 60+1          7       READ(J'ID)(X(NN)N=NNX,NN)          7       READ(J'ID)(X(NN)N=NNX,NN)          9       21       CONTINUE         0       21       CONTINUE         1       50       ID=1         1       743       CONTINUE         1       743       CONTINUE	READ6235 READ6238 READ6238 READ6238 READ6240 READ6241 READ6242 READ6243 READ6244 READ6245 READ6245
20     NUMMARY 60     RELOBEZAB       21     NUMMARY 60     RELOBEZAB       22     NUX KIIALITI GATI     RELOBEZAB       23     NUX KIIALITI GATI     RELOBEZAB       24     RELOPEZIB     RELOBEZAB       25     RELOPEZIB     RELOBEZAB       26     RELOPEZIB     RELOBEZAB       27     RELOPEZIB     RELOBEZAB       28     EDUTIULE     RELOBEZAB       29     RELOLEZITINKRILIMINELINKA     RELOBEZAB       20     RELOLEZITINKRILIMINELINKA     RELOBEZAB       21     RELOLEZITINKRILIMIRESINAN     RELOBEZAB       23     RELOLEZITINKRILIMIRESINAN     RELOBEZAB       24     RELOBEZAB     RELOBEZAB       25     KITELEZITINKRILIMIRESINAN     RELOBEZAB       26     NUTIVUE     RELOBEZAB       27     RELOBEZAB     RELOBEZAB       28     RELOBEZAB     RELOBEZAB       29     LUTIVUE     RELOBEZAB       20     NUTIVUE     RELOBEZAB       21     RELOBEZAB     RELOBEZAB       29     LONDEZAB     RELOBEZAB       20     NUTIVUE     RELOBEZAB       21     RELOBEZAB     RELOBEZAB       21     RELOBEZAB     RELOBEZAB       20	3 20 INUMENY 60 4 NNX=1/MI=1/FINUM 5 NNX=M/K41/-1)* 60+1 6 NNX=M/K41/-1)* 60+1 7 READ(J'ID)(X(NH),NN=NNX,MY) 8 ETND(JIID) 9 21 CONTINUE 1 50 ID=1 1 50 ID=1 1 50 ID=1 1 50 ID=1 1 50 ID=1 2 READ(23!ID)K,KU,HAHES,NMAX 1 50 ID=1 2 READ(23!ID)K,KU,HAHES,NMAX 1 50 ID=1 2 READ(23!ID)K,KU,HAHES,NMAX 1 50 ID=1 5 K(3)=0 6 K(3)=0 6 K(3)=0 6 CONTINUE	READ6238 READ6238 READ6240 READ6241 READ6242 READ6243 READ6244 READ6245 READ6245
24     ND-21     MO-21     MO-24       26     ND-21     MO-21     MO-24       26     NUX-FULL     RAD0244       27     REDQ-11D     X(NU)-NUM-NUX-NUY       28     CUTTOUL     X(NU)-NUM-NUX-NUY       29     L     CUTTOUL       21     CUTTOUL     RAD0244       23     REDQ-11D     X(NU)-NUM-NUX-NUY       24     READ0244     RAD0244       25     REAL/2311D1K-KILLIAHES, MAX     READ0244       26     REAL/2311D1K-KILLIAHES, MAX     READ0244       27     REAL/2311D1K-KILLIAHES, MAX     READ0244       26     REAL/2311D1K-KILLIAHES, MAX     READ0244       27     REAL/2311D1K-KILLIAHES, MAX     READ0244       28     K130=0     READ0250       29     K130=0     READ0250       21     READ0250     READ0250       23     LARCU111/K     READ0250       24     READ0244     READ0250       21     READ0244     READ0250       21     READ0	4         DD_21_NNL=1, FNUM           5         NNX=(INIL-1)* 60+1           6         NNX=(INIL-1)* 60+1           7         READ(J'ID)(X(NH), NN=NNX, NV)           7         READ(J'ID)(X(NH), NN=NNX, NV)           9         21         CONTINUE           0         21         CONTINUE           1         50         ID=1           2         READ(231ID)K, KH, HAMES, NMAX           1         50         ID=1           2         READ(231ID)K, KH, HAMES, NMAX           3         READ(231ID)K, KH, HAMES, NMAX           4         READ(231ID)K, KN, HAMES, NMAX           5         K(3)=0           6         K(3)=0           15         CONTINUE	READ6239 READ6240 READ6241 READ6242 READ6243 READ6244 READ6244 READ6245
27     READ(3110) X(RH), NN=NIX, NY)     READ(234)       28     CEND(110) X(RH), NN=NIX, NY)     READ(234)       30     REIN(13110) X(RH), NN=NIX, NY)     READ(24)       31     50     REIN(13110) X(RH), NN=NIX, NY)       33     REIN(13110) X(RH), NN=NIX, NY)     READ(24)       33     REIN(1310) X(RH), NN=NIX, NY)     READ(24)       33     REIN(1310) X(RH), NYOL,	<ul> <li>ANYENTXALMAX-1</li> <li>READ(J'ID)(X(NHJ)NN=NNXJNNY)</li> <li>21 CONTINUE</li> <li>21 CONTINUE</li> <li>21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 21 CONTINUE</li> <li>3 8 2013K, KN, HAMES, NHAX</li> <li>4 21 FLURN</li> <li>4 2 2 CONTINUE</li> <li>5 2 2 CONTINUE</li> <li>6 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</li></ul>	READ6241 READ6242 READ6243 READ6244 READ6245 READ6246
2 21 CHITLUL 2 21 CHITLUL 31 50 READE244 32 READE241DISLURP.NV0L/NSURF_SLURP_JNPRUT 33 READE2411DISLURP.NV0L/NSURF_SLURP_JNPRUT 34 READE2411DISLURP.NV0L/NSURF_SLURP_JNPRUT 35 K131=0 36 K131=0 37 T43 CHITVUE 37 T43 CHITVUE 38 FEADE250 39 J1FK/14J11-1 1 READE254 40 DIST 1 81JJ1 41 READE254 41 READE254 42 CHIT/12 1 14X(191).MN121/MIAX) 42 ST 1412 43 51 CHIT/12 1 14X(191).MN121/MIAX) 44 READE259 45 DIST 1 81JJ1 46 DIST 1 81JJ1 47 J24K(12).21 4 48 CADE264 48 CADE	21 CONTINUE 21 CONTINUE 1 50 ID=1 2 READ(23)ID)K_KULUAHES,NMAX 3 READ(23)ID)SLURP_NVOL_NSURF_SLURP_2,NPRHT 4 4RITE (0,501)K,KN-HAHES,NHAX 5 K(3)=0 16 RETURN 17 743 CONTINUE	READ6244 READ6244 READ6245 READ6246
31     50     Tell       32     50     Tell       33     REAL(23110)K.KULJAHES,NHAX     READ(24)       35     REAL(23110)SLURPS,NHAX     READ(24)       35     REAL(23110)SLURPS,NHAX     READ(24)       35     REAL(23110)SLURPS,NHAX     READ(254)       36     REAL(23110)SLURPS,NHAX     READ(252)       37     743     CUMTIVLE       38     VISCILIAL     READ(252)       39     VISCILIAL     READ(252)       31     VISCILIAL     READ(252)       36     VISCILIAL     READ(252)       37     VISCILIAL     READ(252)       38     VISCILIAL     READ(252)       41     READ(252)     READ(252)       41     READ(252)     READ(252)       41     READ(252)     READ(252)       41     READ(251)     READ(250)       43     VISCILIAL     READ(250)       44     VISCILIAL     READ(250)       45     VISCILIAL     READ(250)       46     VISCILIAL     READ(250)       47     VISCILIAL     READ(250)       48     VISCILIAL     READ(250)       49     Max     READ(250)       49     Max     READ(250)       40 </td <td>1 50 TD=1 2 READ(23!10)K.KU.HAMES,NMAX 3 READ(23'10)SLURP,NVOL,NSURF,SLURP2,NPRHT 4 HRITE(6,501)K,KN,HAMES,NHAX 5 K(3)=0 6 RETURN 10 743 CONTINUE</td> <td>READ6246</td>	1 50 TD=1 2 READ(23!10)K.KU.HAMES,NMAX 3 READ(23'10)SLURP,NVOL,NSURF,SLURP2,NPRHT 4 HRITE(6,501)K,KN,HAMES,NHAX 5 K(3)=0 6 RETURN 10 743 CONTINUE	READ6246
33     READC291101SLURP_AVOL_NSLRF_SLURP_2.NPRUT     READC294       34     RATRELO-SOLIK_XXALIAHES_NUAX     READDS20       35     RETURN     READDS20       36     RETURN     READDS20       37     43     CONTITVUE       38     Alt=Ku(1/1-1)-1     READDS20       39     Alt=Ku(1/1-1)-1     READDS20       40     Darkut     READDS20       41     READDS20     READDS20       42     READDS20     READDS20       43     SUT241114(XX(NN)=NINAX)     READDS20       44     READDS20     READDS20       45     SUT24114(X     READDS20       46     SUT24114(X     READDS20       47     NRTFE(20111(XX(TSU)=NINAX))     READDS20       48     Darge114(X     READDS20       49     NAL     READDS20       40     Darge11221=1     READDS20       41     NZ=K121-1     READDS20       42     READDS20     READDS20       43     NAL     READDS20       44     NAL     READDS20       45     ND     READDS20       46     ND     READDS20       47     ND     READDS20	A READ(23110)SLURP,NVOL,NSURF,SLURP2,NPRHT A HRITE(6,501)K,KN,HAHES,NHAX 5 K(3)=0 6 RETURN 17 743 CONTINUE	2 E A N G 3 G 7
35     K131=0     K131=0     K131=0       36     RETURN     READ521       38     J1=K1141     REA0522       39     J1=K1141     REA0522       39     J1=K1141     REA0522       40     S1     REA0525       41     REA0525     REA0525       42     S1     CUNTINE       43     S1     CUNTINE       44     S1     REA0525       45     D0     S3       46     S2     REA0525       47     REA0525       48     REA0525       49     REA0525       40     S1       41     REA0525       42     REA0525       43     S1       44     REA0525       45     MC2131       46     REA0555       47     REA0555       48     REA0555       49     REA0555       40     S2       41     REA0555       42     REA0555       43     REA0555       44     REA0555       45     REA0555       46     REA0555       47     REA0555       48     REA0555       49     REA0555    <	5 K(3)=0 6 RETURN 17 743 CONTINUE	READ6246 Priot2266
37     743     Fullive       38     J1=KJU1+1     READ0524       40     READ0254     READ0254       41     READ0254     READ0254       42     READ0254     READ0254       43     LUNTIE     READ0254       44     READ0254     READ0254       45     Statistic     READ0254       45     Statistic     READ0254       45     Statistic     READ0254       45     Statistic     READ0254       46     Statistic     READ0254       47     V12=K(2)+1     READ0256       48     M20     READ0260       49     M2     READ0264       49     M2     READ0264       49     M2     READ0264       40     Statistic     READ0264       41     READ0264     READ0264	T 743 CONTINUE	KEADOZEN KEADOZEO KEADOZEO
39       J1:K.4(41,1)-1         40       BE AD0255         41       READ(241)(XX(1M1),MM=1,M1AX)         42       READ(241)(XX(1M1),MM=1,M1AX)         43       S1         43       S1         44       READ(25)         45       S1         45       X(2)=13         46       S3         47       J2:H(22,21=J2)         48       J2:H(12,21=J2)         49       J2:H(12,21=J1)         47       J2:H(12,21=J1)         47       J2:H(12,21=J1)         48       MBO         49       J2:H(12,21=J1)         40       S2 J2:H(12,22)=J         41       J2:H(12,22)=J         42       MBO         43       MBO         44       J2:H(12,22)=J         45       MBO         46       MBO         47       MBO         48       MBO         49       MBO         40       S2 J2:H(12,22)=J         41       MBO         42       MBO         43       MBO         44       MBO         45       MBO		
41 READ(24/11/XX(NN),NN=1,NHAX) 42 NRITE(20/11/XX(NN),NN=1,HHAX) 43 51 CUNTINUE 45 CUNTINUE 45 DU 53 2=1,14 47 J2=K(2)+1 49 M=0 49 M=0 49 M=0 49 M=0 40 DD 52 T=1,13 40 DD 52 T=1,13 41 DD 52 T=1,13 42 M=0 44 DD 52 T=1,13 45 DD 52 T=1,13 46 DD 52 T=1,13 46 DD 52 T=1,13 47 DD 52 T=1,13 48 DD 52 T=1,13 48 DD 52 T=1,13 49 DD 52 T=1,13 40 DD 52 T=1,13 40 DD 52 T=1,13 41 DD 52 T=1,13 42 DD 52 T=1,13 43 DD 52 T=1,13 44 DD 52 T=1,13 45 DD 52 T=1,13 46 DD 52 T=1,13 47 DD 52 T=1,13 48 DD 52 T=1,13 48 DD 52 T=1,13 49 DD 52 T=1,13 40 DD 52 DD 50 DD 5		READ6254 READ6254 READ515
43 51 CUNTINUE       RE-D0528         44 K(2)=13       READ0259         45 D0 53 J2=1,14       READ0260         46 53 V2=1,14       READ0261         47 J2=K(2)+1       READ0262         47 J2=K(2)+1       READ0262         47 J2=K(2)+1       READ0262         47 J2=K(2)+1       READ0262         48 Mu(J2:2)=1       READ0262         49 Man       READ0264         49 Man       READ0265	L READ(2411)(XX(NN),NN=1,NHAX) NATTE(2011)(XX(NN),NN=1,NHAX)	READESES
45 DD 53 J2=1,14 46 53 kW(J2,2)=J2 47 J2=K(2)+1 48 J2=K(2)+1 48 J2=K(2)=1 49 M=0 49 M=0 50 DD 52 I=1,13 50 DD 52 I=1,13 50 DD 52 I=1,13	3 51 CONTINUE 6 5 K(2)=13	RE4D6258 RE4D6258 READ6258
47 J2=K(2)+1 48 J2=K(2)=1 READ6262 49 M=0 49 m=0 50 pD 52 J=1,13 READ6265 50 pD 52 J=1,13	5 00 53 (2=1,14 6 53 vN(12:2)=12	READ6260 Read6260 Read6261
49 M=0 50 DD 52 J=1,13 RE406265 kEA06265	7 U2=K(2)+1 B U2=K(2)+1	- READ6262
	9 Ma0 10 DD 52 Jalv13	RE4D6264 RE4D6265

-

											· · · ·									
L PAGE 0151	RF406316	READ6317																		
Stiaphittine 03/08/74				-		•							~							
A GRATEAN IV (VER 143) COURCE LICTING. READ		102 END	and you have been a second of the second of the second of the second of the second of the second of the second	-	-							· · · · · · · · · · · · · · · · · · ·								
		tu Jenjen																		
--------------	---	-----------	----------------------------------																	
1	SUSROUTINE PRINT(AA,NI,N2) Real Aa(1)		PRNT6318 Pestaio																	
1 m 4	COMMON//SLURP(89),K2,SLURP2(310),K3		PR:16320																	
- 10. 4	IF(N2, EQ. 1)60 TD 20		PRN10922 Devited222																	
0	NA = 14 FO NR = NZ = NJ = 4 I F - VEB - DE - DE NJ = NJ = 1		PRUT6324 PRUT6324 PRUT6324																	
0	ZC=0 ZC=0		PRNT6326 Deut6326																	
			PRUT6328 DOUT6328																	
61	KT#KK+9 KT#KK+9 KF/		PR416330 PR416330 PR416331																	
54			PR%T6332 De4tf4332																	
	IF(NC.6T.61)NC=W1+2		FR:16334 Durito34																	
19 3																				
21 2	FDRMAT(/27x,6(6x,13,5X))																			
	UU 1 HXELPH C C C C C C C C C C C C C C C C C C C																			
52	IT (																			
27 10	FURIAT(20X,13,4X,6(1PE14,6))		PR:: 10344																	
29 20	WEITE(K2,11)(AA("Y),"Y=1,N1)		PRN10345																	
31 11- 31	FORHAT(27X,,18E14,6,5E14,6) Return · Enn		PRNT6347 PRNT6348 Dent6348																	
		•																		
		•																		

•																											
		•																									
													.														
																	.										
<b>1</b>	50	52	54																								
0	16 63. 16 63'	16 63. 16 63.	16 63																								
PAG		32	5																								
4			•					•														••					
103/1																											
60																											
z																											
2																											
8					•																						
5			•	-						•																	
ISTIN																											
RCE RCE	. (									. 					-								 				
nes (	X) 901	0													<del>ا</del> ت												
C 1 43	LION 1	AL06 ()																									
(VEF	FUNC1 REAL	1=007	END				•	•						•													
AN IV															•												
FURTR.	0	<b>m</b> 4	ŝ					•												•	•						·
A																											
	1 1	ł	1	1	1	1	1.1		1	1	ł	ł	1	ł	1	1	ł	1	1	í I		Ι.	1	1	1	1	

UNDUTTION FILMENTIAL FEAR AND FILMENT
UNRECUTINE EXAMINANCE IN UNRECUTINE EXAMINANCE IN UNRECUTINE EXAMINANCE IN UNRECUTINE EXAMINANCE IN UNRECUTINE EXAMINANCE IN SUBROUTINE 1, 220,3 INN ERREN HAS DCCURED IN SUBROUTINE 1, 220,3 INN ERREN H
USROUTINE ERANKINAME NIJN2) UURECOVERABLE ERANKINAME NIJN2) UNIVECOVERABLE ERANKS CONFERERE BRITET 2-10,0000 AN ENERAL AN ENER ALL WATT 1-2020 AN ENERAL AN ENER ALL WATT 1-2020 AN ENERAL AND AN ENER TOP

1

í

\*

•

W 1V VER L431 Schwarts       04/04/14       PAGe       01/04/14       PAGe       01/04/14         FLUCK FAT       04/04/14       04/04/14       04/04/14       04/04/14         /04/14         FLUCK FAT       04/04/14       04/04/14       04/04/14       04/04/14       04/04/14         FLUCK FAT       04/04/14       04/04/14       04/04/14       04/04/14       04/04/14       04/04/14       04/04/14       04/04/14       04/04/14       04/04/14																									
Burck Far Burck Far	DATA6410 DATA6411	DATA6412 DATA6413	DATA6414	0ATA5416 DATA5417	DATA6418 DATA6419	DATA6420	UATA6421 DATA6422	UATA0423 DATA6424 DATA6424	04746426 04746426 04746427	04146428 04146428	DATA6430	 / UATA6434 / UATA6434 DATA6435	/ DATA6436	/ DATA6438	/ DATA6440	04146442 04746442 04746443	UATA6444 DATA6444	UAT A6446	DATA6448 DATA6448	DATA6450 DATA6450	DATA6452				
, , , , , , , , , , , , , , , , , , ,	BLDCK FATA COMMON/14222/SSNM(8.4).GSUM(8.3).SGNM(8.3).GGNM(8.3).ZSS(8).	1265(8),1256(8),266(8)	DATA SSWI/105SAL, 105SAL, 105SCL, 105SCL, 105SEL, 105SEL, 105SCL, 105S	2,105501,1055P1,105521,105521,105521,105521,105541,105541, 21055X1,105571,105521,105521,105521,105521,105541,105551,105561/	SURFACE TO GAS DIRECT INTERCHANGE AREAS		2+D65Q4	DATA SURFACE DIRECT INTERCHANCE AREA DATA SGMM/105GA1,105GC1,105GC1,105GE1,105GE1,105GC1, 	2.105601,105601,105601,105641,105651,105651,105671,105601,1056V1,105641,	GAS TO GAS DIRECT INTERCHALGE AREA GAS TO CAS DIRECT INTERCHALGE AREA		 	DATA 256/125611,125621,125631,125641,125651,125661,25671,125631	DATA ZGS/12G511,12G521,12G531,12G541,12G551,12G561,12G571,12G581	NET TRANSMISSINT 1005 10 003 10 1206410 1206510 1206610 120681	CAUSSIAN QUADATURE METHIC USING ZEKO DF LEGENDRE Dou vanaturi s and the cherspronnoing weights	WEIGTHS WI WEIGTHS WI DATA WITC-DE127430 - 2:18064314 - 0.26051070 - 0.31234708 -	1 0.33023936 , 0.31234704 , 0.26061070 , 18064816 , 08127439/	DATA XV /96816.24+83603111+61337143+32425342+0.0+	NURBER DE QUADRATURE PAINTS DATA BET AORATURE PAINTS	END				

<ul> <li>C. STARRYE TOTAL STATE CONTRACT STATE CONTRACT AND A TANKED TO</li></ul>	<ul> <li>7.3.7.5.5.9.4.9.4.9.7.165.0.4.6.4.5.</li> <li>7.3.7.5.5.9.4.105.6.4.105.6.4.105.6.6.105.5.6.</li> <li>7.4.4.4.5.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.</li></ul>
Out         District State         District State         District State           2. 1055501, 105571, 105571, 105571, 105511, 105	NWY 105551, 105561, 105561, 105561, 105501, 105501, 105541, 105
21         31<	710559771055777055777055577055777055077705507770557770557770557770557770557770557770557770557770557770557770555777755577775557777555777755577775557777
<ul> <li>C. Gokazer T. M. Schuldschuld</li></ul>	U GAS DIRECT TWERFAHAVGE AREA WILL 106511, 106511, 106551, 106551, 106551, 106561, 04186465 WILL 106511, 106511, 106511, 106511, 106511, 106541, 04186465 DATA6465 BREACE DIRECT INTERCHANGE AREA DATA6465 DATA6465 DATA6465 DATA6465 DATA6465 DATA6465 DATA6465 DATA6465 DATA6467 DATA6467 DATA6467 DATA6467 DATA6467 DATA6467 DATA6467 DATA6467 DATA6467 DATA6471 DATA6471 DATA6477 DATA6478 DATA647
1       "In "Index: Just [1, 105:01, 100, 105:01, 100, 100:00, 100, 100:00, 100:00, 100:00, 10	<pre>Sift, 106511, 106511, 106511, 106511, 106511, 106511, 106511, 106511, 106511, 106511, 106511, 106511, 106511, 106511, 105611, 0014649 </pre>
<ul> <li>a) TOSANA</li> <li>b) TARANE</li> <li>TOSANA</li>  <li>TOSANA</li> <li>TOSANA</li> <li>TOSANA</li></ul>	BEAGE         DIRECT         INTERCHANGE         NE           NHM/105GA1, 105GA1, 15SSA1, 105GA1, 105GA1, 105GA1, 105GA1, 105GA1, 105GA1, 105GA1, 15SSA1, 15SSA1, 15SSA1, 15SSA1, 15SSA1, 15SSA1, 15SSA1, 15SSA1, 15SSA1, 105GA1, 15SSA1, 15SA1, 15SA1, 15SA1, 15S
Dark Services         Dark Services         Dark Services           2. 105001, 105601, 105601, 105601, 105601, 105601, 105601, 105601, 105641, DArk Services         Dark Services         Dark Services           2. 105001, 105601, 1	AW/105GA1,105GA1,105GF1,105GF1,105GA1,004A477         S014/105GA1,105GA1,105GA1,105GA1,105GA1,105GA1,004A477       DATA6477         S014/105GA1,105GA1,105GA1,105GA1,105GA1,004A477       DATA6477         S014/15SA1,15SA1,15SA51,15SA1
<ul> <li>2. Inscordy inscripting in the Area</li> <li>2. Inscordy inscripting in the Area</li> <li>2. Inscordy inscripting in the Area</li> <li>2. Inscordy inscripting inscription inscriptinscription inscription inscription inscription inscri</li></ul>	JIDSGP1, IDSGP1, IDSGR1, IDSGR1, IDSGV1, IDSGV1, IDSGP1, IDSGP1, IDSGP1, IDSGP1, IDSGP1, IDSGP1, IDSGP1, IDSGP1, IDSGP1, IDSGP1, IDSGV1, IDSGV1, IDSGV1, IDSGV1, IDSGV1, IDSGV1, IDSGV1, IDGAV1, IDVAA477           CEFLECTIVITY WITH SUBFACE AS THE EMITTER         DATAA477           CEFLECTIVITY WITH SUBFACE AS THE EMITTER         IDATAA477           CEFLECTIVITY WITH SUBFACE AS THE EMITTER         IDATAA477           CELLISSS1, ISSSCI,
<ul> <li>GÅS TD GAS DIRECT INTERCHATGE AREA</li> <li>GÅS TD GAS DIRECT INTERCHATGE AREA</li> <li>DATA DIRECT INTERCHATGE AREA</li> <li>DATA DIRECT INTERCHATGE AND INDORE UNDER UNDER ALTA</li> <li>DATA SERVINSKADI, PERCIN LEGGLI, FIGGUL, FIGGUL, LEGGLI, DATA TA</li> <li>DATA SERVINSKADI, PERCIN LEGGLI, FIGGUL, FIGGUL, LEGGLI, DATA TA</li> <li>DATA SERVINSKADI, PERCIN LEGGLI, FIGGUL, FIGGUL, LEGGLI, DATA TA</li> <li>DATA SERVINSKADI, PERCIN LEGGLI, FIGGUL, FIGGUL, LEGGLI, DATA TA</li> <li>DATA SERVINSKADI, PERCIN LEGGLI, FIGGUL, FIGGUL, LEGGLI, DATA TA</li> <li>DATA SERVINSKADI, FIGRI, LANDIN, FISCI, LISCO, LISCO, LANDINA</li> <li>DATA SERVINSKADI, SERVINSKAD, FISCI, LISCO, LISCO, LISCO, LANDINA</li> <li>DATA SERVINSKADI, SERVINSKAD, FISCI, LISCO, LISCO, LISCO, LANDINA</li> <li>DATA SERVINSKADI, SERVINSKAD, SERVINSKAD, DATA AND</li> <li>DATA TSIN TISSO, TISCO, TISCO, TISCO, LISCO, /li></ul>	S         Direct INTExcharde         Direct Intexcharde           S:         Direct INTExcharde         Direct Intexcharde           Direct Intexcharde         Direct Intexcharde         Direct Intexchard           Direct Intexcharde
1       0116647       01166473         2       0106047       01166473         3       0106647       01166473         3       0106647       01166473         3       0116647       01166473         3       0116647       01166473         3       0116647       01166473         3       0116647       01166473         3       0116647       01166473         3       0116647       01166473         3       0116647       01166473         3       0116647       01166449         3       0116647       01166449         3       0116647       01166449         3       01166447       011664449         3       01166444       011664446         3       01166444       011664446         3       01166444       011664446         3       01166444       011664446         3       0116644       011664446         3       01166444       011664446         3       01166444       011664446         3       01166444       011664446         3       011664446       011664446         3 </td <td>Gents       10GGT       10GGT       10GGK1       10GGK1</td>	Gents       10GGT       10GGT       10GGK1
<ul> <li>C. SURVACIÓN CONTRACTOR DITAGONA DITAGONA</li> <li>A. A. SSUM/ISSRAJJISKUJJISKUJJISKUJISKUJISKUJISKUJISKUJI</li></ul>	IEFLECTIVITY WITH SURFACE AS THE EMITTER       DATA6475         ISHM/ISRSAL/SRSCI, ISRSDI, ISRSEL, ISRSFI, ISRSGI,       DATA6475         ISHM/ISRSAL, ISRSLI, ISRSHI, ISRSHI, ISRSVI, ISRSVI, ISRSAL, ISRSHI, ISRSAL, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSHI, ISRSVI, ISRSVI, ISRSAL, ISRGAL, ISSRAL, ITSSAL, IT
0x7x SxSty/iSxSty/iSxSty/iSxSt/iSSSt/iSSt/iSSSt/iSSSt/iSSSt/iSSSt/iSSSt/iSSSt	ISERTI, ISSSI, ISSSI, ISSEL, ISSEL, ISSSI, ISSSI, OATA6477         ISELT, ISSSI, ISSSI, ISSSI, ISSSI, ISSSU, ISSSU, ISSSU, DATA6479         ISESTI, ISSSI, ISSSI, ISSSI, ISSSU, ISSSU, ISSSU, DATA6479         ISESTI, ISSSI, ISSSI, ISSSI, ISSSU, ISSSU, ISSS, ISSSI, DATA6479         ISESTI, ISSSI, ISSSI, ISSSI, ISSSI, ISSSU, ISSSI, DATA6479         ISESTI, ISSSI, ISSSI, ISSSI, ISSSI, ISSSI, ISSSI, DATA6479         ISESTI, ISSSI, ISSSI, ISSSI, ISSSI, ISSSI, ISSSI, ISSSI, DATA6481         ISSSI, ISSSI, ISBS, ISSSI, ISSSI, ISSSI, ISSSI, ISSSI, DATA6481         ISSSI, ISSSSI, ISSSSI, ISSSI, ISSSI, ISSSI, ISSSI, ISSSI, ISSSI,
Z, 1585f1, 1555f7, 1565f7, 1565f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1585f7, 1586f1, 1556f1, 1556	JSFSPI, JSRSQI, JSRSRI, JSRSSI, JSRSTI, JSRSUI, JSRSVI, JSRSVI, DATA6479 JSFSPI, JSRSQI, JSRSRI, JSRSQI, JSRSQI, JSRSVI, JSRSWI, DATA6480 LEFLECTIVITY with GAS AS THE EMITTER LGUM/JSRGAI, JSRGH, JSRGAI, JSRGAI, JSRGAI, JSRGAI, DATA6482 GGUM/JSRGAI, JSRGH, JSRGLI, JSRGAI, JSRGVI, JSRGI, DATA6482 IGUM/JSRGAI, JSRGAI, JSRGLI, JSRGUI, JSRGVI, JSRGI, DATA6482 IGUM/JSRGAI, JSRGAI, JSRGLI, JSRGUI, JSRGVI, JSRGI, DATA6482 IGUM/JSRGAI, JSRGAI, JSRGLI, JSRGUI, JSRGVI, JSRGI, DATA6482 IGUM/JSRGAI, JSSGJI, JSRGSI, JSRGUI, JSRGVI, JSRGVI, JSRG4I, DATA6482 ISBUA, TSSGJI, JSSGI, JSSGJI, JSSGI, JSRGUI, JSRGVI, JSRGVI, JSRG4I, DATA6485 ISBUA, TSSAI, JTSSGI, TSSSI, JTSSEI, TTSSAI, JTSSGI, DATA6489 ISBUA, TSSAI, JTSSQI, TTSSLI, JTSSAI, JTSSAI, JTSSAI, DATA6489 ISSNI, JTSS21, JTSSQI, TTSSLI, TTSSUI, TTSSVI, TTSSI, DATA6489 ISSNI, JTSS21, JTSS21, TTSS21, JTSSAI, JTSSAI, JTSSAI, DATA6499 ISSNI, JTSS21, TTSS21, JTSS21, JTSS21, JTSS51, JTSS61, DATA6499 ISSNI, JTSS21, TTSS21, JTSS21, JTSS21, JTSS51, JTSS61, DATA6499 ISSNI, JTSS21, JTSS21, JTSS21, JTSS51, JTSS51, JTSS61, DATA6490 ISSNI, JTSS21, JTSS21, JTSS21, JTSS51, JTSS51, JTSS51, JTSS61, DATA6490 ISSNI, JTSS21, JTSS21, JTSS21, JTSS51, JTSS51, JTSS61, DATA6490 ISSNI, JTSS21, JTSS21, JTSS21, JTSS21, JTSS51, JTSS61, DATA6490 ISSNI, JTSS21, JTSS21, JTSS21, JTSS21, JTSS51, JTSS61, DATA6490 ISSNI, JTS541, JTS521, JTSS21, JTSS21, JTSS61, DATA6490 ISSNI, JTS541, JTS541, JTS541, JTS541, JTS541, JTS541, DATA6490 ISSNI, JTS541, JT5541, JT5541, JT5551, JT5551, JT5551, JT55541, DATA6490 ISSNI,
C         SURFACE REFLECTIVITY         JTRAGE           1         SURFACE REFLECTIVITY         JTRAGE           1         SERVILLSERATI-ISSG11-IISSG11-IISG11-IIISSU1-IIISSU1-IIISG11-IIISSU1-IIIISSU1-IIIISU1-IIIISU1-IIIISU1-IIIISU1-IIIIIIIIII	1585Y1,15851,158511,15851,15851,15851,15851,15851, 15851, 15851       0ata6480         16FLECTIVITY       0ata6481         16H1,1586a1,158651,158601,158601,158601,158601       0ata6482         16H1,1586a1,158651,158611,158601,158601,158601       0ata6483         155611,158611,158651,158611,158601,158601,158641       0ata6483         1,55611,158611,158611,158601,158601,158601,158641       0ata6485         1,55611,15861,158611,158601,158601,158641,10046485       0ata6485         1,55611,15561,158611,158601,158601,158641,10046485       0ata6485         1,55611,15561,15561,15561,15561,15561,0046485       0ata6485         1,55511,15521,15551,15551,15551,15551,15561,0046485       0ata6485         55111,15521,15551,15551,15551,15551,15551,0046485       0ata6489         1,15571,15521,15551,15551,15551,15551,15551,0046485       0ata6489         1,15571,15521,15551,15551,15551,15551,15551,0046485       0ata6489         1,15571,15521,15551,15551,15551,15551,15551,0046485       0ata6489         1,15571,15521,115521,115551,115551,115551,00409       0ata6491         1,15571,15521,115551,115551,115551,115551,00499       0ata6491         1,15511,115521,115551,115551,115551,115551,00499       0ata6491         1,15511,115521,115551,115551,115551,00499       0ata6491         1,15511,115511,115551,115551,115551,00499       0ata6491         1,15511,
1         1	IGH1,158G11,158G41,158G41,158GM1,158GM1,158GM1,158G443         IGH1,158G11,158G41,158G41,158GM1,158GM1,158G41,100146443         IGH1,158G11,158G11,158G11,158GM1,158GU1,158G41,00146443         IGH1,155G11,155G11,155G1,158GU1,158GU1,158G41,00146443         IGH1,155G1,155G1,155G1,155G1,158GU1,158GU1,158G41,00146443         IGH1,155G1,155G1,155G1,155G1,155G1,0014643         IGH1,155G1,155G1,155G1,155G1,155G1,0014643         IGH1,155G1,155G1,155G1,155G1,155G1,0014643         IGH1,155G1,155G1,155S1,155G1,155S1,155S1,1755G1,0014643         IGH2,15521,15521,15551,175531,175501,15551,175561,0014643         IGA5,151551,115521,115551,175551,175551,175551,175561,0014643         IGA5,15151,15521,115551,115551,175551,175551,175561,0014643         IGA5,10115521,115551,115551,115551,175551,175561,0014649         IGA5,10115521,115551,115551,115551,115551,175561,0014649         IGA5,10115521,115551,115551,115551,115551,115561,0014649         IGA5,10115551,115551,115551,115551,115551,0014949         IGA5,1011551,115551,115551,115551,0014949         IGA5,1011551,115551,115551,115551,0014949
a 1564x1, butat 75x1, 17554, 17554, 17554, 175561, 175561, 175561, 175561, 17554, 17554, 17554, 17554, 175561, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 175561, 17554, 1	<pre>// DATA6485 // SURFACE TUTAL INTERCHANGE AREA SSUM/ITSSA!,ITSSE!,ITSSE!,ITSSE!,ITSSE!,ITSSE!, UATA6485 // TSSP!,ITSS2!,ITSSE!,ITSSE!,ITSSN!,ITSSN!,ITSSV!,ITSS2!,UATA6489 // TSSP!,ITSS2!,ITSSE!,ITSSE!,ITSSN!,ITSSV!,ITSS2!,UATA6489 // TSSP!,ITSS2!,ITSS2!,ITSS2!,ITSS2!,ITSS2!,ITSS5!,ITSS5!,UATA6489 // CAS TUTAL INTERCHANGE AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA // CAS TUTAL AREA</pre>
DATA TSS:M/ITSSA!/ITSSA!/ITSSA!/ITSSA!/ITSSA       DATA6489         2:115501/115541/115541/115551/115521/115552/115552	ISEM/ITSSA, ITSSB, ITSSC, ITSSD, ITSSE, ITSSE, ITSSG, DATA6497 ISEV, ITSSP, ITSSQ, ITSSK, ITSSL, ITSSW, ITSSW, ITSSW, DATA6489 DATA6489 DITSSP, ITSSQ, ITSSR, ITSSS, ITSSV, ITSSW, ITSSW, ITSSW, DATA6489 DITSSP, ITSSZ, ITSSQ, ITSSQ, ITSSQ, ITSSW, ITSSW, ITSSW, DATA6499 DATA6491 DATA6491 DATA6492 SUM/ITGSA, ITSSL, ITSSD, ITSSE, ITGSE, ITGSG, DATA6492 SUM/ITGSA, ITGSE, ITGSD, ITGSE, ITGSE, ITGSG, DATA6492 SUM/ITGSA, ITGSE, ITGSD, ITGSE, ITGSE, ITGSG, DATA6492 SUM/ITGSA, ITGSE, ITGSC, ITGSE, ITGSE, ITGSE, ITGSG, DATA6492 SUM/ITGSA, ITGSE, ITGSC, ITGSE, ITGSE, ITGSE, ITGSG, DATA6492 SUM/ITGSA, ITGSC, ITGSE, ITGSE, ITGSE, ITGSE, ITGSG, DATA6492 SUM/ITGSA, ITGSC, ITGSE, ITGSE, ITGSE, ITGSE, ITGSC, DATA6493 SUM/ITGSA, ITGSC, ITGSE, ITGSE, ITGSE, ITGSE, ITGSG, DATA6493 SUM/ITGSA, ITGSC, ITGSE, ITGSE, ITGSE, ITGSE, ITGSG, DATA6493 SUM/ITGSA, ITGSE, ITGSE, ITGSE, ITGSE, ITGSE, ITGSG, DATA6493 SUM/ITGSA, ITGSE, ITGSE, ITGSE, ITGSE, ITGSE, ITGSG, DATA6493 SUM/ITGSA, ITGSE, ITGSE, ITGSE, ITGSE, ITGSE, ITGSG, DATA6493 SUM/ITGSA, ITGSE, ITGSE, ITGSE, ITGSE, ITGSE, ITGSE, ITGSG, DATA6493 COULD AND AND AND AND AND AND AND AND AND AN
Zy 175517, 175507, 175517, 175517, 175507, 1755	I, 155891, 155821, 175581, 175571, 175501, 175501, 175581, 0476499 1, 155891, 175821, 175581, 175821, 175801, 175501, 175561/ 0476490 10 GAS TUTAL 14TERCHANGE AREA 55440/176541, 17681, 176501, 176561, 176561, 176561, 0476492 55440/176541, 176641, 176641, 176641, 176641, 176541, 176541, 0476493
<ul> <li>C SINFACE TU GAS TUTAL TUTERCHANGE ARA DATA TGSUINTLESALITESCLITESCDITESCLITESCLITESCLI UNIA6491</li> <li>DATA TGSUINTLESALITESCLITESCLITESCLITESCLITESCLI UNIA6492</li> <li>I TGSUINTLETESLITESCLITESCLITESCLITESCLITESULITESULI USALI ALTESULITESTCSLITESTLITESCLITESCLITESCLITESULIESULI USA493</li> <li>C SS TO SATA TSUNTTSCRI TTSCRI TTSCRI TTSCRI TTSCGLI DATA6497</li> <li>I TSCALI TTSCRI TTSCRI TTSCRI TTSCRI TTSCRI TTSCGLI DATA6497</li> <li>I TSCALI TTSCRI TTSCRI TTSCRI TTSCRI TTSCGLI TTSCGLI DATA6497</li> <li>I TSCALI TTSCRI TTSCRI TTSCRI TTSCRI TTSCGLI TTSCGLI DATA6497</li> <li>I TSCALI TTSCRI TTSCRI TTSCRI TTSCRI TTSCGLI TTSCGLI DATA6497</li> <li>I TSCALI TTSCRI TTSCRI TTSCRI TTSCRI TTSCGLI TTSCGLI DATA6497</li> <li>C GAS TUTAL INTERCHANGE AREA</li> <li>C GAS TUTAL INTERCHANGE AREA</li> <li>DATA TGGUNITTGCRI TTGCRI TTGCRI TTGCRI DATA6497</li> <li>C GAS TUTAL INTERCHANGE AREA</li> <li>DATA TGGUNITTGCRI TTGCRI TTGCRI DATA6497</li> </ul>	FU GAS TUTAL LATERCHANGE AREA SSHM/LIGSAL/LIGSEL/LIGSEL/LIGSEL/LIGSEL/LIGSGL/ UATA6491 Scut/Ligsal/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Ligsel/Li
I 'TGSW', ITGSW', ITGSW', ITGSW', ITGSW', ITGSW', DATA6493 ZAITGSWI, ITGSWI, ITGSWI, ITGSWI, ITGSWI, DATA6495 DATA TSGWM/ITSGAI, ITSGAI, ITSGAI, ITSGAI, ITSGGI, DATA6497 DATA TSGWM/ITSGAI, ITSGAI, ITSGAI, ITSGAI, ITSGGI, DATA6497 I ITSGWI, ITSGAI, ITSGAI, ITSGAI, ITSGAI, ITSGAI, DATA6497 ZAITSGAI, ITSGAI, ITSGAI, ITSGAI, ITSGAI, ITSGAI, DATA6497 C GAS TOTAL INTERCHANGE AREA DATA TGGWWITGGAI, ITSGAI, ITSGAI, ITSGAI, ITSGAI, DATA6497 DATA GAWWITGGAI, ITSGAI, ITSGAI, ITSGAI, ITSGAI, DATA6499 ZAITSGAI, ITSGAI, ITSGAI, ITSGAI, ITSGAI, ITSGAI, DATA6499 C GAS TOTAL INTERCHANGE AREA DATA TGGWWITGGAI, ITGGAI, ITGGAI, ITGGAI, DATA6500	Colli TTCCI - TTCCI - TTCCI - TTCCI - TTCCN - 0.176603
C GAS TO SURFACE TOTAL TUTERCHANGE AREA DATA TSGUM/ITSGA1, ITSGU1, ITSGU1, ITSGU1, DATA6495 DATA TSGUM/ITSGA1, ITSGU1, ITSGU1, ITSGU1, DATA6497 DATA6491, ITSGU1, ITSG	101101101101101111001111100110110101011011010
DATA TSGMM/ITSGAN,ITSGAN,ITSGEN,ITSGEN,ITSGEN,ITSGAN, DATA6497 1 175GH,ITSGAN,ITSGAN,ITSGAN,ITSGAN,ITSGAN, DATA6498 2 175GD1,ITSGPN,ITSGAN,ITSGAN,ITSGAN,ITSGAN, DATA6499 3 155CXL/ C GAS TUTAL INTERCHANGE AREA DATA TGGMM/ITGGAN,ITGGRN,ITGGEN,ITGGEN,ITGGGN, DATA6502 DATA TGGMM/ITGGAN,ITGGRN,ITGGEN,ITGGEN,ITGGGN, DATA6502	DATA6495 HREACE TOTAL THTERCHANGE AREA DATA6496
Z, ITSGD, ITSGP1, ITSGR1, ITSGS1, ITSGU1, ITSGU1, ITSGV1, ITSGV1, ITSGV2 21TSGX1/ 21TSGX1/ C GAS TO GAS TUTAL INTERCHANGE AREA DATA TGGMM/ITGGA1, ITGGR1, ITGGE1, ITGGE1, ITGGC1, DATA6501 DATA TGGMM/ITGGA1, ITGGR1, ITGGE1, ITGGE1, ITGGG1, DATA6502	SGUN/ITSGA1, ITSGB1, ITSG21, ITSGB1, ITSGF1, ITSGG1, DATA6497
C GAS TUTAL INTERCHANGE AREA DATA TGGWM/ITGGRI,ITGGRI,ITGGEL,ITGGRI,ITGGGL, DATA6501 DATA TGGWM/ITGGRI,ITGGRI,ITGGRI,ITGGRI,ITGGGL, DATA6502	1,156P1,105621,1756R1,175651,175671,1756U1,1756V1,1756V1, 0A1A449
	A TUTAL INTERCHANGE AREA As TUTAL INTERCHANGE AREA 504M/ITGGAL,ITGGRI,ITGGGI,ITGGEL,ITGGEL,ITGGGI, DATA6502

	·					: •							   .	'				1.					4	ĺ	i			
													<b> </b>								•					1		
																		l									1	
											ŗ																	
	-																							-				
	l																							Į –				
										•																		
			l																						Į			
								•								•												
			[	ŀ																								
			ł																									
]					}																							
	8	n s	50						t I								•											
	015	650 650	650 650																									
	ш	ATA	ATA ATA																									
	PAG	a d	23			ļ	1																			}		
		4																				•.						
	*	001		-																								
	5/7	-	.																				-					
	3/0	טטא						• •																				
	0	N.									1																	
•		0 - 1 - 1 - 1																										
	A		:																									
	¢DÅ	001																										
		- 0																										
	8		.																									
		1-0						·				•																
		Ž																										
•		1 TC		.									l															
	NG																											
	151	001																										
	-										ļ									,								
	JRC.																											
	Sol	Ha	·																					Ì				
	(e)	E															;											
	1	100	2																									
	VEF	- 001	ဒ္ဒိရ																							1		
	>		ie I															.						[	ĺ			
	I I																											1
	TRA		_																									
	FUR	23	5								l		ļ					<b> </b>								}		
	A																											
ŀ	Í																	ł										

94GE 0159	DATA6597 Data6508	DATA6509	04140511 04746511	DATA6513 DATA6514	04746515 04746516	UATA6517	04146519 04145519	DATA6521	04140522 10146523 10146524	DATA6525 DATA6526	DATA6527	UATA0548 DATA6529	DATA6530 DATA6531	DATA6533		DATA0537								an industry water the second second second second second second second second second second second second second
03/05/74	(8,3),TGGWM(8,3),5S(8),		SSELPITSSELDITSSGID	1,175501,1755V1,1755M1,	. 176661 . 176561 .	65M1, 1765N1 1765N1 - 1765N1		SGE1, ITSGF1, ITSGG1,	1,1756U1,1756V1,1756W1,	6661 • 176661 • 176661 •	66M1 J 1 765M1	- <u>++++660+++++660++++++664+++++</u>	645 1,155-61,155-71,155-81/	1,165-61,165-71,165-81/	11,156-61,156-71,156-81/	1,166-01,166-71,166-81/				<b>.</b>	•			
L43) SUURCE LISTING!	DATA 1/14226/ TSSNMf8-41-TGSNMf8-31-TSGNM	1, SG(2), SG(5)		11, 1755P1, 175501, 1755R1, 175551, 17557 	TU GAS TUTAL INTERCHANGE AREA 155.04/17554/117658/117650/117	11011111111111111111111111111111111111		123.41/15641.15561.115601.115601.11	11,1156P1,105601,1156R1,1156S1,11565	JAS TUTAL INTERCHANGE AREA For W/ITGGAL ITGCRI.ITGGCL.ITGGOL.IT	110011 110011 110011 110011 110011 11001	<u>, , , , , , , , , , , , , , , , , , , </u>	TO SUKFACE INTERCHAUGE AREA REAL 55/155-11,1555-21,155-31,155-41,155-55 55/155-11,15155-21,155-31,255-31,255-55	05/165-11,165-21,165-31,165-4,1,165-5	SURFACE [11TERCHANGE AREA REAL GAS 56/156411/1562210/1564319156441915655 56/1564110/1562210/156431915655	20/100-11-100-11-100-11-100-11-100-12-00-12-00-12-00-12-00-12-00-12-00-12-00-12-00-12-00-12-00-12-00-12-00-12-0								
A FURTRAN IV (VER	1 ALOCK 2 COMMON	3 1 65(8)	5 DATA T	7 2,17550	9 C SURFACE		13 3176SX1	15 11474 T	17 2, 1756U	19 C GAS TO G	21 1 12	23 24 11661 23 31766X1	25 C SURFACE	27 DATA C	29 C GAS TU S 29 C AS TU S 20 C AS TU S									

												•	-								-
	AGE 0160	DATA6539 DATA6540	0ATA6541 DATA6541	DATA6543 DATA6543	DATA6545	UATA6547															
-	03/05/74 P		/18-3-1-16-3-1-14-3-														••	•			
	4 IV (VER L43) SOURCE LISTING!	RLUCK DATA COMMON/JA775/CSTR1.SC/81.CCT81	SURFACE TU GAS INTERCHANGE AREA REAL GAS	GAS TO SURFACE INTERCHANGE AREA REAL GAS	GAS TO GAS INTERCHANGE AREA TH REAL GAS	END															
	A FORTRAN		ب ۳۹×	2	0 7-0	* 0							•			•					

	NS/US/ 14 NAVE ULO	DATA6548	04146550	DATA552 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DATA6554	0ATA6556										••	•			ł
· HARAGAIL BUILT . MAY POLICIAN I ANALALIA.	A FURIKAN IV (VEK 143) SUUKLE LISTINGI	1 BLUCK DATA 2 Fraudal / 17754/ Sciel - Sciel - Sciel	3 C SURFACE TU SURFACE INTERCHANGE AREA REAL GAS		7 C GASTO SUFACE INTERCHANGE AREA REAL GAS A DATA SCLISCED LISCEAL ISCEAL ISCEAL ISCEEL ISCEEL	6 END														

1

ţ

ì