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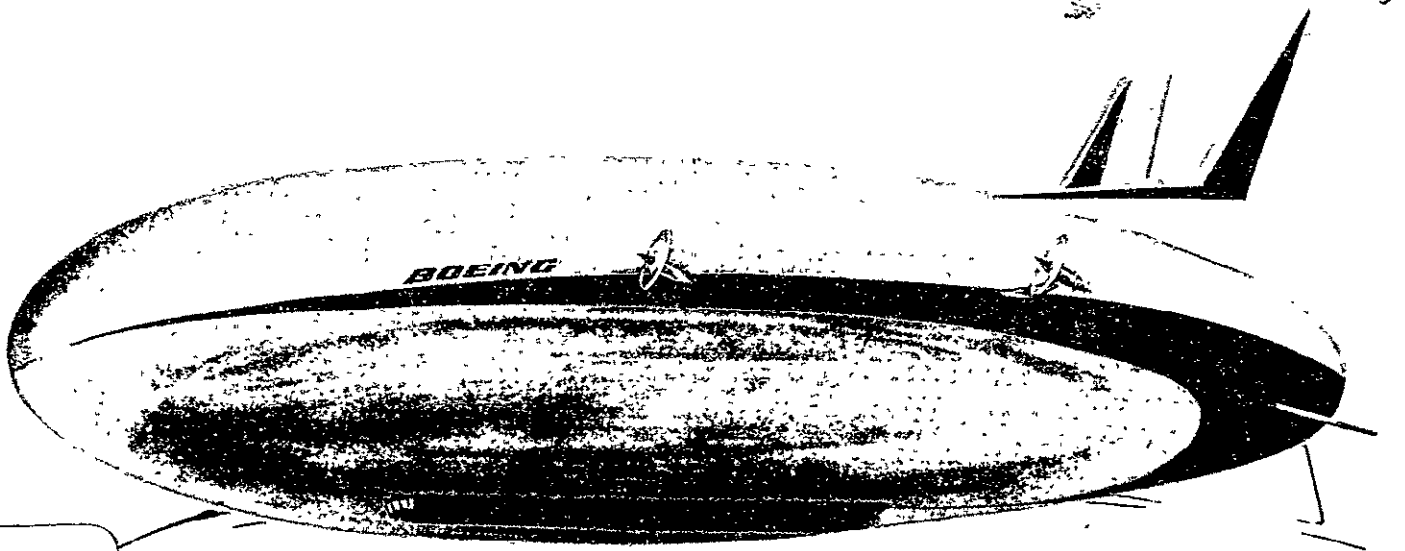

DESPRIPTION OF CASCOMP
COMPREHENSIVE AIRSHIP SIZING AND PERFORMANCE COMPUTER PROGRAM

Volume II

Prepared under Contract Number NAS 2-8693
(Feasibility Study of Modern Airships, Phase I)

for

National Aeronautics and Space Administration
Ames Research Center

by

BOEING VERTOL COMPANY
A DIVISION OF THE BOEING COMPANY
PHILADELPHIA, PENNSYLVANIA

D210-10953-2

May 1975

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1.0 INTRODUCTION

1.1 BACKGROUND

CASCOMP is an airship sizing and performance computer program very similar in format and operation to VASCOMP II, the V/STOL Aircraft Sizing and Performance Computer Program described in Reference 1. The purpose of the program is to aid comparative design studies of lighter than air vehicles by rapidly providing airship size and mission performance data. The program can be used to define design requirements such as weight breakdown, required propulsive power, and physical dimensions of airships which are designed to meet specified mission requirements. The program is also useful in sensitivity studies involving both design trade-offs and performance trade-offs.

During the formulation of the program, the following guidelines have been followed:

1. Maintain generality and flexibility:

   A program of this type must be comprehensive and flexible in order to permit an accurate simulation of virtually any airship configuration. It must be capable of approximating the design process involved in layout and sizing of a wide variety of LTA vehicles and synthesizing their performance.

2. The program should be easy to use:

   In order to minimize hand computation of input data, the input to the program primarily consists of a series of single point values specifying, for example, hull overall fineness ratio, number of engines, airship hull and empennage drag coefficients, a description of the mission profile, and weights of fixed equipment, fixed useful load and payload. Where necessary to adequately describe certain functional relationships, the input is in tabular form. However, since preparation of data for tabular input is generally more cumbersome and time consuming, this form of input has been kept to a minimun.

3. Minimize computation time:

   In order to minimize computation time, the program makes ample use of optional computation paths. To eliminate large quantities of null arithmetic, the program avoids calculations which do not apply to the particular airship

being studied. This is accomplished by means of a series of input indicators that specify the calculations to be performed.

4. The program should be well balanced:

   The program should not be extremely sophisticated in one detail and yet extremely simple in another. To offset the possibility of this occurrence, great care has been taken to examine methods used to describe the airship and its operation.

1.2 APPLICATION

The program has two primary independent applications and a third which is a combination of the first two. The program may be used for the sizing of airships for which the type of vehicle and the mission profile are specified. Alternatively, the program may be used for mission calculations for vehicles for which sizing details (gross weight, fuel available, engine power and fuel consumption, etc.) are known. As a combination of these two capabilities, the program may be used to first size an airship for a given mission and then calculate the off-design-point performance for other missions. The option of calculation to be used is specified to the program by means of an input "option indicator."

The program has been written in a manner to make it directly applicable to sensitivity studies to determine the effect of variations in weight, drag, engine characteristics, etc. This is accomplished by use of incremental multiplicative and additive factors applied to the gross weight, component drag and fuel required equations. For the most part, the multiplicative factors are nominally equal to unity and the additive factors are nominally equal to zero. However, to determine the effect, for example, of a 10 percent increase in drive system weight, the appropriate multiplicative factor can be set to 1.10 and the sizing program rerun.

The program contains size trend equations which reflect the variation of airship dimensions with gross weight, detailed statistical weight trends equations, a routine for sizing of engines to match airframe requirements, and several optional procedures for calculating propeller performance.

The program can be used to study a wide variety of lighter-than-air (LTA) vehicles. Table 1-1 illustrates these.

TABLE 1-1

AIRSHIP CONFIGURATIONS WHICH MAY BE STUDIED USING CASCOMP

Type of Dynamic Lift (DYLIND) \ Hull Type (HULIND)	CONVENTIONAL (1)	LIFTING BODY (2)	ELLIPTICAL PLANFORM LIFTING BODY (3)	CIRCULAR PLANFORM LIFTING BODY (4)
Hull Only Dynamic Lift (Both partially and Fully Buoyant) (1)	X			
Wing and/or Hull Dynamic Lift (2)	X (Megalifter Type)	X	X	X
Dynamic Lift by Rotors Alone (3)	X			
Dynamic Lift by Rotors, Wing and/or Hull (4)	X (Megalifter Type with Rotors)	X	X	X

2.0 TYPICAL AIRSHIP GEOMETRY

Specification of airship characteristics in order to calculate aerodynamic behavior and airship weights is made in a variety of ways; through use of input indicators which specify the types of calculations to be made, through use of weights factors and constants, and through use of configuration geometric information (largely nondimensional).

A typical dimensioning and weighing analysis starts with a given gross weight, a known hull type, a known requirement (or no requirement) for dynamic lift, and a given buoyant fluid (lifting gas). Hull volume is then determined by the interacting requirements of buoyancy ratio, buoyant fluid specific weight and design maximum pressure altitude. The actual hull dimensions, such as overall length or diameter, etc., are obtained by solving the volume relationships for a given hull type using the input values of fineness ratios (in the case of conventional type hulls) or aspect and taper ratios (in the case of the lifting body type hulls). Wing geometry (in the case of a megalifter type airship) is dictated by the requirements to satisfy a given dynamic lift loading and aspect ratio. Tail surface geometry is dictated by tail volume requirements and the location of the airship center of buoyancy.

Figures 2-1, 2-2, 2-3 and 2-4 illustrate the four basic hull forms which may be utilized with this program. Figure 2-1a is simply a special case of the first hull type (shown in Figure 2-1). The geometric information illustrated is typical of that which may be required of the program user. A list of the geometric inputs required is included in the input variable list in Section 5.3.

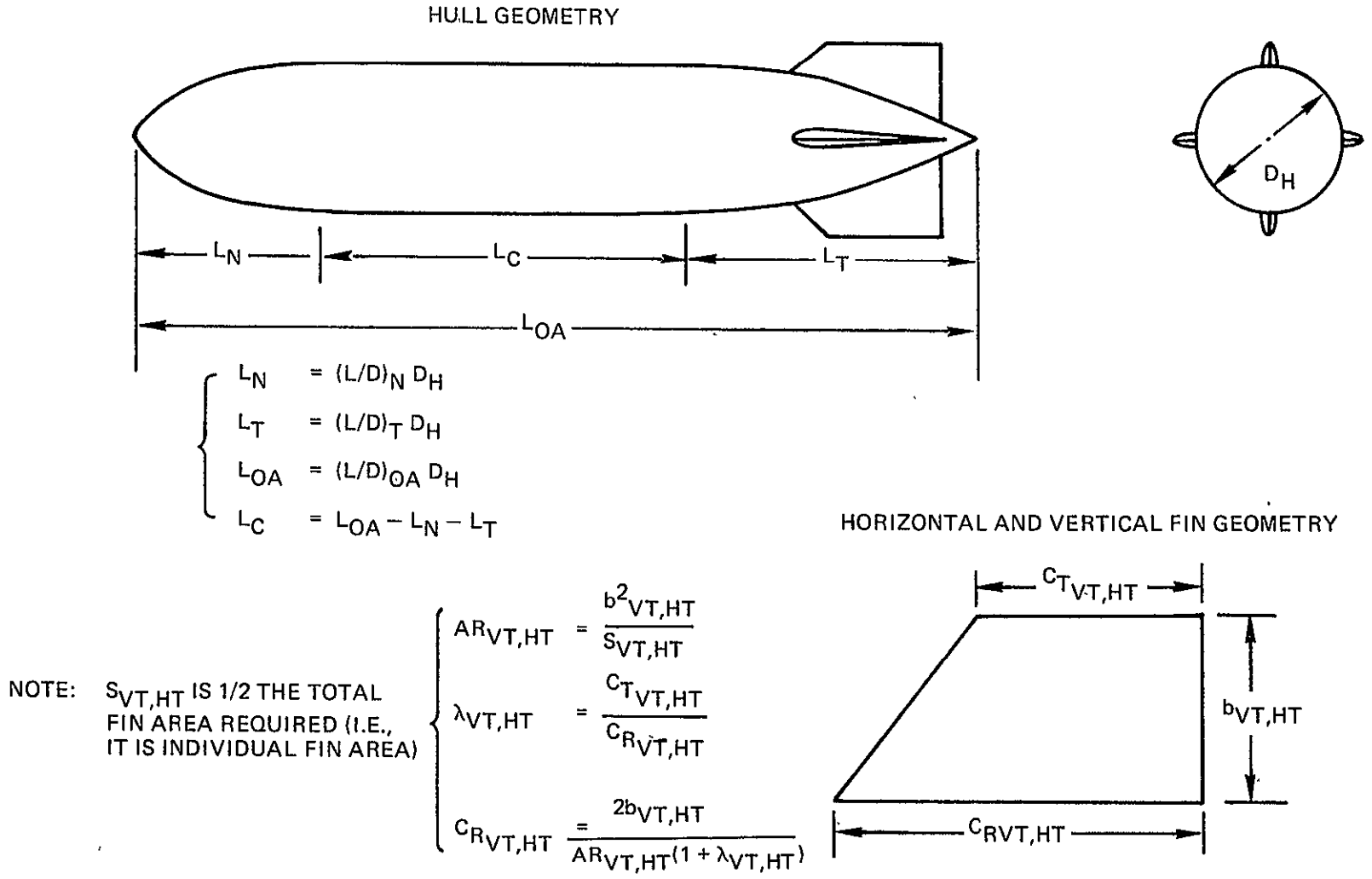


Figure 2–1. Typical Hull and Fin Geometry – Conventional Hull Airship (HULIND = 1)

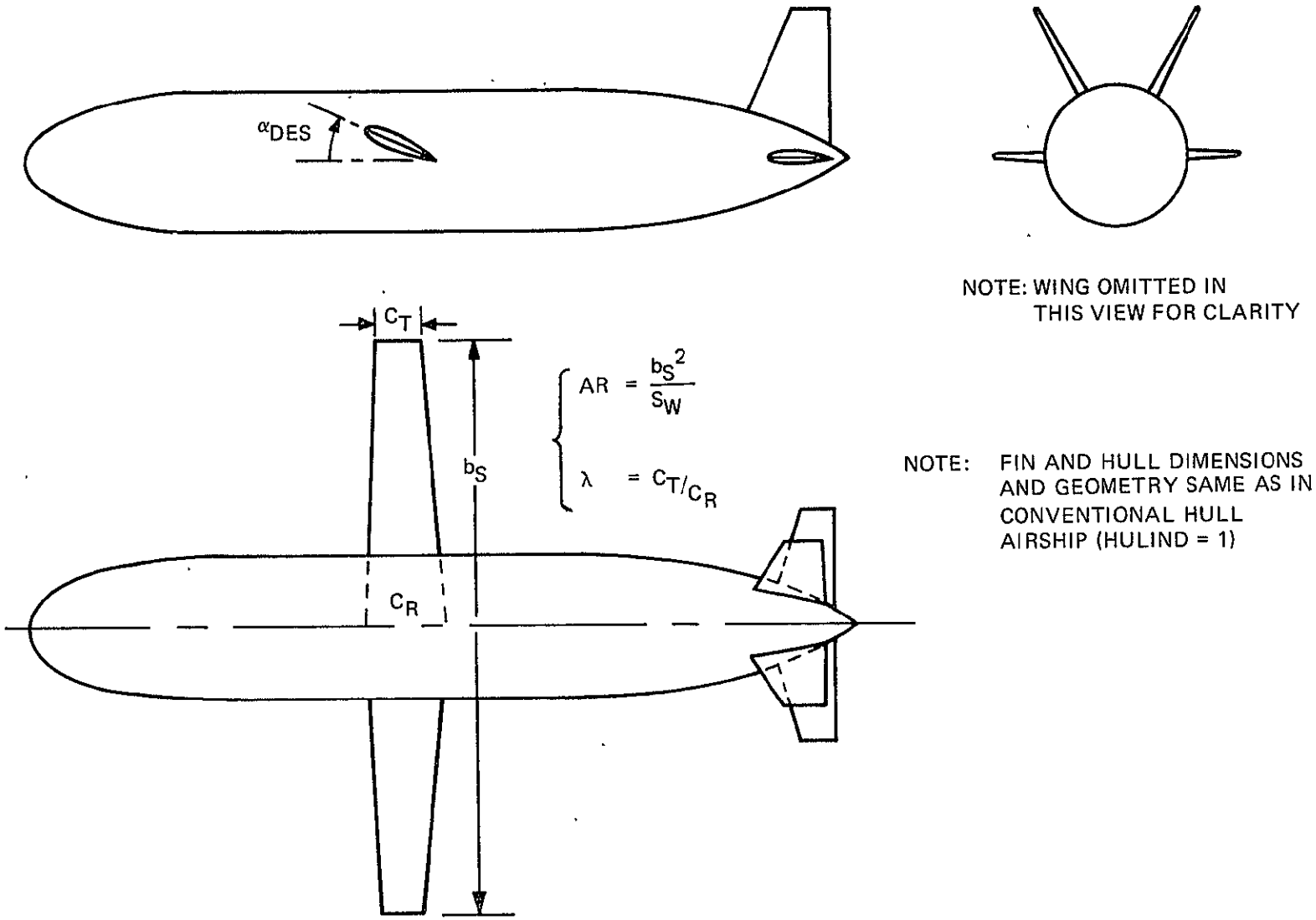


Figure 2–1a. Typical Hull and Fin Geometry — Megalifter

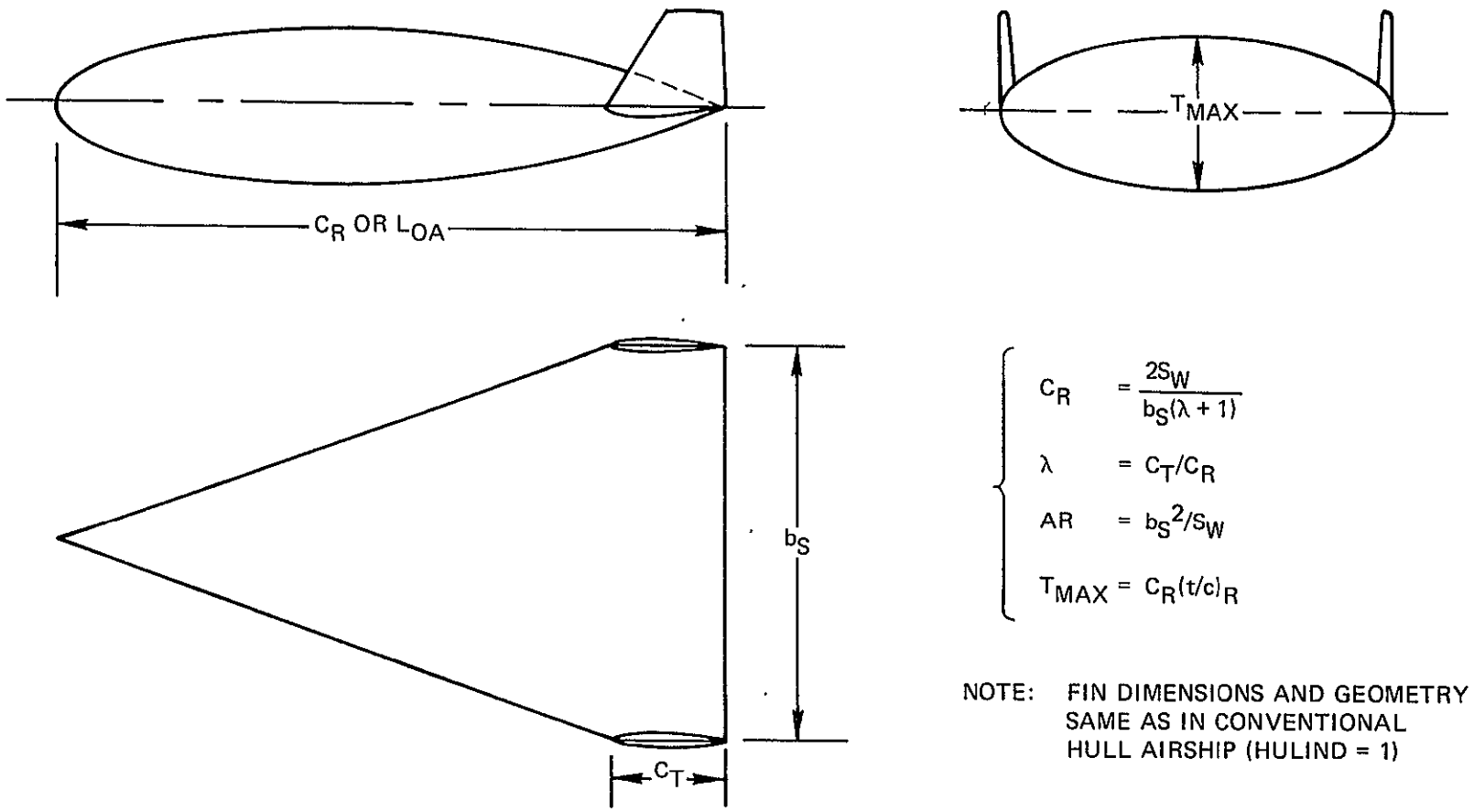


Figure 2–2. Typical Hull and Fin Geometry – Lifting Hull Airship (HULIND = 2)

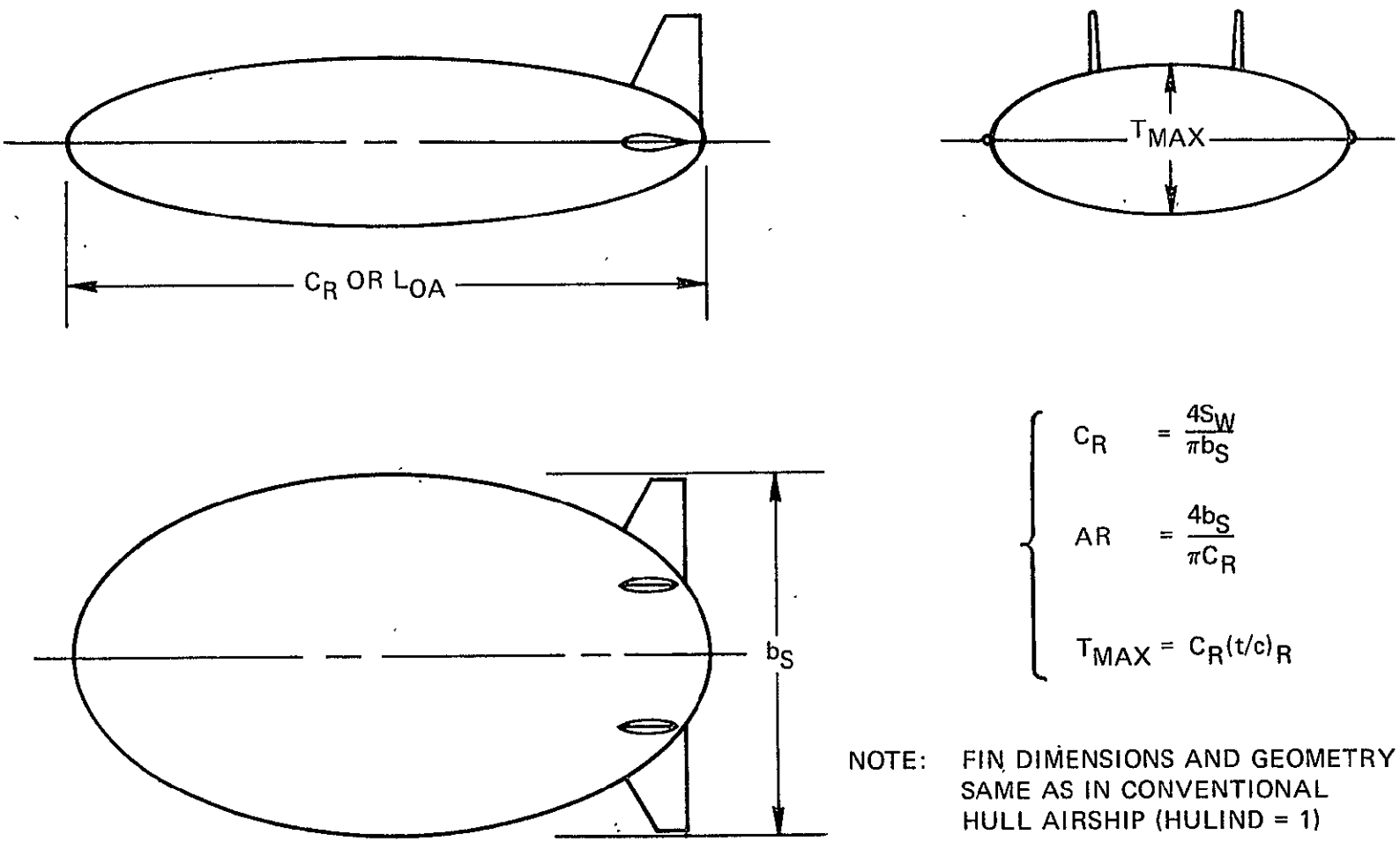


Figure 2–3. Typical Hull and Fin Geometry — Helipsoid Airship (HULIND = 3)

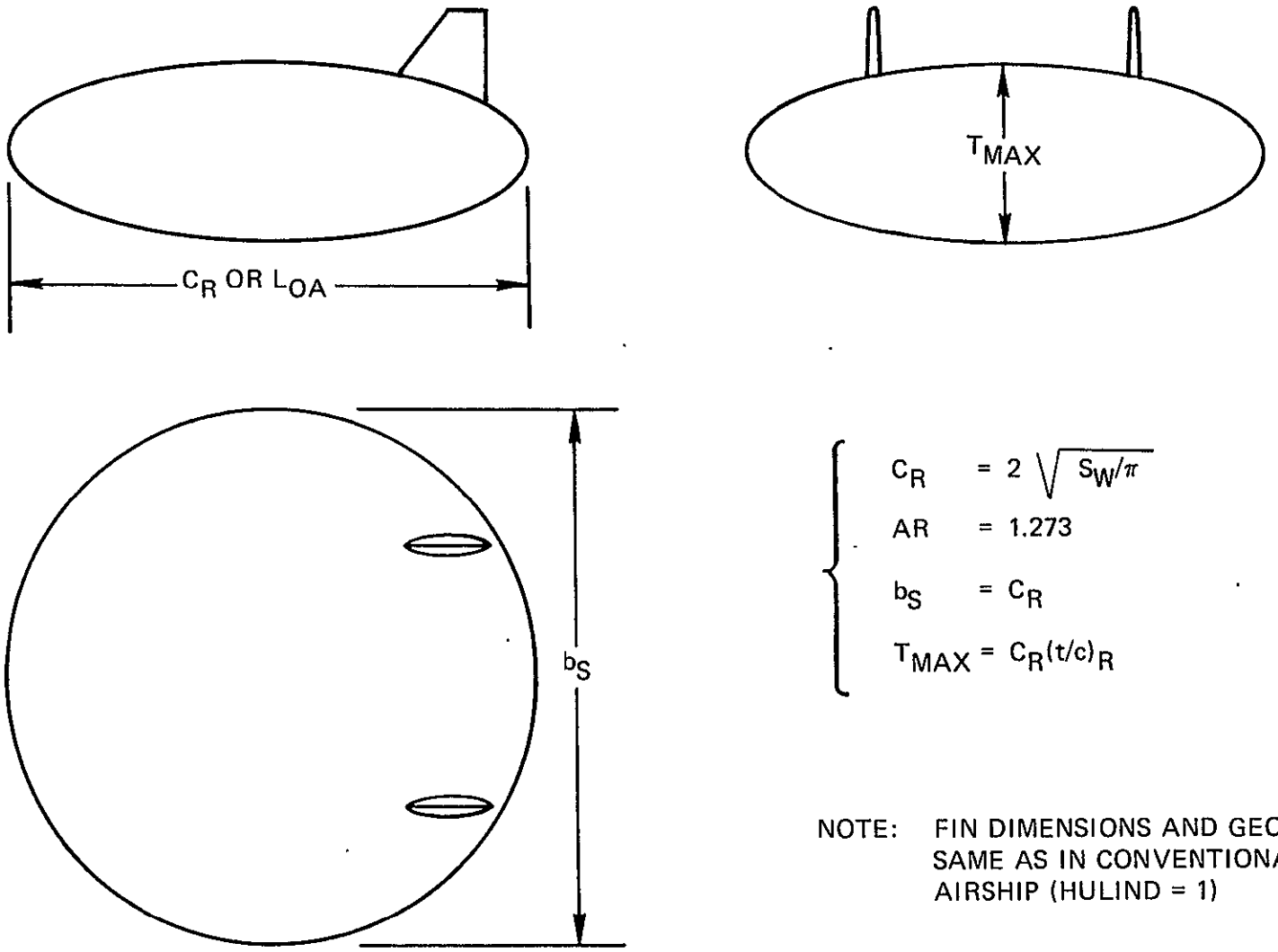


Figure 2–4. Typical Hull and Fin Geometry – Disc Shaped Hull Airship (HULIND = 4)

3.0 GENERAL PROGRAM DESCRIPTION

3.1 GENERAL

As previously described, the program has two major options. The specific option to be used is selected by means of an input "option indicator" abbreviated OPTIND. Note that throughout this volume, the input data locations (see Specimen Input Sheets, Section 5-2) are referred to by the abbreviation LOC.

3.2 OPTIONS

OPTIND = 0

This option determines the airship weight breakdown, payload, dimensions, and required power to satisfy a prescribed mission flight profile at a fixed gross weight. In addition to the flight profile, certain characteristics describing the type of airship are specified such as hull type, buoyancy ratio, design altitude, number of propellers, etc.

OPTIND = 2

This option is used to calculate the flight performance of an airship for which the dimensions and payload have been determined. In addition to the airship characteristics specified above, the power available, airship dimensions, etc. are input to the program. A flight profile is also specified. The program then calculates the performance history of the airship for the specified mission.

Combined Option

This option permits the user to "size" an airship for a "design-point" mission and then to calculate the off-design-point performance of the "sized" airship for a variety of additional missions. Basically, this option causes the program to run OPTIND = 0, save the sizing data generated in that option, and then input this information into the performance option (OPTIND = 2).

3.2.1 Description of Mission Profile

The Performance Calculations Subprogram, consisting of four individual subroutines, permits the simulation of airship performance for virtually any mission flight profile. A typical performance analysis is made up of a series of elements which, in building block fashion, allow the user of the program to perform a wide variety of studies. The elements of a typical performance analysis are:

a. Segment - A segment of a mission profile is a unique portion of the mission such as a cruise or a hover. A segment starts with a set of initial conditions of one or more of the variables of state (altitude, range, weight, etc.) and ends when a terminal condition (or conditions) has been satisfied.

b. Hop - A hop is defined as a set of segments ending at some logical terminal location (such as ground level at the desired range). Thus, a hop might consist of flying from location "A" to location "B" by means of combining the following segments: Takeoff, Transfer Altitude, Cruise, Transfer Altitude, Cruise, Transfer Altitude, Landing.

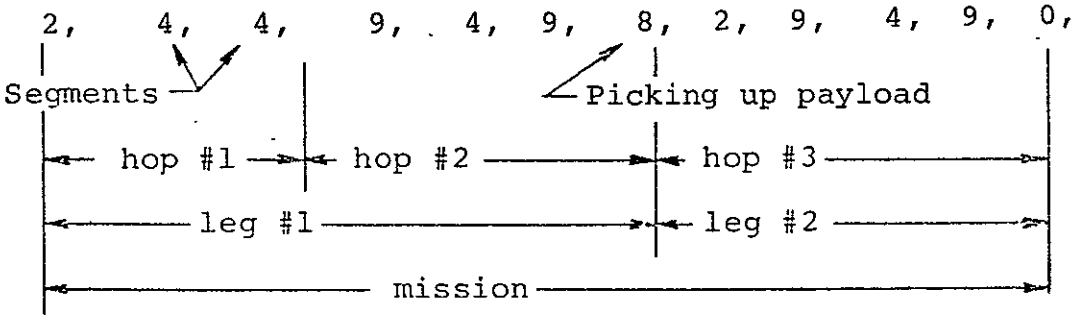
c. Leg - A leg of a mission is herein defined as a set of hops ending in a re-fueling of the airship. Thus, a leg might consist of flying from location "A" to "B", then to "C", at which point the airship is refueled.

d. Mission - A mission is defined in this program as a set of legs (or hops or segments) which satisfy some specific operational requirement. In this program, the mission is the basic element for which the airship is sized.

e. Case - A case is a consecutive series of missions for the same airship. This program permits the user to analyze a case which consists of a mission for which an airship is sized, followed by a different mission which the now-sized airship performs, followed by yet additional missions.

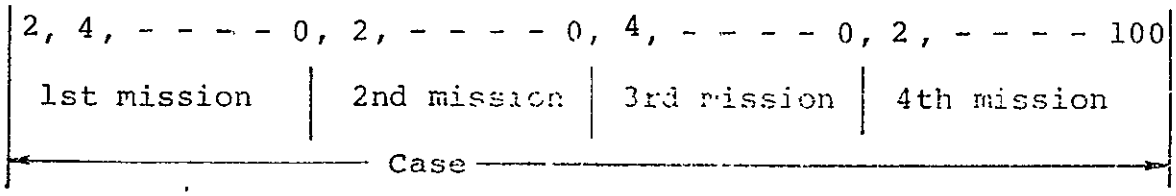
The Performance Calculations Subprogram consists of four individual performance segments, specified by means of an input indicator, SGTIND. The segments are takeoff, hover, and landing (SGTIND = 2), cruise (SGTIND = 4), increment in weight of payload (SGTIND = 8), and transfer altitude (SGTIND = 9). The end of the mission is specified by an input SGTIND = 0. An array of segment indicators is input to the program to specify the mission being studied. Thus, a typical array might be:

SGTIND =



At the end of any leg, the sum of segment fuel required to perform that leg is stored in the computer. At the end of the mission, the largest of these stored values is used to determine the airship sizing requirements when OPTIND = 0. An end of a case is specified by an input SGTIND = 100. Since an end-of-case is also always an end-of-mission, it is not necessary to end a case by a SGTIND = 0 followed by SGTIND = 100. SGTIND = 100 always takes precedence over SGTIND = 0. The distinction between a mission and a case is most useful when it is desired to size an airship for a specified mission followed by analysis of the off-design-point performance of the "sized" airship on other missions. As an example, with OPTIND = 0 (sizing option) the following array of SGTIND might be used:

SGTIND =



The program will size the airship for the first mission and then analyze the performance of the "sized" airship for the second, third and fourth missions. Up to 12 consecutive segments may be included in a single case, arranged in any arbitrary series of hops, legs, and missions. Up to 5 of any specific segment may be included in any case. Thus, a case might consist of several missions, each mission having several different cruise segments.

Each segment is a discrete element of the mission, independent of any other segment with the exception of the influence on the altitude, range, weight, and time. That is, the first cruise of a case might be at cruise power at standard atmospheric conditions and the second cruise could be at best specific range for a nonstandard day.

At the start of a case, the user inputs values for initial conditions of altitude, range, weight, and time. The first segment of the case uses these values as initial boundary conditions and the segment ends at a specified terminal condition. The final values of altitude, range, weight, and time then become, in turn, the initial values for the following segment.

The final, or terminal, condition varies depending upon the segment. Terminal conditions for each segment, input by the user, are:

Takeoff, Hover, and Landing - increment in time

Cruise - range at end of cruise

Change of Payload Weight - increment in weight and increment in time

Transfer Altitude - final altitude

Segments 2 and 4 (takeoff, hover, and landing and cruise) require, in addition to terminal conditions on one of the variables of state, an input value for the step size to be used in the calculations. The step size specifies both the increment in the primary variable which is used in the calculations and the increment between successive printouts. Printouts occur at even integral multiples of the primary variable. As the step size is decreased, the program accuracy improves, but the computing time lengthens.

Atmospheric conditions may vary from segment to segment. For example, the first segment may be for a standard atmosphere; the second segment may use a constant increment in temperature above standard, etc.

At the end of the mission, the total fuel required is determined as the sum of mission fuel required plus reserve fuel. Reserve fuel can be specified to the program as an arbitrary percentage of mission fuel or as an arbitrary increment in total fuel required, or as any arbitrary combination of these factors.

Propeller efficiency can be calculated in two different ways for airships with turboshaft engines. The option chosen is specified by means of a propulsive efficiency indicator, ETAIND. The options range from (a) input of a set of point values of efficiency to

(b) automatic calculation of propeller performance. The option chosen will depend on the type of problem being studied as each of the means of calculating prop performance has features which may be desirable under certain conditions. These options are described in more detail in Section 4.9.

3.3 PROGRAM INDICATORS

Flexibility of operation and generality of approach have been accomplished by use of many optional computation paths. The path to be used is selected by the user through use of a series of input indicators. Besides the option indicator, previously described, the program indicators fall into four categories: size trends indicators, aerodynamics indicators, propulsion indicators, and mission performance indicators. The indicators and their use, are described below.

3.3.1 Size Trends Indicators

a. HULIND - Four different types of basic airship hull configurations are included in this program. They are the conventional "spindle-shaped" hull, a lifting body hull with a chordwise airfoil profile and a spanwise elliptical cross-section, a lifting body hull with an elliptical planform and chordwise and spanwise elliptical cross-sections and a circular planform (or disc-shaped) hull with chordwise and spanwise elliptical cross-sections. If HULIND is input as 1, the conventional hull is selected. If HULIND is input as 2, the lifting-body hull with the chordwise airfoil profile is selected. If HULIND is input as 3 or 4, the elliptical or circular planform lifting body hulls are selected, respectively.

b. DYLIND - This indicator determines the manner in which (or whether) it is desired to utilize dynamic lift for the particular hull configuration selected by the HULIND indicator. There are four options available - DYLIND = 1,2,3, and 4. DYLIND = 1 is used only in conjunction with HULIND = 1. Its use assumes a conventional hull airship with propellers for propulsion and no type of wings for dynamic lift. If the airship to be studied is

fully buoyant (L_B/W_O = 1.00, LOC 0011), it is assumed that the gross weight decrease caused by fuel burnoff is compensated for by water ballast recovery devices, thus negating the need for negative dynamic lift. If the airship is "heavy" (L_B/W_O < 1.00), the dynamic lift of the hull is employed for both lifting and trim. DYLIND = 2 is used in conjunction with all hull types. For the case where HULIND = 1, its use implies a configuration with a conventional hull plus a conventional wing - both of which contribute dynamic lift for both lifting and trimming purposes. When HULIND = 2,3 or 4, obviously all of the dynamic lift is contributed by the lifting body hull. Use of this indicator further implies the use of propellers for propulsion. DYLIND = 3 is used only in conjunction with HULIND = 1. Its use assumes a partially buoyant (L_B/W_O < 1.0) conventional hull airship utilizing "helicopter-type" rotors for both dynamic lift and propulsion. DYLIND = 4 is used in conjunction with all hull types. When HULIND = 1, its use implies a conventional hull plus a conventional wing plus "helicopter-type" rotor(s) - all three of which contribute dynamic lift, with the rotor additionally supplying propulsive thrust. When HULIND = 2,3, or 4, the dynamic lift is supplied by the combination of the lifting-body hull and the rotors, with, as before, the rotor(s) also supplying the propulsive thrust.

c. RDMIND - Propellers or rotors employed by the various airship configurations may be either fixed in diameter and solidity or sized. If RDMIND is input as 1, propeller or rotor diameter (LOC 0074) and propeller Activity Factor (LOC 0077) or rotor solidity (LOC 0075) must be input directly. If RDMIND is input as 2, disc loading (LOC 0073), C_T/σ (LOC 0084), and the propeller/rotor design conditions (LOCS 0085, 0086, 0087) must be input.

d. PRPIND - This indicator is used in conjunction with DYLIND. It serves to indicate whether propellers or "helicopter-type" rotors are being used, thus PRPIND = 0 for DYLIND = 1 and 2 and PRPIND = 1 for DYLIND = 3 and 4.

3.3.2 Aerodynamics Indicators

a. DRGIND - The method of determining the total parasite drag of the airship is specified to the program by means of the indicator DRGIND. If DRGIND = 1, configuration parasite drag is built up in component fashion, with Reynolds number scaling. This is the only parasite drag option presently available. Future modification could lead to a DRGIND = 2 option permitting parasite drag determination on the basis of a trend based on hull volume.

b. OSWIND - The span loading efficiency factor (Oswald's efficiency factor) may be calculated by the program from an approximate relationship as a function of wing aspect ratio. If the user prefers, he may input a fixed value of the efficiency factor to the program. An input of OSWIND = 0 permits the user to input a fixed value for efficiency. An input of OSWIND = 1 will cause the program to use this approximate equation to calculate the value for efficiency. Use of the OSWIND indicator is applicable only for HULIND = 1 and DYLIND = 2 or 4.

3.3.3 Propulsion Indicators

a. FIXIND - Engines selected for airships being studied in the program may be either "fixed" in size or "rubberized". If the engines are "rubberized", the engine sizing subroutine calculates the maximum power of the engines required to satisfy the design cruise flight conditions. If the engines are fixed in size, the user inputs the level of maximum power for the engines and the engine sizing subroutine is bypassed. If FIXIND = 0, the engines are fixed in size. If FIXIND = 1, the engine sizing subroutine is used to calculate the size of the "rubberized" engines.

b. ETAIND - This indicator permits the user to select one of two different methods for providing propeller performance data. If ETAIND = 0, the user specifies a point value efficiency for takeoff and

a table of efficiency versus flight speed for cruise. An input of ETAIND = 1 will permit the use of an automatic subroutine within the program for calculating prop performance.

3.3.4 Mission Performance Indicators

a. SGTIND - The mission profile flown by the airship may be made up of an arbitrary sequencing of four discrete profile segments. The segment selected is specified by means of the segment indicator, SGTIND. The segments are: takeoff, hover, and landing (SGTIND = 2), cruise (SGTIND = 4), change payload (SGTIND = 8), and transfer altitude (SGTIND = 9). The mission is terminated by an input value of SGTIND = 0. SGTIND = 100 terminates a case.

b. CRSIND - Three types of cruise missions are included in the program. They are: cruise at fixed cruise power (CRSIND = 1), cruise at constant true airspeed (CRSIND = 2), or cruise at airspeed for best specific range (CRSIND = 3).

c. TOLIND - The indicator TOLIND is input with each takeoff, hover, and landing and dictates the manner in which power is calculated. If TOLIND = 1, the user inputs the required T/W ratio. If TOLIND = 2, the user inputs required fractions of takeoff power (T/W ratio is computed).

3.4 PROGRAM FLOW

Figure 3-1 indicates, conceptually, the operation of the program. Program flow is monitored by a general control loop which controls the operation of a series of peripheral programs. These include six minor subroutines, four major subroutines, a major subprogram, and various internally stored data. The characteristics of these routines are summarized in Table 3-1.

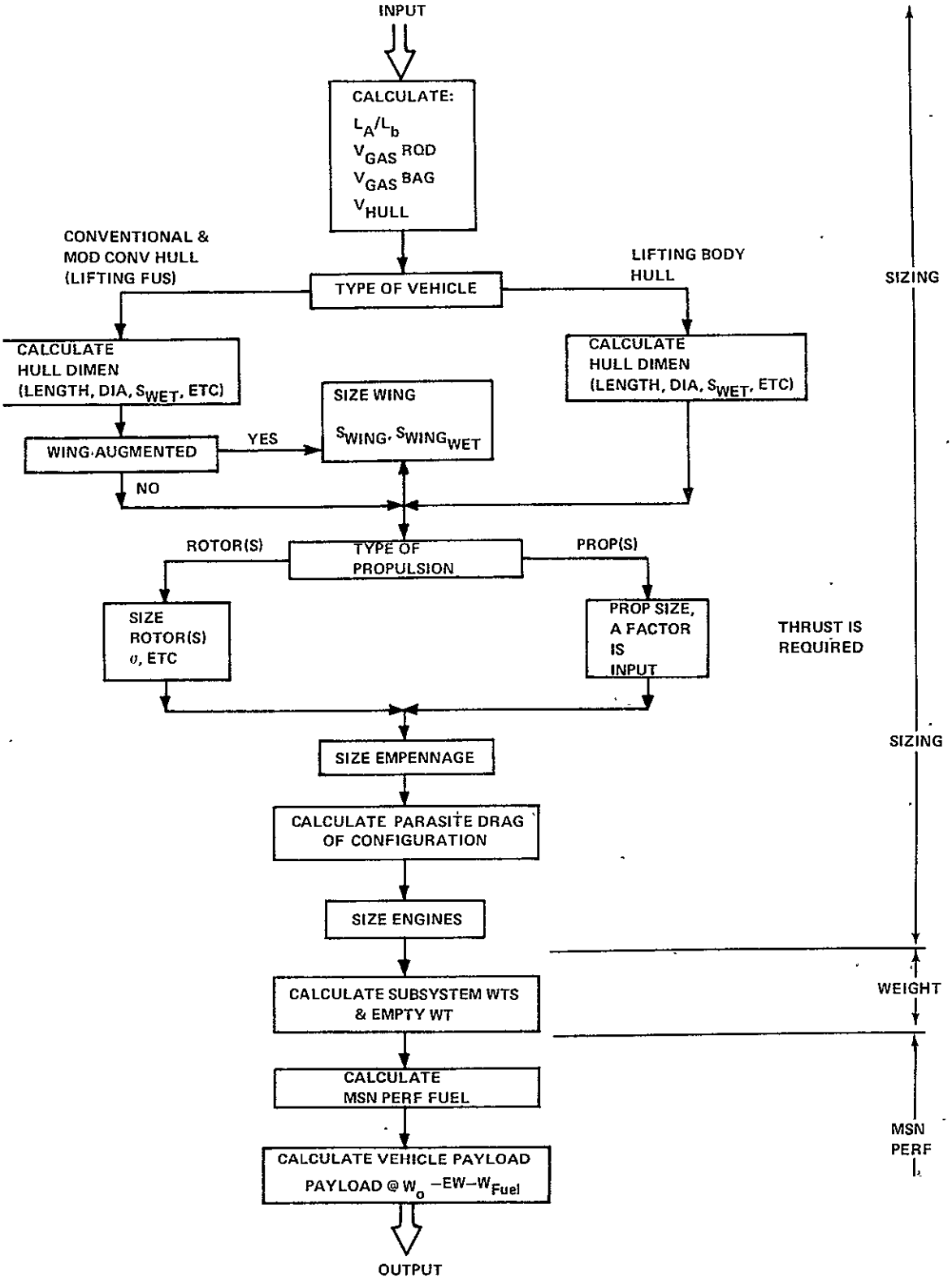


Figure 3–1. CASCOMP Program Flow Diagram

TABLE 3-1
SUMMARY OF SUBROUTINES

ROUTINE	CALLED BY	PURPOSE
Main Control Loop (MAIN)	- - - -	Monitor program operations.
Minor Subroutines:		
Atmosphere (ATMOS)	Performance subroutines with SGTIND = 2,4, Engine Sizing, and Size Trends	Calculate atmospheric density, pressure, temperature, and speed of sound
Lift Calculations (LIFT)	Performance subroutine SGTIND = 4	Calculate airship buoyant lift, determine hull/wing/rotor dynamic lift split, and determine hull/wing angle of attack to satisfy dynamic lift req'd.
Drag Calculations (DRAG)	Performance subroutine SGTIND = 4 and Engine Sizing	Calculate airship drag
POWER	Performance subroutines with SGTIND = 2,4 and Engine Sizing	Calculate propeller power required when thrust and advance ratio are known
THRUST	Same as POWER	Calculate propeller thrust available when power and advance ratio are known

TABLE 3-1
(CONTINUED)

ROUTINE	CALLED BY	PURPOSE
ROTPOW	Performance subroutines with SGTIND = 2,4 and Engine Sizing	Calculates rotor power required for "helicopter-type" rotors
Major Subroutines:		
Size Trends (SIZTR)	MAIN	Calculates airship dimensions which are required for weight breakdown estimate and drag calculation
Aerodynamics (AERO)	MAIN	Performs parasite drag buildup and calculates a series of coefficients which are used by the drag subroutine to calculate airship drag
Engine Sizing (ENGSZ)	MAIN	Calculates engine size (power) required to meet design cruise requirement
Weight Trends (WGHTR)	MAIN	Calculates airship weight summary including propulsion, structures, flight controls, and payload

TABLE 3-1
(CONTINUED)

ROUTINE	CALLED BY	PURPOSE
Major Subprogram:		
Performance Calculations (PRFRM)	MAIN	Monitors program flow during calculation of mission performance and calculates total fuel required at end of mission
Performance Subroutines:		
Takeoff, Hover, and Landing (TOHL)	PRFRM	Calculate takeoff, hover, or landing performance
Cruise (CRUS1,2,3)	PRFRM	Calculate cruise performance
Change Payload (CHGPL)	PRFRM	Add (or subtract) payload to airship
Transfer Altitude (TRALT)	PRFRM	Changes altitude

4.0 DETAILED PROGRAM DESCRIPTION

4.1 ATMOSPHERE SUBROUTINE

The atmosphere subroutine will calculate the atmospheric density, pressure, and temperature as a function of altitude. If non-standard temp. conditions are required, the temperature differential between the standard and desired temperature (ΔT_{in}) is input. Thus, atmospheric conditions can be varied individually for each segment of the flight profile and for the engine sizing.

4.2 PROPULSION SYSTEM CHARACTERISTICS

The propulsion system input for the CASCOMP computer program consists of tabulated performance data and factors relating the dry weight of the propulsion system to its maximum power output. Only propulsion systems producing shaft transmitted power are considered in the program.

The engine identification number is the first input value, followed by FF, which is a measure of the change in power at ambient temperatures other than standard:

$$\frac{\frac{BHP}{\delta\sqrt{\theta}}}{BHP^*} = \frac{\left(\frac{BHP}{\delta\sqrt{\theta}}\right)_{STD}}{BHP^*} + FF\ (\theta_{STD} - \theta)$$

Where:

BHP = shaft horsepower

δ = ambient pressure (psia) divided by 14.696 psia

θ = ambient temperature (°R) divided by 518.7° R

STD = standard day

* = sea level static standard day takeoff power setting

Inputs k_3 and k_4 determine the engine dry weight as a function of sea level static standard day takeoff power, viz,

$$\text{Weight (lbs)} = k_3 \frac{BHP^*_P}{N_P} + k_4$$

Where N_P = number of engines

The performance for the engines is input as tabulated data. The power is represented in normalized referred form as $BHP/BHP^{*}\delta\sqrt{\theta}$. Two 2-dimensional tables (power versus altitude) are required--one for takeoff power (table 1) and one for cruise power (table 2). Each table contains 10 points.

Specific fuel consumption data is represented by a 2-dimensional table of SFC versus referred power.

4.3 SIZE TRENDS SUBROUTINE

The size trends subroutine calculates the volume of the airship hull based on the following relationship:

$$V_{HULL} = \frac{(L_B/W_O)W_O}{(.076474-LG_{SPWT_O})(\rho/\rho_O)_{HD}(V_{GAS_B}/V_{HL})}$$

Where:

L_B/W_O = Buoyancy ratio

W_O = Gross Weight

LG_{SPWT_O} = Lifting gas specific weight (SL, STD) - lb/ft^3

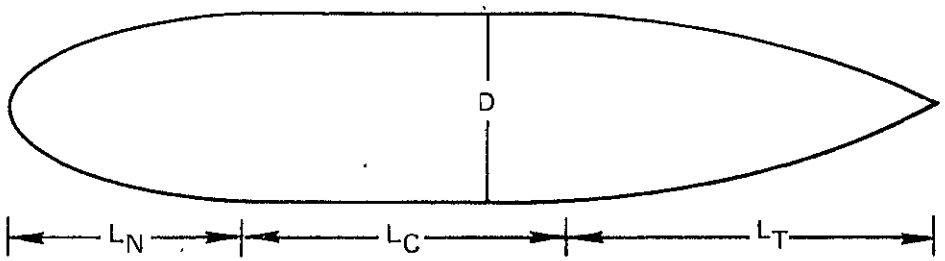
$(\rho/\rho_O)_{HD}$ = Atmospheric density ratio at design pressure altitude

V_{GAS_B}/V_{HL} = Ratio of gas cell volume to hull volume

Hull geometric dimensions (such as diameter, overall length, etc.) are obtained by solving the volume relationships for a given hull configuration. Figures 4-1, 4-2, 4-3, and 4-4 illustrate these relationships for the four basic hull types. Table 4-1 lists some coefficients required with the equations of Figure 4-2.

Note that for the conventional hull type (HULIND = 1) the user inputs a series of fineness ratios $(L/D)_N$, $(L/D)_T$, $(L/D)_{OA}$), where in the case of the lifting-body hulls (HULIND = 2,3, and 4) the planform aspect ratio (AR), maximum t/c of the center line section $(t/c)_R$ and taper ratio (λ) are input.

In the case of a conventional hull type (HULIND = 1) which exhibits no constant diameter center section (l_C), it is sufficient to note that this type of configuration may be represented by insuring that the sum of



DIMENSIONS

$$L_N = (L/D)_N D$$

$$L_T = (L/D)_T D$$

$$L_C = (L/D)_{OA} D - L_N - L_T$$

$$L_{OA} = (L/D)_{OA} D$$

$$D = \sqrt[3]{\frac{V - \Delta V}{\pi \left[\frac{(L/D)_{OA}}{4} - \frac{(L/D)_N}{12} - \frac{7(L/D)_T}{60} \right] \left[1 + \frac{\Delta V}{V} \right]}}$$

(SEE BELOW)

VOLUME

$$V = \pi D^3 \left[\frac{(L/D)_{OA}}{4} - \frac{(L/D)_N}{12} - \frac{7(L/D)_T}{60} \right] \left[1 + \frac{\Delta V}{V} \right] + \Delta V$$

$$C_V = \frac{4V}{\pi D^2 L_{OA}}$$

(PRISMATIC COEFFICIENT)

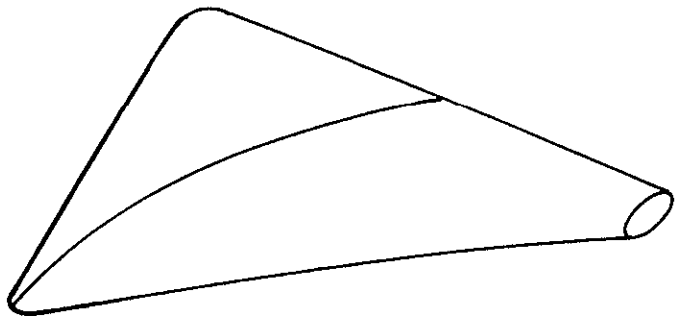
SURFACE (WETTED) AREA

$$S_{WET} = D \left[2.40\, L_N + 3.14\, L_C + 2.07\, L_T + .46D \right] \left[1 + \frac{\Delta S_{WET}}{S_{WET}} \right] + \Delta S_{WET}$$

Figure 4–1. Conventional Airship Hull – Volume and Surface Area Relationships Summary

THIS HULL ASSUMES:

1) DELTA PLANFORM (MODIFIED)
2) ℄ CHORDWISE SECTION REPRESENTATIVE OF NACA 4-DIGIT A/FOIL
3) SPANWISE CROSS-SECTION CONSISTS OF ELLIPSES OF VARYING ECCENTRICITY



DIMENSIONS

$$C_{R_T} = \frac{2S_W}{b_S(\lambda + 1)} \qquad \begin{cases} b_S = \text{SPAN} \\ \lambda = C_{TIP}/C_{R_T} \\ AR = b_S^2/S_W \end{cases} \qquad S_W = \left[\frac{(V-\Delta V)\, AR^{1/2}\, (1+\lambda)^2}{10\pi\, (t/c)_R\, (k_1 + k_2)\left[1 + \frac{\Delta V}{V}\right]}\right]^{2/3}$$

VOLUME

$$V = \frac{10\pi\, (t/c)_R\, S_W}{AR^{1/2}\, (1+\lambda)^2}^{3/2} \left[k_1 + k_2\right]\left(1 + \frac{\Delta V}{V}\right) + \Delta V$$

SURFACE (WETTED AREA)

$$S_{WET} = k_6 \left\{ C_{R_T}{}^3 \frac{(t/c)_R{}^2}{b_S} k_3 + C_{R_T} \frac{3b_S \lambda}{2} + C_{R_T} \frac{3b_S}{4}(1-\lambda) + C_{R_T} \frac{(t/c)_R{}^2}{b_S} (k_4 - k_5) \right\} \left(1 + \frac{\Delta S_W}{S_W}\right) + \Delta S_W$$

Figure 4–2. Lifting Body Hull – Volume and Surface Area Relationships Summary

TABLE 4-1

COEFFICIENTS USED IN CONJUNCTION WITH THE LIFTING BODY HULL TYPE (HULIND = 2) ILLUSTRATED IN FIG. 4-2

$$k_1 = 0.13493 - .07917(1-\lambda)^{3/2} + 0.021\ (1-\lambda)^2$$

$$k_2 = 0.06642 + 0.0293(1-\lambda)^3 - 0.01422(1-\lambda)^4 + 0.003383(1-\lambda)^5$$

$$k_3 = 4.4075(1-\lambda)^2 - 2.494(1-\lambda)^{5/2} - 4.1755(1-\lambda)^{7/2} + 2.4115(1-\lambda)^{9/2} - 0.6695(1-\lambda)^{11/2}$$
$$+ 0.3269(1-\lambda)^3 + 1.4765(1-\lambda)^4 + 0.64975(1-\lambda)^5 - 1.7434(1-\lambda)^6$$
$$+ 1.26835(1-\lambda)^7 - 0.41225(1-\lambda)^8 + 0.06439(1-\lambda)^9$$

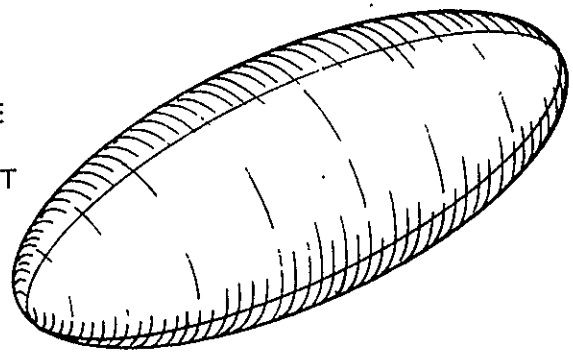
$$k_4 = 5.4915$$

$$k_5 = 7.4225(1-\lambda)^2 - 3.4965(1-\lambda)^{5/2} - 2.9825(1-\lambda)^{7/2} + 1.87575(1-\lambda)^{9/2} - 0.5479(1-\lambda)^{11/2}$$
$$+ 0.2646(1-\lambda)^3 + 1.10735(1-\lambda)^4 + 0.51975(1-\lambda)^5 - 1.453(1-\lambda)^6$$
$$+ 1.08715(1-\lambda)^7 - 0.3607(1-\lambda)^8 + 0.0572(1-\lambda)^9$$

$$k_6 = 1.44513$$

THIS HULL ASSUMES:

1) ELLIPTICAL PLANFORM
2) SPANWISE AND CHORDWISE CROSS-SECTIONS CONSIST OF ELLIPSES OF DIFFERENT ECCENTRICITY



DIMENSIONS

$$C_{R_T} = 2\left[\frac{3(V-\Delta V)}{\pi^2 AR(t/c)_R\left[1+\frac{\Delta V}{V}\right]}\right]^{1/3}$$

$$T_{MAX} = (t/c)_R\, C_{R_T}$$

$$S_W = \frac{\pi}{4} C_{R_T} b_S$$

$$b_S = \frac{\pi AR}{4} C_{R_T}$$

VOLUME

$$V = \frac{\pi}{6} C_{R_T} b_S T_{MAX}\left(1+\frac{\Delta V}{V}\right) + \Delta V$$

SURFACE (WETTED) AREA

$$S_{WET} = \frac{\pi C_{R_T} b_S}{2} E\left[1+\frac{\Delta S_{WET}}{S_{WET}}\right] + \Delta S_{WET}$$

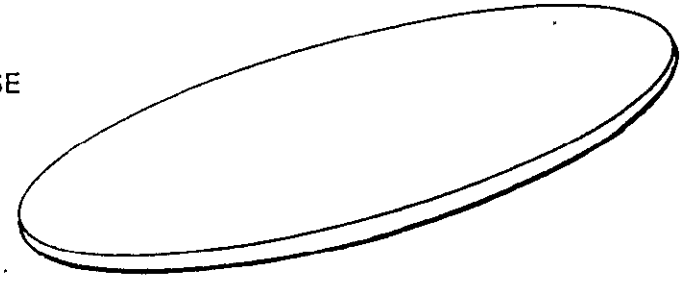
$$E = 1.570796 - .44062m + .162986m^2 - .29316m^3$$

$$m = 1-\left(\frac{T_{MAX}}{b_S}\right)^2$$

Figure 4–3. Helipsoid Lifting-Body Hull Volume and Surface Area Relationships Summary.

THIS HULL ASSUMES:

1) CIRCULAR PLANFORM
2) SPANWISE AND CHORDWISE CROSS-SECTIONS CONSIST OF ELLIPSES OF EQUAL ECCENTRICITY



DIMENSIONS

$$C_{R_T} = 2\left[\frac{3[V-\Delta V]}{4\pi(t/c)_R\left[1+\frac{\Delta V}{V}\right]}\right]^{1/3}$$

$$b_S = C_{R_T}$$

$$T_{MAX} = (t/c)_R\, C_{R_T}$$

$$S_W = \frac{\pi}{4} C_{R_T}{}^2$$

$$AR = 1.273$$

VOLUME

$$V = \frac{\pi}{3} C_{R_T}{}^2\, T_{MAX}\left[1+\frac{\Delta V}{V}\right] + \Delta V$$

SURFACE (WETTED) AREA

$$S_{WET} = \left[\frac{\pi}{2} C_{R_T}{}^2 + \frac{\pi}{4}\,\frac{T_{MAX}{}^2}{\epsilon}\log_e\left(\frac{1+\epsilon}{1-\epsilon}\right)\right]\left[1+\frac{\Delta S_{WET}}{S_{WET}}\right] + \Delta S_{WET}\left[1-(t/c)_R{}^2\right]^{1/2}$$

Figure 4–4. Disc-Shaped Lifting-Body Hull — Volume and Surface Area Relationships Summary

$(L/D)_N$ and $(L/D)_T$ is equal to $(L/D)_{OA}$.

Lifting body hulls of the type represented in Figure 4-2 (HULIND = 2) are not necessarily limited to the configuration pictured. If taper ratio (λ) is equal to 1.0, a rectangular planform hull results. If taper ratio (λ) is equal to 0.0, a delta planform with sharp pointed wing tips results.

It should be noted that for all hull types it is possible to adjust hull volume and wetted areas to account for hull cross-sections other than those reflected by the hull configuration equations by use of the factors ΔV, $\Delta V/V$, ΔS_{wet}, and $\Delta S_{wet}/S_{wet}$.

For the airship configuration where a conventional type hull is used in conjunction with a wing (HULIND = 1, DYLIND = 2 or 4), wing area is calculated from the input wing loading (based on the dynamic lift requirement) and at the design cruise flight requirements (LOCS 0104, 0105, and 0106) used for engine sizing. The relationship used is:

$$S_W = \frac{(1 - LR/L_A)(1 - LB/W_O)\ W_O}{W/S}$$

Where:

LR/L_A = Design rotor lift/dynamic lift ratio (applicable if DYLIND = 4)

LB/W_O = Buoyancy Ratio

W_O = Gross Weight

W/S = Wing Loading

Note that the wing area defined includes the center section within the hull.

As stated previously, propellers and/or rotors may be either fixed in size (RDMIND = 1) or sized (RDMIND = 2). In the case of the latter situation, the rotor or propeller is sized based on the following equations:

$$L_{RH} = W_O\ [1 - (1 - (LB/W_O)]$$

$$D_{MR} = \sqrt{\frac{4L_{RH}}{\pi(W/A)\ N_R}}$$

$$\sigma_{MR} = \frac{4L_{RH}\ (T/W)}{\rho\pi D_{MR}^2 N_R V_T^2\ (C_T/\sigma)_H}$$

Where:

N_R = No. of rotors or propellers

V_T = Rotor or propeller tip speed (ft/sec)

$(C_T/\sigma)_H$ = Design rotor lift coefficient

(T/W) = Design thrust/weight ratio

The ambient conditions are specified by LOCS 0086 and 0087.

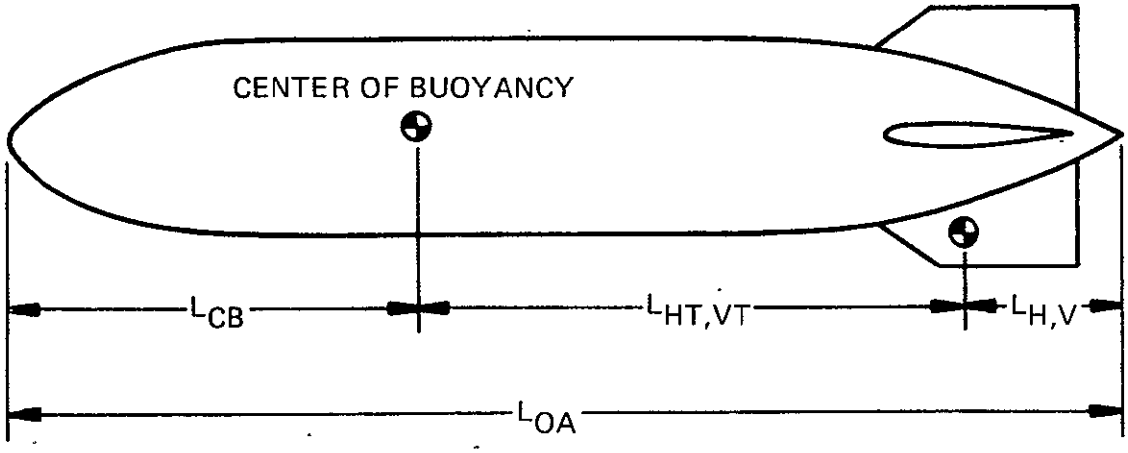
Figure 4-5 illustrates the relationships used for sizing airship empennage. Typical tail volumes are obtained from a trend such as is illustrated in Figure 4-6. Note that all fin dimensions, areas, etc. are based on the portion exposed to the freestream (see Figure 2-1 in Section 2.0).

4.4 ENGINE SIZING SUBROUTINE

Engines selected for airship configurations being studied in the program may be either "fixed" in size or "rubberized." If the engines are "rubberized," the engine sizing subroutine calculates the maximum power of the engines required to satisfy the design cruise flight conditions. If the engines are fixed in size, the user inputs the level of maximum power for the engines and the engine sizing subroutine is bypassed. If FIXIND = 0, the engines are fixed in size. If FIXIND = 1, the engine sizing subroutine is used to calculate the size of the "rubberized" engines.

If FIXIND = 1, the design sizing conditions are dictated by LOCS 0104, 0105, 0106. The relationship for engine sizing is given by:

$$BHP_P^* = \frac{T\ V_{CR}}{325.8\eta_P\eta_T\ (\frac{BHP}{BHP^*\delta\sqrt{\theta}})\ \delta\sqrt{\theta}}$$



$$L_{HT,VT} = \left[1 - \left(\frac{L_{CB}}{L_{OA}} + \frac{L_{H,V}}{L_{OA}}\right)\right] L_{OA}$$

$$S_{HT} = \frac{\overline{V}_H V_{HULL}}{L_{HT}}$$

$$S_{VT} = \frac{\overline{V}_V V_{HULL}}{L_{VT}}$$

NOTE:

1) S_{HT} IS THE TOTAL AREA OF 2 HORIZONTAL FINS
2) S_{VT} IS THE TOTAL AREA OF 2 VERTICAL FINS
3) V_{HULL} IS THE TOTAL HULL VOLUME

Figure 4–5. Relationships for Sizing Airship Horizontal and Vertical Fins

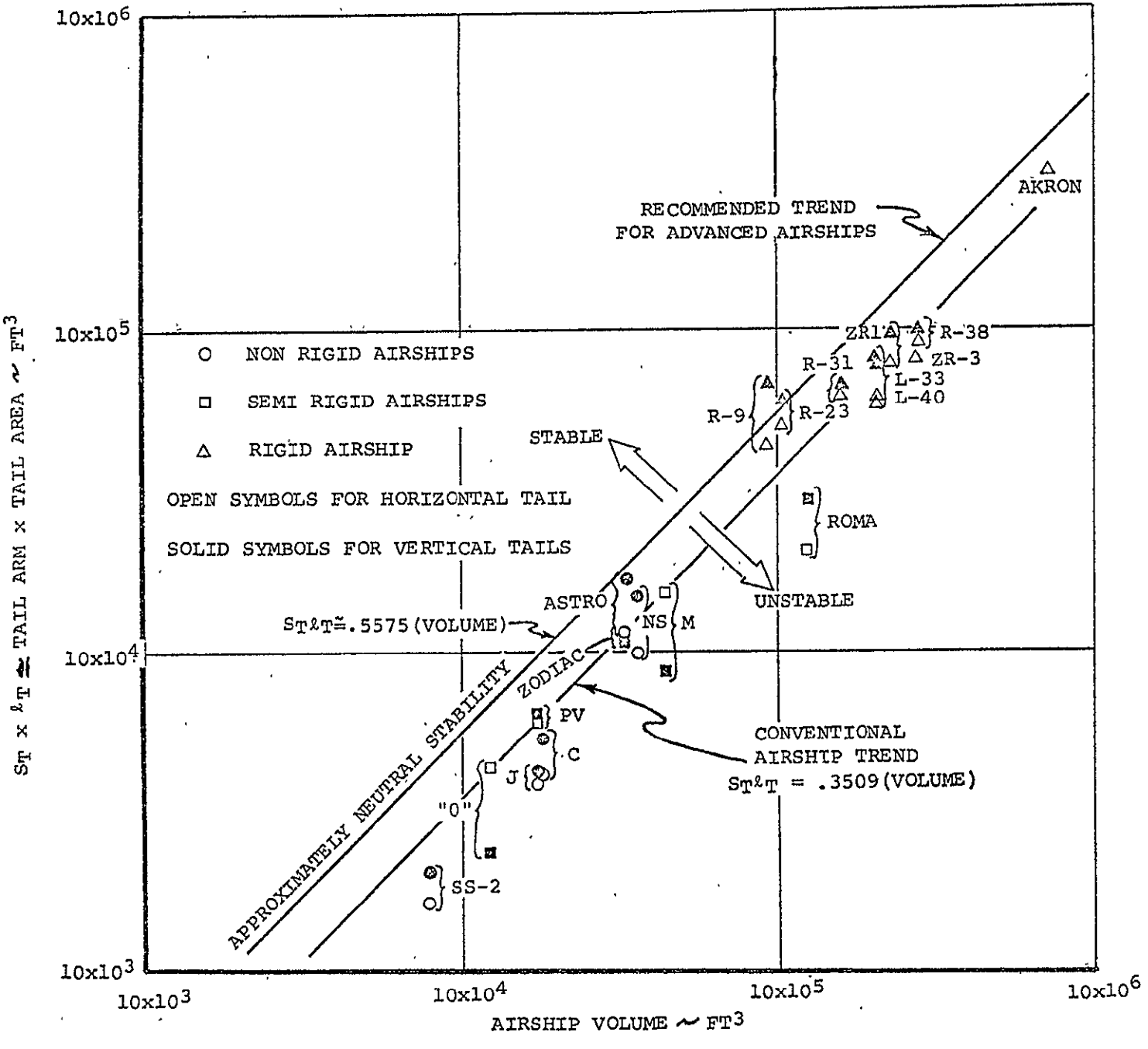


FIGURE 4-6 AIRSHIP STABILITY TRENDS.

Where:

T = Airship thrust required

V_{CR} = Design cruise speed (kts)

η_P = Propulsive efficiency

η_T = Transmission efficiency

$\left(\frac{BHP}{BHP^*_{\delta\sqrt{\theta}}}\right)$ = Referred cruise power available at design altitude

δ = Atmospheric pressure ratio at design altitude

θ = Atmospheric temperature ratio at design altitude

It should be noted that in the case of a conventional hull airship combined with a wing, the drag for engine sizing is based on the premise that the hull is at a level attitude (and therefore contributing no dynamic lift) and the wing is at its design angle of attack (α_{DES}).

4.5 AERODYNAMICS SUBROUTINE

This subroutine performs the parasite drag buildup and calculates other coefficients for use by the DRAG subroutine. The overall expression for parasite drag which obtains is:

$$F_e = Fe_{HULL} + \Delta Fe + Fe_{HT} + Fe_{VT} + Fe_W$$

Where:

$Fe_{HT} = K_{HT} C_{D_{HT}} S_{HT} f_{HT} (Re)$

$F_{eVT} = K_{VT} C_{D_{VT}} S_{VT} f_{VT} (Re)$

$F_{eW} = a_6 C_{D_{WI}} S_W$ (obviously this expression is equal to 0 when HULIND = 1, DYLIND = 1 or 3)

Further:

$a_6 = K_W f_W (Re)$

$a_7 = \frac{1}{\pi ARe}$

For a conventional hull (HULIND = 1)

$$Fe_{HULL} = .00287\ K_F S_{wet_{HULL}}\ f_F\ (Re)$$

For a lifting body hull of the type indicated by HULIND = 3

$$Fe_{HULL} = .00287\ K_F S_{wet_{HULL}}\ f_F\ (Re)$$

$$Fe_W = 0$$

For lifting body hulls of the type indicated by HULIND = 2 or 4.

$$Fe_{HULL} = a_6\ C_{D_{W_I}}\ S_W$$

$$Fe_W = 0$$

The terms $f_W(Re)$, $f_F(Re)$, $f_{VT}(Re)$, etc., are Reynolds' number functions for the wing, hull, vertical tail, etc., which reflect the variation of skin friction coefficient with Reynolds' number. The function which is used is a normalized form of the Prandtl-Schlichting turbulent flat plate skin friction equation:

$$f(R_e) = \frac{C_f}{C_{f_{Re=10^7}}} = \left[1 + \frac{1}{7}\log_{10}\frac{R_e}{10^7}\right]^{-2.6}$$

The program user inputs a value for average Reynolds number per foot for the mission and the program then calculates the Reynolds' number for each component of the aircraft and uses the Reynolds' number functions $f_W(Re)$, $f_F(Re)$, etc., to determine the variation in component drag as the aircraft dimensions change during the iteration on gross weight. The individual profile drag coefficients, C_{DVT}, C_{DHT}, etc., are input at a Reference Reynolds' number of 10^7.

The user inputs values for the profile drag coefficients (C_{DVTi}, C_{DWi}, etc.), for the interference factors (K_F, K_W, etc.), for the mean Reynolds' number per foot, (Re/ℓ), and for the efficiency factor, e (the program will calculate e if OSWIND is input as unity). The program then calculates the values for a_6 and a_7 for use in the drag calculations subroutine.

4.6 LIFT SUBROUTINE

The lift subroutine calculates the buoyant and dynamic lift of the airship during the mission performance calculations. Buoyant lift is defined by the following relationship:

$$L_B = \left[\frac{.076474(t/T - 1)}{(.076474 - LG_{SPWT_O})} + 1\right] \left(\frac{L_B}{W_O}\right) W_O$$

Where:

t/T = Superheat ratio (ratio of lifting gas temperature to ambient atmospheric temperature)

LG_{SPWT_O} = Lifting gas specific weight (SL,STD) - lb/ft^3

L_B/W_O = Buoyancy ratio

W_O = Gross weight

This relationship is based on the following assumptions:

1) The airship is operating at or below the maximum design altitude

2) Until application of superheat, the outside air and lifting gas are at equal temperatures and pressures.

3) Application of superheat results in a change of lifting gas density.

Note that the option available to the user, namely; that of being able to specify t/T in the various performance segments, allows the study of various schemes for modifying buoyant lift by modifying the lifting gas temperature.

The conventional hull and/or lifting body hull dynamic lift is related to hull angle of attack by the following relationship:

$$C_L = \left(\frac{dCL}{d\alpha}\right) \alpha_{RAD} + C_{D_C} \alpha_{RAD} \left|\alpha_{RAD}\right|$$

Where:

$\frac{dCL}{d\alpha}$ = Lift curve slope of conventional and/or lifting body hull (RAD^{-1})

α_{RAD}= Hull angle of attack (radians)

C_{D_C} = Hull cross flow drag coefficient

Figure 4-7 and Table 4-2 illustrate typical values of and procedures for obtaining $dCL/d\alpha$ and C_{D_C} for conventional hulls. Figure 4-8 and Figure 4-9 show typical values of $dCL/d\alpha$ and C_{D_C} for lifting body hulls.

For the conventional hull, the hull lift is defined by:

$$L_{HULL} = q\, D_H L_{OA} C_L$$

For a conventional hull and wing combination, the total lift is defined by:

$$L_{Hull + Wing} = q\left[D_H L_{OA} C_L + 6.28 S_W (\alpha_{RAD} + \alpha_{Des})\right]$$

Where:

D_H = Hull diameter (ft)

L_{OA}= Overall length of hull

S_W = Wing planform area

α_{DES} = Wing design angle of attack (Rad.)

For a lifting body hull, the lift is defined by:

$$L_{HULL} = qS_W C_L$$

Thus for a given dynamic lift requirement, this subroutine determines the required hull angle of attack for use in calculating the induced drag of the configuration.

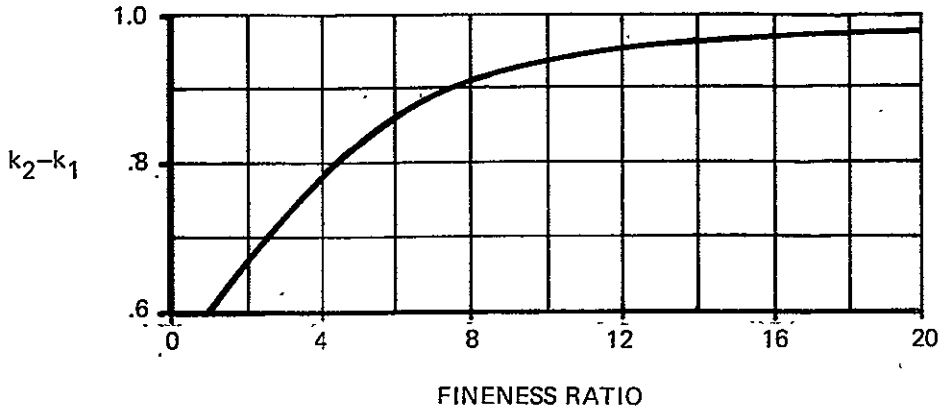


Figure 4–7a. Typical Data Required for Determining Conventional Hull Lift and Drag Characteristics

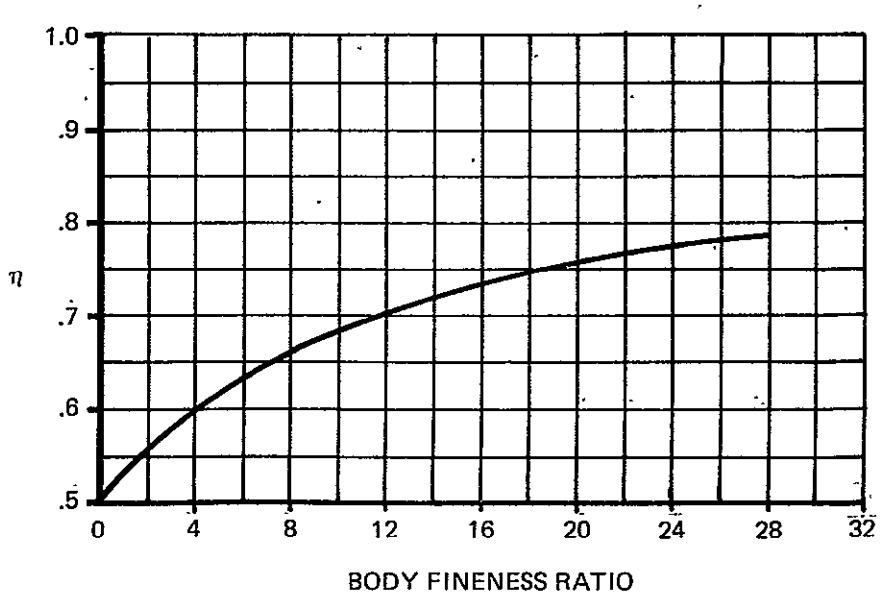


Figure 4–7b. Ratio of the Drag Coefficient of a Circular Cylinder of Finite Length to That of a Cylinder of Infinite Length

TABLE 4-2

RELATIONSHIPS REQUIRED
FOR
DETERMINATION OF CONVENTIONAL
HULL LIFT & DRAG CHARACTERISTICS

In general:

$$C_L = \left(\frac{dC_L}{d\alpha}\right)\alpha + C_{D_C}\alpha^2$$

where:

$$\left(\frac{dC_L}{d\alpha}\right) = \frac{2(k_2-k_1)S_o}{S_{PLAN}}$$

$$C_{D_C} = \frac{2}{S_{PLAN}} \int_{X_o}^{L_{OA}} \eta r C_{d_c} dx$$

For the case of a hull with a circular cross-section:

$$S_o = \frac{\pi D_H^2}{4}$$

$$S_{PLAN} = L_{OA} D_H$$

$$C_{d_c} = 1.2$$

$$X_o = 0.5 L_{OA}$$

$$r = D_H/2 \quad \text{(CONSTANT WITH X)}$$

This reduces to:

$$\left(\frac{dC_L}{d\alpha}\right) = \frac{(k_2-k_1)\pi}{2(L/D)_{OA}}, \quad C_{D_C} = 0.6\eta$$

where (k_2-k_1), η are $f(L/D)_{OA}$ (See Fig. 4-7)

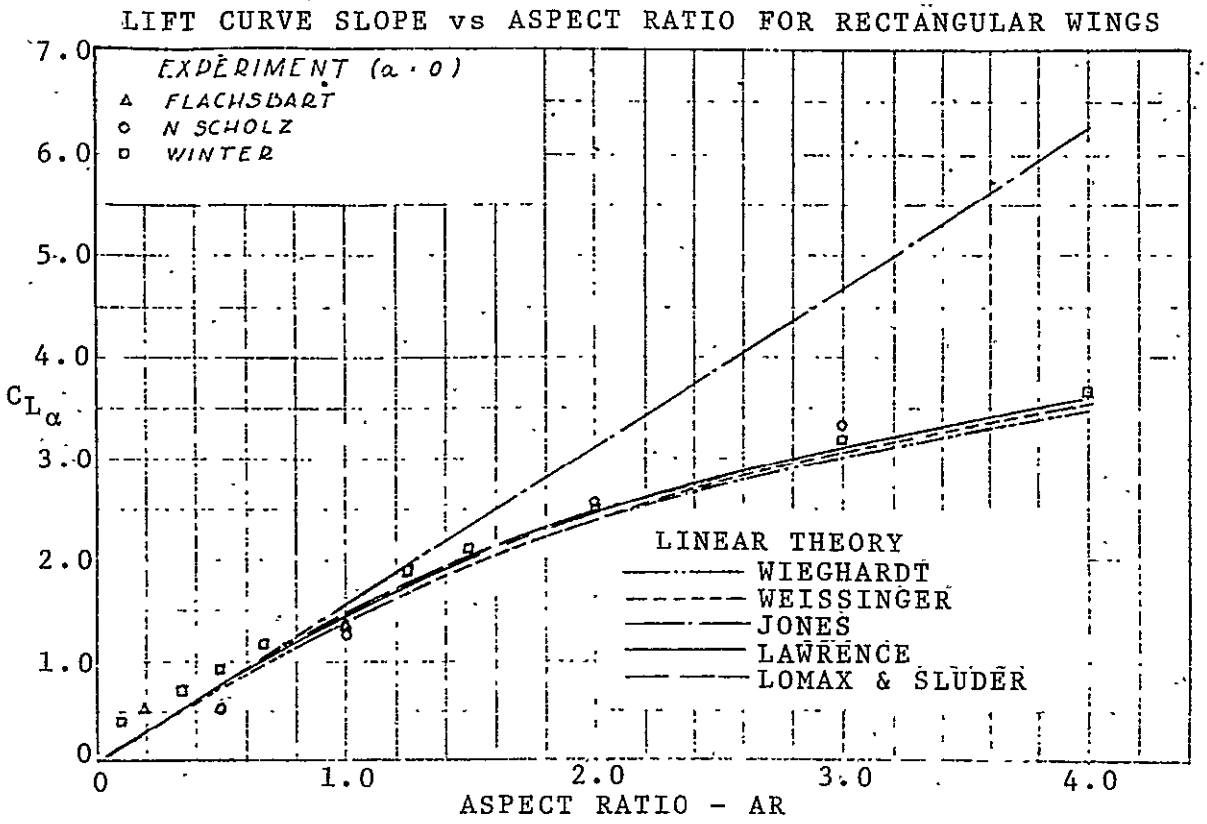


FIGURE 4-8a

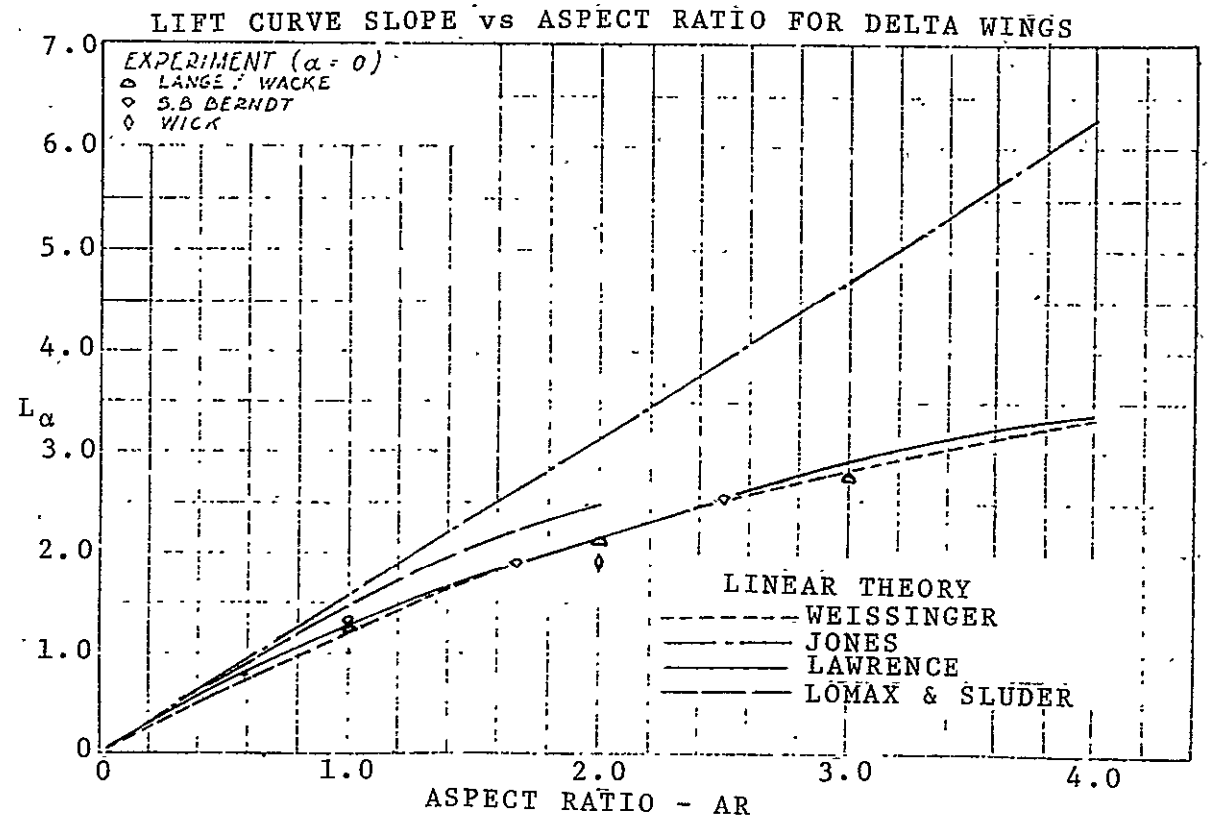


FIGURE 4-8b

FIGURE 4-8. TYPICAL LIFT CURVE SLOPE($dC_L/d\alpha$)DATA FOR LIFTING BODY HULLS.

COMPARISON OF THEORETICAL & EXPERIMENTAL LIFT OF RECTANGULAR AIRFOIL WITH ROUND & SHARP SIDE EDGES

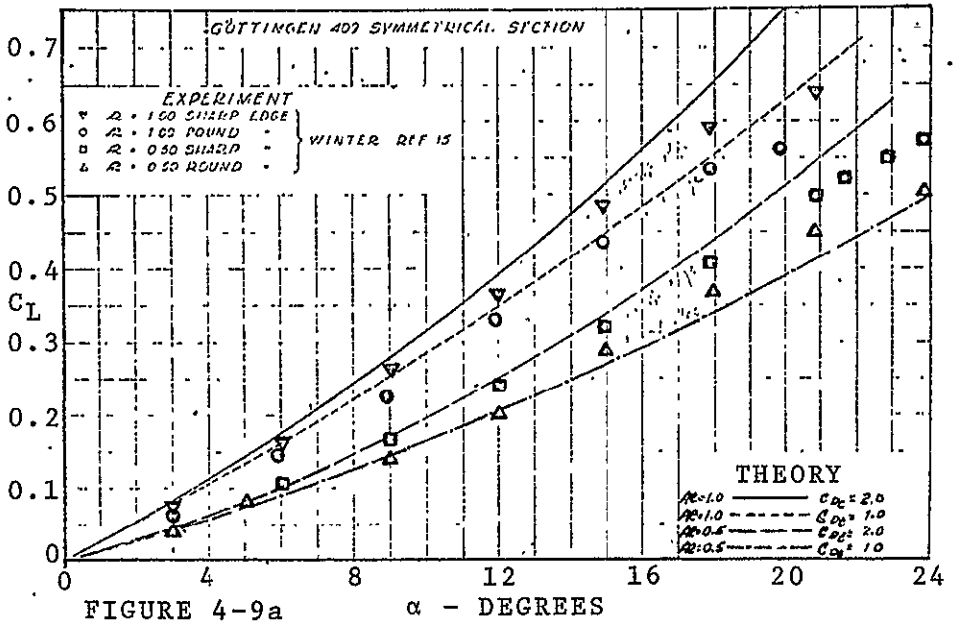


FIGURE 4-9a

COMPARISON OF THEORETICAL & EXPERIMENTAL LIFT FOR BLUNT AIRFOIL DELTA WINGS

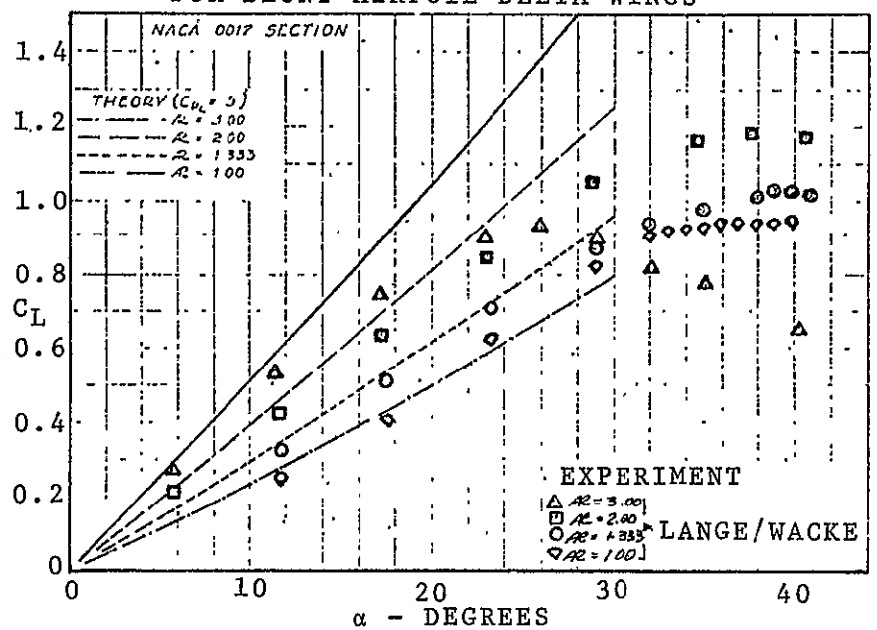


FIGURE 4-9c

COMPARISON OF THEORETICAL & EXPERIMENTAL LIFT FOR AIRFOIL DELTA WINGS WITH ROUNDED EDGES

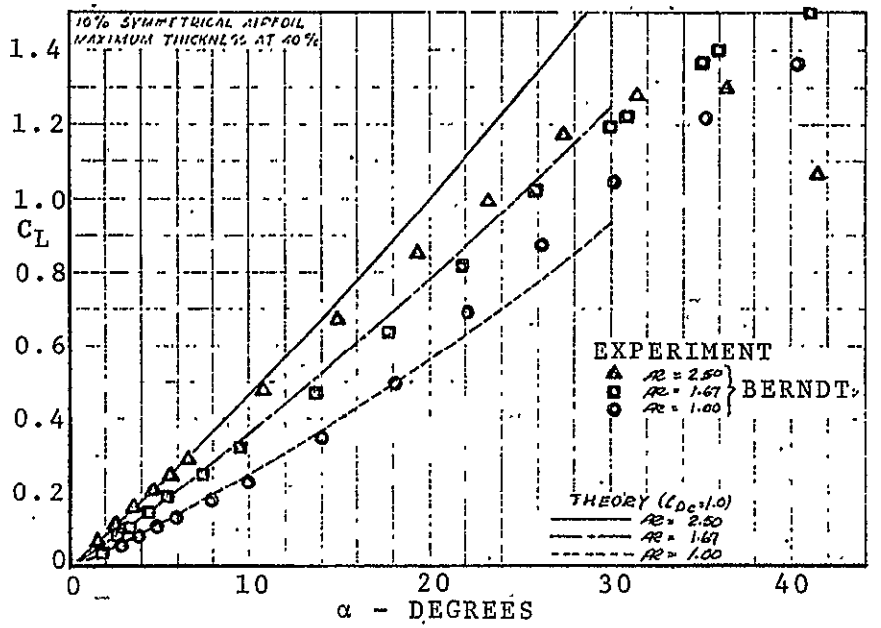


FIGURE 4-9. CORRELATION OF THEORETICAL & EXPERIMENTAL LIFT USING VARIOUS VALUES OF CROSS-FLOW DRAG COEFFICIENT (C_{D_C}).

4.7 DRAG SUBROUTINE

The drag subroutine calculates the total airship drag during the mission performance calculations. This includes parasite, profile and induced drag.

The conventional hull and/or lifting body induced drag is given by:

$$C_{D_i} = \left(\frac{dCL}{d\bar{\alpha}}\right)\bar{\alpha}_{RAD}^2 + C_{D_C}\ \bar{\alpha}_{RAD}^2\ \left|\bar{\alpha}_{RAD}\right|$$

Where $\bar{\alpha}_{RAD}$ was determined by the LIFT subroutine and $(dCL/d\bar{\alpha})$ and C_{D_C} are input values as defined in Section 4.6.

The conventional hull airship total drag is given by:

$$D = qFe + qD_H L_{OA} C_{D_i}$$

For a conventional hull plus wing this becomes:

$$D = qFe + qD_H L_{OA} C_{D_i} + qC_{D_{W_I}} S_W a_6 + qC_{L_W}{}^2 S_W a_7$$

Where:

Fe = Parasite drag area of hull + empennage

$C_{D_{W_I}}$ = Wing profile drag coefficient

C_{LW} = Wing lift coefficient

a_6, a_7 = Coefficients calculated in AERO subroutine

For lifting body hulls defined by HULIND = 2 or 4.

$$D = qFe + qC_{D_{W_S}} S_W a_6 + qS_W C_{D_i}$$

Where:

Fe = Parasite drag area of empennage
S_W = Hull planform area

For lifting body hulls defined by HULIND = 3.

$$D = qFe + qS_W C_{D_i}$$

Where:

Fe = Parasite drag area of hull + empennage.

4.8 ROTOR PERFORMANCE SUBROUTINE

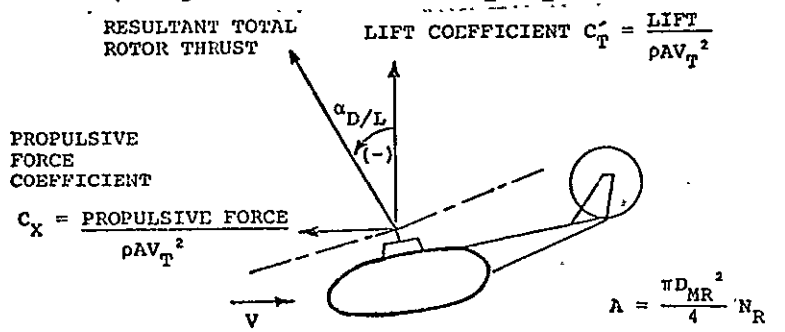
This subroutine calculates the rotor power required for airship configurations using helicopter "type" rotors for providing all or part of the dynamic lift and all of the propulsive thrust. It employs a Boeing developed method known as the "short form" aero methodology which allows the user to calculate rotor performance for a wide range of rotors with a minimum amount of input.

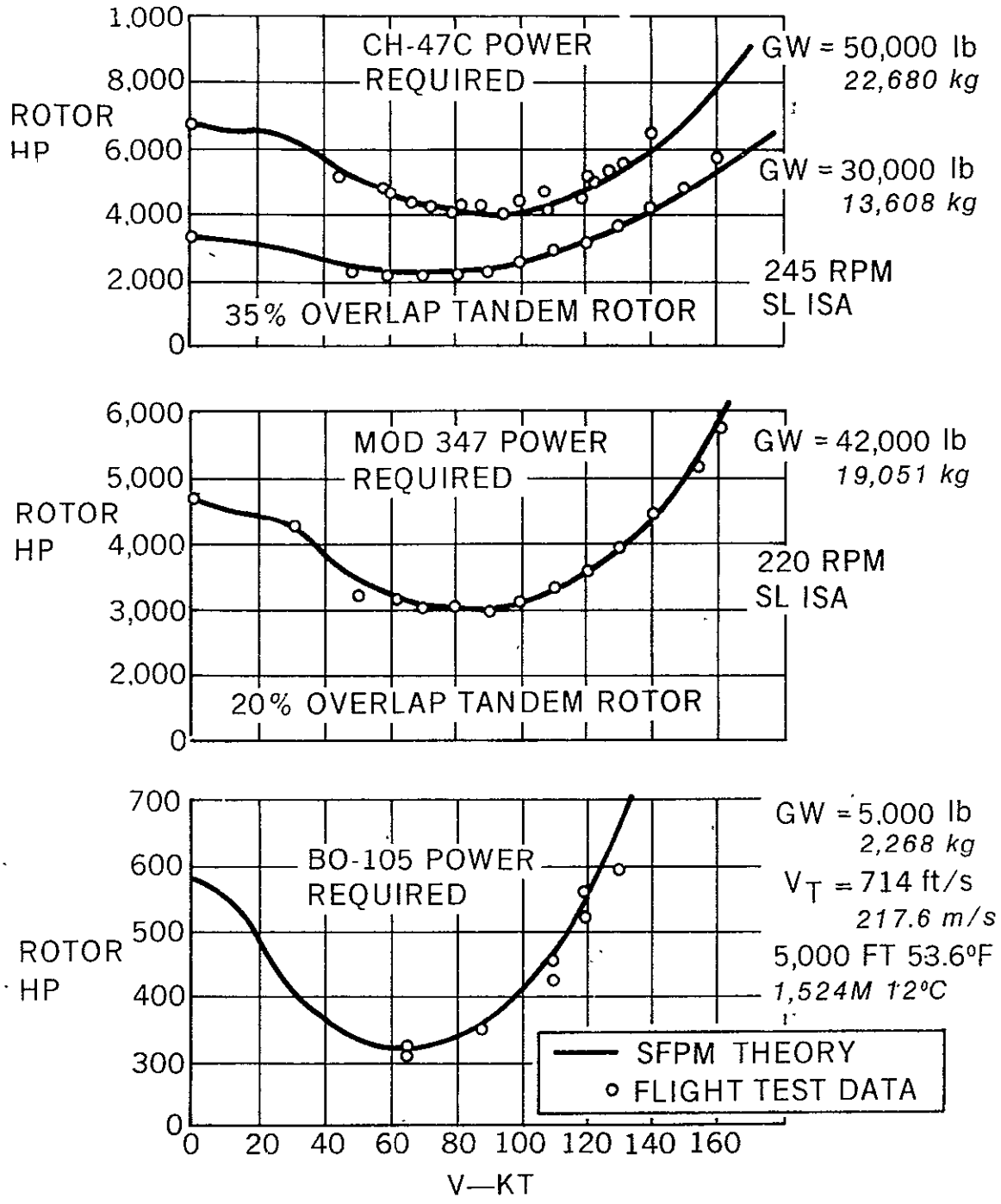
The short form aero methodology, developed at Boeing (References 2, 3 and 4) combines momentum theory and empirical corrections through coefficients found in the rotor cycles. The data used in this approach has been derived and correlated for rotors operating within the following parametric ranges:

Blade Number	=	2 - 6
Blade Twist	=	0 - -15°
Blade Root Cutout	=	0.20R
Rotor Solidity	=	0.055 - 0.150
Rotor Advance Ratio (μ)	=	0 - 0.4

No appreciable loss in accuracy is likely for cases involving more than six blades, less than 20 percent root cutout or a solidity lower than 0.055. The level of confidence will be reduced, however, for those cases in which the rotor parameters greatly exceed the ranges shown above. Figure 4-10 illustrates a typical comparison of short form aero predicted performance and flight test data.

The quantity ALPHA D/L printed out in all forward flight performance segments reflects the propulsive thrust-lift vector of the main rotor. The simple sketch below illustrates the sign convention employed.





CONVERSION FACTOR: 1 kt = 0.514 m/s

Figure 4–10. Comparison of "Short Form Aero" Rotor Performance and Flight Test Data

4.9 PROPELLER PERFORMANCE SUBROUTINE(S)

Two options are available for representing the performance of propellers when using shaft power producing engines. The option to be used is specified to the program by means of a prop efficiency indicator "ETAIND"

ETAIND = 0 - The user inputs a set of point values for the prop efficiency for takeoff and a table of efficiency as a function of flight speed for cruise. The following input is required:

η_{P2} - The static propeller efficiency (Figure of Merit) to be used in calculation of takeoff, hover and landing (SGTIND=2) is input as a single point value.

η_{P4} - A table is input of prop efficiency during cruise (SGTIND=4) as a function of flight speed.

The primary advantage of this option of propeller performance representation is that it permits rapid evaluation of the sensitivity of airship performance and size to changes in propeller performance. For example, a series of runs with different values of η_{P2} and η_{P4} will quickly show the tradeoff between Figure of Merit and cruise efficiency for a family of propellers. It may also prove desirable to use this option in early conceptual studies when a specific prop has not been picked and it is desired to use "reasonable" values of efficiency.

ETAIND = 1 - Through use of this option the program will automatically calculate the performance of a wide variety of V/STOL propellers. The user need only specify the number of blades (3 or 4), the activity factor per blade, and the integrated lift coefficient, C_{L_i}. The method used for the calculation of propeller performance is the "short method" originated at the Curtiss-Wright Corporation's Propeller Division (Reference 14). The method involves the use of a set of equations which can be developed from strip theory. These equations permit the propeller performance maps (C_P, C_T, J) to be transformed into an "equivalent" lift-drag polar for the propeller. Conversely, the lift-drag polars, once developed, can be used with the equations to predict the propeller performance. For incompressible flow, the "equivalent" lift-drag polar which is used depends only on the value of C_{L_i} being considered. That is, for a given C_{L_i} the same polar can be used to accurately

represent the performance of props with a wide variation in activity factor and number of blades and for a wide range of Cp and J. For compressible flow conditions, the curves correlate very well on the basis of the value of helical Mach number at the 3/4 radial station. The equivalent lift-drag polars which are contained in the program were developed from detailed strip analysis calculations for cruise and from calculations using an explicit vortex-influence technique in hover. These detailed calculations covered the following range of parameters:

No. of blades:	3 and 4
Activity factor/blade:	60 $\rightarrow$ 220
Integrated lift coefficient, C_{L_i}:	0.15 $\rightarrow$ 0.7

Although the user is permitted to input values of activity factor and C_{L_i} greater than (or less than) those shown above, the level of confidence in the predictions is reduced when values for those parameters are outside the range used in the detailed calculations.

Figures 4-11 and 4-12 are characteristic of the level of accuracy obtained from the short method when compared to the detailed calculations.

This option will calculate the propeller performance for all mission performance segments.

Subroutine thrust calculates the propeller thrust available for known values of power and flight speed. Subroutine power calculates the power required for a specified thrust and flight speed. These subroutines make use of propeller equivalent lift-drag polars, as mentioned above, to calculate the performance of the propeller. The polars are developed in the main control loop for the particular value of integrated lift coefficient, C_{L_i}, being studied from the following equations:

$$\gamma = \tan^{-1} (C_D/C_L) = \text{function of } M_H, C_L, C_{L_i}$$

M_H = helical Mach No. at 3/4 r/R

C_L = equivalent lift coefficient at which prop is operating

C_{L_i} = integrated lift coefficient of prop

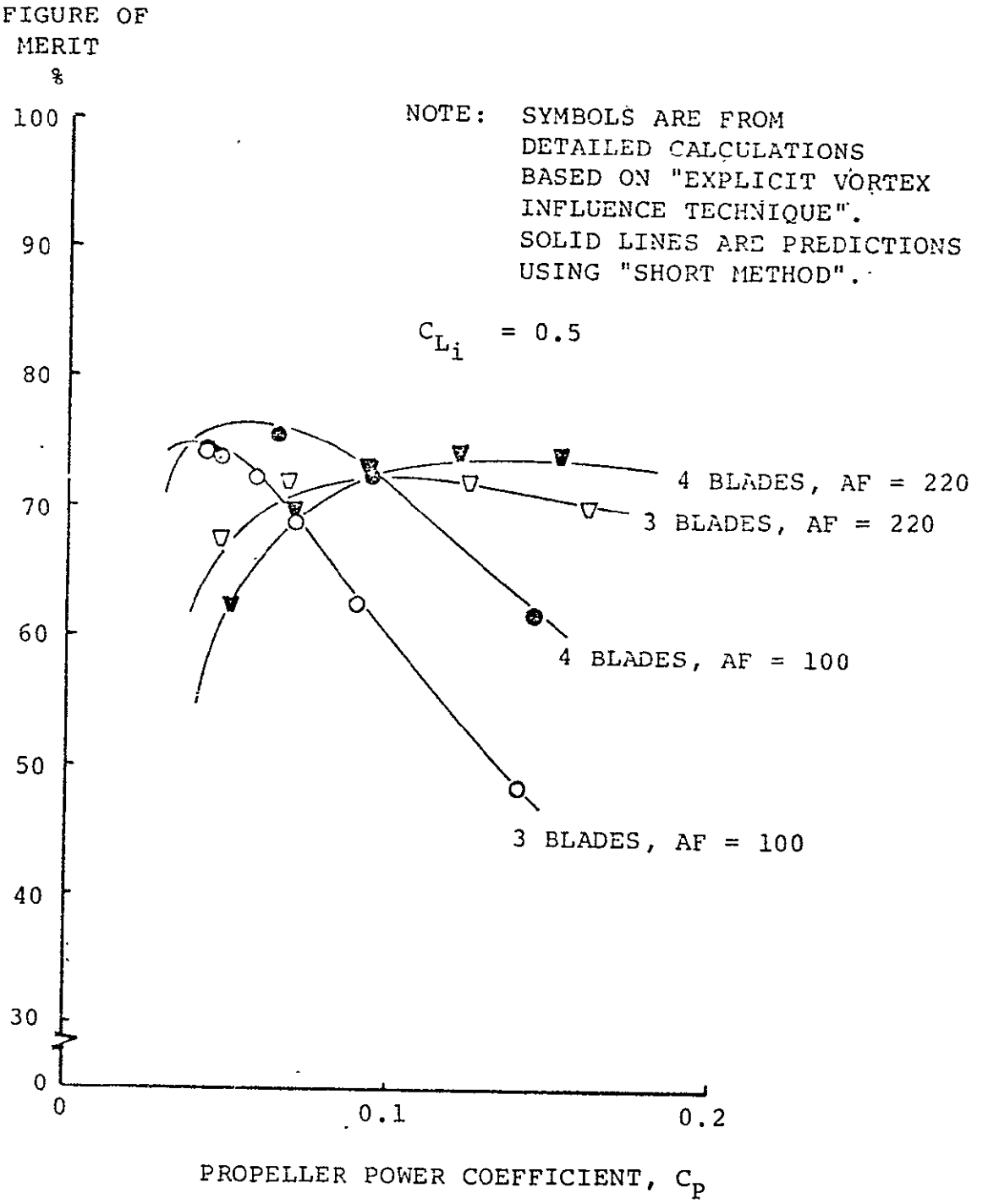


FIGURE 4-11. Comparison of "Short Method" and Detailed Calculation for Propeller Hover Efficiency.

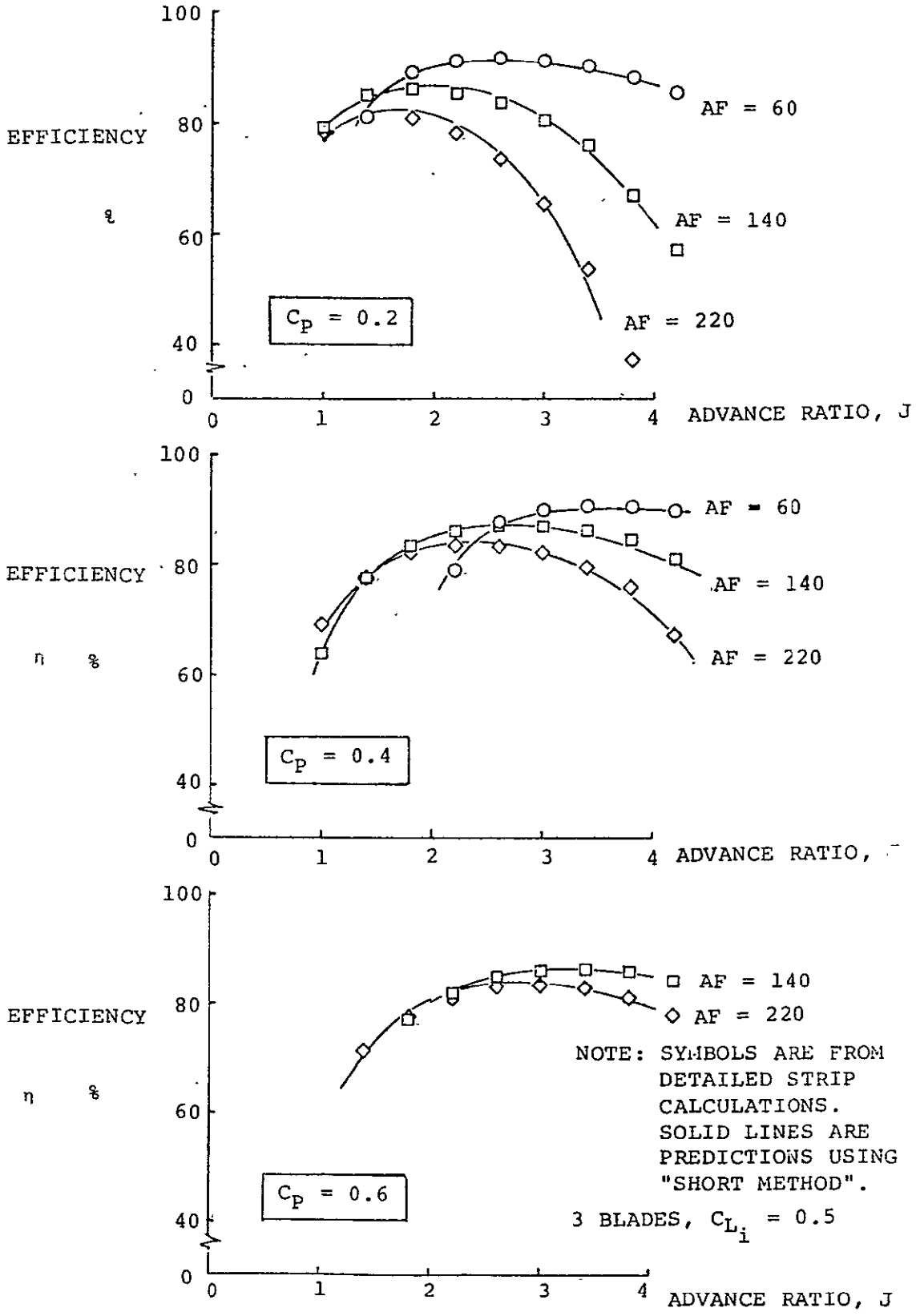


Figure 4-12 Comparison of "Short Method" and Detailed Calculations for Propeller Cruise Efficiency.

For cruise

$$\bar{Y} = a_o + a_1 C_{L_i} + a_2 C_{L_i}^2$$

a_o, a_1, and a_2 are coefficients stored in the program and are functions of M_H and C_L

For hover:

$$\bar{Y} = b_o + b_1 C_{L_i} + b_2 C_{L_i}^2$$

b_o, b_1, and b_2 are coefficients stored in the program and are functions of C_L.

The coefficients a_o, a_1, a_2, b_o, b_1, b_2 are listed in Table 4-3.

TABLE 4-3

COEFFICIENTS FOR PROPELLER EQUIVALENT POLARS

COEFFICIENTS FOR HOVER:

C_L	b_1	b_2	b_3
0	90	0	0
.15	2.68	-5.4836	13.5125
.2	1.9141	-2.9393	8.012
.3	1.513	-2.7523	5.8118
.4	1.5304	-3.0648	4.8132
.5	1.9611	-4.5374	5.3846
.6	2.7089	-6.8293	6.8072
.7	3.8237	-10.0965	9.3267
.8	5.051	-12.558	10.7333
.9	7.3796	-18.5171	15.8002
1.0	9.13	-19.35	15.5

COEFFICIENTS FOR CRUISE:

C_L	M_H	a_0	a_1	a_2	M_H	a_0	a_1	a_2	M_H	a_0	a_1	a_2
0	0.7	90.	0.	0.	0.8	90.	0	0	0.9	90.	0.	0.
.05	↓	7.0392	1.9949	61.2416	↓	10.2148	2.4433	86.4731	↓	11.3227	40.9515	21.9481
.10		4.8350	-4.1639	19.2195		8.3106	-22.6338	56.0		11.3355	-14.062	62.0142
.15		3.2218	-1.7030	8.291		5.4623	-14.9997	35.3636		8.3676	-12.2425	36.0889
.20		2.7551	-2.5322	7.0366		4.0458	-9.9837	23.0606		6.5856	-9.574	25.9573
.3		2.481	-4.5422	7.3774		3.9439	-13.0524	22.0028		5.3862	-8.9808	18.6439
.4		2.4521	-5.4949	7.4251		3.6769	-11.7146	17.3803		5.2054	-9.3153	16.4063
.5		2.8149	-7.092	8.3401		3.8766	-12.0044	16.0882		6.1902	-14.7567	23.2672
.6		3.8725	-10.861	11.4678		4.5901	-13.8756	17.2451		8.153	-25.0375	39.117
.7		5.6653	-16.2691	15.8093		6.1044	-18.2607	21.8349		10.1745	-30.7342	51.0509
.8		8.5799	-24.8115	22.6773		8.9031	-26.0958	30.7056		13.0822	-33.2211	58.1494
.9		12.25	-33.6185	28.7271		12.2042	-29.4588	34.1515		16.5344	-34.9378	64.3529
1.0		17.0496	-43.061	33.8798		17.0398	-37.3809	43.697		20.8089	-40.6314	76.3927
1.1		21.8332	-47.8821	33.6322		22.784	-47.3791	55.5455		25.6453	-49.145	94.4326
1.2		31.7062	-49.6246	26.4923		28.7851	-57.8217	68.2121		33.5049	-77.6449	144.4176

4.10 WEIGHT TRENDS SUBROUTINE

The weight trends subroutine calculates the group weights for the propulsion system, the structures system, and the flight control system. These weights are then combined with input values of the weight of fixed useful load, fixed equipment, and payload in order to determine the weight of fuel available (Figure 4-13). The subroutine uses detailed statistical weight equations as used at the Boeing Vertol Company. The group weights are not directly added, but rather are combined by the use of incremental multiplicative and additive weight factors; these factors are useful for sensitivity studies for the airship. For example, if it is desired to determine the effect of an additional 300 pounds of propulsion system weight, the factor ΔW_p is input as 300. Similarly, if it is desired to investigate the effect of a 15-percent increase in the weight of the engines, the factor K_5 is input as 1.15.

In order to calculate the weight of the airship structure, the weight trends subroutine must determine the limiting design load factor. It does this by comparing the magnitude of the input maneuver load factor with the value calculated for gust load factor.

A detailed explanation of the weight trend methodology as used in CASCOMP in this study is contained in Vol. I, Section 5.4.2.

4.11 PERFORMANCE CALCULATIONS SUBPROGRAM

This subroutine monitors the flow during calculation of mission performance data and calculates the total fuel required at the end of the mission.

4.11.1 Takeoff, Hover and Landing Calculations Subroutine

The takeoff, hover and landing calculations subroutine (specified by SGTIND = 2) will calculate the power required and corresponding fuel flow rates during simulated takeoff/hover/landing operations. Two options are available, specified by the input indicator TOLIND:

TOLIND = 1 - Input required thrust-weight ratio. Program will calculate required power fractions.

TOLIND = 2 - Input the required power fraction. Program will calculate thrust-weight ratio.

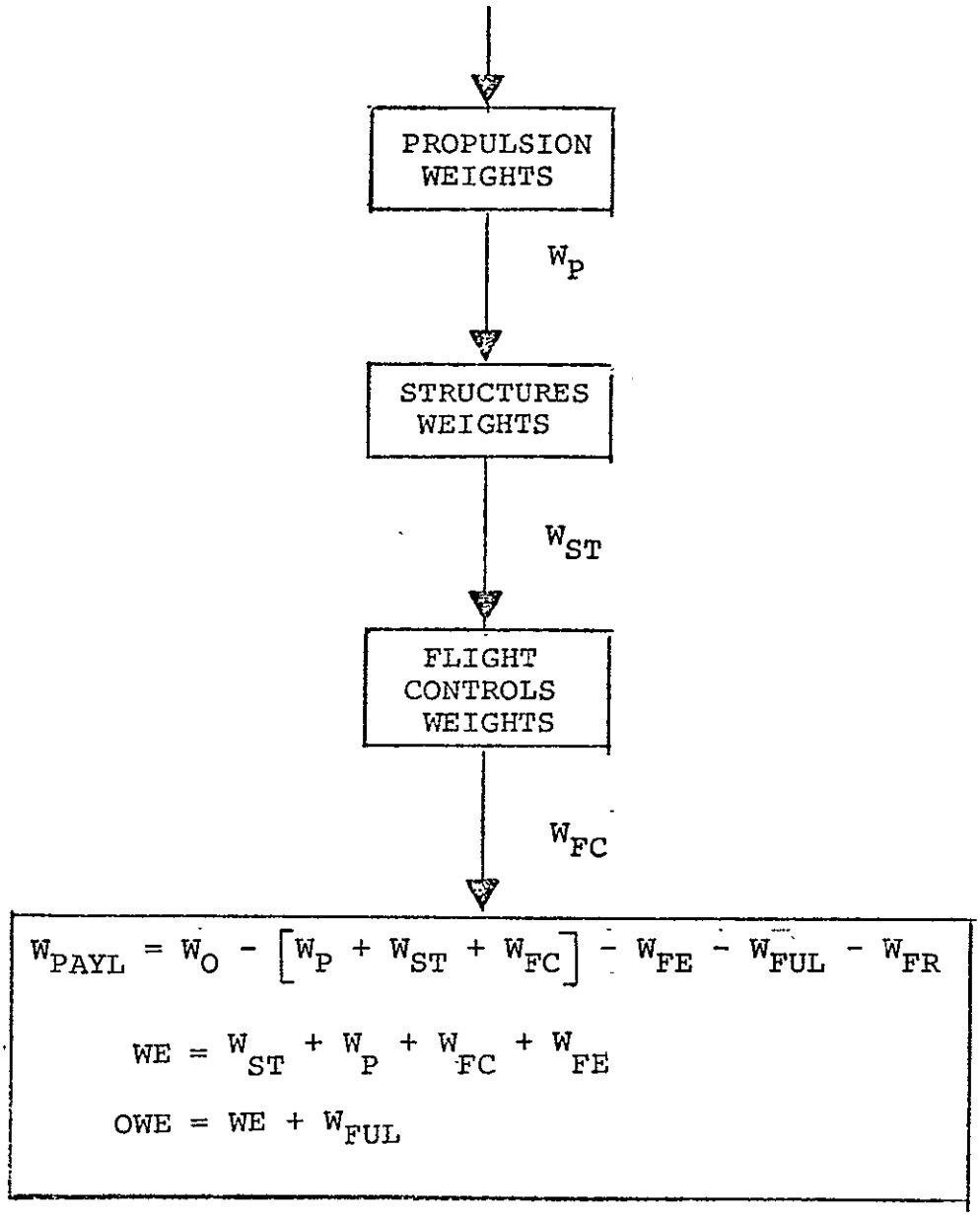


FIGURE 4-13. Weight Trends Subroutine.

In all cases, the program will print out the power fraction and thrust-weight ratio. The program will permit operation at power fractions greater than 1.0 (more than 100 percent of available power) in order to make it easier to perform studies in which engine power is being varied parametrically to satisfy specified takeoff or landing requirements as a site. The program will, however, print a cautionary note that power fraction exceeds 100 percent.

4.11.2 Cruise Calculations Subroutine

This performance segment calculates airship cruise performance. Three separate options specifying the type of cruise desired for the airship are determined by an input cruise indicator, CRSIND.

a. CRSIND = 1 - This is a calculation of airship cruise performance at a fixed cruise power setting and at a constant altitude, constrained by limiting airspeed. This option calculates the true airspeed, specific range, and reduction in gross weight during cruise.

b. CRSIND = 2 - This option will calculate the cruise performance of the airship at constant airspeed, constant altitude, and constrained by cruise power and by limiting airspeed. The program will calculate the power setting required, true airspeed, specific range, and corresponding reduction in gross weight of the airship during cruise.

c. CRSIND = 3 - This option calculates the airspeed during cruise required for best specific range, constrained by cruise power setting and by limiting airspeed. Flight is at constant altitude.

This subroutine permits simulation of cruise performance of an airship with an arbitrary number of engines shut down. The program user specifies the number of engines shut down and a corresponding increment in airship ΔFe.

The input for the cruise calculations subroutine consists of the value for CRSIND, the lifting gas superheat ratio, the increment in atmospheric temperature, the step size (incremental range), the final range for cruise, the increment in parasite drag area, number of engines shut down, and if CRSIND = 2, the cruise airspeed.

4.11.3 Change of Weight Subroutine

This performance segment represents an incremental change in weight of payload. This option would be used to simulate loading or unloading of passengers or other payload. The input to the subroutine consists of the increment in weight and a corresponding increment in time.

4.11.4 Transfer Altitude Subroutine

This performance segment provides a discontinuous change in altitude. The only required input is the altitude to which the airship is to be transferred.

5.0 PROGRAM INPUT

5.1 GENERAL

Input to the program is made by means of a standard set of input sheets. Although there are large quantities of possible input, necessitated by the requirement to keep the program flexible and general, the input sheets have been configured to give maximum visibility and reduce the tediousness of inputting the data. This has been accomplished through several means:

a. All input of a similar nature has been grouped together. Thus, all dimensional information is on the same input sheet, regardless of whether it is used in the size trends subroutine or elsewhere.

b. The input sheets have been color-coded to distinguish between the data required in the weighing and dimensioning option (OPTIND = 0) and the much smaller amount of data required for performance calculations (OPTIND = 2).

c. Footnotes on the input sheets call attention to input which is not required due to selection of one of the optional paths of computation.

d. For parametric studies where only one or two variables are being changed from case to case, a special supplementary input sheet may be used, thus reducing the quantity of paper work.

Altogether there are nine different input sheets which can be loosely grouped into five categories: general information, airship descriptive information, mission profile information, engine cycle information, and supplementary information. A specimen copy of each input sheet is included in this report on pages 5-5 to 5-19. Descriptions of input variables and indicators are given in sections 5.3.1 and 5.3.2. The use of the various input sheets is discussed below in 5.1.1 and 5.1.2.

5.1.1 General Information

Input all primary program indicators (except those for specific mission segments, such as CRSIND), mission initial conditions, reserve fuel factors, and maneuver load factor.

5.1.2 Airship Description Information

5.1.2.1 Dimensional Information - Input characteristic geometric information for airship being studied.

5.1.2.2 Propulsion Information - Input data for propulsive efficiencies, numbers of engines, propellers (and/or rotors), and critical engine sizing conditions.

5.1.2.3 Aerodynamics Information - Input airship hull and empennage drag characteristics - and in the case of the hybrid airships both lift and drag characteristics.

5.1.2.4 Weight Information - Input the factors and constants for weight trends calculations.

5.1.3 Mission Profile Information

There are three input sheets for mission profile information. They are:

a. Takeoff, Hover, and Landing Information
b. Cruise Information
c. Change of Payload Weight and Transfer Altitude Information

Each input variable on the mission profile sheets is represented by an array of five input locations. The data for these locations is filled in sequentially by rows as the particular mission segment is used. For example, the first time that cruise is used in a particular case, the required input information is filled in on the first row of the input sheet. Data for the second cruise of a case is filled in on the second row and so on. Thus, up to five of any particular segment may be used in a case.

5.1.4 Engine Cycle Information - Input engine lapse rate and weight information, take-off and cruise power data (referred), and fuel consumption (SFC) data. All tables must be filled out completely on this sheet.

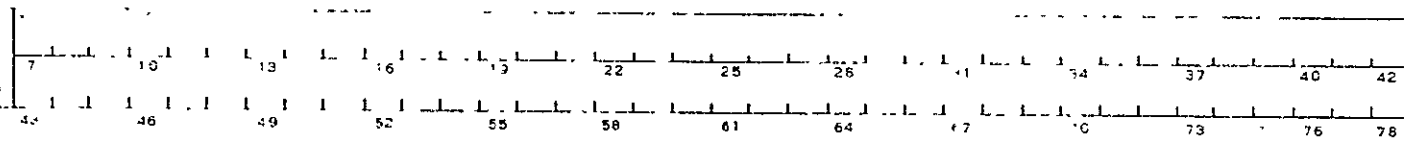
5.1.5 Supplementary Information

The supplementary input sheet may be used for the second and subsequent cases of a parametric study. For example, if the user wishes to change both the propeller (or rotor) tip speed (Location 0083 - see dimensional information sheet) and the number of engines (location 0102 - see propulsion information sheet), these locations and their new values may be filled in on the supplementary input sheet.

SHEET NO OF | CASE NO.

GENERAL INFORMATION

TITLE CARD (72) (DIGITS)



	VARIABLE	UNIT	LOC	VALUE	
OPTION INDICATOR	OPTIND		0001		0 = WEIGH & DIMENSION 2 = PERF. ONLY
SIZE TREND INDICATORS	NULIND		0002		1 = CONV., 2 = LIFTING BODY, 3 = HELIPSOID, 4 = DISC
	DYLIND		0003		1 = HULL (ONLY), 2 = WING 3 = ROTOR(S), 4 = WING + ROTOR(s)
AERODYNAMICS INDICATORS	DRGIND		0004		1 = COMPONENT DRAG 2 = DRAG TREND
	OSWIND		0005		0 = INPUT e 1 = PROG. CALC e
PROPULSION & SIZE TRENDS INDICATORS	FIXIND		0006		0 = INPUT FIXED SIZE ENGINES 1 = PROGRAM SIZE ENGINES
	RDMIND		0007		1 = INPUT D_{MR}, $\sigma(AF)$ 2 = INPUT W/A, C_T/σ
	PRPIND		0008		0 = PROPELLER 1 = HELICOPTER "TYPE" ROTOR
	ETAIND		0009		0 = INPUT η P'S 1 = PROG. CALC. PROP. PERF
	W_g	LB	0010		GROSS WEIGHT
	LB/W_g		0011		BUOYANCY RATIO
	L_R/L_A		0012		DESIGN ROTOR LIFT/DYN LIFT
	V_{GASB}/V_{HL}		0013		GASBAG VOL/HULL VOL
	$LG_{SP\,WT}$	LB/FT³	0014		LIFTING GAS SPECIFIC WT (SL, STD)
	H_{MAX_D}	FT	0015		HULL DESIGN ALT
	$(\rho/\rho_0)_{HD}$		0016		ATMOS. DENSITY RATIO AT DESIGN ALT
	V_{MQ}	KTS EAS	0017		LIMITING SPEED
	M_{LF}		0018		MANEUVER LOAD FACTOR
RESERVE FUEL FACTORS	K_1		0019		NOM = 1.0
	δW_F	LBS	0020		NOM = 0.0
	K_{FF}		0021		FUEL FLOW MULTIPLIER (NOM = 1.0)
	V_{DIVE}	KTS EAS	0022		
INITIAL CONDITIONS	h_0	FT	0023		
	R_0	N.M.	0024		
	t_0	HR	0025		

MISSION PROFILE INFORMATION
MAXIMUM OF 12 CONSECUTIVE SEGMENTS

VALUES OF SGTIND

0 = END OF MISSION
2 = T O., HOVER, LAND
4 = CRUISE
8 = CHANGE PAYLOAD
9 = TRANSFER ALTITUDE
100 = END OF CASE

	LOC	VALUE
1ST	0031	
2ND	0032	
3RD	0033	
4TH	0034	
5TH	0035	
6TH	0036	
7TH	0037	
8TH	0038	
9TH	0039	
10TH	0040	
11TH	0041	
12TH	0042	

NOTE: WHEN OPTIND = 2 CONSIDER ONLY THOSE ITEMS IN THE SHADED BLOCKS

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NOTE WHEN OPTIND = 2
CONSIDER ONLY THOSE
ITEMS IN THE SHADED
BLOCKS

AIRSHIP DIMENSIONAL INFORMATION

	NOTE	VARIABLE	UNIT	LOC	VALUE
WING OR HULL	a	AR		0051	
		W/S	PSF	0052	
	a	(t/c)R		0053	
		(t/c)T		0054	
	a	λ		0055	
HOR. TAIL		AR_{HT}		0056	
		$(t/c)_{HT}$		0057	
		$\bar{V}_H$		0058	
		λ_H		0059	
VERT. TAIL		AR_{VT}		0060	
		$(t/c)_{VT}$		0061	
		$\bar{V}_v$		0062	
		λ_V		0063	
TAIL A.C. POSN		L_H/L_{OA}		0043	
		L_V/L_{OA}		0044	
HULL	b	$(L/D)_N$		0064	
	b	$(L/D)_T$		0065	
	b	$(L/D)_{OA}$		0066	
		$\Delta S_{WET}/S_{WET}$		0067	
		ΔS_{WET}	FT^2	0068	
		$\Delta VOL/V_{OL}$		0069	
		ΔVOL	FT^3	0070	
		C_{BUOY}/L_{OA}		0071	

	NOTE	VARIABLE	UNIT	LOC	VALUE
ROTOR(S) OR PROPELLER		N_R		0072	
	c	W/A	PSF	0073	
	d	D_{MR}	FT	0074	
	d	σ_{MR}		0075	
		b_{MR}		0076	
	e	AF		0077	
	e	C_{Q_1}		0078	
	f	θ_{TMR}	DEG	0079	
	f	$X_{C_{MR}}$		0080	
		X_{MR}		0081	
	f	$(t/c)_{.25\ MR}$		0082	
		V_{TIP}	FT/SEC	0083	
	c	C_T/σ		0084	
		$(T/W)_D$		0085	
		h_{DSN}	FT	0086	
		$\Delta T_{INC_{DSN}}$	^oF	0087	

VALUES OF AERODYNAMIC EFFICIENCY (SEE NOTE g)

g	η_{P_2}		0088	

NO. OF PAIRS IN η_{P_4} TABLE	0089	

VALUES OF V	LOC	VALUE
	0090	
	0091	
	0092	
	0093	
	0094	

VALUES OF η_{P_4}	LOC	VALUE
	0095	
	0096	
	0097	
	0098	
	0099	

NOTE: a IF HULIND = 2,3,4, INPUT THESE VALUES INSTEAD OF THOSE NOTED IN b.

INPUT NOT NECESSARY WHEN:

b. HULIND = 2,3,4
c. RDMIND = 1
d. RDMIND = 2
e. DYLIND = 3,4
f. DYLIND = 1,2
g. DYLIND = 3,4 OR ETAIND = 1

SHEET NO OF	CASE NO.

AIRSHIP PROPULSION INFORMATION

NOTE	VARIABLE	LOC	VALUE
b	BHP^*_p	0101	
	N_p	0102	
	n_t	0103	

ENGINE DATA

NOTE: WHEN OPTIND = 2 CONSIDER ONLY THOSE ITEMS IN THE SHADED BLOCKS

a	h_{CR}	0104	
a	V_{CR}	0105	
a	ΔTIN_{CR}	0106	

CRUISE CONDITIONS FOR ENGINE SIZING

AIRSHIP AERODYNAMICS INFORMATION

NOTE	VARIABLE	LOC	VALUE
	C_{DVT}	0107	
	C_{DHT}	0108	
c	e	0109	
	ΔFe	0110	
d	Fe_{DRG}	0111	
d	EDRAG	0112	
e	C_{DC}	0113	
e	C_{DC} RAD-1	0114	

NOTE	VARIABLE	LOC	VALUE
	K_{VT}	0115	
	K_{HT}	0116	
f	K_F	0117	
g	K_W	0118	

	(Re/ℓ)	0119	

WING PROFILE DRAG AS FUNCTION OF C_L (g)

NO. OF PAIRS IN TABLE	0120	

	$C_{LW}(1)$	0121	
	$C_{LW}(2)$	0122	
	$C_{LW}(3)$	0123	
	$C_{LW}(4)$	0124	
	$C_{LW}(5)$	0125	
	$C_{LW}(6)$	0126	
	$C_{LW}(7)$	0127	
	$C_{LW}(8)$	0128	

	$C_{DW}(1)$	0129	
	$C_{DW}(2)$	0130	
	$C_{DW}(3)$	0131	
	$C_{DW}(4)$	0132	
	$C_{DW}(5)$	0133	
	$C_{DW}(6)$	0134	
	$C_{DW}(7)$	0135	
	$C_{DW}(8)$	0136	

NOTE.

a THESE CONDITIONS ARE USED FOR WING SIZING ALSO IN THE CASE OF HULIND = 1, DYLIND = 1 OR 3

INPUT NOT NECESSARY WHEN.

b. FIXIND = 1
c OSWIND = 1
d DRGIND = 1
e DYLIND = 3
f. HULIND = 2 OR 4
g HULIND = 1, DYLIND = 1 OR 3 OR HULIND = 3

AIRSHIP WEIGHT INFORMANTION

VARIABLE	LOC.	VALUE
W_{FE}	0141	
W_{FUL}	0142	

INCREMENTAL GROUP WEIGHTS (NOM = 0)

VARIABLE	LOC.	VALUE
ΔW_{FC}	0143	
ΔW_P	0144	
ΔW_{ST}	0145	

W_{PAYL}	0197	

GROUP WEIGHT INFORMATION

FLIGHT CONTROLS

k_{CC}	0146	
k_{RC}	0147	
k_{SC}	0148	
k_{FW}	0149	
k_{TM}	0150	
k_{RCA}	0151	
k_{SCA}	0152	
k_{MC}	0153	
k_{AC}	0154	

STRUCTURAL

k_{HL}	0155	
k_{ENV1}	0156	
k_{ENV2}	0157	
k_{GB1}	0158	
k_{GB2}	0159	
k_{BLNT}	0160	
k_{BAL}	0161	
k_{LG}	0162	
k_{WW}	0163	
LF	0164	
RM_1	0165	
k_{WP}	0166	
k_{HT}	0167	
k_{VT}	0168	

PROPULSION

k_{PRB}	0169	
k_{RBF}	0170	
k_{PH}	0171	
k_{amd}	0172	
k_{AR}	0173	
k_{PA}	0174	
k_{VTAR}	0175	
k_{PDS}	0176	
k_{PDSZ}	0177	
k_T	0178	
k_{FS}	0179	
k_{PEI}	0180	
k_{PES}	0181	

MULTIPLICATIVE FACTORS NOMINALLY = 1.0

K_1	0182	
K_2	0183	
K_3	0184	
K_4	0185	
K_5	0186	

K_6	0187	
K_7	0188	
K_8	0189	
K_9	0190	
K_{10}	0191	

K_{11}	0192	
K_{12}	0193	
K_{13}	0194	
K_{14}	0195	
K_{15}	0196	

* INPUT USED ONLY WHEN OPTIND = 2

NOTE: WHEN OPTIND = 2
CONSIDER ONLY THOSE
ITEMS IN THE SHADED BLOCKS

SHEET NO. OF	CASE NO.

EOFF, HOVER AND LANDING INFORMATION SGTIND = 2

TOLIND

	LOC	VALUE
1ST	0201	
2ND	0202	
3RD	0203	
4TH	0204	
5TH	0205	

1 = INPUT T/W
2 = INPUT PEHF

(t/T)H

LOC	VALUE
0206	
0207	
0208	
0209	
0210	

NOM = 1.0

ΔT_{IN} (^{0}F)

LOC	VALUE
0211	
0212	
0213	
0214	
0215	

T/W

LOC	VALUE
0216	
0217	
0218	
0219	
0220	

INPUT NOT NECESSARY WHEN TOLIND = 2

PEHF

	LOC	VALUE
1ST	0221	
2ND	0222	
3RD	0223	
4TH	0224	
5TH	0225	

INPUT NOT NECESSARY WHEN TOLIND = 1

Δt_H (HR)

LOC	VALUE
0226	
0227	
0228	
0229	
0230	

t_H (HR)

LOC	VALUE
0231	
0232	
0233	
0234	
0235	

SHEET NO	CASE NO
OF	

CRUISE INFORMATION SGTIND = 4

	CRSIND		$(t/T)_{CR}$		$\Delta T_{IN}(^{0}F)$		V_{KTS}	
	LOC	VALUE	LOC	VALUE	LOC	VALUE	LOC	VALUE
1ST	0236		0241		0246		0251	
2ND	0237		0242		0247		0252	
3RD	0238		0243		0248		0253	
4TH	0239		0244		0249		0254	
5TH	0240		0245		0250		0255	

1 = SPECIFIED POWER
2 = CONSTANT TAS
3 = BEST NMPP

NOM = 1.0

INPUT NOT NECESSARY WHEN CRSIND = 1,3

	ΔR (N.M.)		R_{MAX}(N.M.)		$\Delta Fe_{CR}(FT^2)$		$N_{PSD_{CR}}$	
	LOC	VALUE	LOC	VALUE	LOC	VALUE	LOC	VALUE
1ST	0256		0261		0266		0271	
2ND	0257		0262		0267		0272	
3RD	0258		0263		0268		0273	
4TH	0259		0264		0269		0274	
5TH	0260		0265		0270		0275	

SHEET NO	CASE NO.
OF	

VARIABLE	LOC	VALUE
CYCLE NO.	0301	
FF	0302	
k_3	0303	
k_4	0304	

NOTE (a)

(a)

ALL TABLES MUST BE COMPLETE

TAKE OFF POWER

VALUES OF h, FT		
	LOC	VALUE
h_1	0306	
h_2	0305	
h_3	0307	
h_4	0308	
h_5	0309	

VALUES OF REF. PWR		
	LOC	VALUE
P_1	0310	
P_2	0311	
P_3	0312	
P_4	0313	
P_5	0314	

CRUISE POWER

VALUES OF h, FT		
	LOC	VALUE
h_1	0315	
h_2	0316	
h_3	0317	
h_4	0318	
h_5	0319	

VALUES OF REF. PWR		
	LOC	VALUE
P_1	0320	
P_2	0321	
P_3	0322	
P_4	0323	
P_5	0324	

SPECIFIC FUEL CONSUMPTION

VALUES OF SFC		
	LOC	VALUE
SFC_1	0325	
SFC_2	0326	
SFC_3	0327	
SFC_4	0328	
SFC_5	0329	
SFC_6	0330	
SFC_7	0331	
SFC_8	0332	

VALUES OF REF. PWR		
	LOC	VALUE
P_1	0333	
P_2	0334	
P_3	0335	
P_4	0336	
P_5	0337	
P_6	0338	
P_7	0339	
P_8	0340	

(a) k_3 IS IN LB/HP, k_4 IS IN LB

CHANGE IN PAYLOAD WEIGHT

SGTIND = 8

ΔW_{PL} (LB)

	LOC	VALUE
1ST	0276	
2ND	0277	
3RD	0278	
4TH	0279	
5TH	0280	

t_{PW} (HR)

LOC	VALUE
0281	
0282	
0283	
0284	
0285	

TRANSFER ALTITUDE

SGTIND = 9

H_{FINAL} (FT)

	LOC	VALUE
1ST	0286	
2ND	0287	
3RD	0288	
4TH	0289	
5TH	0290	

5.3 PROGRAM INPUT

5.3.1 Program Variables

AF	Activity Factor (per blade) of propeller
AR	Wing Aspect Ratio (Lifting body hull aspect ratio when HULIND = 2,3,4)
AR_{HT}	Horizontal tail fin aspect ratio (this is per fin and is based on exposed fin area)
AR_{VT}	Vertical tail fin aspect ratio (this is per fin and is based on exposed fin area)
BHP^*_p	Total configuration installed power
b_{MR}	Number of blades per propeller or rotor
C_{BUOY}/l_{OA}	Position of airship center of buoyancy divided by overall airship length
C_{D_C}	Hull/lifting body cross flow drag coefficient
$C_{D_{HT}}$	Profile drag coefficient of horizontal tail at $R_e = 10^7$
$C_{D_{VT}}$	Profile drag coefficient of vertical tail at $R_e = 10^7$
C_{D_W}	Profile drag coefficient of wing (based on wing planform area)
C_{L_W}	Wing lift coefficient (based on wing planform area)
C_{L_i}	Propeller integrated design lift coefficient
C_{ℓ_α}	Hull/lifting body lift curve slope (Rad^{-1})

C_T/σ	Ratio of thrust coefficient to rotor solidity (helicopter C_T = Thrust/ρAV_{TIP}^2) - this value used for sizing rotor/propeller solidity when RDMIND = 2
CYCLE NO.	Propulsion cycle number
D_{MR}	Rotor or propeller diameter (ft) input if RDMIND = 1
	Span loading efficiency factor
EDRAG F_eDRG	Factors used in conjunction with drag trend
ΔF_e	Increment in equivalent flat plate area parasite drag - ft^2
$\Delta F_{e_{CR}}$	Increment in equivalent flat plate area parasite drag (cruise performance segment) - ft^2.
FF	Temperature accountability (lapse rate) factor for engines (rate of change of referred power with respect to temperature ratio)
h_O	Initial altitude at start of mission (ft)
h_{CR}	Cruise altitude for sizing engines (ft)
h_{FINAL}	Final altitude for transfer altitude segment (SGTIND = 9) (ft)
H_{MAX_D}	Hull design altitude (ft)
K_F	Hull multiplicative drag factor
K_{FF}	Fuel flow multiplicative factor

K_{HT}	Horizontal tail multiplicative drag factor
K_{VT}	Vertical tail multiplicative drag factor
K_W	Wing multiplicative drag factor
K1 (LOC 0019)	Reserve fuel multiplicative factor
k_3, k_4	Engine weight factors
k_{CC}	Cockpit controls weight factor
k_{RC}*	Rotor controls weight factor
k_{SC}*	Rotor system controls weight factor
k_{FW}	Fixed wing controls weight factor (Fraction of airship gross weight)
k_{TM}**	Tilt mechanism weight factor (Fraction of propeller weight)
k_{RCA}**	Propeller controls weight factor
k_{SCA}**	Propeller system controls weight factor
k_{MC}	Miscellaneous controls weight factor (lb.)
k_{AC}	Airship controls weight factor (Fraction of airship gross weight)
k_{HL}	Hull primary structure weight factor (If airship is non-rigid, this coefficient is not used)

k_{ENV1}	Main envelope (skin) weight factors (If airship is rigid, k_{ENV1} is input as 0.)
k_{ENV2}	
k_{GB1}	Gas cell weight factors
k_{GB2}	
k_{BLNT}	Ballonet weight factor (lb/ft^2) (k_{BLNT} input as 0 for rigid airships)
k_{BAL}	Ballast weight factor (Fraction of airship gross weight)
k_{LG}	Landing gear weight factor (Fraction of airship gross weight)
k_{WW}	Wing weight factor (used if it is desired to account for wing relief loads, etc.)
k_{WP}	Wing weight factor (lb/ft^2) (If this factor is used, set $k_{WW} = 0.$)
k_{HT}	Horizontal tail weight factor (lb/ft^2)
k_{VT}	Vertical tail weight factor (lb/ft^2)
k_{PRB*}	Rotor blade weight factors
k_{RBF*}	
k_{PH*}	Rotor hub weight factor
k_{amd*}	Rotor weight factor
k_{AR**}	Propeller weight factor
k_{PA**}	Propeller weight factor (NOM = 1.0)
k_{VTAR**}	Propeller weight factor (NOM = 1.0)

k_{PDS}	Primary drive system weight factor
k_{PDSZ}	Primary drive system weight factor (number of gears in system)
k_T	Primary drive system weight factor
k_{FS}	Fuel system weight factor (Fraction of fuel required)
k_{PEI}	Engine installation weight factor (Fraction of bare engine weight) (If k_{PEI} is greater than 1.0, program assumes $k_{PEI} = W_{PEI}$ (lbs.))
k_{PES}	Engine section weight factor (Fraction of bare engine weight)
K_1	Rotor blade weight multiplicative factor
K_2	Rotor blade hub multiplicative factor
K_3	Propeller weight multiplicative factor
K_4	Primary drive system multiplicative factor
K_5	Engine weight multiplicative factor
K_6	Total hull weight multiplicative factor
K_7	Gas cell weight multiplicative factor
K_8	Wing weight multiplicative factor
K_9	Horizontal tail weight multiplicative factor
K_{10}	Vertical tail weight multiplicative factor
K_{11}	Landing gear weight multiplicative factor

K12	Rotor controls weight multiplicative factor
K13	Rotor system controls weight multiplicative factor
K14	Fixed wing controls weight multiplicative factor
K15	Total propeller controls weight multiplicative factor

NOTE:

* Input only if DYLIND = 3 or 4. This corresponds to a hybrid airship which utilizes helicopter "type" rotors for all or a portion of its dynamic lift.

** Input only if DYLIND = 1 or 2. This corresponds to a fully buoyant conventional airship or a hybrid airship with wings which uses propeller(s) for propulsion and tilts same for low speed/hover control.

L_B/W_O	Airship buoyancy ratio (ratio of buoyant lift to gross weight)
$(L/D)_N$	Fineness ratio of airship nose section
$(L/D)_T$	Fineness ratio of airship tail section
$(L/D)_{OA}$	Overall fineness ratio of hull
LF	Wing unloading factor
LG_{SPWT_O}	Lifting gas (buoyant fluid) specific weight at SL, STD conditions (lb/ft^3)

L_H/L_{OA}	Position of horizontal tail fin aerodynamic center as a fraction of overall hull length (forward of stern)
L_R/L_A	Design rotor lift as a fraction of design dynamic lift requirement
L_V/L_{OA}	Position of vertical tail fin aerodynamic center as a fraction of overall hull length (forward of stern)
M_{LF}	Maneuver load factor (g's)
N_P	Number of engines
$N_{PSD_{CR}}$	Number of engines shut down during cruise
N_R	Number of rotors or propellers
PEHF	Engine power fraction
Re/ℓ	Mean Reynolds number per foot for mission
R_{MAX}	Range at end of cruise (n.mi)
RM_I	Wing relief as fraction of wing lift (used with k_{WW} input)
R_O	Initial range at start of mission (nautical miles)
ΔR	Step size for cruise (nautical miles)
ΔS_{wet}	Incremental wetted area of airship hull (ft^2)
$\Delta S_{wet}/S_{wet}$	Incremental wetted area of airship hull divided by hull wetted area
$(t/c)_R$	Wing root thickness to chord ratio
$(t/c)_T$	Wing tip thickness to chord ratio

$(t/c)_{HT}$	Horizontal tail mean thickness to chord ratio
$(t/c)_{VT}$	Vertical tail mean thickness to chord ratio
$(t/c)_{.25R}$	Rotor blade thickness to chord ratio @ 0.25 rotor radius
t_H	Incremental time for hover (hours)
Δt_H	Step size for hover (hours)
ΔT_{IN}	Increment in ambient temperature during mission (°F)
$\Delta T_{IN_{CR}}$	Increment in ambient temperature for engine sizing at cruise condition (°F)
$\Delta T_{IN_{DSN}}$	Increment in ambient temperature for rotor or propeller sizing at takeoff condition (°F)
t_O	Initial time at start of mission (hours)
t_{PW}	Incremental time for change of payload weight (hours)
$(t/T)_H$	Ratio of lifting gas temperature to ambient temperature (superheat ratio) in hover segment
$(t/T)_{CR}$	Ratio of lifting gas temperature to ambient temperature (superheat ratio) in cruise segment
T/W	Configuration thrust/weight ratio (hover)
$(T/W)_D$	Configuration design thrust/weight ratio for sizing rotor or propeller in hover
V_{CR}	Design cruise speed for engine sizing (kts)
V_{DIVE}	Dive speed (knots EAS)

V_{GASB}/V_{HL}	Ratio of gas cell volume to total hull volume
$\overline{V}_H$	Horizontal tail volume coefficient
V_{KTS}	Mission cruise speed (kts)
V_{MO}	Maximum operating equivalent airspeed (kt)
V_{TIP}	Rotor or propeller tip speed (fps)
$\overline{V}_V$	Vertical tail volume coefficient
Δ Vol	Incremental volume of airship hull (ft^3)
Δ Vol/Vol	Incremental volume of airship hull divided by hull volume
W_{FE}	Weight of fixed equipment (lb.)
W_{FUL}	Weight of fixed useful load (lb.)
W_O	Airship gross weight (lb.)
W_{PAYL}	Payload weight (lbs.) - input only if OPTIND = 2
W/A	Rotor or propeller disc loading (psf) (based on difference between gross weight and buoyant lift)
W/S	Wing loading based on actual lift carried (difference between gross weight and buoyant lift) (psf)
ΔW_{FC}	Flight controls group incremental weight (lb.)
ΔW_P	Propulsion group incremental weight (lb.)
ΔW_{ST}	Structures group incremental weight (lb.)

ΔW_{PL}	Increment in payload weight during change of payload weight subroutine (lb.)
$X_{C_{MR}}$	Rotor blade cutout (end of blade shank, beginning of rotor airfoil sections) position as a fraction of rotor radius
X_{MR}	Rotor blade attachment point as a fraction of rotor radius
δ_{WF}	Fuel required additive reserve factor
η_{P2}	Propeller propulsive efficiency for hover
η_{P4}	Propeller propulsive efficiency for cruise
η_T	Transmission efficiency
$\Theta_{T_{MR}}$	Rotor blade twist (deg)
	Taper ratio of wing
λ_H	Taper ratio of horizontal tail
λ_V	Taper ratio of vertical tail
(ρ/ρ_o)	Ratio of atmospheric density at hull design altitude to that at SL, STD
σ_{MR}	Rotor or propeller solidity

5.3.2 Program Indicators

Option Indicators

OPTIND 0 = Weigh & dimension airship

2 = Calculate performance

Size Trends Indicators

HULIND 1 = Conventional hull

2 = Lifting body hull

3 = Helipsoid

4 = Disk (circular planform) hull

DYLIND 1 = Dynamic lift by hull alone

2 = Dynamic lift by wing and hull

3 = Dynamic lift by rotor(s) only

4 = Dynamic lift by wing and rotor(s)

NOTE: For HULIND = 2,3, or 4, only DYLIND = 2 or 4 are used.

RDMIND 1 = Input D_{MR} or σ (or AF, if PROPIND = 1)

2 = Input W/A, $C_T/_\sigma$

PRPIND 0 = Propeller used

1 = Helicopter "type" rotor used

Aerodynamics Indicators

DRGIND 1 = Component drag buildup

OSWIND 0 = Input span loading efficiency factor (e)

1 = Program calculates e

Propulsion Indicators

FIXIND 0 = Input fixed sized engines

1 = Program sizes engines based on cruise flight design conditions

ETAIND 0 = Input propulsive efficiencies for takeoff and cruise

1 = Program calculates propeller performance

Mission Performance Indicators

SGTIND 0 = End of mission

2 = Takeoff, hover, and landing

4 = Cruise

8 = Change payload

9 = Transfer altitude

100 = End of case

TOLIND 1 = Takeoff, hover, or land at input T/W

2 = Takeoff, hover, or land at input power setting (PEHF)

CRSIND 1 = Cruise at cruise power

2 = Cruise at constant true airspeed

3 = Cruise at speed for best specific range

6.0 SAMPLE CASE

This section contains a filled out sample input sheet and a complete sample case.

GENERAL INFORMATION

TITLE CARD (72) (DIGITS): CONVENTIONAL RIGID AIRSHIP PARAMETRIC STUDY

	VARIABLE	UNIT	LOC	VALUE	
OPTION INDICATOR	OPTIND		0001	0.	0 = WEIGH & DIMENSION 2 = PERF. ONLY
SIZE TREND INDICATORS	HULIND		0002	1.	1 = CONV., 2 = LIFTING BODY, 3 = HELIPSOID, 4 = DISC
	DYLIND		0003	1.	1 = HULL (ONLY), 2 = WING 3 = ROTOR(S), 4 = WING + ROTOR(s)
AERODYNAMICS INDICATORS	DRGIND		0004	1.	1 = COMPONENT DRAG 2 = DRAG TREND
	OSWIND		0005	1.	0 = INPUT e 1 = PROG, CALC e
PROPULSION & SIZE TRENDS INDICATORS	FIXIND		0006	1.	0 = INPUT FIXED SIZE ENGINES 1 = PROGRAM SIZE ENGINES
	RDMIND		0007	1.	1 = INPUT D_{MR}, $\sigma(AF)$ 2 = INPUT W/A, C_T/σ
	PRPIND		0008	0.	0 = PROPELLER 1 = HELICOPTER "TYPE" ROTOR
	ETAIND		0009	0.	0 = INPUT η P'S 1 = PROG. CALC. PROP. PERF
	W_0	LB	0010	60000.	GROSS WEIGHT
	LB/W_0		0011	1.0	BUOYANCY RATIO
	L_R/L_A		0012	0.	DESIGN ROTOR LIFT/DYN LIFT
	V_{GASB}/V_{HL}		0013	.925	GASBAG VOL/HULL VOL
	$LG_{SP\,WT_0}$	LB/FT^3	0014	.01251	LIFTING GAS SPECIFIC WT (SL, STD)
	H_{MAX_D}	FT	0015	5000.	HULL DESIGN ALT
	$(\rho/\rho_0)_{HD}$		0016	.8617	ATMOS DENSITY RATIO AT DESIGN ALT
	V_{MD}	KTS EAS	0017	60.	LIMITING SPEED
	M_{LF}		0018	1.3	MANEUVER LOAD FACTOR
RESERVE FUEL FACTORS	K_f		0019	1.00	NOM = 1.0
	δW_F	LBS	0020	0.0	NOM = 0.0
	K_{FF}		0021	1.00	FUEL FLOW MULTIPLIER (NOM = 1.0)
	V_{DIVE}	KTS EAS	0022	55.7	
INITIAL CONDITIONS	h_0	FT	0023	2000.	
	R_0	N.M.	0024	0.	
	t_0	HR	0025	0.	

MISSION PROFILE INFORMATION
MAXIMUM OF 12 CONSECUTIVE SEGMENTS

VALUES OF SGTIND

0 = END OF MISSION
2 = T.O., HOVER, LAND
4 = CRUISE
8 = CHANGE PAYLOAD
9 = TRANSFER ALTITUDE
100 = END OF CASE

	LOC	VALUE
1ST	0031	4.
2ND	0032	4.
3RD	0033	2.
4TH	0034	100.
5TH	0035	
6TH	0036	
7TH	0037	
8TH	0038	
9TH	0039	
10TH	0040	
11TH	0041	
12TH	0042	

NOTE: WHEN OPTIND = 2
CONSIDER ONLY THOSE
ITEMS IN THE SHADED BLOCKS

PRECEDING PAGE BLANK NOT FILMED

NOTE: WHEN OPTIND = 2 CONSIDER ONLY THOSE ITEMS IN THE SHADED BLOCKS

AIRSHIP DIMENSIONAL INFORMATION

	NOTE	VARIABLE	UNIT	LOC	VALUE
WING OR HULL	a	AR		0051	
		W/S	PSF	0052	
	a	(t/c)R		0053	
		(t/c)T		0054	
	a	λ		0055	
HOR. TAIL		AR_{HT}		0056	0.5
		$(t/c)_{HT}$		0057	0.10
		$\bar{V}_H$		0058	.3509
		λ_H		0059	.60
VERT. TAIL		AR_{VT}		0060	0.5
		$(t/c)_{VT}$		0061	0.10
		$\bar{V}_V$		0062	.3509
		λ_V		0063	.60
TAIL A.C. POSN		L_H/L_{OA}		0043	.10
		L_V/L_{OA}		0044	.10
HULL	b	$(L/D)_N$		0064	1.519
	b	$(L/D)_T$		0065	2.126
	b	$(L/D)_{OA}$		0066	4.496
		$\Delta S_{WET}/S_{WET}$		0067	0.
		ΔS_{WET}	FT^2	0068	0.
		$\Delta VOL/V_{OL}$		0069	0.
		ΔVOL	FT^3	0070	0.
		C_{BUOY}/L_{OA}		0071	.455

	NOTE	VARIABLE	UNIT	LOC	VALUE
ROTOR(S) OR PROPELLER		N_R		0072	4.
	c	W/A	PSF	0073	
	d	D_{MR}	FT	0074	10.
	d	σ_{MR}		0075	
		b_{MR}		0076	4.
	e	AF		0077	140.
	e	C_{ℓ_i}		0078	.5
	f	θ_{TMR}	DEG	0079	
	f	$X_{C_{MR}}$		0080	
		X_{MR}		0081	.08
	f	$(t/c)_{.25\,MR}$		0082	.10
		V_{TIP}	FT/SEC	0083	900.
	c	C_T/σ		0084	
		$(T/W)_0$		0085	
		h_{DSN}	FT	0086	
		$\Delta T_{INC_{DSN}}$	^oF	0087	

VALUES OF AERODYNAMIC EFFICIENCY (SEE NOTE g)

g	η_{P_2}		0088	0.7035

NO. OF PAIRS IN η_{P_4} TABLE		0089	5.0

VALUES OF V	LOC	VALUE	VALUES OF η_{P_4}	LOC	VALUE
	0090	0.		0095	0.7035
	0091	40.		0096	0.42
	0092	80.		0097	0.67
	0093	140.		0098	0.825
	0094	240.		0099	0.88

NOTE: a. IF HULIND = 2,3,4, INPUT THESE VALUES INSTEAD OF THOSE NOTED IN b.

INPUT NOT NECESSARY WHEN:

b. HULIND = 2,3,4
c. RDMIND = 1
d. RDMIND = 2
e. DYLIND = 3,4
f. DYLIND = 1,2
g. DYLIND = 3,4 OR ETAIND = 1

AIRSHIP PROPULSION INFORMATION

NOTE	VARIABLE	LOC	VALUE
b	BHP''_P	0101	
	N_P	0102	4.
	η_T	0103	0.97

ENGINE DATA

NOTE: WHEN OPTIND = 2 CONSIDER ONLY THOSE ITEMS IN THE SHADED BLOCKS.

a	h_{CR}	0104	5000.
a	V_{CR}	0105	50.
a	ΔTIN_{CR}	0106	0.

CRUISE CONDITIONS FOR ENGINE SIZING

AIRSHIP AERODYNAMICS INFORMATION

NOTE	VARIABLE	LOC	VALUE
	C_{DVT}	0107	.00287
	C_{DHT}	0108	.00287
c	e	0109	
	ΔFe	0110	25.
d	Fe_{DRG}	0111	
d	EDRAG	0112	
e	C_{DC}	0113	
e	$C_{\alpha_{RAD-1}}$	0114	

NOTE	VARIABLE	LOC	VALUE
	K_{VT}	0115	2.80
	K_{HT}	0116	2.80
f	K_F	0117	1.3463
g	K_W	0118	

	(Re/ℓ)	0119	4.743 $\times 10^5$

WING PROFILE DRAG AS FUNCTION OF C_L (g)

NO. OF PAIRS IN TABLE	0120	

	$C_{LW}(1)$	0121	
	$C_{LW}(2)$	0122	
	$C_{LW}(3)$	0123	
	$C_{LW}(4)$	0124	
	$C_{LW}(5)$	0125	
	$C_{LW}(6)$	0126	
	$C_{LW}(7)$	0127	
	$C_{LW}(8)$	0128	

	$C_{DW}(1)$	0129	
	$C_{DW}(2)$	0130	
	$C_{DW}(3)$	0131	
	$C_{DW}(4)$	0132	
	$C_{DW}(5)$	0133	
	$C_{DW}(6)$	0134	
	$C_{DW}(7)$	0135	
	$C_{DW}(8)$	0136	

NOTE:

a. THESE CONDITIONS ARE USED FOR WING SIZING ALSO IN THE CASE OF HULIND = 1, DYLIND = 1 OR 3

INPUT NOT NECESSARY WHEN:

b. FIXIND = 1
c. OSWIND = 1
d. DRGIND = 1
e. DYLIND = 3
f. HULIND = 2 OR 4
g. HULIND = 1, DYLIND = 1 OR 3 OR HULIND = 3

AIRSHIP WEIGHT INFORMANTION

VARIABLE	LOC.	VALUE
W_{FE}	0141	5820.
W_{FUL}	0142	1050.

INCREMENTAL GROUP WEIGHTS (NOM = 0)

VARIABLE	LOC.	VALUE
ΔW_{FC}	0143	200.
ΔW_P	0144	0.
ΔW_{ST}	0145	1000.

W_{PAYL}	0197	

GROUP WEIGHT INFORMATION

FLIGHT CONTROLS

k_{CC}	0146	48.
k_{RC}	0147	0.
k_{SC}	0148	0.
k_{FW}	0149	0.
k_{TM}	0150	0.26
k_{RCA}	0151	0.4
k_{SCA}	0152	38.
k_{MC}	0153	0.
k_{AC}	0154	0.009

STRUCTURAL

k_{HL}	0155	0.406
k_{ENV1}	0156	0.
k_{ENV2}	0157	0.036
k_{GB1}	0158	0.049
k_{GB2}	0159	0.939
k_{BLNT}	0160	0.
k_{BAL}	0161	0.046
k_{LG}	0162	0.013
k_{WW}	0163	0.
LF	0164	0.
RM_1	0165	0.
k_{WP}	0166	0.
k_{HT}	0167	1.084
k_{VT}	0168	1.084

PROPULSION

k_{PRB}	0169	0.
k_{RBF}	0170	0.
k_{PH}	0171	0.
k_{amd}	0172	0.
k_{AR}	0173	17.3
k_{PA}	0174	1.0
k_{VTAR}	0175	1.0
k_{PDS}	0176	250.
k_{PDSZ}	0177	3.
k_T	0178	.25
k_{FS}	0179	.07
k_{PEI}	0180	0.27
k_{PES}	0181	2.5

MULTIPLICATIVE FACTORS NOMINALLY = 1.0

K_1	0182	1.0
K_2	0183	1.0
K_3	0184	1.0
K_4	0185	4.0
K_5	0186	1.0

K_6	0187	1.0
K_7	0188	1.0
K_8	0189	1.0
K_9	0190	1.0
K_{10}	0191	1.0

K_{11}	0192	1.0
K_{12}	0193	1.0
K_{13}	0194	1.0
K_{14}	0195	1.0
K_{15}	0196	1.0

* INPUT USED ONLY WHEN OPTIND = 2

NOTE: WHEN OPTIND = 2
CONSIDER ONLY THOSE
ITEMS IN THE SHADED BLOCKS

TAKEOFF, HOVER AND LANDING INFORMATION SGTINO = 2

TOLIND

	LOC	VALUE
1ST	0201	2.
2ND	0202	
3RD	0203	
4TH	0204	
5TH	0205	

1 = INPUT T/W
2 = INPUT PEHF

(t/T)H

LOC	VALUE
0206	1.00
0207	
0208	
0209	
0210	

NOM = 1.0

ΔT_{IN} (^{0}F)

LOC	VALUE
0211	0.
0212	
0213	
0214	
0215	

T/W

LOC	VALUE
0216	
0217	
0218	
0219	
0220	

INPUT NOT NECESSARY WHEN TOLIND = 2

PEHF

	LOC	VALUE
1ST	0221	0.01
2ND	0222	
3RD	0223	
4TH	0224	
5TH	0225	

INPUT NOT NECESSARY WHEN TOLIND = 1

Δt_H(HR)

LOC	VALUE
0226	0.2
0227	
0228	
0229	
0230	

t_H (HR)

LOC	VALUE
0231	2.0
0232	
0233	
0234	
0235	

CRUISE INFORMATION

SGTIND = 4

CRSIND

	LOC	VALUE
1ST	0236	2.
2ND	0237	2.
3RD	0238	
4TH	0239	
5TH	0240	

1 = SPECIFIED POWER
2 = CONSTANT TAS
3 = BEST NMPP

$(t/T)_{CR}$

LOC	VALUE
0241	1.0
0242	1.0
0243	
0244	
0245	

NOM = 1.0

$\Delta T_{IN}(^0F)$

LOC	VALUE
0246	0.
0247	0.
0248	
0249	
0250	

V_{KTS}

LOC	VALUE
0251	50.
0252	50.
0253	
0254	
0255	

INPUT NOT NECESSARY WHEN CRSIND = 1,3

ΔR (N.M.)

	LOC	VALUE
1ST	0256	20.
2ND	0257	5.
3RD	0258	
4TH	0259	
5TH	0260	

R_{MAX}(N.M.)

LOC	VALUE
0261	300.
0262	350.
0263	
0264	
0265	

$\Delta Fe_{CR}(FT^2)$

LOC	VALUE
0266	0.
0267	0.
0268	
0269	
0270	

$N_{PSD_{CR}}$

LOC	VALUE
0271	0.
0272	0.
0273	
0274	
0275	

VARIABLE	LOC	VALUE	
CYCLE NO.	0301	1.0	
FF	0302	2.58	
k_3	0303	0.15	NOTE (a)
k_4	0304	0.	(a)

ALL TABLES MUST BE COMPLETE

TAKE OFF POWER

VALUES OF h, FT		
	LOC	VALUE
h_1	0305	0.
h_2	0306	5000.
h_3	0307	10000.
h_4	0308	15000.
h_5	0309	17000.

VALUES OF REF. PWR		
	LOC	VALUE
P_1	0310	1.00
P_2	0311	1.09
P_3	0312	1.18
P_4	0313	1.27
P_5	0314	1.306

CRUISE POWER

VALUES OF h, FT		
	LOC	VALUE
h_1	0315	0.
h_2	0316	5000.
h_3	0317	10000.
h_4	0318	15000.
h_5	0319	17000.

VALUES OF REF. PWR		
	LOC	VALUE
P_1	0320	0.848
P_2	0321	0.938
P_3	0322	1.027
P_4	0323	1.116
P_5	0324	1.150

SPECIFIC FUEL CONSUMPTION

VALUES OF SFC		
	LOC	VALUE
SFC_1	0325	16.3
SFC_2	0326	0.695
SFC_3	0327	0.556
SFC_4	0328	0.495
SFC_5	0329	0.440
SFC_6	0330	0.418
SFC_7	0331	0.408
SFC_8	0332	0.400

VALUES OF REF. PWR		
	LOC	VALUE
P_1	0333	0.005
P_2	0334	0.20
P_3	0335	0.30
P_4	0336	0.40
P_5	0337	0.60
P_6	0338	0.80
P_7	0339	1.00
P_8	0340	2.00

(a) k_3 IS IN LB/HP, k_4 IS IN LB

C A S C O M P

COMPREHENSIVE AIRSHIP SIZING COMPUTER PROGRAM 8-81

THE FOLLOWING IS A CARD BY CARD REPRODUCTION OF THE INPUT DECK FOR THIS CASE

LOC. CORRESPONDS TO LOCATION NUMBER GIVEN ON INPUT SHEET
NUM STANDS FOR THE NUMBER OF SEQUENTIAL INPUT VALUES STARTING WITH LOC. (MAX. =5)
VAL EQUALS VALUE FOR VARIABLE CORRESPONDING TO LOC.
VAL1 VALUE CORRESPONDING TO LOC.+0001
VAL2 VALUE CORRESPONDING TO LOC.+0002
ETC.

LOC.	NUM	VAL	VAL1	VAL2	VAL3	VAL4
		NOTE : IN USING AUXILIARY ENGINES ; AUXILIARY ENGINE CYCLE INPUT LOCATIONS CAN BE CREATED BY PLACING A 66666 CARD IN FRONT AND BEHIND A STANDARD ENGINE CYCLE				
1	5	0.0	1.0000	1.0000	1.0000	1.0000
6	4	1.0000	1.0000	0.0	0.0	
10	5	60000.	1.0000	0.0	0.92500	0.12510E-01
15	2	5000.0	0.86170			
17	2	60.000	1.3000			
19	3	1.0000	0.0	1.0000		
22	1	55.700				
23	3	2000.0	0.0	0.0		
31	4	4.0000	4.0000	2.0000	100.00	
56	4	0.50000	0.10000E 00	0.35090	0.60000	
60	4	0.50000	0.10000E 00	0.35090	0.60000	
43	2	0.10000E 00	0.10000E 00			
64	5	1.5190	2.1260	4.4960	0.0	0.0
69	3	0.0	0.0	0.45500		
72	1	4.0000				
74	1	10.000				
76	3	4.0000	140.00	0.50000		
81	3	0.80000E-01	0.10000E 00	900.00		
88	1	0.70350				
89	1	5.0000				
90	5	0.0	40.000	80.000	140.00	240.00
95	5	0.70350	0.42000	0.67000	0.82500	0.88000
102	2	4.0000	0.97000			
104	3	5000.0	50.000	0.0		
107	2	0.28700E-02	0.28700E-02			
110	1	25.000				
113	1	1.2000				
115	3	2.8000	2.8000	1.3463		
119	1	0.47430E 06				
120	1	0.0				
141	2	5820.0	1050.0			
143	3	200.00	0.0	1000.0		
146	5	48.000	0.0	0.0	0.0	0.26000
151	4	0.40000	38.000	0.0	0.90000E-02	
155	5	0.40600	0.0	0.38000E-01	0.49000E-01	0.93900
160	5	0.0	0.46000E-01	0.13000E-01	0.0	0.0
165	4	0.0	0.0	1.0840	1.0840	
169	5	0.0	0.0	0.0	0.0	17.300

174	5	1.0000	1.0000	250.00	3.0000	0.25000
179	3	0.70000E-01	0.27000	2.5000		
182	5	1.0000	1.0000	1.0000	4.0000	1.0000
187	5	1.0000	1.0000	1.0000	1.0000	1.0000
192	5	1.0000	1.0000	1.0000	1.0000	1.0000
201	1	2.0000				
206	1	1.0000				
211	1	0.0				
221	1	0.10000E-01				
226	1	0.20000				
231	1	2.0000				
236	2	2.0000	2.0000			
241	2	1.0000	1.0000			
246	2	0.0	0.0			
251	2	50.000	50.000			
256	2	20.000	5.0000			
261	2	300.00	350.00			
266	4	0.0	0.0	0.0	0.0	
271	4	0.0	0.0	0.0	0.0	
301	4	1.0000	2.5800	0.15000	0.0	
305	5	0.0	5000.0	10000.	15000.	17000.
310	5	1.0000	1.0900	1.1800	1.2700	1.3060
315	5	0.0	5000.0	10000.	15000.	17000.
320	5	0.84800	0.93800	1.0270	1.1160	1.1500
325	5	16.300	0.69500	0.55600	0.49500	0.44000
330	3	0.41800	0.40800	0.40000		
333	5	0.50000E-02	0.20000	0.30000	0.40000	0.60000
338	3	0.80000	1.0000	2.0000		

INSUFFICIENT POWER AVAILABLE FOR CRUISE(CRUS2)A
INSUFFICIENT POWER AVAILABLE FOR CRUISE(CRUS2)A

HULIND = 1 CONVENTIONAL HULL

*** DIMENSIONAL DATA

GROSS WEIGHT = 60000. POUNDS

*** HULL

DISPLACEMENT	DSPLMT	89998.	POUNDS
LENGTH(OVERALL)	ELOA	355.3	FEET
LENGTH(NOSE)	ELN	120.0	FEET
LENGTH(TAIL)	ELT	168.0	FEET
DIAMETER	DH	79.0	FEET
VOLUME(HULL)	VHL	1176841.	CUBIC FEET
VOLUME(GAS)	VGASR	938028.	CUBIC FEET
WETTED AREA	SF	69796.	SQUARE FEET
PRISMATIC COEFFICIENT	CV	0.68	
CENTER OF BUOYANCY	CB	161.6	

* *

*** HORIZONTAL TAIL

ASPECT RATIO	ARHT	0.50	
AREA	SHT	2612.1	SQUARE FEET
SPAN	BHT	25.55	FEET
MEAN CHORD	CBARHT	51.11	FEET
TAPER RATIO	SLMH	0.600	

* *

*** VERTICAL TAIL

ASPECT RATIO	ARVT	0.50	
AREA	SVT	2612.1	SQUARE FEET
SPAN	BVT	25.55	FEET
MEAN CHORD	CBARVT	51.11	FEET
TAPER RATIO	SLMVT	0.600	

*** PROPELLERS - DYLIND = 1 OR 2

DIAMETER	DMR	10.00	FEET
ACTIVITY FACTOR PER BLADE	AF	140.	
SOLIDITY	SIGMR	0.229	
NO. OF PROPELLERS	ENR	4.	
NO. OF BLADES PER PROP	BMR	4.	
TIP SPEED	VT	900.	FT/SEC

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*** WEIGHTS DATA    IN LBS
        GUST      LOAD FACTOR    GLF                 0.0
        MANEUVER LOAD FACTOR     EMLF                1.300
        ULTIMATE LOAD FACTOR     ULF                 1.950


    PROPULSION GROUP

        TOTAL MAIN ROTOR GROUP             WPRG           0.
              MAIN ROTOR BLADE                  SK1*WPRB                        0.
              MAIN ROTOR HUB                    SK2*WPH                         0.
        PROPELLER GROUP                   DK3*WPRP               472.
        DRIVE SYSTEM                      DK4*WPDS               271.
        ENGINES                           SK5*WEP                112.
        ENGINE INSTALLATION               WPEI                    30.
        FUEL SYSTEM                       WFS                    141.
        PROPULSION GROUP WEIGHT INCREMENT DELWP                    0.
      * TOTAL PROPULSION GROUP WEIGHT     WPSTR                                    1026.


    STRUCTURES GROUP

        TOTAL HULL STRUCTURE WEIGHT                              7053.
                  HULL STRUCTURE                 SK6*WHL                    4401.
                  HULL ENVELOPE (SKIN)           SK6*WENV                   2652.
        GAS CELLS                         SK7*WGSB              9283.
        BALLONETS                         WBALNT                   0.
        WING                              SK8*WW                   0.
        HORIZONTAL TAIL                   SK9 *WHT              2832.
        VERTICAL   TAIL                   SK10*WVT              2832.
        LANDING    GEAR                   SK11*WLG               780.
        ENGINE  SECTION                   WES                    280.
        STRUCTURES WEIGHT INCREMENT       DELWST                1000.
      * TOTAL STRUCTURE WEIGHT            WST                                     24059.


    FLIGHT CONTROLS GROUP

        PRIMARY FLIGHT CONTROLS           WPFC                  4317.
              COCKPIT  CONTROLS                WCC                      257.
              AIRSHIP  CONTROLS                WAC                      540.
              ROTOR    CONTROLS                SK12*WRC                   0.
              ROTOR SYSTEMS CONTROLS           SK13*WSC                   0.
              FIXED WING    CONTROLS           SK14*WFW                   0.
              TILT MECHANISM                  WTM                       123.
              PROPELLER CONTROLS            SK15*WPC                637.
              BALLAST                          WBAL                    2760.
              MISCELLANEOUS CONTROLS           WMC                        0.
        CONTROL WEIGHT INCREMENT          DELWFC                 200.
      * TOTAL CONTROL WEIGHT              WFC                                      4517.

      * WEIGHT OF FIXED EQUIPMENT         WFE                                      5820.
      * WEIGHT EMPTY                      WE                                      35422.
      * FIXED USEFUL LOAD                 WFUL                                     1050.
      * OPERATING WEIGHT EMPTY            OWE                                     36472.
      * PAYLOAD                            WPL                                    21518.
      * FUEL                              WFR                                      2010.

     *** GROSS WEIGHT                     WO                                      60000.
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
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*** PROPULSION DATA

PROPULSION CYCLE NUMBER 1.000 WAS EMPLOYED

TOTAL POWER FOR 4. ENGINE(S),(BHP *) 746. HORSEPOWER

ENGINE(S) SIZED FOR CRUISE AT VC= 50.0 KNOTS,
HC= 5000. FT, TEMPERATURE= 41.2 DEG F.

* *

*** AERODYNAMICS DATA

TOTAL EFFECTIVE FLAT PLATE AREA	FE	238.8	SQ.FT
TOTAL WETTED AREA	SWET	80413.8	SQ.FT
MEAN SKIN FRICTION COEFFICIENT	CBARF	0.002969	
DRAG COEFFICIENT BASED ON VOLUME	CDV	0.021410	

*** DRAG BREAKDOWN

WING FE	FEW	0.0	SQ.FT
HULL FE	FEH	177.2	SQ.FT
VERTICAL TAIL FE	FEVT	18.3	SQ.FT
HORIZONTAL TAIL FE	FEHT	18.3	SQ.FT
INCREMENTAL FE	DELTA FE	25.0	SQ.FT
*** WING LIFT EFFICIENCY FACTOR	E	1.0000	

* *

MISSION PERFORMANCE DATA

CRUISE AT 50.0 KNOTS TAS

TIME (HOURS)	RANGE (N.MI)	FUEL USED (POUNDS)	WEIGHT (POUNDS)	ALT. (FEET)	TEMP (DEG.F)	TAS (KT)	B.R.	PEHF	BHPR	ETAP	NMPP	R.N.	CL
			HULL LIFT (POUNDS)		WING LIFT (POUNDS)		ROTOR LIFT (POUNDS)		ALPHA H (DEG)			ALPHA D/L (DEG)	

INSUFFICIENT POWER AVAILABLE FOR CRUISE(CRUS2)A
CRUISE AT CRUISE POWER

TIME (HOURS)	RANGE (N.MI)	FUEL USED (POUNDS)	WEIGHT (POUNDS)	ALT. (FEET)	TEMP (DEG.F)	TAS (KT)	B.R.	PEHF	BHPR	ETAP	NMPP	R.N.	CL
			HULL LIFT (POUNDS)		WING LIFT (POUNDS)		ROTOR LIFT (POUNDS)		ALPHA H (DEG)			ALPHA D/L (DEG)	
0.0	0.0	0.	60000.	2000.	51.87	49.4	1.000	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
0.40	20.0	102.	59898.	2000.	51.87	49.4	1.002	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	

0.81	40.0	204.	59796. 0.	2000.	51.87 0.	49.4	1.003 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
1.21	60.0	306.	59694. 0.	2000.	51.87 0.	49.4	1.005 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
1.62	80.0	408.	59592. 0.	2000.	51.87 0.	49.4	1.007 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
2.02	100.0	510.	59490. 0.	2000.	51.87 0.	49.4	1.009 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
2.43	120.0	612.	59388. 0.	2000.	51.87 0.	49.4	1.010 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
2.83	140.0	714.	59286. 0.	2000.	51.87 0.	49.4	1.012 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
3.24	160.0	815.	59185. 0.	2000.	51.87 0.	49.4	1.014 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
3.64	180.0	917.	59083. 0.	2000.	51.87 0.	49.4	1.016 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
4.05	200.0	1019.	58981. 0.	2000.	51.87 0.	49.4	1.017 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
4.45	220.0	1121.	58879. 0.	2000.	51.87 0.	49.4	1.019 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
4.85	240.0	1223.	58777. 0.	2000.	51.87 0.	49.4	1.021 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
5.26	260.0	1325.	58675. 0.	2000.	51.87 0.	49.4	1.023 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
5.66	280.0	1427.	58573. 0.	2000.	51.87 0.	49.4	1.024 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0
6.07	300.0	1529.	58471. 0.	2000.	51.87 0.	49.4	1.026 0.	1.000	609. 0.0	0.48	0.196212	0.0 -90.0	0.0

CRUISE AT 50.0 KNOTS TAS

TIME (HOURS)	RANGE (N.MI)	FUEL USED (POUNDS)	WEIGHT (POUNDS)	ALT. (FEET)	TEMP (DEG.F)	TAS (KT)	B.R.	PEHF	BHPR	ETAP	NMPP	R.N.	CL

HULL LIFT (POUNDS)	WING LIFT (POUNDS)	ROTOR LIFT (POUNDS)	ALPHA H (DEG)	ALPHA D/L (DEG)

INSUFFICIENT POWER AVAILABLE FOR CRUISE(CRUS2)A

CRUISE AT CRUISE POWER

TIME (HOURS)	RANGE (N.MI)	FUEL USED (POUNDS)	WEIGHT (POUNDS)	ALT. (FEET)	TEMP (DEG.F)	TAS (KT)	B.R.	PEHF	BHPR	ETAP	NMPP	R.N.	CL

HULL LIFT	WING LIFT	ROTOR LIFT	ALPHA H	ALPHA D/L

		(POUNDS)		(POUNDS)		(POUNDS)		(DEG)			(DEG)	
6.07	300.0	1529.	58471.	2000.	51.87	49.4	1.026	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.17	305.0	1554.	58446.	2000.	51.87	49.4	1.027	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.27	310.0	1580.	58420.	2000.	51.87	49.4	1.027	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.37	315.0	1605.	58395.	2000.	51.87	49.4	1.027	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.47	320.0	1631.	58369.	2000.	51.87	49.4	1.028	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.57	325.0	1656.	58344.	2000.	51.87	49.4	1.028	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.68	330.0	1682.	58318.	2000.	51.87	49.4	1.029	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.78	335.0	1707.	58293.	2000.	51.87	49.4	1.029	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.88	340.0	1733.	58267.	2000.	51.87	49.4	1.030	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
6.98	345.0	1758.	58242.	2000.	51.87	49.4	1.030	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	
7.08	350.0	1784.	58216.	2000.	51.87	49.4	1.031	1.000	609.	0.48	0.196212	0.0	0.0
			0.		0.		0.		0.0			-90.0	

TAKEOFF, HOVER, OR LAND AT PEHF = 0.010 FOR 2.000 HRS.

TIME HOURS	RANGE (N.MI.)	FUEL USED (POUNDS)	WEIGHT (POUNDS)	ALT. FEET	TEMP (DEG.F)	TAS (KTS)	B.R.	PEHF	BHPR	FM	T/W	THRUST (POUNDS)	FUEL FLOW (LB/HR)
7.08	350.0	1784.	58216.	2000.	51.87	0.0	1.031	0.010	7.	0.70	0.004	-60000.	113.
7.28	350.0	1806.	58194.	2000.	51.87	0.0	1.031	0.010	7.	0.70	0.004	-60000.	113.
7.48	350.0	1829.	58171.	2000.	51.87	0.0	1.031	0.010	7.	0.70	0.004	-60000.	113.
7.68	350.0	1852.	58148.	2000.	51.87	0.0	1.032	0.010	7.	0.70	0.004	-60000.	113.
7.88	350.0	1874.	58126.	2000.	51.87	0.0	1.032	0.010	7.	0.70	0.004	-60000.	113.
8.08	350.0	1897.	58103.	2000.	51.87	0.0	1.033	0.010	7.	0.70	0.004	-60000.	113.
8.28	350.0	1920.	58080.	2000.	51.87	0.0	1.033	0.010	7.	0.70	0.004	-60000.	113.
8.48	350.0	1942.	58058.	2000.	51.87	0.0	1.033	0.010	7.	0.70	0.004	-60000.	113.
8.68	350.0	1965.	58035.	2000.	51.87	0.0	1.034	0.010	7.	0.70	0.004	-60000.	113.
8.88	350.0	1988.	58012.	2000.	51.87	0.0	1.034	0.010	7.	0.70	0.004	-60000.	113.
9.08	350.0	2010.	57990.	2000.	51.87	0.0	1.035	0.010	7.	0.70	0.004	-60000.	113.
9.08	350.0	2010.	57990.	2000.	51.87	0.0	1.035	0.010	7.	0.70	0.004	-60000.	113.

MISSION FUEL REQUIRED = 2010.
RESERVE FUEL REQUIRED = 0.
TOTAL FUEL REQUIRED = 2010.

7.0 COMPLETE PROGRAM LISTING (FORTRAN)

This section contains a complete FORTRAN listing of the CASCOMP computer program.

C2

C-2

```
F88-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED XREF,LIST,LET,OVLY
          DEFAULT OPTION(S) USED - SIZE=(100352,14336)
IEW0000     INCLUDE SYSOBJ
IEW0000     INCLUDE SYSLMOD1(B8100)
IEW0000     ENTRY MAIN
IEW0000     NAME B8100(R)
IEW0201
****B8100    NOW REPLACED IN DATA SET
```

CROSS REFERENCE TABLE

CONTROL SECTION NAME	ORIGIN	LENGTH	SEG. NO.	ENTRY NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
DRAG	00	41E	1								
ROTPOW	420	FD8	1								
ENGSZ	13F8	922	1								
LIFT	1D20	816	1								
AERO	2538	8BA	1								
MAIN	2DF8	2342	1								
CRUS1	5140	BD8	1								
CRUS3	5D18	C60	1								
SIZTR	6978	11DA	1								
THRUST	7B58	CAC	1								
WGHTR	8808	DD6	1								
ATMOS	95E0	316	1								
BIV	98F8	58C	1								
ODD	9E88	814	1								
RTPOW	A6A0	26C	1								
CHGPL	A910	2C4	1								
CRUS2	ABD8	A66	1								
FACTR	B640	126	1								
LOADER	B768	85A	1								
POWER	BFC8	8DC	1								
PRFRM	C8A8	570	1								
TABLE	CE18	46E	1								
TOHL	D288	C06	1								
TRALT	DE90	26C	1								
XLINT	E100	474	1								
XLKUP	E578	854	1								
IHCSLOG	EDD0	186	1								
				ALOG10	EDD0	ALOG	EDE8				
IHCSSCN	EF88	1D9	1								
				COS	EF88	SIN	EFA0				
IHCFEXIT	F168	1C	1								
				EXIT	F168						
IHCSEXP	F188	192	1								
				EXP	F188						
IHCFRXPR	F320	183	1								
				FRXPR#	F320						
IHCNAMEL	F4A8	AC3	1								
				FRDNL#	F4A8	FWRNL#	FAAC				

NAME	ORIGIN	LENGTH	SEG. NO.
IHCECOMH	FF70	F61	1
IHCCOMH2	10ED8	65D	1
IHCSSQRT	11538	145	1
IHCFCVTH	11680	119D	1
IHCEFNTH	12820	542	1
IHCSATN2	12D68	1CB	1
IHCSTNCT	12F38	266	1
IHCEFIOS	131A0	F28	1
IHCFIOS2	140C8	52E	1
IHCERRM	145F8	5D4	1
IHCUOPT	14BD0	300	1
IHCETRCH	14ED0	28E	1
IHCUATBL	15160	638	1
$BLANKCOM	15798	9DC	1

NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
IBCOM#	FF70	FDIOCS#	1002C	INTSWTCH	10EB6		
SEQDASD	11250						
SQRT	11538						
ADCON#	11680	FCVAOUTP	1172A	FCVLOUTP	117BA	FCVZOUTP	1190A
FCVIOUTP	11CB8	FCVEOUTP	121BA	FCVCOUTP	123D4	INT6SWCH	1268B
ARITH#	12820	ADJSWTCH	12BBC				
ATAN2	12D68	ATAN	12D7C				
COTAN	12F38	TAN	12F4E	QTAN	130C0		
FIOCS#	131A0	FIOCSBEP	131A6				
ERRMON	145F8	IHCERRE	14610				
IHCTRCH	14ED0	ERRTRA	14ED8				

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.
100			1	104	XLINT	XLINT	1
108	IBCOM#	IHCECOMH	1	11C			1
12C			1	13C			1
14C			1	15C			1
16C			1	17C			1
18C			1	1AC			1
1BC			1	1CC			1
1DC			1	9C			1
A0			1	A4			1
910			1	914	RTPOW	RTPOW	1
918	XLINT	XLINT	1	91C	XLKUP	XLKUP	1
920	ERXPR#	IHCERXPR	1	924	COS	IHCSSCN	1
928	SIN	IHCSSCN	1	92C	ATAN	IHCSATN2	1
930	SQRT	IHCSSQRT	1	934	IBCOM#	IHCECOMH	1
9A8			1	9B8			1
9D8			1	9E8			1
9F8			1	A08			1
A18			1	A28			1
A58			1	A68			1
A78			1	680	RTPOW	RTPOW	1
6B4	RTPOW	RTPOW	1	6C8			1
6CC	RTPOW	RTPOW	1	6D4	RTPOW	RTPOW	1

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.
6DC	RTPOW	RTPOW	1	6F8	RTPOW	RTPOW	1
700	RTPOW	RTPOW	1	708	RTPOW	RTPOW	1
724	RTPOW	RTPOW	1	728	RTPOW	RTPOW	1
72C			1	25E0			1
25E4			1	25F4			1
26D0			1	26D4	XLINT	XLINT	1
26D8	FRXPR#	IHCFRXPR	1	26DC	ALOG10	IHCSLOG	1
26F4			1	2704			1
2714			1	2724			1
2734			1	2744			1
2754			1	2764			1
2774			1	2784			1
2794			1	27A4			1
27B4			1	27C4			1
1618			1	161C	DRAG	DRAG	1
1620	ATMOS	ATMOS	1	1624	FACTR	FACTR	1
1628	XLINT	XLINT	1	162C	IBCOM#	IHCECOMH	1
1630	ROTPOW	ROTPOW	1	1634	THRUST	THRUST	1
1648			1	16B8			1
16E8			1	16F8			1
1708			1	1728			1
1738			1	1758			1
152C			1	1530			1
1534			1	1538			1
153C			1	1540			1
154C			1	1550			1
1560			1	15c8			1
156C			1	1570			1
1E30			1	1E44			1
1E54			1	1E64			1
1E74			1	1E84			1
1F74			1	1F84			1
2884			1	26E0	IBCOM#	IHCECOMH	1
262C			1	4608			1
460C			1	4610	ODD	ODD	1
4614	AERO	AERO	1	4618	ATMOS	ATMOS	1
461C	ENGSZ	ENGSZ	1	4620	PRFRM	PRFRM	1
4624	SIZTR	SIZTR	1	4628	WGHTR	WGHTR	1
462C	FRXPR#	IHCFRXPR	1	4630	IBCOM#	IHCECOMH	1
4634	LOADER	LOADER	1	44FC			1
4504			1	450d			1
5588			1	558C	DRAG	DRAG	1
5590	LIFT	LIFT	1	5594	ATMOS	ATMOS	1
5598	FACTR	FACTR	1	559C	POWER	POWER	1
55A0	XLINT	XLINT	1	55A4	FWRNL#	IHCNAMEL	1
55A8	IBCOM#	IHCECOMH	1	55AC	ROTPOW	ROTPOW	1
55E0			1	55F0			1
5600			1	5610			1
5620			1	5630			1
5640			1	5650			1
5660			1	5670			1
5680			1	5690			1

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.
56A0			1	56F0			1
5700			1	5710			1
5720			1	5730			1
5484			1	548C			1
5490			1	5494			1
5498			1	54A4			1
54A8			1	54AC			1
54B8			1	54C0			1
54C4			1	54C8			1
54CC			1	54D0			1
607C			1	6084			1
6088			1	608C			1
6090			1	609C			1
60A0			1	60A4			1
6080			1	6088			1
60BC			1	60C0			1
60C4			1	60C8			1
6178			1	617C	DRAG	DRAG	1
62E0			1	6180	LIFT	LIFT	1
6184	ATMOS	ATMOS	1	6188	FACTR	FACTR	1
618C	POWER	POWER	1	6190	XLINT	XLINT	1
6194	FWRNL#	IHCNAMEL	1	6198	IBCOM#	IHCECOMH	1
619C	ROTPOW	ROTPOW	1	61F0			1
6200			1	6210			1
6220			1	6230			1
6240			1	6250			1
6260			1	6270			1
6280			1	6290			1
62A0			1	6280			1
62F0			1	6300			1
6310			1	6EB4			1
6EC4			1	6ED4			1
6EE4			1	6EF4			1
6F04			1	6F14			1
6F34			1	6F44			1
6F64			1	6F84			1
6F94			1	6FA4			1
6FB4			1	6FC4			1
6FD4			1	6FE4			1
6FF4			1	7004			1
7014			1	7024			1
7034			1	7084			1
7094			1	69FC			1
6D24			1	6A50			1
6A54			1	6A5C			1
6A60			1	6C40			1
6C44	ATMOS	ATMOS	1	6C48	ALOG	IHCSLOG	1
6C4C	SQRT	IHCSSQRT	1	6C50	FRXPR#	IHCFRXPR	1
6C64			1	6C74			1
6C84			1	6C94			1
6CA4			1	6CB4			1
6CC4			1	6CD4			1

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.
6CE4			1	6CF4			1
6D04			1	6D14			1
6D34			1	6D44			1
6D54			1	6D64			1
6D74			1	6D84			1
6D94			1	6DA4			1
6E54			1	6E64			1
6E74			1	7ED8			1
7EDC	ODD	ODD	1	7EE0	BIV	BIV	1
7EE4	TABLE	TABLE	1	7EE8	XLINT	XLINT	1
7EEC	FRXPR#	IHCFRXPR	1	7EF0	COTAN	IHCSTNCT	1
7EF4	TAN	IHCSTNCT	1	7EF8	COS	IHCSSCN	1
7EFC	SIN	IHCSSCN	1	7F00	ATAN	IHCSATN2	1
7F04	SQRT	IHCSSQRT	1	7F08	FWRNL#	IHCNAMEL	1
7F0C	IBCOM#	IHCECOMH	1	7F20			1
7F30			1	7F40			1
7F50			1	7F60			1
7F70			1	8070			1
7CB0			1	7CB4			1
7CB8	ODD	ODD	1	7CBC	ODD	ODD	1
7CC0	ODD	ODD	1	7CD4			1
7CD8			1	7CDC	ODD	ODD	1
7CE0	ODD	ODD	1	7CE4	ODD	ODD	1
7D14	ODD	ODD	1	7D18	ODD	ODD	1
7D1C			1	7D40	ODD	ODD	1
7D44	ODD	ODD	1	7D48			1
7D68	ODD	ODD	1	7D6C	ODD	ODD	1
7D70			1	7D7C	ODD	ODD	1
7D80	ODD	ODD	1	7D84			1
7DA8	ODD	ODD	1	7DAC			1
7DC8	ODD	ODD	1	7DCC			1
7DE8			1	8A20			1
8A24	ALOG10	IHCSLOG	1	8A28	SQRT	IHCSSQRT	1
8A2C	FRXPR#	IHCFRXPR	1	8A40			1
8A50			1	8A60			1
8A70			1	8A80			1
8A90			1	8AA0			1
8AB0			1	8AC0			1
8AD0			1	8AE0			1
8AF0			1	8B00			1
8B10			1	8B20			1
8B30			1	8B40			1
8B50			1	8B60			1
8B70			1	8B80			1
8B90			1	8BA0			1
8BB0			1	8BC0			1
8BD0			1	8BE0			1
8BF0			1	8C00			1
8C10			1	8C20			1
8C30			1	8C40			1
8C50			1	8C60			1
8C70			1	8C80			1

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.
8C90			1	88AC			1
88BC			1	88DC			1
88E4			1	88E8			1
8904			1	890C			1
8910			1	9688			1
968C	EXP	IHCSEXP	1	96C0	FRXPR#	IHCFRXPR	1
96C4	SQRT	IHCSSQRT	1	96D8			1
96E8			1	96F8			1
9708			1	9718			1
9728			1	9738			1
9748			1	9758			1
9768			1	9654			1
9668			1	AA88			1
AA8C	IBCOM#	IHCECOMH	1	AFD8			1
AFDC	DRAG	DRAG	1	AFE0	LIFT	LIFT	1
AFE4	ATMOS	ATMOS	1	AFE8	CRUS1	CRUS1	1
AFEC	FACTR	FACTR	1	AFF0	POWER	POWER	1
AFF4	XLINT	XLINT	1	AFF8	IBCOM#	IHCECOMH	1
AFFC	ROTPOW	ROTPOW	1	B020			1
B030			1	B040			1
B050			1	B060			1
B070			1	B080			1
B090			1	B0A0			1
B0B0			1	B0C0			1
B0D0			1	B0E0			1
B0F0			1	B100			1
B110			1	B120			1
AEF4			1	AEFC			1
AF00			1	AF04			1
AF08			1	AF14			1
AF18			1	AF1C			1
AF28			1	AF30			1
AF34			1	AF38			1
AF3C			1	AF40			1
BCB8	EXIT	IHCFEXIT	1	BCBC	IBCOM#	IHCECOMH	1
C290			1	C294	FACTR	FACTR	1
C298	TABLE	TABLE	1	C29C	XLINT	XLINT	1
C2A0	SQRT	IHCSSQRT	1	C2A4	FRXPR#	IHCFRXPR	1
C2A8	FWRNI#	IHCNAMEL	1	C2AC	IBCOM#	IHCECOMH	1
C2B0	THRUST	THRUST	1	C2C4			1
C2D4			1	C2E4			1
C2F4			1	C304			1
C314			1	C324			1
C334			1	C344			1
C354			1	C364			1
C394			1	C0E4			1
C0E8			1	C0F8			1
C100			1	C104			1
C108			1	C10C			1
C11C			1	C120			1
C124			1	C128			1
CAF0			1	CAF4	TOHL	TOHL	1

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.
CAF8	CHGPL	CHGPL	1	CAFC	CRUS1	CRUS1	1
CB00	CRUS2	CRUS2	1	CB04	CRUS3	CRUS3	1
CB08	TRALT	TRALT	1	CB0C	IBCOM#	IHCECOMH	1
CA90			1	D618			1
D61C	ATMOS	ATMOS	1	D620	FACTR	FACTR	1
D624	POWER	POWER	1	D628	XLINT	XLINT	1
D62C	SQRT	IHCSSQRT	1	D630	FRXPR#	IHCFRXPR	1
D634	IBCOM#	IHCECOMH	1	D638	ROTPOW	ROTPOW	1
D64C			1	D65C			1
D66C			1	D67C			1
D68C			1	D69C			1
D6AC			1	D6BC			1
D6CC			1	D6DC			1
D6EC			1	D6FC			1
D70C			1	D71C			1
D72C			1	D73C			1
D74C			1	D77C			1
D78C			1	D7CC			1
D524			1	D528			1
D538			1	D540			1
D544			1	D548			1
D55C			1	D560			1
D564			1	DFE8			1
DFEC	IBCOM#	IHCECOMH	1	E330	IBCOM#	IHCECOMH	1
EA10	BIV	BIV	1	EA2C	IBCOM#	IHCECOMH	1
EEF8	IBCOM#	IHCECOMH	1	EF34	IHCERRM	IHCERRM	1
F088	IBCOM#	IHCECOMH	1	F0FC	IHCERRM	IHCERRM	1
F180	IBCOM#	IHCECOMH	1	F290	IBCOM#	IHCECOMH	1
F28C	IHCERRM	IHCERRM	1	F430	IBCOM#	IHCECOMH	1
F434	IHCERRM	IHCERRM	1	F428	ALOG	IHCSLOG	1
F42C	EXP	IHCSEXP	1	FD3C	IBCOM#	IHCECOMH	1
FD44	ADCON#	IHCFCVTH	1	FD40	FIOCS#	IHCEFIOS	1
FE28	IHCERRM	IHCERRM	1	1002C	SEQDASD	IHCCOMH2	1
10DBC	ADCON#	IHCFCVTH	1	10DB4	FIOCS#	IHCEFIOS	1
10DC0	ARITH#	IHCEFNTH	1	10DE0	ADJSWTCH	IHCEFNTH	1
10DDC	IHCUOPT	IHCUOPT	1	10DC4	FCVEOUTP	IHCFCVTH	1
10DC8	FCVLOUTP	IHCFCVTH	1	10DCC	FCVIOUTP	IHCFCVTH	1
10DD0	FCVCOUTP	IHCFCVTH	1	10DD4	FCVAOUTP	IHCFCVTH	1
10DD8	FCVZOUTP	IHCFCVTH	1	10D68	IHCERRE	IHCERRM	1
10D94	IHCCOMH2	IHCCOMH2	1	10D98	IHCERRM	IHCERRM	1
10D6C	IHCCOMH2	IHCCOMH2	1	10D70	IHCCOMH2	IHCCOMH2	1
10D74	IHCCOMH2	IHCCOMH2	1	10D78	IHCCOMH2	IHCCOMH2	1
11175	IHCECOMH	IHCECOMH	1	11178	IHCECOMH	IHCECOMH	1
10F20	IHCERRM	IHCERRM	1	10F1C	IBCOM#	IHCECOMH	1
11395	IHCECOMH	IHCECOMH	1	113A5	IHCECOMH	IHCECOMH	1
113B5	IHCECOMH	IHCECOMH	1	11608	IBCOM#	IHCECOMH	1
11630	IHCERRM	IHCERRM	1	1267C	IBCOM#	IHCECOMH	1
12678	IHCERRM	IHCERRM	1	12C0C	IBCOM#	IHCECOMH	1
12C10	INTSWTCH	IHCECOMH	1	12BB8	INT6SWCH	IHCFCVTH	1
12BB4	IHCUOPT	IHCUOPT	1	12C18	ADCON#	IHCFCVTH	1
12C14	FIOCS#	IHCEFIOS	1	12C84	IHCERRM	IHCERRM	1
12EA8	IBCOM#	IHCECOMH	1	12EF4	IHCERRM	IHCERRM	1

LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.	LOCATION	REFERS TO SYMBOL	IN CONTROL SECTION	SEG. NO.
130C4	IBCOM#	IHCECOMH	1	130D8	IHCERRM	IHCERRM	1
13308	IHCERRM	IHCERRM	1	1330C	IHCFIOS2	IHCFIOS2	1
13F18	IHCUATBL	IHCUATBL	1	13F24	IBCOM#	IHCECOMH	1
13F39	IHCFIOS2	IHCFIOS2	1	13F50	IHCFIOS2	IHCFIOS2	1
140C1	IHCFIOS2	IHCFIOS2	1	14BBC	IHCUOPT	IHCUOPT	1
14BC0	IBCOM#	IHCECOMH	1	14BC4	IHCTRCH	IHCETRCH	1
14BC8	FIOCSBEP	IHCEFIOS	1	15044	IBCOM#	IHCECOMH	1
15048	ADCON#	IHCFCVTH	1	1504C	FIOCSBEP	IHCEFIOS	1

ENTRY ADDRESS 2DF8
TOTAL LENGTH 16178

DIAGNOSTIC MESSAGE DIRECTORY

IEW0201 WARNING - OVERLAY STRUCTURE CONTAINS ONLY ONE SEGMENT -- OVERLAY OPTION CANCELED.

```
         COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
 ISN 0002                 SUBROUTINE AERO                                                    00010000
                C**** MEMBER NAME 881AERO                                                    00020000
                C     PAGE 1    INPUT   LOC 0001 THRU 0050                                   00030000
 ISN 0003             COMMON   OPTIND   ,FLLIND   ,DYLIND   ,ORGIND   ,OSWIND   ,00040000
                     1FIXIND   ,RCMIND   ,PFFIND   ,ETAIND   ,WC       ,XLBWO    ,00050000
                     2XLRLA    ,VGBCWH   ,XLGC     ,HMAXD    ,RHCRHO   ,VMC      ,00060000
                     3EMLF     ,CK1      ,EELWF    ,CKFF     ,VDIVE    ,HCC      ,00070000
                     4RCO      ,TOC      ,GAP1(5)  ,SGTIND(12),ELHLOA  ,ELVLOA   ,00080000
                     5GAP2(6)                                                        00090000
                C     PAGE 2    INPUT   LOC 0051 THRU 0100                                   00100000
 ISN 0004             COMMON   AR       ,WS       ,TCR      ,TCT      ,SLM      ,00110000
                     1ARHT     ,TCHT     ,VEARH    ,SLMH     ,ARVT     ,TCVT     ,00120000
                     2VBARV    ,SLMVT    ,ELCN     ,ELDT     ,ELDOA    ,DLSWSH   ,00130000
                     3DSWET    ,DLVLHL   ,DVCL     ,DBYLCA   ,ENR      ,WVA      ,00140000
                     4DAM1     ,DAM2     ,EMR      ,DAM3     ,CLEYE    ,THETMR   ,00150000
                     5XC       ,XMR      ,TVCMR    ,VT       ,CTSIGH   ,TVW      ,00160000
                     6HES      ,TINY     ,ETAP2    ,ETAP4N   ,TBEM5(5) ,TB8AP4(5),00170000
                     7GAP3                                                           00180000
                C     PAGE 3    INPUT   LOC 0101 THRU 140                                    00190000
 ISN 0005             COMMON   DAM4     ,ENF      ,ETAT     ,HC       ,VC       ,00200000
                     1ATMIY    ,CDVT     ,CCHT     ,DAM5     ,DLTAFE   ,FEDRAG   ,00210000
                     2EXPDRG   ,CDC      ,CLALPH   ,CKVT     ,CKHT     ,CKF      ,00220000
                     3CKW      ,RELI     ,TCLN     ,TBCL1(8) ,TBCDWI(8) ,GAP4(4)  00230000
                C     PAGE 4 INPUT  LOC 141 THRU 200   WEIGHT DATA                           00240000
 ISN 0006             COMMON   WFE      ,WFUL     ,DELWFC   ,DELWP    ,DELWST   ,00250000
                     1SKCC     ,SKRC     ,SKSC     ,SKFW     ,SKTM     ,SKRCA    ,00260000
                     2SKSCA    ,SKMC     ,SKAC     ,SKHL     ,SKENV1   ,SKENV2   ,00270000
                     3SKGB1    ,SKGB2    ,SKBLNT   ,SKBAL    ,SKLG     ,SKWW     ,00280000
                     4ELF      ,RMI      ,SKWP     ,SKHT     ,SKVT     ,SKPRB    ,00290000
                     5SKRBF    ,SKPF     ,SKAMD    ,SKAR     ,SKPA     ,SKVTAR   ,00300000
                     6SKPDS    ,SKPCSZ   ,SKT      ,SKFS     ,SKPEI    ,SKPES    ,00310000
                     7SK1      ,SK2      ,DK3      ,DK4      ,SK5      ,SK6      ,00320000
                     8SK7      ,SK8      ,SK9      ,SK10     ,SK11     ,SK12     ,00330000
                     9SK13     ,SK14     ,SK15     ,PLIN     ,GAP5(3)              00340000
                C     PACE 5  INPUT  LOC 201 THRU 300                                        00350000
 ISN 0007             COMMON   TCLIND(5) ,XTGTA2(5) ,TIN2(5)  ,TWTW(5)  ,PFET2(5)  ,00360000
                     1DELTH(5)  ,STH(5)    ,CRSINC(5) ,XTGTA4(5) ,TIN4(5)  ,VIN(5)   ,00370000
                     2DELR(5)   ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)  ,00380000
                     3FFIN(5)   ,GAP6(10)                                            00390000
                C     PAGE 6   INPUT  LOC 301 THRU 400                                       00400000
 ISN 0008             COMMON   CYCFRL   ,FF       ,SK3      ,SK4      ,TBH1(5)  ,00410000
                     1TBTO(5)  ,TBH2(5)  ,TBCRP(5) ,TBSFC(8) ,TBPOW(8) ,GAP7(60)  00420000
                C     WORKING COMMON                                                         00430000
 ISN 0009             COMMON  ALFDES,ALFCL,ALFF,AMU,                                         00440000
                     1        BFPA,BFFR,BHPSLF,BHT,BLP,BR,BS,BVT,                            00450000
                     2 CBARF,CEARFT,CEARVT,CEARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO00460000
                     3,CPTOT,CRT,CTP,CV,CX,CLDES,CE,                                         00470000
                     4 DELRTH,DELTA,DF,DSPLMT,        ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP,    00480000
                     5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4           00490000
 ISN 0010             COMMON GAMD11(3,15),GLF,GMDC1(16),H,                                   00500000
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                     7 ICRUS,INCCRU,INCCRG,INCCYL,INDETA,INDFIX,INDHUL,INDOPT,INCOSW,    00510CCC
                     8 INDPOW,INDPRF,INCRDM,IPFINT                                       00520000
ISN 0011              COMMON LTHL,NCCFF,NCXP,,CWE,FEHF,PI,Q,RHC,REALJ,RHPMR,R,RN         00530CCC
ISN 0012              COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST, 00540000
                     1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC         00550000
ISN 0013              COMMON T,TAF,TCEAR,THETA,TMAX,TMP,TPRCP,TR,ULF,VGASB,VGASR,VHL,V    00560000
ISN 0014              COMMON W,WBAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,             00570000
                     1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR 00580000
                     2,WRC,WRCA,WSC,WSCA,WST,WTN,WVT,WW,WPAYLO,WAC,WENV                  00590000
ISN 0015              COMMON XLALB,XLE,XLBF,XLFL,XLR,XLW,YLS2,TOVW                        00600000
ISN 0016              COMMON DMF,SIGMR,AF,EFFP,SEE                                        00610001
ISN 0017        1002  FORMAT(22X,34HTHIS ERROR IS IN THE CL,CDWI TABLE)                  00620000
ISN 0018              NAMELIST /NAERC/ FEW,FEFL,FEVT,FEHT,FETOT,SWTT,CBARF,COV,SA5,     00630000
                     1          SA6,SA7,SWWET,SEE,CLTAFE,FNWRE,FNFRE,FNVRE,FNHRE,       00640000
                     2          FHLRE,REW,REF,REVT,REHT,REHL,CKKW,SWETH                 00650000
ISN 0019              NTCL = TCLN + 0.1                                                   00660000
ISN 0020              FEW=0.0                                                             00670000
ISN 0021              IF (INDCYL.EQ.1.OR.INDCYL.EQ.3) GO TO 3                             00680000
ISN 0023              IF (INDHUL.GT.1) GO TO 2                                            00690000
ISN 0025              REW=RELI*CBARW                                                      00700000
ISN 0026              ARGG=1.0E-07*REW                                                    00710000
ISN 0027              FNWRE=(1.0+ALOG10(ARGG)/7.0)**(-2.6)                                00720000
ISN 0028              CDWI=XLINT(TBCL1,TBCDWI,0.,NTCL,M)                                  00730000
ISN 0029              IF (M.NE.0) WRITE(6,1002)                                           00740000
ISN 0031              FEW=CKW*CDWI*SW*FNWRE                                               00750000
ISN 0032              IF (INDCSW.EQ.0) GO TO 3                                            00760000
ISN 0034              SEE=0.94-0.045*AR**0.68                                             00770000
ISN 0035              GO TO 3                                                             00780000
ISN 0036            2 SWWET=0.                                                            00790000
ISN 0037            3 IF (INDCRG.EQ.2) GO TO 15                                         00800000
ISN 0039              REF=RELI*ELCA                                                       00810000
ISN 0040              REVT=RELI*CBARVT                                                    00820000
ISN 0041              REHT=RELI*CBARHT                                                    00830000
ISN 0042              ARGG=1.0E-07*REF                                                    00840000
ISN 0043              FNFRE=(1.0+ALOG10(ARGG)/7.0)**(-2.6)                                00850000
ISN 0044              ARGG=1.0E-07*REVT                                                   00850100
ISN 0045              IF(ARGG.GT.0.) GO TO 17                                             00850200
ISN 0047              FNVRE=0.                                                            00850300
ISN 0048              GO TO 18                                                            00860000
ISN 0049           17 FNVRE=(1.0+ALOG10(ARGG)/7.0)**(-2.6)                                00870000
ISN 0050           18 ARGG=1.0E-07*REHT                                                   00870100
ISN 0051              IF(ARGG.GT.0.) GO TO 19                                             00870200
ISN 0053              FNHRE=0.                                                            00870300
ISN 0054              GO TO 20                                                            00880000
ISN 0055           19 FNHRE=(1.0+ALOG10(ARGG)/7.0)**(-2.6)                                00890000
ISN 0056           20 IF(INDHUL.GT.1) GO TO 4                                             00900000
ISN 0058              FEHL=0.00287*CKF*SWETH*FNFRE                                        00910000
ISN 0059              GO TO 5                                                             00910100
ISN 0060            4 IF (INDHUL.EQ.2) GO TO 16                                           00920000
ISN 0062              REHL=RELI*CBARW                                                     00930000
ISN 0063              ARGG=1.0E-07*REHL                                                   00940000
ISN 0064              FHLRE=(1.0+ALOG10(ARGG)/7.0)**(-2.6)                                00950000
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ISN 0065          CDWI=XLINT(TBCL1,TBCDWI,C.,NTCL,M)                    00950000
ISN 0066          IF (M.NE.C) WRITE(6,1CC2)                             00960000
ISN 0068          FEHL=CKW*CDWI*SW*FHLRE                                00970000
ISN 0069          FEW=0.C                                               00980000
ISN 0070          SEE=0.C                                               00990000
ISN 0071          SWWET=0.C                                             01000000
ISN 0072        5 FEVT=CKVT*CDVT*SVT*FNVFE                              01010000
ISN 0073          FEHT=CKHT*CDHT*SHT*FNHFE                              01020000
ISN 0074          FETOT=FEHL+FEW+FEVT+FEHT+DLTAFE                       01030000
ISN 0075        6 SWTT=SWETH+SWWET+SVTW+SHTW                            01040000
ISN 0076          CBARF=FETOT/SWTT                                      01050000
ISN 0077          CDV=FETOT/VHL**C.6667                                 01060000
ISN 0078          IF (INDHUL.GT.1) GO TO 8                              01070000
ISN 0080          SA5=FEHL+FEVT+FEHT+DLTAFE                             01080000
ISN 0081          IF.(INDCYL.EQ.2.OR.INDCYL.EQ.4) GO TO 7               01090000
ISN 0083          SA6=0.C                                               01100000
ISN 0084          SA7=0.C                                               01110000
ISN 0085          GO TO 15                                              01120000
ISN 0086        7 SA6=CKW*FNWRE                                         01130000
ISN 0087          SA7=1/(PI*SEE*AR)                                     01140000
ISN 0088          GO TO 15                                              01150000
ISN 0089        8 SA7=0.C                                               01160000
ISN 0090          IF (INDCRG.EQ.2) GO TO 9                              01170000
ISN 0092          SA5=FEVT+FEHT+DLTAFE                                  01180000
ISN 0093          SA6=CKW*FHLRE                                         01190000
ISN 0094          IF(INDHUL.EQ.3) SA6=0.C                               01190100
ISN 0096          IF(INDHUL.EQ.3) SA5=FEHL+FEVT+FEHT+DLTAFE             01190200
ISN 0098          GO TO 15                                              01200000
ISN 0099       16 REHL=RELI*ELCA                                        01210000
ISN 0100          ARGG=1.0E-07*REHL                                     01220000
ISN 0101          FHLRE=(1.C+ALOG10(ARGG)/7.0)**(-2.6)                  01230000
ISN 0102          FEHL=0.CC287*CKF*SWETH*FHLRE                          01240000
ISN 0103          FEW=0.0                                               01250000
ISN 0104          SEE=0.0                                               01260000
ISN 0105          SWWET=C.C                                             01270000
ISN 0106          GO TO 5                                               01280000
ISN 0107        9 CDWI=XLINT(TBCL1,TBCDWI,C.,NTCL,M)                    01210000
ISN 0108          IF (M.NE.C) WRITE(6,10C2)                             01220000
ISN 0110          CKKW=FEHL/(CDWI*SW)                                   01230000
ISN 0111          SA5=0.C                                               01240000
ISN 0112          SA6=CKKW                                              01250000
ISN 0113          SA7=0.C                                               01260000
ISN 0114       15 CONTINUE                                              01270000
ISN 0115          RETURN                                                01290000
ISN 0116          END                                                   01300000
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NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.
H		C	R*4	N.R.	M	FA		I*4	000158	Q		C	R*4	N.R.	R		C	R*4	N.R.
T		C	R*4	N.R.	V		C	R*4	N.R.	W		C	R*4	N.R.	AF		C	R*4	N.R.
AR	F	C	R*4	0000C8	BR		C	R*4	N.R.	BS		C	R*4	N.R.	CB		C	R*4	N.R.
CV		C	R*4	N.R.	CX		C	R*4	N.R.	DH		C	R*4	N.R.	EN		C	R*4	N.R.
FF		C	R*4	N.R.	FM		C	R*4	N.R.	FP		C	R*4	N.R.	HC		C	R*4	N.R.
PI	F	C	R*4	000864	RN		C	R*4	N.R.	SA		C	R*4	N.R.	ST		C	R*4	N.R.
SW	F	C	R*4	0008C8	TR		C	R*4	N.R.	VC		C	R*4	N.R.	VT		C	R*4	N.R.
WE		C	R*4	N.R.	WF		C	R*4	N.R.	WO		C	R*4	N.R.	WS		C	R*4	N.R.
WW		C	R*4	N.R.	XC		C	R*4	N.R.	AMU		C	R*4	N.R.	BHT		C	R*4	N.R.
BLP		C	R*4	N.R.	BMR		C	R*4	N.R.	BVT		C	R*4	N.R.	CCP		C	R*4	N.R.
CCT		C	R*4	N.R.	CDC		C	R*4	N.R.	CDV	S	C	R*4	000688	CKF	F	C	R*4	0001D0
CKW	F	C	R*4	0001D4	CK1		C	R*4	N.R.	CLW		C	R*4	N.R.	CRT		C	R*4	N.R.
CTP		C	R*4	N.R.	CK3		C	R*4	N.R.	DK4		C	R*4	N.R.	DMR		C	R*4	N.R.
ELC		C	R*4	N.R.	ELF		C	R*4	N.R.	ELN		C	R*4	N.R.	ELT		C	R*4	N.R.
ENP		C	R*4	N.R.	ENR		C	R*4	N.R.	FEH		C	R*4	N.R.	FET		C	R*4	N.R.
FEW	SF	C	R*4	0007C8	GLF		C	R*4	N.R.	HES		C	R*4	N.R.	HCC		C	R*4	N.R.
OWE		C	R*4	N.R.	REF	SF		R*4	00015C	REW	SF		R*4	000160	RHO		C	R*4	N.R.
RMI		C	R*4	N.R.	RCC		C	R*4	N.R.	SA5	S	C	R*4	000884	SA6	S	C	R*4	000888
SA7	S	C	R*4	00088C	SEE	SF	C	R*4	0009D8	SFC		C	R*4	N.R.	SHT	F	C	R*4	00089C
SKT		C	R*4	N.R.	SK1		C	R*4	N.R.	SK2		C	R*4	N.R.	SK3		C	R*4	N.R.
SK4		C	R*4	N.R.	SK5		C	R*4	N.R.	SK6		C	R*4	N.R.	SK7		C	R*4	N.R.
SK8		C	R*4	N.R.	SK9		C	R*4	N.R.	SLM		C	R*4	N.R.	STH		C	R*4	N.R.
SVT	F	C	R*4	000890	TAF		C	R*4	N.R.	TCR		C	R*4	N.R.	TCT		C	R*4	N.R.
TMP		C	R*4	N.R.	TOO		C	R*4	N.R.	TVW		C	R*4	N.R.	ULF		C	R*4	N.R.
VHL	F	C	R*4	0009CC	VIN		C	R*4	N.R.	VMO		C	R*4	N.R.	WAC		C	R*4	N.R.
WCC		C	R*4	N.R.	WEP		C	R*4	N.R.	WES		C	R*4	N.R.	WFC		C	R*4	N.R.
WFE		C	R*4	N.R.	WFR		C	R*4	N.R.	WFS		C	R*4	N.R.	WFW		C	R*4	N.R.
WHL		C	R*4	N.R.	WHT		C	R*4	N.R.	WLG		C	R*4	N.R.	WMC		C	R*4	N.R.
WPC		C	R*4	N.R.	WPH		C	R*4	N.R.	WRC		C	R*4	N.R.	WSC		C	R*4	N.R.
WST		C	R*4	N.R.	WTM		C	R*4	N.R.	WVA		C	R*4	N.R.	WVT		C	R*4	N.R.
XLB		C	R*4	N.R.	XLR		C	R*4	N.R.	XLW		C	R*4	N.R.	XMR		C	R*4	N.R.
AERO			R*4	000164	ALFR		C	R*4	N.R.	ARGG	SFA		R*4	000168	ARHT		C	R*4	N.R.
ARVT		C	R*4	N.R.	BHPA		C	R*4	N.R.	BHPP		C	R*4	N.R.	BHPR		C	R*4	N.R.
CDHT	F	C	R*4	0001AC	CDVT	F	C	R*4	0001A8	CDWI	SF		R*4	00016C	CKFF		C	R*4	N.R.
CKHT	F	C	R*4	0001CC	CKKW	SF		R*4	00017C	CKVT	F	C	R*4	0001C8	CAM1		C	R*4	N.R.
CAM2		C	R*4	N.R.	CAM3		C	R*4	N.R.	CAM4		C	R*4	N.R.	CAM5		C	R*4	N.R.
DELR		C	R*4	N.R.	DVOL		C	R*4	N.R.	ELDN		C	R*4	N.R.	ELDT		C	R*4	N.R.
ELHT		C	R*4	N.R.	ELCA	F	C	R*4	0006D8	ELVT		C	R*4	N.R.	EMLF		C	R*4	N.R.
ETAP		C	R*4	N.R.	ETAT		C	R*4	N.R.	FEHI		C	R*4	N.R.	FEHL	SF	C	R*4	0006F4
FEHT	SF	C	R*4	0006F8	FEVT	SF	C	R*4	000704	FEWH		C	R*4	N.R.	FEWI		C	R*4	N.R.
GAP1		C	R*4	N.R.	GAP2		C	R*4	N.R.	GAP3		C	R*4	N.R.	GAP4		C	R*4	N.R.
GAP5		C	R*4	N.R.	GAP6		C	R*4	N.R.	GAP7		C	R*4	N.R.	HFIN		C	R*4	N.R.
LTHL		C	I*4	N.R.	NTCL	SFA		I*4	000174	PEHF		C	R*4	N.R.	PLIN		C	R*4	N.R.
REHL	SF		R*4	000178	FEHT	SF		R*4	00017C	RELI	F	C	R*4	0001D8	REVT	SF		R*4	000180
RMAX		C	R*4	N.R.	SHPA		C	R*4	N.R.	SHPR		C	R*4	N.R.	SHTE		C	R*4	N.R.
SHTW	F	C	R*4	0008A4	SKAC		C	R*4	N.R.	SKAR		C	R*4	N.R.	SKCC		C	R*4	N.R.
SKFS		C	R*4	N.R.	SKFW		C	R*4	N.R.	SKHL		C	R*4	N.R.	SKHT		C	R*4	N.R.
SKLG		C	R*4	N.R.	SKMC		C	R*4	N.R.	SKPA		C	R*4	N.R.	SKPH		C	R*4	N.R.
SKRC		C	R*4	N.R.	SKSC		C	R*4	N.R.	SKTM		C	R*4	N.R.	SKVT		C	R*4	N.R.
SKWP		C	R*4	N.R.	SKWW		C	R*4	N.R.	SK10		C	R*4	N.R.	SK11		C	R*4	N.R.

SK12		C	R*4	N.R.	SK13		C	R*4	N.R.	SK14		C	R*4	N.R.	SK15		C	R*4	N.R.
SLMH		C	R*4	N.R.	STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.	SVTW	F	C	R*4	0008C4
SWTT	SF	C	R*4	0008C4	TBH1		C	R*4	N.R.	TBH2		C	R*4	N.R.	TETC		C	R*4	N.R.
TCHT		C	R*4	N.R.	TCLA	F	C	R*4	0001DC	TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.
TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.	TMAX		C	R*4	N.R.	TCVW		C	R*4	N.R.
TWTW		C	R*4	N.R.	WEAL		C	R*4	N.R.	WENV		C	R*4	N.R.	WFUL		C	R*4	N.R.
WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.	WPRB		C	R*4	N.R.
WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.	WRCA		C	R*4	N.R.	WSCA		C	R*4	N.R.
XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.	XLHL		C	R*4	N.R.	YLS2		C	R*4	N.R.
ALFDL		C	R*4	N.R.	ATMIY		C	R*4	N.R.	CBARF	S	C	R*4	000670	CBARW	F	C	R*4	00067C
CLDES		C	R*4	N.R.	CLEYE		C	R*4	N.R.	CPIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.
CPPAR		C	R*4	N.R.	CPPRC		C	R*4	N.R.	CPTOT		C	R*4	N.R.	DELTA		C	R*4	N.R.
DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.	DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.
ELDOA		C	R*4	N.R.	ENPCR		C	R*4	N.R.	ETAP2		C	R*4	N.R.	ETAP4		C	R*4	N.R.
FETOT	SF	C	R*4	0007C0	FHLRE	SF		R*4	000184	FNFRE	SF		R*4	000188	FNHRE	SF		R*4	0C018C
FNVRE	SF		R*4	000190	FNWRE	SF		R*4	000194	GMDDI		C	R*4	N.R.	HMAXD		C	R*4	N.R.
ICRUS		C	I*4	N.R.	NAERO				000000	NOCPP		C	I*4	N.R.	NCXPJ		C	I*4	N.R.
PFET2		C	R*4	N.R.	REALJ		C	R*4	N.R.	RHPMR		C	R*4	N.R.	SIGMA		C	R*4	N.R.
SIGMR		C	R*4	N.R.	SKAMD		C	R*4	N.R.	SKBAL		C	R*4	N.R.	SKGB1		C	R*4	N.R.
SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.	SKPES		C	R*4	N.R.
SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.	SKRCA		C	R*4	N.R.	SKSCA		C	R*4	N.R.
SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH	F	C	R*4	0008CC	SWEXP		C	R*4	N.R.
SWWET	SF	C	R*4	0008C8	S2RHC		C	R*4	N.R.	TBCLI	FA	C	R*4	00C1E0	TBCRP		C	R*4	N.R.
TBEM5		C	R*4	N.R.	TBPCW		C	R*4	N.R.	TBSFC		C	R*4	N.R.	TCBAR		C	R*4	N.R.
THETA		C	R*4	N.R.	TFFCP		C	R*4	N.R.	TVCMR		C	R*4	N.R.	VBARH		C	R*4	N.R.
VBARV		C	R*4	N.R.	VCIVE		C	R*4	N.R.	VGASB		C	R*4	N.R.	VGASR		C	R*4	N.R.
WPAYL		C	R*4	N.R.	WFSTR		C	R*4	N.R.	XLALB		C	R*4	N.R.	XLBWO		C	R*4	N.R.
XLINT	F XF		R*4	000CCC	XLRLA		C	R*4	N.R.	FRXPR#		XF	R*4	000000	ALCG10		XF	R*4	000000
ALFDES		C	R*4	N.R.	EHPSUP		C	R*4	N.R.	CBARHT	F	C	R*4	00C674	CBARVT	F	C	R*4	0C0678
CBYLOA		C	R*4	N.R.	CLALPH		C	R*4	N.R.	CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.
CYCPRL		C	R*4	N.R.	DELFCR		C	R*4	N.R.	DELRTH		C	R*4	N.R.	DELWFC		C	R*4	N.R.
DELWPL		C	R*4	N.R.	DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.	DLTAFE	F	C	R*4	0001B4
DLVLHL		C	R*4	N.R.	DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.
ELHLOA		C	R*4	N.R.	ELVLCA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4N		C	R*4	N.R.
EXPDRG		C	R*4	N.R.	FECRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	GAMDII		C	R*4	N.R.
HULIND		C	R*4	N.R.	IECCM#	F	XF	I*4	000000	INDCRU		C	I*4	N.R.	INDDRG		C	I*4	000824
INDDYL		C	I*4	000828	INDETA		C	I*4	N.R.	INDFIX		C	I*4	N.R.	INDFUL		C	I*4	000834
INDOPT		C	I*4	N.R.	INDCSW		C	I*4	00083C	INDPOW		C	I*4	N.R.	INDPRP		C	I*4	N.R.
INDRDM		C	I*4	N.R.	IPRINT		C	I*4	N.R.	OPTIND		C	R*4	N.R.	OSWIND		C	R*4	N.R.
PRPIND		C	R*4	N.R.	RCMIND		C	R*4	N.R.	RHORHO		C	R*4	N.R.	SGTIND		C	R*4	N.R.
SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.
SKVTAR		C	R*4	N.R.	SSIGMA		C	R*4	N.R.	STHETA		C	R*4	N.R.	TBCDWI	FA	C	R*4	0C0200
TB8AP4		C	R*4	N.R.	THETMR		C	R*4	N.R.	TOLIND		C	R*4	N.R.	VGBOVH		C	R*4	N.R.
WBALNT		C	R*4	N.R.	WFAYLO		C	R*4	N.R.	XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.

OPTIND	R*4	N.R.	HULINC	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXINC	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	HC	R*4	N.R.	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBCVH	R*4	N.R.	XLGC	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VNC	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	HOO	R*4	N.R.	ROO	R*4	N.R.
TCC	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	00C0C8	HS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCFT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELCT	R*4	N.R.	ELCOA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	N.R.
HVA	R*4	N.R.	CAM1	R*4	N.R.	CAM2	R*4	N.R.	BMR	R*4	N.R.
CAM3	R*4	N.R.	CLEVE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVH	R*4	N.R.	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEMS	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
CAM4	R*4	N.R.	ENF	R*4	N.R.	ETAT	R*4	N.R.	HC	R*4	N.R.
VC	R*4	N.R.	ATMIX	R*4	N.R.	CDVT	R*4	0001A8	CDHT	R*4	0C01AC
CAM5	R*4	N.R.	CLTAFE	R*4	0C01B4	FEDRAG	R*4	N.R.	EXPORG	R*4	N.R.
CFC	R*4	N.R.	CLALFH	R*4	N.R.	CKVT	R*4	0001C8	CKHT	R*4	0001CC
CKF	R*4	0001C0	CKH	R*4	0001D4	RELI	R*4	0001D8	TCLN	R*4	0001DC
TBCLI	R*4	0001E0	TBCDWI	R*4	0C0200	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFLL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKHH	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKHP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKREF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLINC	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWH	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTCTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWFL	R*4	N.R.	STPH	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPFL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPCH	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHFR	R*4	N.R.	BHFSLF	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
BR	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	000670
CBARFT	R*4	000674	CBARVT	R*4	000678	CBARW	R*4	00067C	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	000688	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPALC	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.

CFT	R*4	N.R.	CTF	R*4	N.R.	CV	R*4	N.R.	CX	R*4	N.R.
CLDES	R*4	N.R.	CE	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DH	R*4	N.R.	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELOA	R*4	0006D8	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	N.R.	ETAF	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	0006F4	FEHT	R*4	0006F8	FET	R*4	N.R.	FETOT	R*4	000700
FEVT	R*4	0007C4	FEW	R*4	000708	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FN	R*4	N.R.	FF	R*4	N.R.	ETAP4	R*4	N.R.	GAMD11	R*4	N.R.
GLF	R*4	N.R.	GMOC1	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRL	I*4	N.R.	INDCRG	I*4	000824	INDDYL	I*4	000828	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDHUL	I*4	000834	INDOPT	I*4	N.R.	INDOSW	I*4	00083C
INDPCW	I*4	N.R.	INDPRP	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.
LTHL	I*4	N.R.	NCCPF	I*4	N.R.	NOXPJ	I*4	N.R.	OWE	R*4	N.R.
PEFF	R*4	N.R.	PI	R*4	000864	Q	R*4	N.R.	RHO	R*4	N.R.
REALJ	R*4	N.R.	RHPMF	R*4	N.R.	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	N.R.	SA5	R*4	000884	SA6	R*4	000888	SA7	R*4	00088C
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	000890
SHTE	R*4	N.R.	SHTW	R*4	0008A4	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	000888
SVTE	R*4	N.R.	SVTW	R*4	0008C4	SW	R*4	0008C8	SWETH	R*4	0008CC
SWEXP	R*4	N.R.	SWTT	R*4	0008D4	SWWET	R*4	0008D8	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.
TMAX	R*4	N.R.	TMP	R*4	N.R.	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	000890
V	R*4	N.R.	W	R*4	N.R.	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPCS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRP	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLEH	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	N.R.	TCVW	R*4	N.R.	DMR	R*4	N.R.	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPF	R*4	N.R.	SEE	R*4	000908			

2	0CC4A6	3	CC04AE	17	0C0542	18	00057A
19	CCC59E	2C	CCC5CC	4	CC05F0	5	000698
6	0CC6D8 NR	7	CCC75C	8	C00776	16	0007D2
9	CCC83E	15	CCC856				

CPTIONS IN EFFECT NAME= MAIN,CPT=C2,LINECNT=54,SIZE=0000K,

CPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 115 ,PROGRAM SIZE = 2234

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 99K BYTES OF CORE NOT USED

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      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
            C     ENTRY MAIN    CASCOMP                                                  00010000
            C**** MEMBER NAME 881AMAIN                                                   00020000
            C      PAGE 1    INPUT    LOC 0001 THRU 0050                                00030000
ISN 0002              COMMON      OPTIND     ,HULIND     ,DYLIND     ,DRGIND     ,OSWIND     ,00040000
                     1FIXIND     ,RDMIND     ,PRPIND     ,ETAIND     ,WO         ,XLBWO      ,00050000
                     2XLRLA      ,VGBOVH     ,XLGD       ,HMAXD      ,RHORHO     ,VMO        ,00060000
                     3EMLF       ,CK1        ,DELWF      ,CKFF       ,VDIVE      ,HOO        ,00070000
                     4ROO        ,TOO        ,GAP1(5)    ,SGTIND(12),ELHLOA      ,ELVLOA     ,00080000
                     5GAP2(6)                                                                00090000
            C      PAGE 2    INPUT    LOC 0051 THRU 0100                                00100000
ISN 0003              COMMON      AR          ,WS         ,TCR        ,TCT        ,SLM        ,00110000
                     1ARHT       ,TCHT       ,VBARH      ,SLMH       ,ARVT       ,TCVT       ,00120000
                     2VBARV      ,SLMVT      ,ELDN       ,ELDT       ,ELDOA      ,DLSWSH     ,00130000
                     3DSWET      ,DLVLHL     ,DVOL       ,CBYLOA     ,ENR        ,WVA        ,00140000
                     4DAM1       ,DAM2       ,BMR        ,DAM3       ,CLEYE      ,THETMR     ,00150000
                     5XC         ,XMR        ,TVCMR      ,VT         ,CTSIGH     ,TVW        ,00160000
                     6HES        ,TINY       ,ETAP2      ,ETAP4N     ,TBEM5(5)   ,TB8AP4(5)  ,00170000
                     7GAP3                                                                   00180000
            C      PAGE 3    INPUT   LOC 0101 THRU 140                                 00190000
ISN 0004              COMMON      DAM4        ,ENP        ,ETAT       ,HC         ,VC         ,00200000
                     1ATMIY      ,CDVT       ,CDHT       ,DAM5       ,DLTAFE     ,FEDRAG     ,00210000
                     2EXPDRG     ,CDC        ,CLALPH     ,CKVT       ,CKHT       ,CKF        ,00220000
                     3CKW        ,RELI       ,TCLN       ,TBCL1(8)   ,TBCDWI(8)  ,GAP4(4)    ,00230000
            C      PAGE 4. INPUT   LOC 141 THRU 200  WEIGHT DATA                           00240000
ISN 0005              COMMON      WFE         ,WFUL       ,DELWFC     ,DELWP      ,DELWST     ,00250000
                     1SKCC       ,SKRC       ,SKSC       ,SKFW       ,SKTM       ,SKRCA      ,00260000
                     2SKSCA      ,SKMC       ,SKAC       ,SKHL       ,SKENV1     ,SKENV2     ,00270000
                     3SKGB1      ,SKGB2      ,SKBLNT     ,SKBAL      ,SKLG       ,SKWW       ,00280000
                     4ELF        ,RMI        ,SKWP       ,SKHT       ,SKVT       ,SKPRB      ,00290000
                     5SKRBF      ,SKPH       ,SKAMD      ,SKAR       ,SKPA       ,SKVTAR     ,00300000
                     6SKPDS      ,SKPDSZ     ,SKT        ,SKFS       ,SKPEI      ,SKPES      ,00310000
                     7SK1        ,SK2        ,DK3        ,DK4        ,SK5        ,SK6        ,00320000
                     8SK7        ,SK8        ,SK9        ,SK10       ,SK11       ,SK12       ,00330000
                     9SK13       ,SK14       ,SK15       ,PLIN       ,GAP5(3)                00340000
            C      PAGE 5   INPUT   LOC 201 THRU 300                                       00350000
ISN 0006              COMMON      TOLIND(5) ,XTGTA2(5) ,TIN2(5)    ,TWTW(5)    ,PFET2(5)   ,00360000
                     1DELTH(5)   ,STH(5)     ,CRSIND(5) ,XTGTA4(5) ,TIN4(5)    ,VIN(5)     ,00370000
                     2DELR(5)    ,RMAX(5)    ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)    ,00380000
                     3HFIN(5)    ,GAP6(10)                                                   00390000
            C      PAGE 6   INPUT   LOC 301 THRU 400                                       00400000
ISN 0007              COMMON      CYCPRL      ,FF         ,SK3        ,SK4        ,TBH1(5)    ,00410000
                     1TBTO(5)    ,TBH2(5)    ,TBCRP(5)   ,TBSFC(8)   ,TBPOW(8)   ,GAP7(60)   00420000
            C      WORKING COMMON                                                          00430000
ISN 0008              COMMON   ALFDES,ALFDL,ALFR,AMU,                                     00440000
                     1         BHPA,BHPR,BHPSUP,BHT,BLP,BR,BS,BVT,                        00450000
                     2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO00460000
                     3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,                                     00470000
                     4 DELRTH,DELTA,DH,DSPLMT,      ELC,ELHT,ELN,ELOA,ELT,ELVT,EN,ETAP,  00480000
                     5 FEH,FEHI,FEHL,FEHT,FET,FETOT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4       00490000
ISN 0009              COMMON GAMD11(3,15),GLF,GMDD1(16),H,                                00500000
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                7 ICRUS,INDCRU,INDDRG,INDDYL,INDETA,INDFIX,INDHUL,INDOPT,INDOSW,    00510000
                8 INDPOW,INDPRP,INDRDM,IPRINT                                      00520000
ISN 0010          COMMON LTHL,NOCPP,NOXPJ,OWE,REHF,PI,Q,RHO,REALJ,RHPMR,R,RN       00530000
ISN 0011          COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHO        00550000
ISN 0012          COMMON T,TAF,TCBAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0013          COMMON W,WBAL,WBALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,           00570000
                1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR00580000
                2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                 00590000
ISN 0014          COMMON XLALB,XLB,XLBH,XLHL,XLR,XLW,YLS2,TOVW                      00600000
ISN 0015          COMMON DMR,SIGMR,AF,BHPP,SEE                                      00600001
ISN 0016          COMMON /ODD/ A0(3,15),A1(3,15),A2(3,15),BB0(16),BB1(16),BB2(16),  00600010
                1       RJ3(10),CPOW3(10),ETAI3(10,10),RJ4(10),CPOW4(10),         00600020
                2       ETAI4(10,10),AMACH(3),CLLL(15),CLGAM(16),CPOW33(20),      00600030
                3       CTI3(20),CTI4(20)                                         00600040
ISN 0017          DIMENSION DATA(1)                                                 00600100
ISN 0018          EQUIVALENCE (DATA(1),OPTIND)                                      00610000
                  INITIALIZE DATA                                                   00620000
ISN 0019          DO 1  I=1,400                                                     00630000
ISN 0020        1 DATA(I) = 0.                                                      00640000
ISN 0021          DO 2 I=179,193                                                    00650000
ISN 0022        2 DATA(I) = 1.                                                      00660000
ISN 0023          PI = 3.14159                                                      00670000
ISN 0024          DATA(11)  = 1.                                                    00680000
ISN 0025          DATA(13)  = 1.                                                    00690000
ISN 0026          DATA(16)  = 1.                                                    00700000
ISN 0027          DATA(18)  = 1.                                                    00710000
ISN 0028          DATA(19)  = 1.                                                    00720000
ISN 0029          DATA(21)  = 1.                                                    00730000
ISN 0030          DATA(109) = 1.                                                    00740000
ISN 0031          DATA(161) = 1.                                                    00750000
ISN 0032        3 CALL LOADER (DATA,1)                                              00760000
ISN 0033          INDOPT=OPTIND+0.1                                                 00770000
ISN 0034          INDHUL=HULIND+0.1                                                 00780000
ISN 0035          INDDYL=DYLIND+0.1                                                 00790000
ISN 0036          INDDRG=DRGIND+0.1                                                 00800000
ISN 0037          INDOSW=OSWIND+0.1                                                 00810000
ISN 0038          INDFIX=FIXIND+0.1                                                 00820000
ISN 0039          INDRDM=RDMIND+0.1                                                 00830000
ISN 0040          INDPRP=PRPIND+0.1                                                 00840000
ISN 0041          INDETA=ETAIND+0.1                                                 00850000
ISN 0042          WPAYL=PLIN                                                        00850100
ISN 0043          DMR=DAM1                                                          00850200
ISN 0044          SIGMR=DAM2                                                        00850300
ISN 0045          AF=DAM3                                                           00850400
ISN 0046          BHPP=DAM4                                                         00850500
ISN 0047          SEE=DAM5                                                          00850600
ISN 0048          IF(INDDYL.GT.2)GO TO 4                                            00860000
ISN 0050          IF(INDETA.EQ.0)GO TO 4                                            00870000
ISN 0052          DO 69 I=1,16                                                      00880000
ISN 0053          GMODI(I) = BB0(I) + CLEYE*(BB1(I) + CLEYE * BB2(I))               00890000
ISN 0054       69 CONTINUE                                                          00900000
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ISN 0055          DO 77 J = 1,3                                                  00910000
ISN 0056          DO 78 K = 1,15                                                 00920000
ISN 0057          GAMD11(J,K) = A0(J,K) + CLEYE * ( A1(J,K) + CLEYE * A2(J,K))   00930000
ISN 0058       78 CONTINUE                                                       00930100
ISN 0059       77 CONTINUE                                                       00940000
ISN 0060        4 IF(INDOPT.EQ.0) GO TO 5                                        00950000
ISN 0062          IF(INDOPT.EQ.1) RETURN                                        00960000
ISN 0064          GO TO 6                                                       00970000
ISN 0065        5 CALL SIZTR                                                    00980000
ISN 0066          CALL AERO                                                     00990000
ISN 0067          CALL ENGSZ                                                    01000000
ISN 0068          IPRINT=0                                                      01010000
ISN 0069          CALL PRFRM                                                    01020000
ISN 0070          CALL WGHTR                                                    01030000
ISN 0071          WRITE(6,2015)                                                 01030100
ISN 0072          IF(INDHUL.EQ.1)WRITE(6,2003)                                  01040000
ISN 0074       2003 FORMAT(10X,'HULIND = 1     CONVENTIONAL  HULL'//)           01050000
ISN 0075       2015 FORMAT(1H1,10X,'***  DIMENSIONAL DATA',//)                  01070000
ISN 0076          IF(INDHUL.EQ.1)WRITE(6,2001)WO,DSPLMT,ELOA,ELN,ELT,DH,VHL,VGASR,SW01080000
                 1ETH,CV,CB                                                     01090000
ISN 0078       2001 FORMAT(10X,'GROSS WEIGHT  =    ',F10.0,'  POUNDS'//        01100000
                 1       10X,'*** HULL'/                                        01110000
                 2       20X,'DISPLACEMENT',12X,'DSPLMT',3X,F10.0,4X,'POUNDS'/  01120000
                 3       20X,'LENGTH(OVERALL)',9X,'ELOA',9X,F7.1,3X,'FEET'/     01130000
                 4       20X,'LENGTH(NOSE)',12X,'ELN',11X,F7.1,3X,'FEET'/       01140000
                 5       20X,'LENGTH(TAIL)',12X,'ELT',11X,F7.1,3X,'FEET'/       01150000
                 6       20X,'DIAMETER',    16X,'DH', 12X,F7.1,3X,'FEET'/       01160000
                 7       20X,'VOLUME(HULL)',12X,'VHL',5X,F12.0,4X,'CUBIC FEET'/ 01170000
                 8       20X,'VOLUME(GAS) ',12X,'VGASR',2X,F12.0,4X,'CUBIC FEET'/01180000
                 9       20X,'WETTED AREA',13X,'SF',6X,F11.0,4X,'SQUARE FEET'/  01190000
                 A       20X,'PRISMATIC COEFFICIENT   CV',15X,F6.2, /           01200000
                 8       20X,'CENTER OF BUOYANCY      CB',14X,F6.1, /           01210000
                 C       10X,'* * * * * * * * * * * * * * * * * * * * * * * * * C1220000
                 D* * * * * * * *'/)                                            01230000
ISN 0079          IF(INDDYL.EQ.1.OR.INDDYL.EQ.3) GO TO 2222                     01240000
ISN 0081          ALFDD=ALFDES*57.2957795                                       01240100
ISN 0082          IF(INDHUL.EQ.1)WRITE(6,2002)AR,SW,BS,CBARW,SLM,CLDES,ALFDD    01250000
ISN 0084       2002 FORMAT(10X,'*** WING'/                                      01260000
                 1       20X,'ASPECT RATIO',12X,'AR',14X,F6.2/                  01270000
                 2       20X,'AREA',20X,'SW',11X,F8.1,3X,'SQUARE FEET'/         01280000
                 3       20X,'SPAN',20X,'BW',12X,F8.2,2X,'FEET'/                01290000
                 4       20X,'MEAN CHORD',14X,'CBARW',10X,F7.2,'  FEET'/        01300000
                 5        20X,'TAPER RATIO',13X,'LAMBDA',12X,F6.3/              01310000
                 6        20X,'DESIGN LIFT COEFFICIENT',2X,'CLDES',12X,F6.3/    01320000
                 7        20X,'DESIGN ANGLE OF ATTACK',3X,'ALFDES',11X,F6.3,' DEG'/101320100
                80X,'* * * * * * * * * * * * * * * * * * * * * * * * * * * * * 01320200
                 9* * * *'/)                                                    01320300
ISN 0085       2222 IF(INDHUL.EQ.2) WRITE(6,2004)                               01330000
ISN 0087       2004 FORMAT(10X,'HULIND = 2    LIFTING HULL'//)                 01340000
ISN 0088          IF (INDHUL.EQ.3) WRITE(6,2019)                                01340100
ISN 0090       2019 FORMAT(10X,'HULIND = 3  LIFTING HULL (ELLIPTICAL PLANFORM)'//) 01340200
ISN 0091          IF (INDHUL.EQ.4) WRITE(6,2020)                                01340300
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ISN 0093      2020 FORMAT(10X,'HULIND = 4  LIFTING HULL (CIRCULAR PLANFORM)'//)      01340400
ISN 0094           IF(INDHUL.GT.1) WRITE(6,2005)WD,DSPLMT,ELOA,TMAX,AR,BS,TCR,SLM,VHL01350000
                  1,VGASR,SW,SWETH,CLDES,ALFDD,CB                                   01360000
ISN 0096      2005 FORMAT(10X,'GROSS WEIGHT  =  ',F10.0,2X,'POUNDS'//10X,'*** HULL'/ 01370000
                  1 20X,'DISPLACEMENT       DSPLMT',  2X,F10.0,6X,'POUNDS'/         01380000
                  2 20X,'LENGTH(OVERALL)    ELOA  ',  6X,F7.1 ,5X,'FEET'/           01390000
                  3 20X,'MAXIMUM THICKNESS  TMAX  ',  7X,F6.1 ,5X,'FEET'/           01400000
                  4 20X,'ASPECT RATIO       AR    ',  8X,F6.2/                      01410000
                  5 20X,'SPAN               BS    ',  6X,F7.1 ,5X,'FEET'/           01420000
                  6 20X,'THICKNESS/CHORD    TCR   ',  9X,F6.3/                      01430000
                  7 20X,'TAPER RATIO        LAMBDA',  9X,F6.3/                      01440000
                  8 20X,'VOLUME(HULL)       VHL   ',     F12.0,6X,'CUBIC  FEET'/    01450000
                  9 20X,'VOLUME(GAS)        VGASR ',     F12.0,6X,'CUBIC  FEET'/    01460000
                  A 20X,'PLANFORM AREA      SW    ',  1X,F11.0,6X,'SQUARE FEET'/    01470000
                  B 20X,'WETTED AREA        SWETH ',  1X,F11.0,6X,'SQUARE FEET'/    01480000
                  C 20X,'DESIGN LIFT COEFFICIENT',1X,'CLDES',2X,F6.3/               01490000
                  D 20X,'DESIGN ANGLE OF ATTACK',2X,'ALFDES',1X,F6.3,' DEG'/        01500000
                  E 20X,'CENTER OF BUOYANCY CB    ',  7X,F6.1 ,5X,'FEET'/10X,' * * * *01501000
                  F * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *'/)  01502000
ISN 0097           WRITE(6,2006)ARHT,SHT,BHT,CBARHT,SLMH                            01510000
ISN 0098      2006 FORMAT(10X,'*** HORIZONTAL TAIL'/                                01520000
                  1 20X,'ASPECT RATIO',12X,'ARHT',12X,   F6.2/                      01530000
                  2 20X,'AREA',        20X,'SHT', 10X,   F8.1,3X,'SQUARE FEET'/     01540000
                  3 20X,'SPAN',        20X,'BHT', 11X,   F8.2,2X,'FEET'/            01550000
                  4 20X,'MEAN CHORD',  14X,'CBARHT',9X,  F7.2,2X,'FEET'/            01560000
                  5 20X,'TAPER RATIO', 13X,'SLMH', 13X,  F6.3/10X,'* * * * * * * * * 01570000
                  6* * * * * * * * * * * * * * * * * * * * * * * * * * * * *'//)    01580000
ISN 0099           WRITE(6,2007)ARVT,SVT,BVT,CBARVT,SLMVT                           01590000
ISN 0100      2007 FORMAT(10X,'*** VERTICAL TAIL'/                                  01600000
                  1 20X,'ASPECT RATIO',12X,'ARVT',  12X, F6.2/                      01610000
                  2 20X,'AREA',        20X,'SVT',   10X, F8.1,3X,'SQUARE FEET'/     01620000
                  3 20X,'SPAN',        20X,'BVT',   11X, F8.2,2X,'FEET'/            01630000
                  4 20X,'MEAN CHORD',  14X,'CBARVT', 9X, F7.2,2X,'FEET'/            01640000
                  5 20X,'TAPER RATIO', 13X,'SLMVT', 13X, F6.3/10X,'* * * * * * * * * 01650000
                  6* * * * * * * * * * * * * * * * * * * * * * * * * * * * *'//)    01660000
ISN 0101           IF(INDDYL.LE.2)WRITE(6,2008)DMR,AF,SIGMR,ENR,BMR,VT              01670000
ISN 0103      2008 FORMAT(10X,'*** PROPELLERS - DYLIND = 1 OR 2'//                   01680000
                  1 20X,'DIAMETER',                  21X,'DMR',  5X,F7.2,3X,'FEET'/ 01690000
                  2 20X,'ACTIVITY FACTOR PER BLADE', 4X,'AF' ,  5X,F6.0/            01700000
                  3 20X,'SOLIDITY',                  21X,'SIGMR',5X,F6.3/           01710000
                  4 20X,'NO. OF PROPELLERS',         12X,'ENR',  6X,F4.0/           01720000
                  5 20X,'NO. OF BLADES PER PROP',     7X,'BMR',  6X,F4.0/           01730000
                  6 20X,'TIP SPEED',                 20X,'VT' ,  5X,F6.0,5X,'FT/SEC'/ 01740000
                  7 10X,' * * * * * * * * * * * * * * * * * * * * * * * * * * * * *01750000
                  8 * * * * *'//)                                                   01760000
ISN 0104           IF(INDDYL.GT.2)WRITE(6,2009)DMR,SIGMR,WVA,ENR,BMR,VT             01770000
ISN 0106      2009 FORMAT(10X,'*** ROTOR(S) - DYLIND = 3 OR 4'//                    01780000
                  1 20X,'DIAMETER',                  21X,'DMR',  5X,F7.2,3X,'FEET'/ 01790000
                  2 20X,'SOLIDITY',                  21X,'SIGMR',5X,F6.3/           01800000
                  3 20X,'DISC LOADING',              17X,'WVA',  5X,F6.1,4X,'LB/SQ.FT'01810000
                  4/20X,'NO. OF ROTORS',             16X,'ENR',  6X,F4.0/           01820000
                  5 20X,'NO. OF BLADES PER ROTOR',    6X,'BMR',  6X,F4.0/           01830000
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     6 20X,'TIP SPEED',                20X,'VT',    5X,F6.0,5X,'FT/SEC'/ 01840000
     7 10X,' *********************************************** *01850000
     8 * * * * *'//)                                                      01860000
ISN 0107      WRITE(6,2010) GLF,EMLF,ULF                                  01870000
ISN 0108  2010 FORMAT(1H1,10X,'*** WEIGHTS DATA    IN LBS'/              01880000
     2 20X,'GUST      LOAD FACTOR    GLF ',15X,F7.3/                     01890000
     1 20X,'MANEUVER LOAD FACTOR    EMLF',14X,F7.3/                     01900000
     3 20X,'ULTIMATE LOAD FACTOR    ULF ',15X,F7.3//)                   01910000
ISN 0109      WPRBO = SK1 * WPRB                                          01920000
ISN 0110      WPHO  = SK2 * WPH                                           01930000
ISN 0111      WPRPO = DK3 * WPRP                                          01940000
ISN 0112      WPDSO = DK4 * WPDS                                          01950000
ISN 0113      WEPO  = SK5 * WEP                                           01960000
ISN 0114      WHLO  = SK6 * WHL                                           01970000
ISN 0115      WENVO = SK6 * WENV                                          01980000
ISN 0116      WHLT = WHLO + WENVO                                         01990000
ISN 0117      WGSBO = SK7 * WGSB                                          02000000
ISN 0118      WWO   = SK8 * WW                                            02010000
ISN 0119      WHTO  = SK9 * WHT                                           02020000
ISN 0120      WVTO  = SK10* WVT                                           02030000
ISN 0121      WLGO  = SK11* WLG                                           02040000
ISN 0122      WRCO  = SK12* WRC                                           02050000
ISN 0123      WSCO  = SK13* WSC                                           02060000
ISN 0124      WFWO  = SK14* WFW                                           02070000
ISN 0125      WPCO  = SK15* WPC                                           02080000
ISN 0126      WPFC = WCC+WRCO+WSCO+WFWO+WTM+WPCO+WBAL+WMC+WAC             02090000
ISN 0127      WFC  = WPFC + DELWFC                                        02100000
ISN 0128      WPL=WPAYL                                                   02100100
ISN 0129      WRITE(6,2011)WPRG,WPRBO,WPHO,WPRPO,WPDSO,WEPO,WPEI,WFS,DELWP,WPSTR02110000
ISN 0130  2011 FORMAT(15X,'PROPULSION GROUP'//                            02120000
     1 20X,'TOTAL MAIN ROTOR GROUP              WPRG ',F10.0/            02130000
     2 20X,'      MAIN ROTOR BLADE',17X,'SK1*WPRB',15X,F10.0/            02140000
     3 20X,'      MAIN ROTOR HUB',19X,  'SK2*WPH',16X, F10.0/            02150000
     4 20X,'PROPELLER GROUP',18X,'DK3*WPRP',8X,F10.0/                    02160000
     5 20X,'DRIVE SYSTEM',22X,   'DK4*WPDS',8X,F10.0/                    02170000
     6 20X,'ENGINES',27X,'SK5*WEP',9X,F10.0/                             02180000
     7 20X,'ENGINE INSTALLATION',15X,'WPEI',12X,F10.0/                   02190000
     8 20X,'FUEL SYSTEM',23X,'WFS',13X,F10.0/                            02200000
     9 20X,'PROPULSION GROUP WEIGHT INCREMENT DELWP' ,11X,F10.0/         02210000
     A 18X,'* TOTAL PROPULSION GROUP WEIGHT    WPSTR',31X,F10.0//)       02220000
ISN 0131      WRITE(6,2012)WHLT,WHLO,WENVO,WGSBO,WBALNT,WWC,WHTO,WVTO,WLGO,WES, 02230000
     1 DELWST,WST                                                        02240000
ISN 0132  2012 FORMAT(15X,'STRUCTURES GROUP'//                            02250000
     1 20X,'TOTAL HULL STRUCTURE WEIGHT',24X,F10.0/                      02260000
     B 30X,'HULL STRUCTURE',20X,'SK6*WHL',17X,F10.0/                     02270000
     C 30X,'HULL ENVELOPE (SKIN)',14X,'SK6*WENV',16X,F10.0/              02280000
     2 20X,'GAS CELLS',25X,                'SK7*WGSB',7X,F10.0/          02290000
     3 20X,'BALLONETS',25X,                'WBALNT'  ,9X,F10.0/          02300000
     4 20X,'WING',30X,                     'SK8*WW'  ,9X,F10.0/          02310000
     5 20X,'HORIZONTAL TAIL',19X,          'SK9 *WHT',  8X, F10.0/       02320000
     6 20X,'VERTICAL   TAIL',19X,          'SK10*WVT',  8X, F10.0/       02330000
    -7 20X,'LANDING    GEAR',19X,          'SK11*WLG',  8X, F10.0/       02340000
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     8 20X,'ENGINE  SECTION',19X,          'WES'     , 13X, F10.0/      02350000
     9 20X,'STRUCTURES WEIGHT INCREMENT',7X,'DELWST',   10X, F10.0/      02360000
     A 18X,'* TOTAL STRUCTURE WEIGHT',  12X,'WST',      33X, F10.0//)    02370000
ISN 0133      WRITE(6,2013)WPFC,WCC,WAC,WRCO,WSCO,WFWO,WTM,WPCO,WBAL,WMC,DELWFC 02380000
     1 ,WFC                                                               02390000
ISN 0134  2013 FORMAT(15X,'FLIGHT CONTROLS GROUP'//                       02400000
     1 20X,'PRIMARY FLIGHT CONTROLS',11X,'WPFC',12X,    F10.0/           02410000
     2 26X,'COCKPIT  CONTROLS',16X,'WCC',17X,           F10.0/           02420000
     C 26X,'AIRSHIP  CONTROLS',16X,'WAC',17X,F10.0/                      02430000
     3 26X,'ROTOR    CONTROLS',16X,'SK12*WRC',13X,      F10.0/           02440000
     4 26X,'ROTOR SYSTEMS CONTROLS',11X,'SK13*WSC',13X, F10.0/           02450000
     5 26X,'FIXED WING    CONTROLS',11X,'SK14*WFW',13X, F10.0/           02460000
     6 26X,'TILT MECHANISM',18X,'WTM',18X,              F10.0/           02470000
     7 26X,'PROPELLER CONTROLS',11X,'SK15*WPC',13X,     F10.0/           02480000
     8 26X,'BALLAST',26X,'WBAL',16X,                    F10.0/           02490000
     9 26X,'MISCELLANEOUS CONTROLS',11X,'WMC',18X,      F10.0/           02500000
     A 20X,'CONTROL WEIGHT INCREMENT',10X,'DELWFC',10X, F10.0/           02510000
     B 18X,'* TOTAL CONTROL WEIGHT',14X,'WFC',33X,      F10.0/ )         02520000
ISN 0135      WRITE(6,2014)WFE,WE,WFUL,OWE,WPL,WFR,WO                     02530000
ISN 0136  2014 FORMAT(18X,'* WEIGHT OF FIXED EQUIPMENT',9X,'WFE', 33X,F10.0/ 02540000
     1       18X,'* WEIGHT EMPTY',22X,              'WE',  34X,F10.0/   02550000
     2       18X,'* FIXED USEFUL LOAD',17X,         'WFUL',32X,F10.0/   02560000
     3       18X,'* OPERATING WEIGHT EMPTY',12X,    'OWE', 33X,F10.0/   02570000
     4       18X,'* PAYLOAD',28X,                   'WPL', 33X,F10.0/   02580000
     5       18X,'* FUEL',30X,                      'WFR', 33X,F10.0//  02590000
     6      16X,'*** GROSS WEIGHT',22X,             'WO',  34X,F10.0/   02600000
     710X,' * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * 02610000
     8* * * * * * * * * * * * * * * * * * *'//)                          02620000
ISN 0137      CALL ATMOS(HC,ATMIY)                                        02620100
ISN 0138      WRITE(6,2016) CYCPRL,ENP,BHPP                               02630000
ISN 0139      WRITE(6,2022) VC,HC,TMP                                     02630100
ISN 0140  2016 FORMAT(10X,'*** PROPULSION DATA'//                         02640000
     1 20X,'PROPULSION CYCLE NUMBER',29X,F10.3,5X,'WAS EMPLOYED'//       02650000
     2 20X,'TOTAL POWER FOR',2X,F5.0,2X,'ENGINE(S),( BHP * )',6X,F10.0,  02660000
     3  2X,'HORSEPOWER'//)                                               02670000
ISN 0141  2022 FORMAT(20X,'ENGINE(S) SIZED FOR CRUISE AT VC=',2X,F6.1,1X,'KNOTS,'02680000
     1 /20X,'HC=',2X,F6.0,1X,'FT, TEMPERATURE=',2X,F5.1,1X,'DEG F.'/10X,02680100
     2 ' * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *02680200
     3 * * * * * * * * * * * *'/)                                        02680300
ISN 0142      WRITE(6,2017)FETOT,SWTT,CBARF,CDV                           02690000
ISN 0143  2017 FORMAT(1HO,10X,'*** AERODYNAMICS DATA'//                   02700000
     1 20X,'TOTAL EFFECTIVE FLAT PLATE AREA',7X,'FE',11X,F10.1,7X,'SQ.FT02710000
     2'/20X,'TOTAL WETTED AREA',20X,'SWET',9X,F10.1,7X,'SQ.FT'/          02720000
     3 20X,'MEAN SKIN FRICTION COEFFICIENT',7X,'CBARF',14X,F9.6/         02730000
     4 20X,'DRAG COEFFICIENT BASED ON VOLUME',5X,'CDV',14X,F11.6//)      02740000
ISN 0144      WRITE(6,2018)FEW,FEHL,FEVT,FEHT,DLTAFE,SEE                  02750000
ISN 0145  2018 FORMAT(10X,'*** DRAG BREAKDOWN'/                           02760000
     1 20X,'WING FE',29X,'FEW',10X,F10.1,7X,'SQ.FT'/                     02770000
     2 20X,'HULL FE',29X,'FEH',10X,F10.1,7X,'SQ.FT'/                     02780000
     3 20X,'VERTICAL   TAIL FE',19X,'FEVT',9X,F10.1,7X,'SQ.FT'/          02790000
     4 20X,'HORIZONTAL TAIL FE',19X,'FEHT',9X,F10.1,7X,'SQ.FT'/          02800000
     5 20X,'INCREMENTAL     FE',19X,'DELTA FE',5X,F10.1,7X,'SQ.FT'/      02810000
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                  o 10X,'***',7X,'WING LIFT EFFICIENCY FACTOR',10X,'E',18X,F7.4/10X,  02820000
                  7' * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * C2830000
                  8* * * * * * * * * * * *'//)                                        02840000
ISN 0146            SPRO=WPL*VC/WE                                                    02840100
ISN 0147            WRITE(6,2024)SPRO                                                 02840200
ISN 0148         2024 FORMAT(20X,'SPECIFIC PRODUCTIVITY =',2X,F7.2,1X,'TON-KNOTS/TON') 02840300
ISN 0149            IPRINT=1                                                          02850000
ISN 0150            CALL PRFRM                                                        02860000
ISN 0151            GO TO 3                                                           02870000
ISN 0152          6 SA5 = DLTAFE                                                      02880000
ISN 0153            IF(INDDYL.EQ.2.OR.INDDYL.EQ.4) GO TO 7                            02890000
ISN 0155            GO TO 8                                                           02900000
ISN 0156          7 SA6 = CKW                                                         02910000
ISN 0157            SW  = WO/WS                                                       02920000
ISN 0158            IF(INDHUL.EQ.1)GO TO 9                                            02930000
ISN 0160            GO TO 8                                                           02940000
ISN 0161          9 CALL ATMOS(HC,ATMIY)                                              02950000
ISN 0162            Q = 1.42636 * RHO * VC * VC                                       02960000
ISN 0163            ALFDES = (1. - XLRLA)*(1. - XLBWO)*WO/(Q * SW * CLALPH)           02970000
ISN 0164            VHULL = XLBWO * WO/(RHORHO *VGBOVH*(0.076474 - XLGD))             02980000
ISN 0165            DENOM = PI * (0.25*ELDOA-ELDN/12. - ELDT*7./60.)*(1.+DLVLHL)      02990000
ISN 0166            DH    = ((VHULL-DVOL)/DENOM)**(1./3.)                             03000000
ISN 0167            ELOA  =  ELDOA * DH                                               03010000
ISN 0168          8 IPRINT=1                                                          03020000
ISN 0169            CALL PRFRM                                                        03030000
ISN 0170            GO TO 3                                                           03040000
ISN 0171            END                                                               03050000
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NAME	TAG		TYPE	ADD.
H		C	R*4	N.R.
Q	SF	C	R*4	000868
W		C	R*4	N.R.
A1	F	C	R*4	000084
CB	F	C	R*4	0006B8
EN		C	R*4	N.R.
HC	SFA	C	R*4	00019C
ST		C	R*4	N.R.
VT	F	C	R*4	000148
WS	F	C	R*4	0000CC
BRO	F	C	R*4	00021C
BLP		C	R*4	N.R.
CCT		C	R*4	N.R.
CKW	F	C	R*4	0001D4
CTP		C	R*4	N.R.
ELC		C	R*4	N.R.
ENP	F	C	R*4	000194
FEW	F	C	R*4	000708
OWE	F	C	R*4	00085C
RMI		C	R*4	N.R.
SA7		C	R*4	N.R.
SKT		C	R*4	N.R.
SK4		C	R*4	N.R.
SK8	F	C	R*4	0002F0
SVT	F	C	R*4	0008BC
TMP	F	C	R*4	0008F4
VHL	F	C	R*4	00090C
WCC	F	C	R*4	000920
WFE	F	C	R*4	000230
WHL	F	C	R*4	000948
WPC	F	C	R*4	00095C
WSC	F	C	R*4	000984
WVT	F	C	R*4	000994
XLW		C	R*4	N.R.
ARHT	F	C	R*4	0000DC
BHPR		C	R*4	N.R.
CKHT		C	R*4	N.R.
CTI4		C	R*4	N.R.
DAM4	F	C	R*4	000190
DVOL	F	C	R*4	000114
ELOA	SF	C	R*4	0006D8
ETAT		C	R*4	N.R.
FEVT	F	C	R*4	000704
GAP2		C	R*4	N.R.
GAP6		C	R*4	N.R.
PEHF		C	R*4	N.R.
SHPA		C	R*4	N.R.
SKAC		C	R*4	N.R.
SKFW		C	R*4	N.R.
SKMC		C	R*4	N.R.

NAME	TAG		TYPE	ADD.
I	SF		I*4	0017D8
R		C	R*4	N.R.
AF	SF	C	R*4	0009D0
A2	F	C	R*4	000168
CV	F	C	R*4	0006AC
FF		C	R*4	N.R.
PI	SF	C	R*4	000864
SW	SF	C	R*4	0008C8
WE	F	C	R*4	000924
WW	F	C	R*4	000998
BB1	F	C	R*4	00025C
BMR	F	C	R*4	00012C
CDC		C	R*4	N.R.
CK1		C	R*4	N.R.
DK3	F	C	R*4	0002DC
ELF		C	R*4	N.R.
ENR	F	C	R*4	00011C
GLF	F	C	R*4	0007D4
RHO	F	C	R*4	00086C
ROO		C	R*4	N.R.
SEE	SF	C	R*4	0009D8
SK1	F	C	R*4	0002D4
SK5	F	C	R*4	0002E4
SK9	F	C	R*4	0002F4
TAF		C	R*4	N.R.
TOO		C	R*4	N.R.
VIN		C	R*4	N.R.
WEP	F	C	R*4	000928
WFR	F	C	R*4	000938
WHT	F	C	R*4	00094C
WPH	F	C	R*4	000968
WST	F	C	R*4	00098C
WWO	SF		R*4	0017E8
XMR		C	R*4	N.R.
ARVT	F	C	R*4	0000EC
CDHT		C	R*4	N.R.
CKVT		C	R*4	N.R.
DAM1	F	C	R*4	000124
DAM5	F	C	R*4	000180
ELDN	F	C	R*4	0000FC
ELVT		C	R*4	N.R.
FEHI		C	R*4	N.R.
FEWH		C	R*4	N.R.
GAP3		C	R*4	N.R.
GAP7		C	R*4	N.R.
PLIN	F	C	R*4	000310
SHPR		C	R*4	N.R.
SKAR		C	R*4	N.R.
SKHL		C	R*4	N.R.
SKPA		C	R*4	N.R.

NAME	TAG		TYPE	ADD.
J	SF		I*4	0017DC
T		C	R*4	N.R.
AR	F	C	R*4	0000C8
BR		C	R*4	N.R.
CX		C	R*4	N.R.
FM		C	R*4	N.R.
RN		C	R*4	N.R.
TR		C	R*4	N.R.
WF		C	R*4	N.R.
XC		C	R*4	N.R.
BB2	F	C	R*4	00029C
BVT	F	C	R*4	00066C
CDV	F	C	R*4	000688
CLW		C	R*4	N.R.
DK4	F	C	R*4	0002E0
ELN	F	C	R*4	0006D4
FEH		C	R*4	N.R.
HES		C	R*4	N.R.
RJ3		C	R*4	N.R.
SA5	S	C	R*4	000884
SFC		C	R*4	N.R.
SK2	F	C	R*4	0002D8
SK6	F	C	R*4	0002E8
SLM	F	C	R*4	0000D8
TCR	F	C	R*4	0C00D0
TVW		C	R*4	N.R.
VMO		C	R*4	N.R.
WES	F	C	R*4	00092C
WFS	F	C	R*4	00093C
WLG	F	C	R*4	000950
WPL	SF		R*4	0017E4
WTM	F	C	R*4	000990
XLB		C	R*4	N.R.
AERO	SF	XF	R*4	000000
BHPA		C	R*4	N.R.
CDVT		C	R*4	N.R.
CLLL		C	R*4	N.R.
DAM2	F	C	R*4	000128
DATA	SFA	CE	R*4	000000
ELDT	F	C	R*4	000100
EMLF	F	C	R*4	000044
FEHL	F	C	R*4	0006F4
FEWI		C	R*4	N.R.
GAP4		C	R*4	N.R.
HFIN		C	R*4	N.R.
RELI		C	R*4	N.R.
SHTE		C	R*4	N.R.
SKCC		C	R*4	N.R.
SKHT		C	R*4	N.R.
SKPH		C	R*4	N.R.

NAME	TAG		TYPE	ADD.
K	SF		I*4	0017E0
V		C	R*4	N.R.
A0	F	C	R*4	000000
BS	F	C	R*4	000668
DH	SF	C	R*4	0006C4
FP		C	R*4	N.R.
SA		C	R*4	N.R.
VC	F	C	R*4	0001A0
WO	F	C	R*4	000024
AMU		C	R*4	N.R.
BHT	F	C	R*4	00065C
CCP		C	R*4	N.R.
CKF		C	R*4	N.R.
CRT		C	R*4	N.R.
DMR	SF	C	R*4	0009C8
ELT	F	C	R*4	0006DC
FET		C	R*4	N.R.
HOO		C	R*4	N.R.
RJ4		C	R*4	N.R.
SA6	S	C	R*4	000888
SHT	F	C	R*4	00089C
SK3		C	R*4	N.R.
SK7	F	C	R*4	0002EC
STH		C	R*4	N.R.
TCT		C	R*4	N.R.
ULF	F	C	R*4	000900
WAC	F	C	R*4	0009A0
WFC	SF	C	R*4	000934
WFW	F	C	R*4	000940
WMC	F	C	R*4	000954
WRC	F	C	R*4	00097C
WVA	F	C	R*4	000120
XLR		C	R*4	N.R.
ALFR		C	R*4	N.R.
BHPP	SF	C	R*4	0009D4
CKFF		C	R*4	N.R.
CTI3		C	R*4	N.R.
DAM3	F	C	R*4	000130
DELR		C	R*4	N.R.
ELHT		C	R*4	N.R.
ETAP		C	R*4	N.R.
FEHT	F	C	R*4	0006F8
GAP1		C	R*4	N.R.
GAP5		C	R*4	N.R.
LTHL		C	I*4	N.R.
RMAX		C	R*4	N.R.
SHTW		C	R*4	N.R.
SKFS		C	R*4	N.R.
SKLG		C	R*4	N.R.
SKRC		C	R*4	N.R.

SKSC		C	R*4	N.R.	SKTM		C	R*4	N.R.	SKVT		C	R*4	N.R.	SKWP		C	R*4	N.R.
SKHW		C	R*4	N.R.	SK10	F	C	R*4	0002F8	SK11	F	C	R*4	0002FC	SK12	F	C	R*4	000300
SK13	F	C	R*4	000304	SK14	F	C	R*4	000308	SK15	F	C	R*4	00030C	SLMH	F	C	R*4	0000E8
SPRO	SF		R*4	0017EC	STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.	SVTW		C	R*4	N.R.
SWTT	F	C	R*4	0008D4	TBH1		C	R*4	N.R.	TBH2		C	R*4	N.R.	TBTO		C	R*4	N.R.
TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.
TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.	TMAX	F	C	R*4	0008F0	TOVW		C	R*4	N.R.
TWTW		C	R*4	N.R.	WBAL	F	C	R*4	000918	WENV	F	C	R*4	0009A4	WEPO	SF		R*4	0017F0
WFUL	F	C	R*4	000234	WFWO	SF		R*4	0017F4	WGSB	F	C	R*4	000944	WHLO	SF		R*4	0017F8
WHLT	SF		R*4	0017FC	WHTO	SF		R*4	001800	WLGO	SF		R*4	001804	WPCO	SF		R*4	001808
WPDS	F	C	R*4	0009b0	WPEI	F	C	R*4	000964	WPFC	SF		R*4	00180C	WPHO	SF		R*4	001810
WPRB	F	C	R*4	00096C	WPRG	F	C	R*4	000970	WPRP	F	C	R*4	000974	WRCA		C	R*4	N.R.
WRCO	SF		R*4	001814	WSCA		C	R*4	N.R.	WSCO	SF		R*4	001818	WVTO	SF		R*4	00181C
XLBH		C	R*4	N.R.	XLGD	F	C	R*4	000034	XLHL		C	R*4	N.R.	YLS2		C	R*4	N.R.
ALFDD	SF		R*4	001820	ALFDL		C	R*4	N.R.	AMACH		C	R*4	N.R.	ATMIY	SFA	C	R*4	0001A4
ATMOS	SF	XF	R*4	000000	CBARF	F	C	R*4	000670	CBARW	F	C	R*4	00067C	CLDES	F	C	R*4	0006B4
CLEYE	F	C	R*4	000134	CLGAM		C	R*4	N.R.	CPIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.
CPOW3		C	R*4	N.R.	CPOW4		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPRO		C	R*4	N.R.
CPTOT		C	R*4	N.R.	DELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.
DELWP	F	C	R*4	00023C	DENOM	SF		R*4	001824	DSWET		C	R*4	N.R.	ELDOA	F	C	R*4	000104
ENGSZ	SF	XF	R*4	000000	ENPCR		C	R*4	N.R.	ETAI3		C	R*4	N.R.	ETAI4		C	R*4	N.R.
ETAP2		C	R*4	N.R.	ETAP4		C	R*4	N.R.	FETOT	F	C	R*4	000700	GMDD1	S	C	R*4	0007D8
HMAXD		C	R*4	N.R.	ICRUS		C	I*4	N.R.	NOCPP		C	I*4	N.R.	NOXPJ		C	I*4	N.R.
PFET2		C	R*4	N.R.	PRFRM	SF	XF	R*4	000000	REALJ		C	R*4	N.R.	RHPMR		C	R*4	N.R.
SIGMA		C	R*4	N.R.	SIGMR	SF	C	R*4	0009CC	SIZTR	SF	XF	R*4	000000	SKAMD		C	R*4	N.R.
SKBAL		C	R*4	N.R.	SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.
SKPEI		C	R*4	N.R.	SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.
SKRCA		C	R*4	N.R.	SKSCA		C	R*4	N.R.	SLMVT	F	C	R*4	0000F8	STMAX		C	R*4	N.R.
SWETH	F	C	R*4	0008CC	SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2RHO		C	R*4	N.R.
TBCL1		C	R*4	N.R.	TBCRP		C	R*4	N.R.	TBEM5		C	R*4	N.R.	TBPOW		C	R*4	N.R.
TBSFC		C	R*4	N.R.	TCBAR		C	R*4	N.R.	THETA		C	R*4	N.R.	TPROP		C	R*4	N.R.
TVCMR		C	R*4	N.R.	VBARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.
VGASB		C	R*4	N.R.	VGASR	F	C	R*4	000908	VHULL	SF		R*4	001828	WENVO	SF		R*4	00182C
WGHTR	SF	XF	R*4	000000	WGSBO	SF		R*4	001830	WPAYL	SF	C	R*4	000958	WPDSO	SF		R*4	001834
WPRBO	SF		R*4	001838	WPRPO	SF		R*4	00183C	WPSTR	F	C	R*4	000978	XLALB		C	R*4	N.R.
XLBWO	F	C	R*4	000028	XLRLA	F	C	R*4	00002C	FRXPR#		XF	R*4	000000	ALFDES	SF	C	R*4	000640
BHPSUP		C	R*4	N.R.	CBARHT	F	C	R*4	000674	CBARVT	F	C	R*4	000678	CBYLOA		C	R*4	N.R.
CLALPH	F	C	R*4	0001C4	CPOW33		C	R*4	N.R.	CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.
CYCPRL	F	C	R*4	000480	DELFCR		C	R*4	N.R.	DELRTH		C	R*4	N.R.	DELWFC	F	C	R*4	000238
DELWPL		C	R*4	N.R.	DELWST	F	C	R*4	000240	DLSWSH		C	R*4	N.R.	DLTAFE	F	C	R*4	0001B4
DLVLHL	F	C	R*4	000110	DRGIND	F	C	R*4	00000C	DSPLMT	F	C	R*4	0006C8	DYLIND	F	C	R*4	000008
ELHLOA		C	R*4	N.R.	ELVLOA		C	R*4	N.R.	ETAIND	F	C	R*4	000020	ETAP4N		C	R*4	N.R.
EXPDRG		C	R*4	N.R.	FEDRAG		C	R*4	N.R.	FIXIND	F	C	R*4	000014	GAMD11	S	C	R*4	000720
HULIND	F	C	R*4	000004	IBCOM#	F	XF	R*4	000000	INDCRU		C	I*4	N.R.	INDDRG	S	C	I*4	000824
INDDYL	S	C	I*4	000828	INDETA	S	C	I*4	00082C	INDFIX	S	C	I*4	000830	INDHUL	S	C	I*4	000834
INDOPT	S	C	I*4	000838	INDOSW	S	C	I*4	00083C	INDPOW		C	I*4	N.R.	INDPRP	S	C	I*4	000844
INDRDM	S	C	I*4	000848	IPRINT	S	C	I*4	00084C	LOADER	SF	XF	I*4	000000	OPTIND	F	CE	R*4	000000
OSWIND	F	C	R*4	000010	PRPIND	F	C	R*4	00001C	RDMIND	F	C	R*4	000018	RHORHO	F	C	R*4	00003C
SGTIND		C	R*4	N.R.	SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.
SKPDSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.	SSIGMA		C	R*4	N.R.	STHETA		C	R*4	N.R.
TBCDWI		C	R*4	N.R.	TB8AP4		C	R*4	N.R.	THETMR		C	R*4	N.R.	TOLIND		C	R*4	N.R.
VGBOVH	F	C	R*4	000030	WBALNT	F	C	R*4	00091C	WPAYLO		C	R*4	N.R.	XTGTA2		C	R*4	N.R.

XTGTA4 C R*4 N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	000000	HULIND	R*4	000004	DYLIND	R*4	000008	DRGIND	R*4	00000C
OSWIND	R*4	000010	FIXIND	R*4	000014	RDMIND	R*4	000018	PRPIND	R*4	00001C
ETAIND	R*4	000020	WO	R*4	000024	XLBWO	R*4	000028	XLRLA	R*4	00002C
VGBOVH	R*4	000030	XLGD	R*4	000034	HMAXD	R*4	N.R.	RHORHO	R*4	00003C
VMO	R*4	N.R.	EMLF	R*4	000044	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	HOO	R*4	N.R.	ROO	R*4	N.R.
TOO	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLOA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	0000C9	WS	R*4	0000CC
TCR	R*4	0000D0	TCT	R*4	N.R.	SLM	R*4	0J0CD8	ARHT	R*4	0000DC
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	0000E8	ARVT	R*4	0000EC
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	0000F8	ELDN	R*4	0000FC
ELDT	R*4	000100	ELDOA	R*4	000104	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	000110	DVOL	R*4	000114	CBYLOA	R*4	N.R.	ENR	R*4	00011C
WVA	R*4	000120	DAM1	R*4	000124	DAM2	R*4	000128	BMR	R*4	00012C
DAM3	R*4	000130	CLEYE	R*4	000134	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	000148	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	HES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEM5	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
DAM4	R*4	000190	ENP	R*4	000194	ETAT	R*4	N.R.	HC	R*4	00019C
VC	R*4	0001A0	ATMIY	R*4	0001A4	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	0001B0	DLTAFE	R*4	0001B4	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CDC	R*4	N.R.	CLALPH	R*4	0001C4	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	0001D4	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	000230
WFUL	R*4	000234	DELWFC	R*4	000238	DELWP	R*4	00023C	DELWST	R*4	000240
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKRBF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	0002D4	SK2	R*4	0002D8	DK3	R*4	0002DC	DK4	R*4	0002E0
SK5	R*4	0002E4	SK6	R*4	0002E8	SK7	R*4	0002EC	SK8	R*4	0002F0
SK9	R*4	0002F4	SK10	R*4	0002F8	SK11	R*4	0002FC	SK12	R*4	000300
SK13	R*4	000304	SK14	R*4	000308	SK15	R*4	00030C	PLIN	R*4	000310
GAP5	R*4	N.R.	TOLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWPL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	000480	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.

TBH1	R*4	N.R.	TBTO	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPOW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	000640
ALFDL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHPR	R*4	N.R.	BHPSUP	R*4	N.R.	BHT	R*4	00065C	BLP	R*4	N.R.
GR	R*4	N.R.	BS	R*4	000668	BVT	R*4	00066C	CBARF	R*4	000670
CBARHT	R*4	000674	CBARVT	R*4	000678	CBARW	R*4	00067C	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	000688	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPNUD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CRT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	0006AC	CX	R*4	N.R.
CLDES	R*4	0006B4	CB	R*4	0006B8	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DH	R*4	0006C4	DSPLMT	R*4	0006C8	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	0006D4	ELOA	R*4	0006D8	ELT	R*4	0006DC	ELVT	R*4	N.R.
EN	R*4	N.R.	ETAP	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	0006F4	FEHT	R*4	0006F8	FET	R*4	N.R.	FETOT	R*4	000700
FEVT	R*4	000704	FEW	R*4	000708	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FP	R*4	N.R.	ETAP4	R*4	N.R.	GAMD11	R*4	000720
GLF	R*4	0007D4	GMDD1	R*4	0007D8	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRU	I*4	N.R.	INDDRG	I*4	000824	INDDYL	I*4	000828	INDETA	I*4	00082C
INDFIX	I*4	000830	INDHUL	I*4	000834	INDOPT	I*4	000838	INDOSW	I*4	00083C
INDPOW	I*4	N.R.	INDPRP	I*4	000844	INDRDM	I*4	000848	IPRINT	I*4	00084C
LTHL	I*4	N.R.	NOCPP	I*4	N.R.	NOXPJ	I*4	N.R.	GWE	R*4	00085C
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	000868	RHO	R*4	00086C
REALJ	R*4	N.R.	RHPMR	R*4	N.R.	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	N.R.	SA5	R*4	000884	SA6	R*4	000888	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	00089C
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	0008BC
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	0008C8	SWETH	R*4	0008CC
SWEXP	R*4	N.R.	SWTT	R*4	0008D4	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.
TMAX	R*4	0008F0	TMP	R*4	0008F4	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	000900	VGASB	R*4	N.R.	VGASR	R*4	000908	VHL	R*4	00090C
V	R*4	N.R.	W	R*4	N.R.	WBAL	R*4	000918	WBALNT	R*4	00091C
WCC	R*4	000920	WE	R*4	000924	WEP	R*4	000928	WES	R*4	00092C
WF	R*4	N.R.	WFC	R*4	000934	WFR	R*4	000938	WFS	R*4	00093C
WFW	R*4	000940	WGSB	R*4	000944	WHL	R*4	000948	WHT	R*4	00094C
WLG	R*4	000950	WMC	R*4	000954	WPAYL	R*4	000958	WPC	R*4	00095C
WPDS	R*4	000960	WPEI	R*4	000964	WPH	R*4	000968	WPRB	R*4	00096C
WPRG	R*4	000970	WPRP	R*4	000974	WPSTR	R*4	000978	WRC	R*4	00097C
WRCA	R*4	N.R.	WSC	R*4	000984	WSCA	R*4	N.R.	WST	R*4	00098C
WTM	R*4	000990	WVT	R*4	000994	WW	R*4	000998	WPAYLO	R*4	N.R.
WAC	R*4	0009A0	WENV	R*4	0009A4	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBH	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	N.R.	TOVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	0009CC
AF	R*4	0009D0	BHPP	R*4	0009D4	SEE	R*4	0009D8			

EQUIVALENCED VARIABLES WITHIN THIS COMMON BLOCK

VARIABLE	OFFSET	VARIABLE	OFFSET	VARIABLE	OFFSET	VARIABLE	OFFSET
DATA	000000						

NAME OF COMMON BLOCK * ODD* SIZE OF BLOCK 000814 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
A0	R*4	000000	A1	R*4	000084	A2	R*4	000168	BB0	R*4	00021C
BB1	R*4	00025C	BB2	R*4	00029C	RJ3	R*4	N.R.	CPOW3	R*4	N.R.
ETAI3	R*4	N.R.	RJ4	R*4	N.R.	CPOW4	R*4	N.R.	ETAI4	R*4	N.R.
AMACH	R*4	N.R.	CLLL	R*4	N.R.	CLGAM	R*4	N.R.	CPOW33	R*4	N.R.
CTI3	R*4	N.R.	CTI4	R*4	N.R.						

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
1	0018CC	2	0018E2	3	001916	69	001AB2
78	001AE4	77	001AE8	4	001AEC	5	001B0C
2222	001C78	6	002264	7	002280	9	0022A4
8	002368						

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*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =     170 ,PROGRAM SIZE =     9118

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                          79K BYTES OF CORE NOT USED
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LEVEL 21.7 ( JAN 73 )                         OS/360  FORTRAN H                                    DATE  75.097/11.08.45

          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
  ISN 0002                   SUBROUTINE ATMOS(HH,TIN33)                                           00010000
                    C**** MEMBER NAME B81ATMOS                                                    00020000
                    C         PAGE 1    INPUT   LOC 0001 THRU 0050                                00030000
  ISN 0003                    COMMON      OPTIND     ,FULIND     ,DYLIND     ,ORGIND     ,OSWIND     ,00040000
                         1FIXIND     ,ROMIND     ,PFFIND     ,ETAIND     ,WO         ,XLBWO      ,00050000
                         2XLRLA      ,VGBCWH     ,XLOC       ,HMAXD      ,FFCRHO     ,VMO        ,00060000
                         3EMLF       ,CK1        ,DELWF      ,CKFF       ,VDIVE      ,HOC        ,00070000
                         4ROC        ,TOC        ,GAP1(5)    ,SGTIND(12) ,ELHLOA     ,ELVLOA     ,00080000
                         5GAP2(6)                                                                 00090000
                    C         PAGE 2    INPUT   LOC 0051 THRU 0100                                00100000
  ISN 0004                    COMMON      AR         ,WS         ,TCR        ,TCT        ,SLM        ,00110000
                         1ARHT       ,TCHT       ,VBARH      ,SLMH       ,ARVT       ,TCVT       ,00120000
                         2VBARV      ,SLMVT      ,ELDN       ,ELDT       ,ELDOA      ,DLSWSH     ,00130000
                         3DSWET      ,DLVLHL     ,DVCL       ,CBYLOA     ,ENR        ,WVA        ,00140000
                         4CAM1       ,CAM2       ,EMF        ,DAM3       ,CLEYE      ,THETMR     ,00150000
                         5XC         ,XMR        ,TVCMR      ,VT         ,CTSIGH     ,TVW         00160000
  ISN 0005                    COMMON HES                                                          00170000
                         6           ,TINY       ,ETAP2      ,ETAP4N     ,TBEM5(5)   ,TB8AP4(5)  ,00180000
                         7GAP3                                                                    00190000
                    C         PAGE 3  . INPUT  LOC 0101 THRU 140                                  00200000
  ISN 0006                    COMMON      CAM4       ,ENF        ,ETAT       ,FC         ,VC         ,00210000
                         1ATMIY      ,CDVT       ,CDHT       ,DAM5       ,CLTAFE     ,FEDRAG     ,00220000
                         2EXFDRG     ,CDC        ,CLALPH     ,CKVT       ,CKHT       ,CKF        ,00230000
                         3CKW        ,RELI       ,TCLN       ,TBCLI(8)   ,TBCDWI(8)  ,GAP4(4)     00240000
                    C         PAGE 4  INPUT  LOC 141 THRU 200  WEIGHT DATA                        00250000
  ISN 0007                    COMMON      WFE        ,WFLL       ,DELWFC     ,DELWP      ,DELWST     ,00260000
                         1SKCC       ,SKRC       ,SKSC       ,SKFW       ,SKTM       ,SKRCA      ,00270000
                         2SKSCA      ,SKMC       ,SKAC       ,SKHL       ,SKENV1     ,SKENV2     ,00280000
                         3SKGB1      ,SKGE2      ,SKBLNT     ,SKBAL      ,SKLG       ,SKWW       ,00290000
                         4ELF        ,RMI        ,SKFP       ,SKHT       ,SKVT       ,SKPFB      ,00300000
                         5SKRBF      ,SKPH       ,SKAND      ,SKAR       ,SKPA       ,SKVTAR     ,00310000
                         6SKPDS      ,SKFCSZ     ,SKT        ,SKFS       ,SKPEI      ,SKPES      ,00320000
                         7SK1        ,SK2        ,DK3        ,DK4        ,SK5        ,SK6        ,00330000
                         8SK7        ,SK8        ,SK9        ,SK10       ,SK11       ,SK12       ,00340000
                         9SK13       ,SK14       ,SK15       ,PLIN       ,GAP5(3)                 00350000
                    C         PAGE 5  INPUT  LOC 201 THRU 300                                     00360000
  ISN 0008                    COMMON      TOLIND(5)  ,XTGTA2(5)  ,TIN2(5)    ,TWTW(5)    ,PFET2(5)   ,00370000
                         1DELTH(5)   ,STH(5)     ,CRSINC(5)  ,XTGTA4(5)  ,TIN4(5)    ,VIN(5)     ,00380000
                         2DELR(5)    ,RMAX(5)    ,DELFCR(5)  ,ENPCR(5)   ,DELWPL(5)  ,STPW(5)    ,00390000
                         3HFIN(5)    ,GAP6(10)                                                    00400000
                    C         PAGE 6  INPUT  LOC 301 THRU 400                                     00410000
  ISN 0009                    COMMON      CYCFRL     ,FF         ,SK3        ,SK4        ,TBH1(5)    ,00420000
                         1TBTO(5)    ,TBH2(5)    ,TBCRP(5)   ,TBSFC(8)   ,TBPOW(8)   ,GAP7(60)    00430000
                    C        WORKING COMMON                                                       00440000
  ISN 0010                    COMMON  ALFDES,ALFCL,ALFF,AML,                                      00450000
                         1              BHPA,BHFR,BHFSLP,BHT,BLP,BR,BS,BVT,                       00460000
                         2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO00470000
                         3,CPTOT,CRT,CTP,CV,CX,CLDES,CE,                                          00480000
                         4 DELRTH,DELTA,DH,DSPLMT,      ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP,       00490000
                         5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4            00500000
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ISN 0011        COMMON CAMD11(3,15),CLF,CMDC1(16),H,                              00510000
               7 ICRUS,INCCRU,INCCRG,INCCYL,INDETA,INDFIX,INCHUL,INDOPT,INCOSW,   00520000
               8 INDPOW,INDPRF,INDFDM,IFFINT                                      00530000
ISN 0012        COMMON LTHL,NCCFP,NOXP,,CWE,FEHF,PI,Q,RHC,REALJ,RHPMR,R,RA        00540000
ISN 0013        COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST, 00550000
               1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC        00560000
ISN 0014        COMMON T,TAF,TCEAF,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V   00570000
ISN 0015        COMMON W,WBAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,            00580000
               1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPF,WPRB,WPRG,WPRP,WPSTR 00590000
               2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                 00600000
ISN 0016        COMMON XLALB,XLE,XLBF,XLFL,XLR,XLW,YLS2,TCVW                       00610000
ISN 0017        COMMON CMR,SIGMR,AF,BHFP,SEE                                       00610100
ISN 0018        NAMELIST /NATMOS/ THETA,DELTA,SIGMA,SA,RHO,S2RHO,STHETA,           00620000
               1          SSIGMA,DELRTH,TMP                                       00630000
ISN 0019        IF (HH.GT.36089.) GO TO 2                                          00640000
ISN 0021        THETA=1.0-0.OOOOO6875*HH                                           00650000
ISN 0022        GO TO 3                                                            00660000
ISN 0023      2 THETA=0.7519                                                       00670000
ISN 0024      3 THETA=THETA+TINY/518.69                                            00680000
ISN 0025        STHETA=SQRT(THETA)                                                 00690000
ISN 0026        IF (HH.GT.36089.) GO TO 4                                          00700000
ISN 0028        DELTA=(1.0-.OOOOO6875*HH)**5.2561                                  00710000
ISN 0029        GO TO 5                                                            00720000
ISN 0030      4 DELTA=0.22336*EXP((36089.-HH)/20786.)                              00730000
ISN 0031      5 SIGMA=DELTA/THETA                                                  00740000
ISN 0032        SA=661.7*STHETA                                                    00750000
ISN 0033        RHO=0.0023769*SIGMA                                                00760000
ISN 0034        S2RHO=SQRT(2.*RHO)                                                 00770000
ISN 0035        SSIGMA=SQRT(SIGMA)                                                 00780000
ISN 0036        DELRTH=DELTA*STHETA                                                00790000
ISN 0037        TMP=THETA*518.69-459.69                                            00800000
ISN 0038        RETURN                                                             00820000
ISN 0039        END                                                                00830000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	C	R*4	N.R.	G	C	R*4	N.R.	R	C	R*4	N.R.	T	C	R*4	N.R.
V	C	R*4	N.R.	W	C	R*4	N.R.	AF	C	R*4	N.R.	AF	C	R*4	N.R.
BR	C	R*4	N.R.	ES	C	R*4	N.R.	CB	C	R*4	N.R.	CV	C	R*4	N.R.
CX	C	R*4	N.R.	DF	C	R*4	N.R.	EN	C	R*4	N.R.	FF	C	R*4	N.R.
FM	C	R*4	N.R.	FP	C	R*4	N.R.	HC	C	R*4	N.R.	HH	FA	R*4	0C00C4
PI	C	R*4	N.R.	RR	C	R*4	N.R.	SA S	C	R*4	000880	ST	C	R*4	N.R.
SW	C	R*4	N.R.	TR	C	R*4	N.R.	VC	C	R*4	N.R.	VT	C	R*4	N.R.
WE	C	R*4	N.R.	WF	C	R*4	N.R.	WO	C	R*4	N.R.	WS	C	R*4	N.R.
WW	C	R*4	N.R.	XC	C	R*4	N.R.	AMU	C	R*4	N.R.	BHT	C	R*4	N.R.
BLP	C	R*4	N.R.	BMR	C	R*4	N.R.	BVT	C	R*4	N.R.	CCP	C	R*4	N.R.
CCT	C	R*4	N.R.	CDC	C	R*4	N.R.	CDV	C	R*4	N.R.	CKF	C	R*4	N.R.
CKW	C	R*4	N.R.	CK1	C	R*4	N.R.	CLW	C	R*4	N.R.	CRT	C	R*4	N.R.
CTP	C	R*4	N.R.	CK3	C	R*4	N.R.	DK4	C	R*4	N.R.	DMR	C	R*4	N.R.
ELC	C	R*4	N.R.	ELF	C	R*4	N.R.	ELN	C	R*4	N.R.	ELT	C	R*4	N.R.
ENP	C	R*4	N.R.	ENR	C	R*4	N.R.	FEH	C	R*4	N.R.	FET	C	R*4	N.R.
FEW	C	R*4	N.R.	GLF	C	R*4	N.R.	HES	C	R*4	N.R.	HOO	C	R*4	N.R.
OWE	C	R*4	N.R.	RHC SFA	C	R*4	00086C	RMI	C	R*4	N.R.	ROO	C	R*4	N.R.
SA5	C	R*4	N.R.	SA6	C	R*4	N.R.	SA7	C	R*4	N.R.	SEE	C	R*4	N.R.
SFC	C	R*4	N.R.	SHT	C	R*4	N.R.	SKT	C	R*4	N.R.	SK1	C	R*4	N.R.
SK2	C	R*4	N.R.	SK3	C	R*4	N.R.	SK4	C	R*4	N.R.	SK5	C	R*4	N.R.
SK6	C	R*4	N.R.	SK7	C	R*4	N.R.	SK8	C	R*4	N.R.	SK9	C	R*4	N.R.
SLM	C	R*4	N.R.	STH	C	R*4	N.R.	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.
TCR	C	R*4	N.R.	TCT	C	R*4	N.R.	TMP S	C	R*4	00C8F4	TCO	C	R*4	N.R.
TVW	C	R*4	N.R.	ULF	C	R*4	N.R.	VHL	C	R*4	N.R.	VIN	C	R*4	N.R.
VMO	C	R*4	N.R.	WAC	C	R*4	N.R.	WCC	C	R*4	N.R.	WEP	C	R*4	N.R.
WES	C	R*4	N.R.	WFC	C	R*4	N.R.	WFE	C	R*4	N.R.	WFR	C	R*4	N.R.
WFS	C	R*4	N.R.	WFW	C	R*4	N.R.	WHL	C	R*4	N.R.	WHT	C	R*4	N.R.
WLG	C	R*4	N.R.	WMC	C	R*4	N.R.	WPC	C	R*4	N.R.	WPH	C	R*4	N.R.
WRC	C	R*4	N.R.	WSC	C	R*4	N.R.	WST	C	R*4	N.R.	WTM	C	R*4	N.R.
WVA	C	R*4	N.R.	WVT	C	R*4	N.R.	XLB	C	R*4	N.R.	XLR	C	R*4	N.R.
XLW	C	R*4	N.R.	XMR	C	R*4	N.R.	ALFR	C	R*4	N.R.	ARHT	C	R*4	N.R.
ARVT	C	R*4	N.R.	BHPA	C	R*4	N.R.	BHPP	C	R*4	N.R.	BHPR	C	R*4	N.R.
CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.	CKFF	C	R*4	N.R.	CKHT	C	R*4	N.R.
CKVT	C	R*4	N.R.	DAM1	C	R*4	N.R.	DAM2	C	R*4	N.R.	DAM3	C	R*4	N.R.
DAM4	C	R*4	N.R.	DAM5	C	R*4	N.R.	DELR	C	R*4	N.R.	DVCL	C	R*4	N.R.
ELDN	C	R*4	N.R.	ELDT	C	R*4	N.R.	ELHT	C	R*4	N.R.	ELOA	C	R*4	N.R.
ELVT	C	R*4	N.R.	EMLF	C	R*4	N.R.	ETAP	C	R*4	N.R.	ETAT	C	R*4	N.R.
FEHI	C	R*4	N.R.	FEHL	C	R*4	N.R.	FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.
FEWH	C	R*4	N.R.	FEWI	C	R*4	N.R.	GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.
GAP3	C	R*4	N.R.	GAP4	C	R*4	N.R.	GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.
GAP7	C	R*4	N.R.	HFIN	C	R*4	N.R.	LTHL	C	I*4	N.R.	PEHF	C	R*4	N.R.
PLIN	C	R*4	N.R.	RELI	C	R*4	N.R.	RMAX	C	R*4	N.R.	SHPA	C	R*4	N.R.
SHPR	C	R*4	N.R.	SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.
SKAR	C	R*4	N.R.	SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.
SKHL	C	R*4	N.R.	SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.
SKPA	C	R*4	N.R.	SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.
SKTM	C	R*4	N.R.	SKVT	C	R*4	N.R.	SKWP	C	R*4	N.R.	SKWW	C	R*4	N.R.
SK10	C	R*4	N.R.	SK11	C	R*4	N.R.	SK12	C	R*4	N.R.	SK13	C	R*4	N.R.
SK14	C	R*4	N.R.	SK15	C	R*4	N.R.	SLMH	C	R*4	N.R.	STPW	C	R*4	N.R.
SVTE	C	R*4	N.R.	SVTW	C	R*4	N.R.	SWTT	C	R*4	N.R.	TBH1	C	R*4	N.R.

TBH2	C	R*4	N.R.	TBTO	C	R*4	N.R.	TCHT	C	R*4	N.R.	TCLN	C	R*4	N.R.
TCVT	C	R*4	N.R.	TINY	C	R*4	N.R.	TIN2	C	R*4	N.R.	TIN4	C	R*4	N.R.
TMAX	C	R*4	N.R.	TCVW	C	R*4	N.R.	TWTW	C	R*4	N.R.	WBAL	C	R*4	N.R.
WENV	C	R*4	N.R.	WFUL	C	R*4	N.R.	WGSB	C	R*4	N.R.	WPDS	C	R*4	N.R.
WPEI	C	R*4	N.R.	WPRB	C	R*4	N.R.	WPRG	C	R*4	N.R.	WPPP	C	R*4	N.R.
WRCA	C	R*4	N.R.	WSCA	C	R*4	N.R.	XL8H	C	R*4	N.R.	XLGD	C	R*4	N.R.
XLHL	C	R*4	N.R.	YLS2	C	R*4	N.R.	ALFDL	C	R*4	N.R.	ATMIY	C	R*4	N.R.
ATMOS		R*4	0000C8	CEARF	C	R*4	N.R.	CBARW	C	R*4	N.R.	CLDES	C	R*4	N.R.
CLEYE	C	R*4	N.R.	CPIND	C	R*4	N.R.	CPNUD	C	R*4	N.R.	CPPAR	C	R*4	N.R.
CPPRO	C	R*4	N.R.	CPTOT	C	R*4	N.R.	DELTA SF	C	R*4	00C6C0	DELTH	C	R*4	N.R.
DELWF	C	R*4	N.R.	DELWP	C	R*4	N.R.	DSWET	C	R*4	N.R.	ELDCA	C	R*4	N.R.
ENPCR	C	R*4	N.R.	ETAP2	C	R*4	N.R.	ETAP4	C	R*4	N.R.	FETOT	C	R*4	N.R.
GMOD1	C	R*4	N.R.	HMAXC	C	R*4	N.R.	ICRUS	C	I*4	N.R.	NCCPP	C	I*4	N.R.
NOXPJ	C	I*4	N.R.	PFET2	C	R*4	N.R.	REALJ	C	R*4	N.R.	RHPMR	C	R*4	N.R.
SIGMA SFA	C	R*4	0008A8	SIGMR	C	R*4	N.R.	SKAMD	C	R*4	N.R.	SKBAL	C	R*4	N.R.
SKGB1	C	R*4	N.R.	SKGB2	C	R*4	N.R.	SKPDS	C	R*4	N.R.	SKPEI	C	R*4	N.R.
SKPES	C	R*4	N.R.	SKPRB	C	R*4	N.R.	SKRBF	C	R*4	N.R.	SKFCA	C	R*4	N.R.
SKSCA	C	R*4	N.R.	SLMVT	C	R*4	N.R.	STMAX	C	R*4	N.R.	SWETH	C	R*4	N.R.
SWEXP	C	R*4	N.R.	SWWET	C	R*4	N.R.	S2%HO S	C	R*4	00C8DC	TBCL1	C	R*4	N.R.
TBCRP	C	R*4	N.R.	TBEM5	C	R*4	N.R.	TBPOW	C	R*4	N.R.	TBSFC	C	R*4	N.R.
TCBAR	C	R*4	N.R.	THETA SFA	C	R*4	0008EC	TIN33 F		R*4	00C0CC	TPRCP	C	R*4	N.R.
TVCMR	C	R*4	N.R.	VEARH	C	R*4	N.R.	VBARV	C	R*4	N.R.	VCIVE	C	R*4	N.R.
VGASB	C	R*4	N.R.	VGASR	C	R*4	N.R.	WPAYL	C	R*4	N.R.	WPSTR	C	R*4	N.R.
XLAL8	C	R*4	N.R.	XL8WC	C	R*4	N.R.	XLRLA	C	R*4	N.R.	EXP	XF	R*4	0C0000
FRXPR#	XF	R*4	0000CC	SCRT	XF	R*4	0C0000	ALFDES	C	R*4	N.R.	BHPSUP	C	R*4	N.R.
CBARHT	C	R*4	N.R.	CEARVT	C	R*4	N.R.	CBYLOA	C	R*4	N.R.	CLALPH	C	R*4	N.R.
CRSIND	C	R*4	N.R.	CTSIGH	C	R*4	N.R.	CYCPRL	C	R*4	N.R.	DELFCR	C	R*4	N.R.
DELRTH S	C	R*4	0006BC	DELWFC	C	R*4	N.R.	DELWPL	C	R*4	N.R.	DELWST	C	R*4	N.R.
DLSWSH	C	R*4	N.R.	ELTAFE	C	R*4	N.R.	DLVLHL	C	R*4	N.R.	DRGIND	C	R*4	N.R.
DSPLMT	C	R*4	N.R.	EYLINC	C	R*4	N.R.	ELHLOA	C	R*4	N.R.	ELVLOA	C	R*4	N.R.
ETAIND	C	R*4	N.R.	ETAF4A	C	R*4	N.R.	EXPORG	C	R*4	N.R.	FEOPAG	C	R*4	N.R.
FIXIND	C	R*4	N.R.	CAPCLL	C	R*4	N.R.	HULIND	C	R*4	N.R.	INDCRU	C	I*4	N.R.
INDDRG	C	I*4	N.R.	INDDYL	C	I*4	N.R.	INDETA	C	I*4	N.R.	INDFIX	C	I*4	N.R.
INDHUL	C	I*4	N.R.	INDCPT	C	I*4	N.R.	INDOSW	C	I*4	N.R.	INDPOW	C	I*4	N.R.
INDPRP	C	I*4	N.R.	INDRDM	C	I*4	N.R.	IPRINT	C	I*4	N.R.	NATMOS			0C0000
OPTIND	C	R*4	N.R.	OSWIND	C	R*4	N.R.	PRPIND	C	R*4	N.R.	RDMIND	C	R*4	N.R.
RHORHO	C	R*4	N.R.	SGTIND	C	R*4	N.R.	SKBLNT	C	R*4	N.R.	SKENV1	C	R*4	N.R.
SKENV2	C	R*4	N.R.	SKPOSZ	C	R*4	N.R.	SKVTAR	C	R*4	N.R.	SSIGMA S	C	R*4	0C08AC
STHETA SF	C	R*4	0008B4	TBCDWI	C	R*4	N.R.	TB8AP4	C	R*4	N.R.	THETMR	C	R*4	N.R.
TOLIND	C	R*4	N.R.	VGBCVH	C	R*4	N.R.	WBALNT	C	R*4	N.R.	WPAYLO	C	R*4	N.R.
XTGTA2	C	R*4	N.R.	XTGTA4	C	R*4	N.R.								

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	HULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WC	R*4	N.R.	XL8WO	R*4	N.R.	XLRLA	R*4	N.R.
VGBCVH	R*4	N.R.	XLGC	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.

VMC	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	HOO	R*4	N.R.	RCO	R*4	N.R.
TCC	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	APHT	R*4	N.R.
TCHT	R*4	N.R.	VEARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VEARV	R*4	N.R.	SLMVT	R*4	N.R.	FLDN	R*4	N.R.
ELCT	R*4	N.R.	ELOCA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	N.R.
WVA	R*4	N.R.	CAM1	R*4	N.R.	CAM2	R*4	N.R.	BMR	R*4	N.R.
CAM3	R*4	N.R.	CLEVE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	HES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEMS	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
CAM4	R*4	N.R.	EMF	R*4	N.R.	ETAT	R*4	N.R.	HC	R*4	N.R.
VC	R*4	N.R.	ATMIX	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
CAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CCC	R*4	N.R.	CLALPH	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFLL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKHP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKREF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLINC	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSINC	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWFL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPFL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBF1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	N.R.	TPCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBFCW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BFFR	R*4	N.R.	EHFSCF	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
BR	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARFT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CCV	R*4	N.R.	CCW	R*4	N.R.	CPIND	R*4	N.R.
CPALC	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CFT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	N.R.	CX	R*4	N.R.
CLOES	R*4	N.R.	CB	R*4	N.R.	DELRTH	R*4	0006BC	DELTA	R*4	0006C0
CH	R*4	N.R.	CSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELA	R*4	N.R.	ELCA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.

EA	R*4	N.R.	ETAF	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETOT	R*4	N.R.
FEWT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FF	R*4	N.R.	ETAP4	R*4	N.R.	GAMDII	R*4	N.R.
GLF	R*4	N.R.	GMDDI	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRU	I*4	N.R.	INDDRC	I*4	N.R.	INDDYL	I*4	N.R.	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDFUL	I*4	N.R.	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPCW	I*4	N.R.	INDPRF	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.
LTHL	I*4	N.R.	NOCPF	I*4	N.R.	NOXPJ	I*4	N.R.	CWE	R*4	N.R.
PEHF	R*4	N.R.	PI	R*4	N.R.	Q	R*4	N.R.	PHO	R*4	00086C
REALJ	R*4	N.R.	RHPMR	R*4	N.R.	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	000880	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHFA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	0008A8	SSIGMA	R*4	0008AC
ST	R*4	N.R.	STHETA	R*4	0008B4	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2PHO	R*4	0008DC
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	0008EC
TMAX	R*4	N.R.	TMF	R*4	0008F4	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	N.R.	W	R*4	N.R.	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPES	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRF	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBH	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	N.R.	TOVW	R*4	N.R.	DMR	R*4	N.R.	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPF	R*4	N.R.	SEE	R*4	N.R.			

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    LABEL    ADDR                LABEL    ADDR                LABEL    ADDR                LABEL    ADDR          PAGE 007

        2  00C1CA                    3  CCC1D2                    4  CC0230                    5  00025E

*CPTIONS IN EFFECT*      NAME=  MAIN,CPT=C2,LINECNT=54,SIZE=0000K,

*CPTIONS IN EFFECT*      SOURCE,EBCDIC,NCLIST,NCDECK,LOAD,MAP,NOEDIT,ID,NOXREF

*STATISTICS*     SCURCE STATEMENTS =      38 ,PROGRAM SIZE =      79C

*STATISTICS*  NO  DIAGNCSTICS GENERATED

****** END CF CCMPILATICN ******                                  107K BYTES OF CORE NOT USED
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      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                        SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002              FUNCTION BIV(XARG,YARG,XTAB,YTAB,ZTAB,NXARG,NYARG,NXI,NYJ)      00010000
                C**** MEMBER NAME BBIEIV                                              00020000
ISN 0003              VAL(A,B,C,D) = (A*(A-B-C)+B*C)/(D*(D-B-C)+B*C)                  00030000
ISN 0004              DIMENSION ZTAB(NXI,NYJ),XTAB(1),YTAB(1)                         00040000
                C     XTAB AND YTAB DIMENSIONS ARE DUMMY BUT Z IS CRITICAL            00050000
                C     IT MUST AGREE WITH THE DIMENSION IN THE CALLING PROGRAM         00060000
                C                                                                     00070000
                C                                                                     00080000
                C     LOCATE THE X VALUE                                              00090000
                C     IS XARG LESS THAN FIRST VALUE IN TABLE                          00100000
ISN 0005           1  IF (XARG-XTAB(1))2,3,3                                          00110000
                C     YES-USE FIRST 3 VALUES IN TABLE                                 00120000
ISN 0006           2   J=1                                                          00130000
ISN 0007              GO TO 9                                                         00140000
                C     NO-FIND WHICH 2 ARGUMENTS XARG IS BETWEEN                       00150000
ISN 0008           3  DO 5 I=2,NXARG                                                 00160000
ISN 0009              K=I                                                             00170000
ISN 0010           4  IF(XARG-XTAB(I))6,6,5                                          00180000
ISN 0011           5  CONTINUE                                                       00190000
                C     ARE WE AT END OF TABLE                                          00200000
ISN 0012           6  I=K                                                           00210000
ISN 0013              IF(I-NXARG) 8,7,8                                               00220000
                C     YES-USE LAST 3 TABLE VALUES                                     00230000
ISN 0014           7  J=NXARG-2                                                     00240000
ISN 0015              GO TO 9                                                         00250000
                C     NO-USE 3 SURROUNDING VALUES                                     00260000
ISN 0016           8  J=I-1                                                         00270000
                C     FIND WHERE YARG LIES IN TABLE                                   00280000
                C     IS YARG LESS THAN FIRST VALUE OF TABLE                          00290000
ISN 0017           9  IF (YARG-YTAB(1))10,11,11                                     00300000
                C     YES-USE FIRST 3 VALUES IN TABLE                                 00310000
ISN 0018          10  L=1                                                           00320000
ISN 0019              GO TO 17                                                        00330000
                C     NO-FIND WHERE YARG LIES                                         00340000
ISN 0020          11  DO 13 I=2,NYARG                                               00350000
ISN 0021              K=I                                                             00360000
ISN 0022          12  IF (YARG-YTAB(I))14,14,13                                     00370000
ISN 0023          13  CONTINUE                                                       00380000
                C     ARE WE AT END OF TABLE                                          00390000
ISN 0024          14  I=K                                                           00400000
ISN 0025              IF(I-NYARG) 16,15,16                                            00410000
                C     YES-USE LAST 3 VALUES IN TABLE                                  00420000
ISN 0026          15  L=NYARG-2                                                     00430000
ISN 0027              GO TO 17                                                        00440000
                C     NO-USE 3 SURROUNDING VALUES                                     00450000
ISN 0028          16  L=I-1                                                         00460000
                C     SET UP FOR INTERPOLATION                                        00470000
ISN 0029          17  JJ=J+1                                                        00480000
ISN 0030              JJJ=J+2                                                         00490000
ISN 0031              LL=L+1                                                          00500000
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ISN 0032          LLL=L+2                                                    00510000
                C EVALUATE FY1(X)                                            00520000
ISN 0033       18 FY11=VAL(XARG,XTAB(JJ),XTAB(JJJ),XTAB(J))                  00530000
ISN 0034          FY12=VAL(XARG,XTAB(J),XTAB(JJJ),XTAB(JJ))                  00540000
ISN 0035          FY13=VAL(XARG,XTAB(J),XTAB(JJ),XTAB(JJJ))                  00550000
ISN 0036          FY1=FY11*ZTAB(J,L)+FY12*ZTAB(JJ,L)+FY13*ZTAB(JJJ,L)        00560000
                C EVALUATE FY2(X)                                            00570000
ISN 0037       19 FY2=FY11*ZTAB(J,LL)+FY12*ZTAB(JJ,LL)+FY13*ZTAB(JJJ,LL)     00580000
                C EVALUATE FY3(X)                                            00590000
ISN 0038       20 FY3=FY11*ZTAB(J,LLL)+FY12*ZTAB(JJ,LLL)+FY13*ZTAB(JJJ,LLL)  00600000
                C EVALUATE F(Y)-FINAL ANSWER                                 00610000
ISN 0039       21 BIV=(VAL(YARG,YTAB(LL),YTAB(LLL),YTAB(L))*FY1)+            00620000
                  1(VAL(YARG,YTAB(L),YTAB(LLL),YTAB(LL))*FY2)+               00630000
                  2(VAL(YARG,YTAB(L),YTAB(LL),YTAB(LLL))*FY3)                00640000
ISN 0040          RETURN                                                     00650000
ISN 0041          END                                                        00660000
```

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	SF	I*4	000080	J	SFA	I*4	000084	K	SF	I*4	000088	L	SFA	I*4	00008C
JJ	SFA	I*4	000090	LL	SFA	I*4	000094	BIV	S	R*4	000098	FY1	SF	R*4	00009C
FY2	SF	R*4	0000A0	FY3	SF	R*4	0000A4	JJJ	SFA	I*4	0000A8	LLL	SFA	I*4	0000AC
NXI		I*4	0000BC	NYJ		I*4	0000B4	VAL	S ASF	R*4	000000	FY11	SF	R*4	0000B8
FY12	SF	R*4	0000BC	FY13	SF	R*4	0000C0	XARG	FA	R*4	0000C4	XTAB	FA XR	R*4	0C0000
YARG	FA	R*4	0000C8	YTAB	FA XR	R*4	000000	ZTAB	F XR	R*4	000000	NXARG	F	I*4	0000CC
NYARG	F	I*4	0000D0												

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
1	0CC128	2	CCC13E	3	CC0144	4	000162 NR
5	0CC172	6	CCC17C	7	CCC18E	8	00019E
9	0CC1AA	10	CCC1BA	11	CCC1C6	12	0001E4 NR
13	0CC1F4	14	CCC1FE	15	0C0210	16	000220
17	0CC22C	18	CC025C NR	19	CCC380 NR	20	000386 NR
21	0CC3E6 NR						

CPTIONS IN EFFECT NAME= MAIN,CPT=C2,LINECNT=54,SIZE=00C0K,

CPTIONS IN EFFECT SOURCE,EBCDIC,NCLIST,NCDECK,LOAC,MAP,NCEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 40 ,PROGRAM SIZE = 1420

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 115K BYTES OF CORE NOT USED

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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                          SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
   ISN 0002               BLOCK DATA                                                00010000
                    C**** MEMBER NAME BBIELKDT                                      00020000
   ISN 0003               DIMENSION A0(3,15),A1(3,15),A2(3,15),BB0(16),BB1(16),BB2(16),  00030000
                         1 RJ3(10),CPOW3(10),ETAI3(10,10),RJ4(10),CPOW4(10),ETAI4(10,10),  00040000
                         2AMACH(3),CLLL(15),CLGAM(16),CPOW33(20),CTI3(20),CTI4(20)      00050000
   ISN 0004               DIMENSION RCTCAT(14)                                      00070000
   ISN 0005               COMMON/CDC/A0,A1,A2,BB0,BB1,BB2,RJ3,CPOW3,ETAI3,RJ4,CPOW4,  00080000
                         1 ETAI4,AMACH,CLLL,CLGAM,CPOW33,CTI3,CTI4                 00090000
   ISN 0006               COMMON /RTPCW/ CTTBLE(12),THTBLE(5),DKHTB(12,5),AMUTB(20),  00100000
                         1              CKNCTB(20),DMDBB(9),CKBLH(9),CTT(10),CKHCVT(10)  00110000
   ISN 0007               DATA A0/ 90.,90.,90.,7.0392,10.2148,11.3227,4.8350,8.3106,  00120000
                         1 11.3355,3.2218,5.4623,8.3676,2.7551,4.0458,6.5856,2.481,   00130000
                         2 3.9439,5.3862,2.4521,3.6769,5.2054,2.8149,3.8766,6.1902,   00140000
                         3 3.8725,4.5901,8.153,5.6653,6.1044,10.1745,8.5799,8.9031,   00150000
                         4 13.0822,12.25,12.2042,16.5344,17.0496,17.0398,20.8089,     00160000
                         5 21.8332,22.784,25.6453,31.7062,28.7851,33.5049/            00170000
   ISN 0008               DATA A1/ 0.0,0.0,0.0,1.9949,2.4433,40.9515,-4.1639,-22.6338,  00180000
                         1 -14.062,-1.7030,-14.9997,-12.2425,-2.5322,-9.9837,-9.574,  00190000
                         2 -4.5422,-13.0524,-8.9808,-5.4949,-11.7146,-9.3153,-7.092,  00200000
                         3 -12.0044,-14.7567,-10.861,-13.8756,-25.0375,-16.2691,-18.2607,  00210000
                         4 -30.7342,-24.8115,-26.0958,-33.2211,-33.6185,-29.4588,-34.9378,  00220000
                         5 -43.061,-37.3809,-40.6314,-47.8821,-47.3791,-49.145,-49.6246,  00230000
                         6 -57.8217,-77.6449/                                       00240000
   ISN 0009               DATA A2/ 0.0,0.0,0.0,61.2416,86.4731,21.9481,19.2195,56.0,  00250000
                         1 62.0142,8.291,35.3636,36.0889,7.0366,23.0606,25.9573,7.3774,  00260000
                         2 22.0028,18.6439,7.4251,17.3803,16.4063,8.3401,16.0882,23.2672,  00270000
                         3 11.4678,17.2451,39.117,15.8093,21.8349,51.0509,22.6773,30.7056,  00280000
                         4 58.1494,28.7271,34.1515,64.3529,33.8798,43.697,76.3927,33.6322,  00290000
                         5 55.5455,54.4326,26.4923,68.2121,144.4176/                00300000
   ISN 0010               DATA BB0/ 90.,2.68,1.9141,1.513,1.5304,1.9611,2.7089,3.8237,  00310000
                         1 5.051,7.3796,9.13,12.397,17.169,22.392,28.85,38.2/       00320000
   ISN 0011               DATA BB1/ 0.0,-5.4836,-2.9393,-2.7523,-3.0648,-4.5374,    00330000
                         1 -6.8293,-10.0965,-12.558,-18.5171,-19.35,-11.944,-10.883,  00340000
                         2 -5.948,0.0,0.0/                                          00350000
   ISN 0012               DATA BB2/ 0.0,13.5125,8.012,5.8118,4.8132,5.3846,6.8072,  00360000
                         1 9.3267,10.7333,15.8002,15.5,6.818,7.879,5.606,0.0,0.0/   00370000
   ISN 0013               DATA RJ3/0.2,1.0,1.2,1.4,1.8,2.2,2.6,3.0,3.4,4.2/         00380000
   ISN 0014               DATA CPOW3/0.0,0.05,0.1,0.2,0.3,0.4,0.5,0.6,0.75,0.9/     00390000
   ISN 0015               DATA ETAI3/10*1.0,0.74,0.937,0.954,0.9662,0.980,0.9862,0.9895,  00400000
                         1 0.9912,0.9924,0.9962,0.621,0.896,0.920,0.939,0.961,0.973,0.9793,  00410000
                         2 0.9827,0.985,0.9906,0.467,0.830,0.866,0.892,0.928,0.949,0.960,  00420000
                         3 0.9664,0.9715,0.9794,0.342,0.772,0.819,0.851,0.896,0.926,0.9415,  00430000
                         4 0.9486,0.956,0.9683,0.262,0.718,0.770,0.810,0.868,0.9044,0.9235,  00440000
                         5 0.935,0.944,0.9575,0.206,0.666,0.728,0.773,0.839,0.882,0.9064,  00450000
                         6 0.9204,0.9305,0.9456,0.168,0.615,0.684,0.736,0.816,0.8615,0.8885,00460000
                         7 0.906,0.918,0.9345,0.126,0.541,0.615,0.679,0.779,0.830,0.8633,  00470000
                         8 0.8848,0.8988,0.9175,0.096,0.471,0.547,0.620,0.743,0.803,0.8385,  00480000
                         9 0.863,0.880,0.900/                                       00490000
   ISN 0016               DATA RJ4/0.2,1.0,1.2,1.4,1.8,2.2,2.6,3.0,3.4,4.2/         00500000
   ISN 0017               DATA CPOW4/0.0,0.05,0.1,0.2,0.3,0.4,0.5,0.6,0.75,0.9/     00510000
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ISN 0018        DATA ETAI4/10*1.0,C.668,C.935,0.959,0.968,0.9822,0.9875,C.9906,    00520000
               1 C.9925,0.9938,C.9956,C.942,C.898,0.929,0.946,C.9655,0.9755,C.981,00530000
               2 C.9846,C.987,C.9905,C.405,C.834,0.878,0.904,C.9355,0.954,C.964,   00540000
               3 C.9705,C.975,C.982,0.311,C.784,C.834,0.869,C.9095,0.9345,C.9484,  00550000
               4 C.9575,C.9646,C.9736,C.252,C.735,0.793,C.835,C.886,0.916,C.933,   00560000
               5 C.9445,C.9535,C.966,0.204,C.690,0.753,C.8025,0.862,0.8974,0.918,  00570000
               6 C.932,C.9436,C.9585,C.170,0.646,0.714,C.772,C.8415,0.8794,0.902,  00580000
               7 C.9195,0.933,C.9513,C.135,C.582,0.657,C.727,C.810,0.853,C.8796,   00590000
               8 C.9007,C.918,C.940,C.110,C.520,C.601,0.683,C.781,0.828,C.860,     00600000
               9 C.883,C.904,C.928/                                                00610000
ISN 0019        DATA AMACF/C.7,C.8,C.9/                                             00620000
ISN 0020        DATA CLLL/ 0.0,C.05,C.1,C.15,C.2,C.3,0.4,0.5,C.6,0.7,0.8,C.9,       00630000
               1 1.0,1.1,1.2/                                                      00640000
ISN 0021        DATA CLCAF/C.0,C.15,C.2,C.3,C.4,C.5,0.6,C.7,C.8,0.9,1.0,            00650000
               1 1.2,1.4,1.6,1.8,2.0/                                              00660000
ISN 0022        DATA CPCW33/ C.C,C.005,C.01,C.02,C.03,0.04,0.06,0.08,0.12,C.16,     00670000
               1 C.20,0.24,C.28,C.32,C.36,C.40,0.44,0.48,0.52,C.607                00680000
ISN 0023        DATA CTI3/0.0,C.0223,0.0523,C.082,C.1065,0.127,0.163,0.194,         00690000
               1C.2475,C.2945,C.338,C.3772,C.4102,C.4368,0.4637,0.4912,0.517,      00700000
               2 C.539,C.5616,C.5958/                                              00710000
ISN 0024        DATA CTI4/0.0,.0345,.0545,.0838,0.1073,C.128,C.166,0.201,C.2556,    00720000
               1 C.3026,C.3462,C.3859,C.4208,0.4544,0.4871,0.514,0.539,0.5592,     00730000
               2 C.5824,C.6354/                                                    00740000
ISN 0025        DATA CTTBLE / C.C,0.004,C.005,0.006,0.007,0.008,0.010,0.012,        00750000
               1              C.014,C.018,0.022,C.030/                             00760000
ISN 0026        DATA THTBLE /-15.C,-9.C,-6.C,-3.0,0.0/                              00770000
ISN 0027        DATA DKHTB / -C.219,-C.219,-C.204,-0.195,-0.186,-0.179,-0.164,      00780000
               1             -C.152,-C.144,-C.132,-0.124,-0.120,-0.179,-0.179,     00790000
               2             -C.159,-C.145,-C.134,-0.125,-0.111,-C.100,-0.093,     00800000
               3             -C.084,-C.080,-C.079,-0.135,-0.135,-C.118,-0.106,     00810000
               4             -C.097,-C.090,-C.078,-0.069,-0.063,-C.058,-0.054,     00820000
               5             -0.053,-C.078,-C.078,-0.066,-0.056,-C.052,-C.048,     00830000
               6             -C.041,-C.035,-C.033,-0.029,-0.028,-0.028,12*C.0/     00840000
ISN 0028        DATA AMLTB / C.C,C.05,C.125,C.2,0.25,0.325,0.36,0.37,0.386,         00850000
               1             C.4,C.425,C.45,C.475,C.525,C.55,C.6,0.7,0.8,          00860000
               2             C.9,1.0/                                              00870000
ISN 0029        DATA CKNDTB / C.C,0.0,C.025,C.105,C.205,0.397,C.475,0.48,C.475,     00880000
               1              C.432,C.342,0.33,0.333,0.342,0.355,C.375,0.412,      00890000
               2              C.444,C.474,C.5/                                     00900000
ISN 0030        DATA DMDBB / C.020,0.0075,0.0,-0.005,-0.0085,-0.011,-0.013,         00910000
               1             -C.0146,-C.016/                                       00920000
ISN 0031        DATA CKBLF / 1.20,1.06,1.00,C.955,C.92,0.891,C.867,0.846,           00930000
               1             C.828/                                                00940000
ISN 0032        DATA CTT / C.0,C.004,C.007,C.009,C.010,0.011,C.0115,0.012,          00950000
               1          0.0155,C.022/                                            00960000
ISN 0033        DATA CKHOVT / 1.018,1.085,1.154,1.233,1.279,1.314,1.327,1.337,      00970000
               1             1.364,1.397/                                          00980000
ISN 0034        END                                                                 00990000
```

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
A0	C	R*4	N.R.	A1	C	R*4	N.R.	A2	C	R*4	N.R.	BB0	C	R*4	N.R.
BB1	C	R*4	N.R.	BB2	C	R*4	N.R.	CTT	C	R*4	N.R.	RJ3	C	R*4	N.R.
RJ4	C	R*4	N.R.	CLLL	C	R*4	N.R.	CTI3	C	R*4	N.R.	CTI4	C	R*4	N.R.
AMACH	C	R*4	N.R.	AMUTB	C	R*4	N.R.	CKBLH	C	R*4	N.R.	CLGAM	C	R*4	N.R.
CPOW3	C	R*4	N.R.	CPCW4	C	R*4	N.R.	DKHTB	C	R*4	N.R.	DMDBB	C	R*4	N.R.
ETAI3	C	R*4	N.R.	ETAI4	C	R*4	N.R.	CKHOVT	C	R*4	N.R.	CKNDTB	C	R*4	N.R.
CPOW33	C	R*4	N.R.	CTTBLE	C	R*4	N.R.	ROTDAT		R*4	N.R.	THTBLE	C	R*4	N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * CDC* SIZE OF BLOCK 000814 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
A0	R*4	N.R.	A1	R*4	N.R.	A2	R*4	N.R.	BB0	R*4	N.R.
BB1	R*4	N.R.	BB2	R*4	N.R.	RJ3	R*4	N.R.	CPCW3	R*4	N.R.
ETAI3	R*4	N.R.	RJ4	R*4	N.R.	CPOW4	R*4	N.R.	ETAI4	R*4	N.R.
AMACH	R*4	N.R.	CLLL	R*4	N.R.	CLGAM	R*4	N.R.	CPOW33	R*4	N.R.
CTI3	R*4	N.R.	CTI4	R*4	N.R.						

NAME OF COMMON BLOCK * RTPCW* SIZE OF BLOCK 00026C HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
CTTBLE	R*4	N.R.	THTBLE	R*4	N.R.	DKHTB	R*4	N.R.	AMUTB	R*4	N.R.
CKNDTB	R*4	N.R.	DMDBB	R*4	N.R.	CKBLH	R*4	N.R.	CTT	R*4	N.R.
CKHOVT	R*4	N.R.									

OPTIONS IN EFFECT NAME= MAIN,OPT=02,LINECNT=54,SIZE=0000K,

OPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 33 ,PROGRAM SIZE = 8

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 83K BYTES OF CORE NOT USED

```
      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002              SUBROUTINE CHOPL (ICHOPL)                                  00010000
                C**** MEMBER NAME B81CHGPL                                       00020000
                C     PAGE 1   INPUT   LOC 0001 THRU 005C                        00030000
ISN 0003              COMMON    OPTIND    ,FULIND    ,DYLIND    ,ORGIND    ,OSWIND   ,00040000
                     1FIXIND   ,ROMIND   ,FFFIND   ,ETAIND   ,WC        ,XLBWC    ,00050000
                     2XLRLA    ,VOPOVH   ,XLOO     ,HMAXD    ,FHORHO   ,VMC      ,00060000
                     3EMLF     ,CK1      ,DELWF    ,OKFF     ,VOIVE    ,HOC      ,00070000
                     4ROO      ,TOC      ,CAP1(5)  ,SGTIND(12),ELFLOA  ,ELVLOA   ,00080000
                     5GAP2(6)                                                    00090000
                C     PAGE 2   INPUT   LOC 0051 THRU 0100                        00100000
ISN 0004              COMMON    AR        ,WS       ,TOR      ,TOT      ,SLN      ,00110000
                     1ARFT     ,TORT     ,VEARH    ,SLMH     ,ARVT     ,TOVT     ,00120000
                     2VBARV    ,SLMVT    ,ELOA     ,ELDT     ,ELOOA    ,OLSWSH   ,00130000
                     3DSWET    ,OLVLFL   ,OVOL     ,OBYLOA   ,ENR      ,WVA      ,00140000
                     4DAM1     ,DAM2     ,ENR      ,DAM3     ,OLEYE    ,TFETMR   ,00150000
                     5XO       ,XMR      ,TVOMR    ,VT       ,OTSIGH   ,TVW      ,00160000
                     6FES      ,TINY     ,ETAP2    ,ETAP4N   ,TBEM5(5) ,TH8AP4(5),00170000
                     7GAP3                                                       00180000
                C     PAGE 3   INPUT  LOC 0101 THRU 140                          00190000
ISN 0005              COMMON    DAM4      ,ENF      ,ETAT     ,FO       ,VO       ,00200000
                     1ATMIY    ,ODVT     ,ODFT     ,DAM5     ,OLTAFE   ,FEDRAG   ,00210000
                     2EXPDRG   ,OOO      ,OLALPF   ,OKVT     ,OKHT     ,OKF      ,00220000
                     3OKW      ,RELI     ,TOLN     ,TBOL1(8) ,TBODWI(8),GAP4(4)  00230000
                C     PAGE 4 INPUT  LOC 141 THRU 2CC  WEIGHT DATA                00240000
ISN 0006              COMMON    WFE       ,WFLL     ,DELWFO   ,OELWP    ,DELWST   ,00250000
                     1SKOO     ,SKRO     ,SKSO     ,SKFW     ,SKTM     ,SKRCA    ,00260000
                     2SKSCA    ,SKMO     ,SKAO     ,SKHL     ,SKENV1   ,SKENV2   ,00270000
                     3SKGB1    ,SKGB2    ,SKELNT   ,SKBAL    ,SKLG     ,SKVW     ,00280000
                     4ELF      ,RMI      ,SKWP     ,SKHT     ,SKVT     ,SKPRB    ,00290000
                     5SKRBF    ,SKPH     ,SKAND    ,SKAR     ,SKPA     ,SKVTAR   ,00300000
                     6SKPDS    ,SKPOSZ   ,SK1      ,SKFS     ,SKPEI    ,SKPES    ,00310000
                     7SK1      ,SK2      ,OK3      ,DK4      ,SK5      ,SK6      ,00320000
                     8SK7      ,SK8      ,SK9      ,SK10     ,SK11     ,SK12     ,00330000
                     9SK13     ,SK14     ,SK15     ,PLIN     ,GAP5(3)            00340000
                C     PAGE 5   INPUT   LOC 201 THRU 300                          00350000
ISN 0007              COMMON    TOLIN(5) ,XTGTA2(5) ,TIN2(5)  ,TWTW(5)  ,PFET2(5) ,00360000
                     1DELTH(5) ,STH(5)   ,ORSINO(5),XTGTA4(5),TIN4(5)  ,VIN(5)   ,00370000
                     2DELR(5)  ,RMAX(5)  ,DELPOR(5),ENPOR(5) ,DELWPL(5),STPW(5)  ,00380000
                     3FFIN(5)  ,GAPE(10)                                         00390000
                C     PAGE 6   INPUT   LOC 301 THRU 400                          00400000
ISN 0008              COMMON    CYCPRL    ,FF       ,SK3      ,SK4      ,TBH1(5)  ,00410000
                     1TBTO(5)  ,TBH2(5)  ,TBORP(5) ,TBSFO(8) ,TBPOW(8) ,GAP7(60)  00420000
                C     WORKING COMMON                                             00430000
ISN 0009              COMMON  ALFOES,ALFOL,ALFR,AML,                             00440000
                     1        BFPA,BFFR,BHFSLP,BHT,BLP,BR,BS,BVT,                00450000
                     2 CBARF,CEARFT,CEARVT,CEARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPR00460000
                     3,CPTOT,CRT,CTP,CV,CX,CLOES,CB,                            00470000
                     4 DELRTH,DELTA,DF,DSPEMT,     ELO,ELHT,ELN,ELOA,ELT,ELVT,EN,ETAP,  00480000
                     5 FEH,FEHI,FEHL,FEHT,FET,FETOT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4  00490000
ISN 0010              COMMON GAMO11(3,15),OLF,GMOO1(16),H,                       00500000
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                     7 ICRUS,INCCRU,INCORG,INCCYL,INDETA,INDFIX,INCFLL,INDOPT,INCOSW,    00510CCC
                     8 INDPOW,INDPRF,INCROM,IPRINT                                       00520000
ISN 0011              COMMON LTHL,NCCPP,NCXP,,CWE,PEHF,PI,Q,RHC,REALJ,RHPMR,R,RN         00530000
ISN 0012              COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPP,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                     1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC        00550000
ISN 0013              COMMON T,TAF,TCEAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V    00560000
ISN 0014              COMMON W,WBAL,WEALNT,WCC,WE,WFP,WES,WF,WFC,WFR,WFS,WFW,             00570000
                     1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPF,WPRB,WPRG,WPRP,WPSTR00580000
                     2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLC,WAC,WENV                  00590000
ISN 0015              COMMON XLALB,XLE,XLBH,XLHL,XLR,XLW,YLS2,TOVW                        00600000
ISN 0016              COMMON DMR,SIGAR,AF,BHFP,SEE                                        00600001
ISN 0017              WCLD = W                                                            00610000
ISN 0018              TCLD = ST                                                           00620000
ISN 0019              PLCLD = WPAYLC                                                      00630000
ISN 0020              W    = W  +  CELWFL(ICHGPL)                                         00640000
ISN 0021              ST   = ST +  STPW(ICHGPL)                                           00650000
ISN 0022              WPAYLO =   PLCLC + CELWFL(ICHGPL)                                   00660000
ISN 0023              IF(IPRINT.NE.1)GO TO 300                                            00670000
ISN 0025              WRITE(6,1001) PLCLD,WPAYLC,STPW(ICHGPL)                             00680000
ISN 0026         1001 FORMAT( 7X,'CHANGE PAYLOAD FROM ',F10.0,4X,'POUNDS'/25X,'TO   ',   00700000
                     1F10.0,4X,'POUNDS',4X,'TAKING',2X,F6.2,2X,'HOURS'/)                 00710000
ISN 0027              WRITE(6,1002)                                                       00720000
ISN 0028         1002 FORMAT(7X,'TIME',8X,'RANGE',6X,'FUEL USED',6X,'WEIGHT',7X,'ALT'/   00730000
                     17X,'(HOURS)',5X,'(N.MI)',6X,'(POUNDS)',5X,'(POUNDS)',6X,'FEET'/)   00740000
ISN 0029              WRITE(6,1003)TCLC,R,WF,WCLD,H                                       00750000
ISN 0030              WRITE(6,1003)ST  ,R,WF,W   ,H                                       00760000
ISN 0031         1003 FORMAT(7X,F7.2,4X,F8.1,4X,F9.0,4X,F10.0,4X,F8.0)                    00770000
ISN 0032          300 RETURN                                                             00780000
ISN 0033              END                                                                00790000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	F C	R*4	000818	Q	C	R*4	N.R.	R	F C	R*4	0002878	T	C	R*4	N.R.
V	C	R*4	N.R.	W SF	C	R*4	000914	AF	C	R*4	N.R.	AR	C	R*4	N.R.
BR	C	R*4	N.R.	BS	C	R*4	N.R.	CB	C	R*4	N.R.	CV	C	R*4	N.R.
CX	C	R*4	N.R.	CH	C	R*4	N.R.	EN	C	R*4	N.R.	FF	C	R*4	N.R.
FM	C	R*4	N.R.	FP	C	R*4	N.R.	HC	C	R*4	N.R.	P1	C	R*4	N.R.
RN	C	R*4	N.R.	SA	C	R*4	N.R.	ST SF	C	R*4	0002880	SW	C	R*4	N.R.
TR	C	R*4	N.R.	VC	C	R*4	N.R.	VT	C	R*4	N.R.	WE	C	R*4	N.R.
WF	F C	R*4	000930	WC	C	R*4	N.R.	WS	C	R*4	N.R.	WW	C	R*4	N.R.
XC	C	R*4	N.R.	AMU	C	R*4	N.R.	BHT	C	R*4	N.R.	BLP	C	R*4	N.R.
BMR	C	R*4	N.R.	BVT	C	R*4	N.R.	CCP	C	R*4	N.R.	CCT	C	R*4	N.R.
CDC	C	R*4	N.R.	CDV	C	R*4	N.R.	CKF	C	R*4	N.R.	CKW	C	R*4	N.R.
CK1	C	R*4	N.R.	CLW	C	R*4	N.R.	CRT	C	R*4	N.R.	CTP	C	R*4	N.R.
DK3	C	R*4	N.R.	DK4	C	R*4	N.R.	DMR	C	R*4	N.R.	ELC	C	R*4	N.R.
ELF	C	R*4	N.R.	ELN	C	R*4	N.R.	ELT	C	R*4	N.R.	ENP	C	R*4	N.R.
ENR	C	R*4	N.R.	FEF	C	R*4	N.R.	FET	C	R*4	N.R.	FEW	C	R*4	N.R.
GLF	C	R*4	N.R.	HES	C	R*4	N.R.	HOO	C	R*4	N.R.	OWE	C	R*4	N.R.
RHC	C	R*4	N.R.	RMI	C	R*4	N.R.	ROO	C	R*4	N.R.	SA5	C	R*4	N.R.
SA6	C	R*4	N.R.	SA7	C	R*4	N.R.	SEE	C	R*4	N.R.	SFC	C	R*4	N.R.
SHT	C	R*4	N.R.	SKT	C	R*4	N.R.	SK1	C	R*4	N.R.	SK2	C	R*4	N.R.
SK3	C	R*4	N.R.	SK4	C	R*4	N.R.	SK5	C	R*4	N.R.	SK6	C	R*4	N.R.
SK7	C	R*4	N.R.	SK8	C	R*4	N.R.	SK9	C	R*4	N.R.	SLP	C	R*4	N.R.
STH	C	R*4	N.R.	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.	TCR	C	R*4	N.R.
TCT	C	R*4	N.R.	TMP	C	R*4	N.R.	TOO	C	R*4	N.R.	TVW	C	R*4	N.R.
ULF	C	R*4	N.R.	VHL	C	R*4	N.R.	VIN	C	R*4	N.R.	VMC	C	R*4	N.R.
WAC	C	R*4	N.R.	WCC	C	R*4	N.R.	WEP	C	R*4	N.R.	WES	C	R*4	N.R.
WFC	C	R*4	N.R.	WFE	C	R*4	N.R.	WFR	C	R*4	N.R.	WFS	C	R*4	N.R.
WFW	C	R*4	N.R.	WHL	C	R*4	N.R.	WHT	C	R*4	N.R.	WLG	C	R*4	N.R.
WMC	C	R*4	N.R.	WPC	C	R*4	N.R.	WPH	C	R*4	N.R.	WRC	C	R*4	N.R.
WSC	C	R*4	N.R.	WST	C	R*4	N.R.	WTM	C	R*4	N.R.	WVA	C	R*4	N.R.
WVT	C	R*4	N.R.	XLB	C	R*4	N.R.	XLR	C	R*4	N.R.	XLW	C	R*4	N.R.
XMR	C	R*4	N.R.	ALFR	C	R*4	N.R.	ARHT	C	R*4	N.R.	ARVT	C	R*4	N.R.
BHPA	C	R*4	N.R.	BHPF	C	R*4	N.R.	BHPR	C	R*4	N.R.	CDHT	C	R*4	N.R.
CDVT	C	R*4	N.R.	CKFF	C	R*4	N.R.	CKHT	C	R*4	N.R.	CKVT	C	R*4	N.R.
DAM1	C	R*4	N.R.	DAM2	C	R*4	N.R.	DAM3	C	R*4	N.R.	DAM4	C	R*4	N.R.
DAM5	C	R*4	N.R.	DELR	C	R*4	N.R.	DVOL	C	R*4	N.R.	ELDN	C	R*4	N.R.
ELDT	C	R*4	N.R.	ELHT	C	R*4	N.R.	ELUA	C	R*4	N.R.	ELVT	C	R*4	N.R.
EMLF	C	R*4	N.R.	ETAP	C	R*4	N.R.	ETAT	C	R*4	N.R.	FEHI	C	R*4	N.R.
FEHL	C	R*4	N.R.	FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.	FEWH	C	R*4	N.R.
FEWI	C	R*4	N.R.	GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.	GAP3	C	R*4	N.R.
GAP4	C	R*4	N.R.	GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.	GAP7	C	R*4	N.R.
HFIN	C	R*4	N.R.	LTHL	C	I*4	N.R.	PEHF	C	R*4	N.R.	PLIN	C	R*4	N.R.
RELI	C	R*4	N.R.	RMAX	C	R*4	N.R.	SHPA	C	R*4	N.R.	SHPK	C	R*4	N.R.
SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.	SKAR	C	R*4	N.R.
SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.	SKHL	C	R*4	N.R.
SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SRMC	C	R*4	N.R.	SKPA	C	R*4	N.R.
SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.	SKTM	C	R*4	N.R.
SKVT	C	R*4	N.R.	SKWP	C	R*4	N.R.	SKWW	C	R*4	N.R.	SK10	C	R*4	N.R.
SK11	C	R*4	N.R.	SK12	C	R*4	N.R.	SK13	C	R*4	N.R.	SK14	C	R*4	N.R.
SK15	C	R*4	N.R.	SLMH	C	R*4	N.R.	STPW	F C	R*4	000460	SVTE	C	R*4	N.R.
SVTW	C	R*4	N.R.	SWTT	C	R*4	N.R.	TBH1	C	R*4	N.R.	TBH2	C	R*4	N.R.

TBIC	C	R*4	N.R.	TCHT	C	R*4	N.R.	TCLN	C	R*4	N.R.	TCVT	C	R*4	N.R.		
TINY	C	R*4	N.R.	TIN2	C	R*4	N.R.	TIN4	C	R*4	N.R.	TMAX	C	R*4	N.R.		
TOLD SF		R*4	000160	TCVW	C	R*4	N.R.	TWTW	C	R*4	N.R.	WBAL	C	R*4	N.R.		
WENV	C	R*4	N.R.	WFLL	C	R*4	N.R.	WGSB	C	R*4	N.R.	WOLD SF		R*4	000164		
WPDS	C	R*4	N.R.	WPEI	C	R*4	N.R.	WPRB	C	R*4	N.R.	WPRG	C	R*4	N.R.		
WPRP	C	R*4	N.R.	WRCA	C	R*4	N.R.	WSCA	C	R*4	N.R.	XLBH	C	R*4	N.R.		
XLGD	C	R*4	N.R.	XLHL	C	R*4	N.R.	YLS2	C	R*4	N.R.	ALFCL	C	R*4	N.R.		
ATMIY	C	R*4	N.R.	CEARF	C	R*4	N.R.	CBARW	C	R*4	N.R.	CHGPL		R*4	000168		
CLDES	C	R*4	N.R.	CLEYE	C	R*4	N.R.	CPIND	C	R*4	N.R.	CPNUD	C	R*4	N.R.		
CPPAR	C	R*4	N.R.	CPPRO	C	R*4	N.R.	CPTOT	C	R*4	N.R.	DELTA	C	R*4	N.R.		
DELTH	C	R*4	N.R.	DELWF	C	R*4	N.R.	DELWP	C	R*4	N.R.	DSWET	C	R*4	N.R.		
ELDOA	C	R*4	N.R.	ENPCR	C	R*4	N.R.	ETAP2	C	R*4	N.R.	ETAP4	C	R*4	N.R.		
FETOT	C	R*4	N.R.	GMCD1	C	R*4	N.R.	HMAXD	C	R*4	N.R.	ICRUS	C	I*4	N.R.		
NOCPP	C	I*4	N.R.	NCXPJ	C	I*4	N.R.	PFET2	C	R*4	N.R.	PLCLD SF		R*4	00016C		
REALJ	C	R*4	N.R.	RHPMR	C	R*4	N.R.	SIGMA	C	R*4	N.R.	SIGMP	C	R*4	N.R.		
SKAMD	C	R*4	N.R.	SKBAL	C	R*4	N.R.	SKGB1	C	R*4	N.R.	SKGB2	C	R*4	N.R.		
SKPDS	C	R*4	N.R.	SKPEI	C	R*4	N.R.	SKPES	C	R*4	N.R.	SKPPB	C	R*4	N.R.		
SKRBF	C	R*4	N.R.	SKRCA	C	R*4	N.R.	SKSCA	C	R*4	N.R.	SLMVT	C	R*4	N.R.		
STMAX	C	R*4	N.R.	SWETF	C	R*4	N.R.	SWEXP	C	R*4	N.R.	SWVET	C	R*4	N.R.		
S2RHO	C	R*4	N.R.	TECL1	C	R*4	N.R.	TBCRP	C	R*4	N.R.	TBEM5	C	R*4	N.R.		
TBPOW	C	R*4	N.R.	TESFC	C	R*4	N.R.	TCBAR	C	R*4	N.R.	THETA	C	R*4	N.R.		
TPROP	C	R*4	N.R.	TVCMR	C	R*4	N.R.	VBARH	C	R*4	N.R.	VBARV	C	P*4	N.R.		
VDIVE	C	R*4	N.R.	VGASB	C	R*4	N.R.	VGASR	C	R*4	N.R.	WPAYL	C	R*4	N.R.		
WPSTR	C	R*4	N.R.	XLALB	C	R*4	N.R.	XLBWO	C	R*4	N.R.	XLRLA	C	R*4	N.R.		
ALFDES	C	R*4	N.R.	EHFSLP	C	R*4	N.R.	CBARHT	C	R*4	N.R.	CBARVT	C	P*4	N.R.		
CBYLOA	C	R*4	N.R.	CLALPH	C	R*4	N.R.	CRSIND	C	R*4	N.R.	CTSIGH	C	R*4	N.R.		
CYCPRL	C	R*4	N.R.	DELFCR	C	R*4	N.R.	DELRTH	C	R*4	N.R.	DELWFC	C	R*4	N.R.		
DELWPL F	C	R*4	00044C	DELWST	C	R*4	N.R.	DLSWSH	C	R*4	N.R.	DLTAFE	C	R*4	N.R.		
DLVLHL	C	R*4	N.R.	DRGIND	C	R*4	N.R.	DSPLMT	C	R*4	N.R.	DYLIND	C	P*4	N.R.		
ELHLOA	C	R*4	N.R.	ELVLOA	C	R*4	N.R.	ETAIND	C	R*4	N.R.	ETAP4N	C	P*4	N.R.		
EXPDRG	C	R*4	N.R.	FECRAG	C	R*4	N.R.	FIXIND	C	R*4	N.R.	GAMD11	C	R*4	N.R.		
HULIND	C	R*4	N.R.	IBCCM4 F	XF	I*4	000000	ICHGPL F		I*4	000170	INDCRU	C	I*4	N.R.		
INDDRG	C	I*4	N.R.	INDCYL	C	I*4	N.R.	INDETA	C	I*4	N.R.	INDFIX	C	I*4	N.R.		
INDHUL	C	I*4	N.R.	INDCPT	C	I*4	N.R.	INDOSW	C	I*4	N.R.	INDPOW	C	I*4	N.R.		
INDPRP	C	I*4	N.R.	INDRDM	C	I*4	N.R.	IPRINT	C	I*4	000084C	OPTIND	C	R*4	N.R.		
OSWIND	C	R*4	N.R.	PRPIND	C	R*4	N.R.	RDMIND	C	R*4	N.R.	RHCFHD	C	R*4	N.R.		
SCTIND	C	R*4	N.R.	SKBLNT	C	R*4	N.R.	SKENV1	C	R*4	N.R.	SKENV2	C	R*4	N.R.		
SKPDSZ	C	R*4	N.R.	SKVTAR	C	R*4	N.R.	SSIGMA	C	R*4	N.R.	STHETA	C	R*4	N.R.		
TBCDWI	C	R*4	N.R.	TBBAP4	C	R*4	N.R.	THETMR	C	R*4	N.R.	TCLIND	C	R*4	N.R.		
VGBOVH	C	R*4	N.R.	WBALNT	C	R*4	N.R.	WPAYLO SF	C	R*4	00C99C	XTGTA2	C	R*4	N.R.		
XTGTA4	C	R*4	N.R.														

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	HULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WC	R*4	N.R.	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBOVH	R*4	N.R.	XLGD	R*4	N.R.	HMAXD	R*4	N.R.	RHCRHO	R*4	N.R.

VMC	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VCIVE	R*4	N.R.	HOO	R*4	N.R.	PCO	R*4	N.R.
TCC	R*4	N.R.	CAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLCA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELCT	R*4	N.R.	ELCCA	R*4	N.R.	CLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	CVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENF	R*4	N.R.
WVA	R*4	N.R.	CAM1	R*4	N.R.	CAM2	R*4	N.R.	BMP	R*4	N.R.
CAM3	R*4	N.R.	CLEVE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEMS	R*4	N.R.	TB84P4	R*4	N.R.	GAP3	R*4	N.R.
CAM4	R*4	N.R.	ENF	R*4	N.R.	ETAT	R*4	N.R.	HC	R*4	N.R.
VC	R*4	N.R.	ATMIN	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
CAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FECRAG	R*4	N.R.	EXPCRG	R*4	N.R.
CCC	R*4	N.R.	CLALPH	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFLL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFV	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKCE1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	FMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKREF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAF	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLINC	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFETZ	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSINC	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCF	R*4	N.R.
DELWFL	R*4	00044C	STFW	R*4	0C0460	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPFL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBF1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBFOW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHFR	R*4	N.R.	BHPSLF	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
ER	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARFT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CCV	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPNLC	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CPT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	N.R.	CX	R*4	N.R.
CLCES	R*4	N.R.	CE	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DH	R*4	N.R.	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELA	R*4	N.R.	ELCA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.

EN	R*4	N.R.	ETAF	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FFTCT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FF	R*4	N.R.	ETAP4	R*4	N.R.	GAMD11	R*4	N.R.
GLF	R*4	N.R.	GMDD1	R*4	N.R.	H	R*4	000818	ICRUS	I*4	N.R.
INDCFL	I*4	N.R.	INDDRG	I*4	N.R.	INDDYL	I*4	N.R.	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDHDL	I*4	N.R.	INDJPT	I*4	N.R.	INDGS	I*4	N.R.
INDPCW	I*4	N.R.	INDPRF	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	000840
LTHL	I*4	N.R.	NDDFF	I*4	N.R.	NOXPJ	I*4	N.R.	CWS	R*4	N.R.
PEHF	R*4	N.R.	PI	R*4	N.R.	Q	R*4	N.R.	PHD	R*4	N.R.
REALJ	R*4	N.R.	RHFMR	R*4	N.R.	R	R*4	000878	RN	R*4	N.R.
SA	R*4	N.R.	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	0008BC	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.
TMAX	R*4	N.R.	TMF	R*4	N.R.	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	N.R.	W	R*4	000914	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	000930	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPCS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPFG	R*4	N.R.	WPRF	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	00099C
WAC	R*4	N.R.	WEAV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBF	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	N.R.	TCVW	R*4	N.R.	DMR	R*4	N.R.	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPF	R*4	N.R.	SEE	R*4	N.R.			

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     LABEL    ADDR                LABEL    ADDR                LABEL    ADDR                LABEL    ADDR          PAGE 007

       300  CCC294

*CPTIONS IN EFFECT*      NAME=  MAIN,CPT=C2,LINECNT=54,SIZE=0000K,

*CPTIONS IN EFFECT*      SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =      32 ,PROGRAM SIZE =      708

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  107K BYTES OF CORE NOT USED
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       COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                          SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
 ISN 0002             SUBROUTINE CRUS1  (ICRUS)                                        00010000
                C**** MEMBER NAME B81CRUS1                                             00020000
                C     PAGE 1   INPUT   LOC 0001 THRU 0050                              00030000
 ISN 0003             COMMON      OPTIND    ,FULIND    ,DYLIND    ,CRGIND    ,OSWIND    ,00040000
                     1FIXIND    ,ROMIND    ,PRPIND    ,ETAIND    ,WC        ,XLBWO     ,00050000
                     2XLFLA     ,VGECVH    ,XLCC      ,HMAXD     ,FFORHO    ,VMC       ,00060000
                     3EMLF      ,CK1       ,DELWF     ,CKFF      ,VDIVE     ,HOC       ,00070000
                     4RCC       ,TCC       ,GAP1(5)   ,SGTIND(12),ELHLOA    ,ELVLOA    ,00080000
                     5GAP2(6)                                                          00090000
                C     PAGE 2   INPUT   LOC 0051 THRU 0100                              00100000
 ISN 0004             COMMON      AR        ,WS        ,TCR       ,TCT       ,SLM       ,00110000
                     1ARHT      ,TCHT      ,VEARH     ,SLMH      ,ARVT      ,TCVT      ,00120000
                     2VEARV     ,SLMVT     ,ELON      ,ELOT      ,ELDOA     ,DLSWSH    ,00130000
                     3DSWET     ,ELVLFL    ,DVCL      ,CBYLOA    ,ENR       ,WVA       ,00140000
                     4DAM1      ,DAM2      ,EMF       ,DAM3      ,CLEYE     ,THETMR    ,00150000
                     5XC        ,XMR       ,TVCMR     ,VT        ,CTSIGH    ,TVW       ,00160000
                     6HES       ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5) ,00170000
                     7GAP3                                                             00180000
                C     PAGE 3   INPUT  LOC 0101 THRU 140                                00190000
 ISN 0005             COMMON      DAM4      ,ENF       ,ETAT      ,FC        ,VC        ,00200000
                     1ATMIY     ,CDVT      ,CDHT      ,DAM5      ,DLTAFE    ,FECRAG    ,00210000
                     2EXFDRG    ,CDC       ,CLALPH    ,CKVT      ,CKHT      ,CKF       ,00220000
                     3CKW       ,RELI      ,TCLN      ,TBCL1(8)  ,TECDWI(8) ,GAP4(4)    00230000
                C     PAGE 4 INPUT  LOC 141 THRU 200  WEIGHT DATA                      00240000
 ISN 0006             COMMON      WFE       ,WFUL      ,DELWFC    ,DELWP     ,DELWST    ,00250000
                     1SKCC      ,SKRC      ,SKSC      ,SKFW      ,SKTM      ,SKRCA     ,00260000
                     2SKSCA     ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2    ,00270000
                     3SKCB1     ,SKGE2     ,SKELNT    ,SKBAL     ,SKLG      ,SKWW      ,00280000
                     4ELF       ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB     ,00290000
                     5SKRBF     ,SKPH      ,SKAMD     ,SKAR      ,SKPA      ,SKVTAR    ,00300000
                     6SKPDS     ,SKPDS2    ,SKT       ,SKFS      ,SKPEI     ,SKPES     ,00310000
                     7SK1       ,SK2       ,DK3       ,DK4       ,SK5       ,SK6       ,00320000
                     8SK7       ,SK8       ,SK9       ,SK10      ,SK11      ,SK12      ,00330000
                     9SK13      ,SK14      ,SK15      ,PLIN      ,GAP5(3)               00340000
                C     PAGE 5  INPUT  LOC 201 THRU 300                                  00350000
 ISN 0007             COMMON      TCLINC(5) ,XTCTA2(5) ,TIN2(5)   ,THTW(5)   ,PFET2(5)  ,00360000
                     1DELTH(5)  ,STH(5)    ,CRSINC(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)    ,00370000
                     2DELR(5)   ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)   ,00380000
                     3HFIN(5)   ,GAP6(10)                                              00390000
                C     PAGE 6  INPUT  LOC 301 THRU 400                                  00400000
 ISN 0008             COMMON      CYCPRL    ,FF        ,SK3       ,SK4       ,TBHI(5)   ,00410000
                     1TBTO(5)   ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60)   00420000
                C     WORKING COMMON                                                   00430000
 ISN 0009             COMMON  ALFDES,ALFCL,ALFR,ANL,                                   00440000
                     1         BHPA,BHPR,BHPSLP,BHT,BLP,BR,BS,BVT,                     00450000
                     2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CFIND,CPNUD,CPPAR,CPPRO00460000
                     3,CPTOT,CRT,CTP,CV,CX,CLDES,C8,                                   00470000
                     4 DELRTH,DELTA,DH,DSPLMT,        ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP,  00480000
                     5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4     00490000
 ISN 0010             COMMON GAMD11(3,15),GLF,GMDC1(16),H,                             00500000
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                      7ICUM3,INCCRU,INCERG,INCCYL,INCETA,INDFIX,INDFUL,INDOPT,INCCSW,    C051CCCC
                      8 INDPOW,INCPRP,INCRCM,IPRINT                                      00520000
ISN 0011               CCMMON LTHL,NCCPP,NCXP-,CWE,PEHF,PI,Q,RHC,REALJ,RHPMR,R,RN        00530000
ISN 0012               CCMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPP,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,C054CCCC
                      1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC        00550000
ISN 0013               CCMMON T,TAF,TCEAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0014               CCMMON W,WBAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,           00570000
                      1 WCSB,WFL,WFT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR00580000
                      2,WRC,WRCA,WSC,WSCA,WST,WTN,WVT,WW,WPAYLC,WAC,WENV                 00590000
ISN 0015               CCMMON XLALB,XLE,XLBF,XLFL,XLR,XLW,YLS2,TGVW                       00600000
ISN 0016               CCMMON DMR,SIGMR,ZF,EHPP,SEE                                       C06CCCC1
ISN 0017               NAMELIST /NCRLS1/ LC1,LC3,YLS2,V,T,Q,CX,BHPR,EHPA,BLP,             C061CCCC
                      1        BHPSUP,FP,EN,INCETA,ETAP4,DHP,B1,B2,DELV,V,R,W,WF,ST      00620000
ISN 0018               RTCD=57.2957795                                                    00620100
ISN 0019               HF=H                                                               00620200
ISN 0020               NETAP4 = ETAP4N + C.1                                              C063CCCC
ISN 0021               IF(IPRINT.NE.1)GO TO 3C1                                           C064CCCC
ISN 0023            3C4 WRITE(6,3C7)                                                      00720000
ISN 0024            3C7 FORMAT(7X,'CRUISE AT CRUISE POWER'/)                              00730000
ISN 0025            3C1 CONTINUE                                                          00740000
ISN 0026               IF(IPRINT.EQ.1) WRITE(6,1CC5)                                      00750000
ISN 0028               IF(IPRINT.EQ.1) WRITE(6,1CC8)                                      00750100
ISN 0030            1CC5 FORMAT(2X,'TIME',7X,'RANGE',5X,'FUEL USED',5X,'WEIGHT',6X,'ALT.',600760000
                      1X,'TEMP',5X,'TAS',5X,'E.F.',4X,'PEHF',5X,'BHPR',4X,'ETAP',5X,'NMPP00770000
                      2',6X,'R.N.',4X,'CL'/                                              00780000
                      32X,'(HOURS)    (N.MI)     (POUNDS)    (POUNDS)     (FEET)   (DEG.F00790000
                      4)   (KT)'//)                                                      00800000
ISN 0031            1CC8 FORMAT(37X,'HULL LIFT',11X,'WING LIFT',7X,'ROTOR LIFT',8X,'ALPHA H00800100
                      1',16X,'ALPHA C/L'/38X,'(POUNDS)',12X,'(POUNDS)',7X,'(POUNDS)',10X,00800200
                      2'(DEG)',17X,'(DEG)'//)                                            00800300
ISN 0032               LC1 = 0                                                            C081CCCC
ISN 0033               LC3 = 0                                                            00820000
ISN 0034               YLS2 = ( ENP - ENFOR(ICRLS))/ENP                                   C083CCCC
ISN 0035               TIN = TIN4(ICRLS)                                                  00840000
ISN 0036               CALL ATMOS(H,TIN)                                                  00850000
ISN 0037            15 V=VMO/SSIGMA                                                       00860000
ISN 0038             1 Q  =  1.42636 * RHC * V * V                                        00870000
ISN 0039               LC3 = LC3 + 1                                                      00880000
ISN 0040               CALL LIFT                                                          00890000
ISN 0041               CALL DRAG(ALFR)                                                    00900000
ISN 0042               BR=XLB/W                                                           00900100
ISN 0043               IF(INDCYL.GT.2) GO TO 2                                            00910000
ISN 0045               T  =  T +  Q * DELFOR(ICRLS)                                       00920000
ISN 0046               IF(INDETA.EQ.0) GO TO 4                                            00930000
ISN 0048               TPROP = T                                                          00940000
ISN 0049               CALL POWER                                                         00950000
ISN 0050               BHPR = SHPR * BHPP * DELRTH * YLS2                                 00960000
ISN 0051               GO TO 5                                                            00970000
ISN 0052             2 CX = CX + 2. * AMU * AMU * DELFOR(ICRUS)/(PI * DMR * DMR * ENR)    00980000
ISN 0053               CALL RCTPCW                                                        00990000
ISN 0054               BHPR =  RHPMR/ETAT                                                 01000000
ISN 0055               GO TO 5                                                            01010000
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ISN 0056        4 ETAP4 = XLINT(TEEMS,TEEAP4,V,AETAP4,M)                          01020000
ISN 0057          IF (M.NE.C) WRITE(6,1C1) I                                      01030000
ISN 0059          ETAP=ETAP4                                                      01040000
ISN 0060      1C1 FORMAT(22X35HTHIS ERROR IS IN THE V-ETAP4 TABLE/                01050000
                1       22X,7HSGTIND(,I2,')'/)                                    01060000
ISN 0061          BHPR  =  T * V / (325.6 * ETAP4 * ETAT)                         01070000
ISN 0062        5 BLP   = XLINT(TBH2,TBCPP,H,5,M)                                 01080000
ISN 0063          IF (M.NE.C) WRITE(6,1C2) I                                      01090000
ISN 0065      1C2 FORMAT(22X35HTHIS ERROR IS IN THE H-POWER TABLE/                01100000
                1       22X,7HSGTIND(,I2,')'/)                                    01110000
ISN 0066          BLP=FACTR(BLP,FF,TFETA,FF)                                      01120000
ISN 0067          BLK=BLP                                                         01130000
ISN 0068          BHPSUP= BLP * DELRTH * BHPP                                     01140000
ISN 0069          BHPA  = BHPSUP * YLS2                                           01150000
ISN 0070          DHP   = ABS(1. - BHPR/BHPA)                                     01160000
ISN 0071          IF(DHP.LE.0.01)GC TO 6                                          01170000
ISN 0073          IF(LC3.GE.2)   GC TC 7                                          01180000
ISN 0075          IF(BHPA.GT.BHPR)  GC TC 8                                       01190000
ISN 0077          B1 = BHPR - BHPA                                                01200000
ISN 0078          DELV = 1C.                                                      01210000
ISN 0079        9 V = V - DELV                                                    01220000
ISN 0080          IF(V.GT.5.C)GC TC 1                                             01230000
ISN 0082          NEXT = 1                                                        01240000
ISN 0083          WRITE(6,1CC1)                                                   01250000
ISN 0084      1CC1 FORMAT(15X,47HINSUFFICIENT POWER AVAILABLE FOR CRUISE(CRUS1)A) 01260000
ISN 0085          GC TO 3CC                                                       01270000
ISN 0086        7 B2  =  BHPR - BHPA                                              01280000
ISN 0087          IF(ABS(B1/B2 - 1.).LE.C.C1)  GO TO 10                           01290000
ISN 0089          DELV = DELV * B2 / (B1 - B2)                                    01300000
ISN 0090          IF(DELV.LE.0.0) GC TO 11                                        01310000
ISN 0092       12 B1 = B2                                                         01320000
ISN 0093          GC TO 9                                                         01330000
ISN 0094       11 IF(B2.GT.C.C)GC TC 10                                           01340000
ISN 0096          GC TO 12                                                        01350000
ISN 0097       10 WRITE(6,1CC2)                                                   01360000
ISN 0098      1CC2 FORMAT(15X,41H*** INSUFFICIENT POWER FOR CRUISE(CRUS1)B)       01370000
ISN 0099          NEXT = 1                                                        01380000
ISN 0100          CC TO 3CC                                                       01390000
ISN 0101        8 BHPA  =  BHPR                                                   01400000
ISN 0102          BHPSUP=  BHPA/YLS2                                              01410000
ISN 0103          BLP   =  BHPSLP/(BHPP * DELRTH)                                 01420000
ISN 0104        6 SFC   =  XLINT(TBFCH,TESFC,BLP,8,M)                             01430000
ISN 0105          IF (M.NE.C) WRITE(6,1C3) I                                      01440000
ISN 0107      103 FORMAT(22X3CHTHIS ERROR IS IN THE SFC TABLE/                    01450000
                1       22),7HSGTIND(,I2,')'/)                                    01460000
ISN 0108          FP    =  SFC * BHPA*CKFF                                        01460100
ISN 0109          EN    =  V / FF                                                 01460200
ISN 0110          IF(INDCYL.LT.3) ALFDL=-9C.                                      01460300
ISN 0112          ALFD=ALFR*RTOC                                                  01470000
ISN 0113          PEFF=BHPSLP/(BLK*BHPP*DELRTF)                                   01480000
ISN 0114          IF(LC1.EQ.1) GC TC 299
ISN 0116          RMAXI = RMAX(ICRLS)
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ISN 0117          IF( R .LE.(RMAXI -DELR(ICRLS)))GO TO 13                    C1490000
ISN 0119          DELTAR  =  RMAXI - R                                       C1500000
ISN 0120          LC1     =  1                                               C1510000
ISN 0121          GO TO  14                                                  C1520000
ISN 0122       13 DELTAR  =  DELR(ICRLS)                                     C1530000
ISN 0123       14 IF(IPRINT.EQ.1) WRITE(6,1003)ST,R,WF,W,H,TMP,V,BR,PEHF,BHPR,ETAP,  C1540000
                 1EN,RN,CLW                                                 C1550000
ISN 0125          IF(IPRINT.EQ.1) WRITE(6,1009)XLHL,XLW,XLR,ALFC,ALFDL       C1550010
ISN 0127       1003 FORMAT(2X,F7.2,2X,F8.1,2X,F9.0,4X,F10.0,2X,F8.0,2X,F7.2,3X,F6.1,2X  C1560000
                 1,F6.3,2X,F6.3,2),F8.0,2X,F5.2,2X,F9.6,2X,F6.3,2X,F5.2)    C1570000
ISN 0128       1009 FORMAT(34X,F10.0,11X,F10.0,7X,F10.0,11X,F5.1,19X,F5.1/)  C1570100
ISN 0129          R       =  R  +  DELTAR                                    C1580000
ISN 0130          W       =  W  -  DELTAR/EN                                 C1590000
ISN 0131          WF      =  WF +  DELTAR/EN                                 C1600000
ISN 0132          ST      =  ST +  DELTAR/V                                  C1610000
ISN 0133          LC3=0                                                      C1610100
ISN 0134          GO TO 15                                                   C1620000
ISN 0135       300 WRITE(6,NCRLS1)                                           C1630000
ISN 0136       299 RETURN                                                    C1640000
ISN 0137          END                                                        C1650000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	SFA C	R*4	000818	I	F	I*4	0003F4	M	FA	I*4	0003F8	Q	SF C	R*4	000868
R	SF C	R*4	000878	T	SF C	R*4	000BEC	V	SFA C	R*4	000910	W	SF C	R*4	000914
AF	C	R*4	N.R.	AR	C	R*4	N.R.	BR	SF C	R*4	000664	BS	C	R*4	N.R.
B1	SFA	R*4	0003FC	B2	SFA	R*4	000400	CB	C	R*4	N.R.	CV	C	R*4	N.R.
CX	SF C	R*4	0006EC	DH	C	R*4	N.R.	EN	SF C	R*4	000BE4	FF	FA C	R*4	0004B4
FM	C	R*4	N.R.	FP	SF C	R*4	000718	HC	C	R*4	N.R.	HH	SFA	R*4	000404
PI	F C	R*4	000864	RN	F C	R*4	00087C	SA	C	R*4	N.R.	ST	SF C	R*4	000880
SW	C	R*4	N.R.	TR	C	R*4	N.R.	VC	C	R*4	N.R.	VT	C	R*4	N.R.
WE	C	R*4	N.R.	WF	SF C	R*4	000930	WO	C	R*4	N.R.	WS	C	R*4	N.R.
WW	C	R*4	N.R.	XC	C	R*4	N.R.	AMU	F C	R*4	000B4C	BHT	C	R*4	N.R.
BLK	SF	R*4	0004C8	BLF	SFA C	R*4	000660	BMR	C	R*4	N.R.	BVT	C	R*4	N.R.
CCP	C	R*4	N.R.	CCT	C	R*4	N.R.	CDC	C	R*4	N.R.	CDV	C	R*4	N.R.
CKF	C	R*4	N.R.	CKW	C	R*4	N.R.	CK1	C	R*4	N.R.	CLW	F C	R*4	00068C
CRT	C	R*4	N.R.	CTP	C	R*4	N.R.	DHP	S	R*4	000B0C	DK3	C	R*4	N.R.
DK4	C	R*4	N.R.	EMR	F C	R*4	000988	ELC	C	R*4	N.R.	ELF	C	R*4	N.R.
ELN	C	R*4	N.R.	ELT	C	R*4	N.R.	ENP	F C	R*4	000194	ENR	F C	R*4	000110
FEH	C	R*4	N.R.	FET	C	R*4	N.R.	FEW	C	R*4	N.R.	GLF	C	R*4	N.R.
HES	C	R*4	N.R.	HCO	C	R*4	N.R.	LC1	S	I*4	000B10	LC3	SF	I*4	000414
OWE	C	R*4	N.R.	RHC	F C	R*4	00086C	RMI	C	R*4	N.R.	RCO	C	R*4	N.R.
SA5	C	R*4	N.R.	SA6	C	R*4	N.R.	SA7	C	R*4	N.R.	SFE	C	R*4	N.R.
SFC	SF C	R*4	000898	SHT	C	R*4	N.R.	SKT	C	R*4	N.R.	SK1	C	R*4	N.R.
SK2	C	R*4	N.R.	SK3	C	R*4	N.R.	SK4	C	R*4	N.R.	SK5	C	R*4	N.R.
SK6	C	R*4	N.R.	SK7	C	R*4	N.R.	SK8	C	R*4	N.R.	SK9	C	R*4	N.R.
SLM	C	R*4	N.R.	STH	C	R*4	N.R.	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.
TCR	C	R*4	N.R.	TCT	C	R*4	N.R.	TIN	SFA	R*4	000418	TMP	F C	R*4	000BF4
TOC	C	R*4	N.R.	TVW	C	R*4	N.R.	ULF	C	R*4	N.R.	VHL	C	R*4	N.R.
VIN	C	R*4	N.R.	VMC	F C	R*4	000040	WAC	C	R*4	N.R.	WCC	C	R*4	N.R.
WEP	C	R*4	N.R.	WES	C	R*4	N.R.	WFC	C	R*4	N.R.	WFE	C	R*4	N.R.
WFR	C	R*4	N.R.	WFS	C	R*4	N.R.	WFW	C	R*4	N.R.	WHL	C	R*4	N.R.
WHT	C	R*4	N.R.	WLG	C	R*4	N.R.	WMC	C	R*4	N.R.	WPC	C	R*4	N.R.
WPH	C	R*4	N.R.	WRC	C	R*4	N.R.	WSC	C	R*4	N.R.	WST	C	R*4	N.R.
WTM	C	R*4	N.R.	WVA	C	R*4	N.R.	WVT	C	R*4	N.R.	XLB	F C	R*4	0009AC
XLR	F C	R*4	0009E8	XLW	F C	R*4	0009BC	XMR	C	R*4	N.R.	ALFD	SF	R*4	000410
ALFR	SFA C	R*4	000648	ARHT	C	R*4	N.R.	ARVT	C	R*4	N.R.	BHPA	SFA C	R*4	000650
BHPP	F C	R*4	0009D4	BHPR	SFA C	R*4	000654	CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.
CKFF	F C	R*4	000050	CKHT	C	R*4	N.R.	CKVT	C	R*4	N.R.	CAM1	C	R*4	N.R.
CAM2	C	R*4	N.R.	CAM3	C	R*4	N.R.	CAM4	C	R*4	N.R.	CAM5	C	R*4	N.R.
DELR	F C	R*4	0003FC	DELV	SF	R*4	000420	DRAG	SF XF	R*4	000000	DVOL	C	R*4	N.R.
ELDN	C	R*4	N.R.	ELDT	C	R*4	N.R.	ELHT	C	R*4	N.R.	ELOA	C	R*4	N.R.
ELVT	C	R*4	N.R.	EMLF	C	R*4	N.R.	ETAP	SF C	R*4	000BE8	ETAT	F C	R*4	000198
FEHI	C	R*4	N.R.	FEHL	C	R*4	N.R.	FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.
FEWH	C	R*4	N.R.	FEWI	C	R*4	N.R.	GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.
GAP3	C	R*4	N.R.	GAP4	C	R*4	N.R.	GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.
GAP7	C	R*4	N.R.	HFIN	C	R*4	N.R.	LIFT	SF XF	I*4	000000	LTHL	C	I*4	N.R.
NEXT	S	I*4	000424	PEHF	SF C	R*4	00086C	PLIN	C	R*4	N.R.	RELI	C	R*4	N.R.
RMAX	F C	R*4	00041C	RTCD	SF	R*4	000428	SHPA	C	R*4	N.R.	SHPR	F C	R*4	000898
SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.	SKAR	C	R*4	N.R.
SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.	SKHL	C	R*4	N.R.
SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.	SKPA	C	R*4	N.R.
SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.	SKTM	C	R*4	N.R.

SKVT		C	R*4	N.R.	SKWP		C	R*4	N.R.	SKWW		C	R*4	N.R.	SK10		C	R*4	N.R.
SK11		C	R*4	N.R.	SK12		C	R*4	N.R.	SK13		C	R*4	N.R.	SK14		C	R*4	N.R.
SK15		C	R*4	N.R.	SLMH		C	R*4	N.R.	STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.
SVTW		C	R*4	N.R.	SWTT		C	R*4	N.R.	TBH1		C	R*4	N.R.	TBH2	FA	C	R*4	0004E8
TBTG		C	R*4	N.R.	TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.
TINY		C	R*4	N.R.	TIN2		C	R*4	N.R.	TIN4	F	C	R*4	0003D4	TMAX		C	R*4	N.R.
TOVW		C	R*4	N.R.	TWTW		C	R*4	N.R.	WBAL		C	R*4	N.R.	WENV		C	R*4	N.R.
WFUL		C	R*4	N.R.	WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.
WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.	WRCA		C	R*4	N.R.
WSCA		C	R*4	N.R.	XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.	XLHL	F	C	R*4	0009B4
YLS2	SF	C	R*4	0009CC	ALFDL	SF	C	R*4	000644	ATMIY		C	R*4	N.R.	ATMOS	SF	XF	R*4	000000
CBARF		C	R*4	N.R.	CEARW		C	R*4	N.R.	CLDES		C	R*4	N.R.	CLEYE		C	R*4	N.R.
CPIND		C	R*4	N.R.	CFAUC		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPRO		C	R*4	N.R.
CPTOT		C	R*4	N.R.	CRLS1			R*4	00042C	DELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.
DELWF		C	R*4	N.R.	DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.	ELDOA		C	R*4	N.R.
ENPCR	F	C	R*4	000438	ETAP2		C	R*4	N.R.	ETAP4	SF	C	R*4	00071C	FACTR	F	XF	R*4	000000
FETOT		C	R*4	N.R.	GMCD1		C	R*4	N.R.	HMAXD		C	R*4	N.R.	ICRUS	F		I*4	000430
IDUM3		C	I*4	N.R.	NCCPP		C	I*4	N.R.	NOXPJ		C	I*4	N.R.	PFET2		C	R*4	N.R.
POWER	SF	XF	R*4	000CC0	REALJ		C	R*4	N.R.	RHPMR	F	C	R*4	000874	RMAXI	SF		R*4	000434
SIGMA		C	R*4	N.R.	SIGMR		C	R*4	N.R.	SKAMD		C	R*4	N.R.	SKBAL		C	R*4	N.R.
SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.
SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.	SKRCA		C	R*4	N.R.
SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH		C	R*4	N.R.
SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2RHO		C	R*4	N.R.	TBCL1		C	R*4	N.R.
TBCRP	FA	C	R*4	0004FC	TBEM5	FA	C	R*4	000164	TBPOW	FA	C	R*4	000530	TBSFC	FA	C	R*4	000510
TCBAR		C	R*4	N.R.	TFETA	FA	C	R*4	0008EC	TPROP	S	C	R*4	0008F8	TVCMR		C	R*4	N.R.
VBARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.	VGASB		C	R*4	N.R.
VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.	XLALB		C	R*4	N.R.
XLBWG		C	R*4	N.R.	XLINT	F	XF	R*4	000000	XLRLA		C	R*4	N.R.	ALFDES		C	R*4	N.R.
BHPSUP	SF	C	R*4	000658	CEARHT		C	R*4	N.R.	CBARVT		C	R*4	N.R.	CBYLCA		C	R*4	N.R.
CLALPH		C	R*4	N.R.	CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.
DELFCR	F	C	R*4	000424	DELRTH	F	C	R*4	00068C	DELTAR	SF		R*4	000438	DELWFC		C	R*4	N.R.
DELWPL		C	R*4	N.R.	DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.
DLVLHL		C	R*4	N.R.	DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.
ELHLOA		C	R*4	N.R.	ELVLCA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4N	F	C	R*4	000160
EXPDRG		C	R*4	N.R.	FECRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	FWRNL#	F	XF	I*4	000000
GAMD11		C	R*4	N.R.	FULIND		C	R*4	N.R.	IBCOM#	F	XF	I*4	000000	INDCRU		C	I*4	N.R.
INDDRG		C	I*4	N.R.	INDDYL		C	I*4	000828	INDETA		C	I*4	000820	INDFIX		C	I*4	N.R.
INDHUL		C	I*4	N.R.	INDOPT		C	I*4	N.R.	INDOSW		C	I*4	N.R.	INDPOW		C	I*4	N.R.
INDPRP		C	I*4	N.R.	INDRON		C	I*4	N.R.	IPRINT		C	I*4	000840	NCRUSI	F			000803
NETAP4	SFA		I*4	00043C	OPTIND		C	R*4	N.R.	OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.
RCMIND		C	R*4	N.R.	RHCRHO		C	R*4	N.R.	ROTPOW	SF	XF	R*4	000000	SGTIND		C	R*4	N.R.
SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.
SKVTAR		C	R*4	N.R.	SSIGMA	F	C	R*4	0008AC	STHETA		C	R*4	N.R.	TBCDWI		C	R*4	N.R.
TBSAP4	FA	C	R*4	000178	THETMR		C	R*4	N.R.	TOLIND		C	R*4	N.R.	VGBOVH		C	R*4	N.R.
WBALNT		C	R*4	N.R.	WPAYLC		C	R*4	N.R.	XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 000900 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	FULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	hC	R*4	N.R.	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBCVH	R*4	N.R.	XLGC	R*4	N.R.	HMAXD	R*4	N.R.	RHCRHO	R*4	N.R.
VMC	R*4	000040	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	000050	VDIVE	R*4	N.R.	HOO	R*4	N.R.	ROO	R*4	N.R.
TCC	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	hS	R*4	N.R.
TCR	R*4	N.R.	TC1	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARF	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELDT	R*4	N.R.	ELDCA	R*4	N.R.	CLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLFL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	00011C
hVA	R*4	N.R.	CAM1	R*4	N.R.	CAM2	R*4	N.R.	BMR	R*4	N.R.
CAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVh	R*4	N.R.	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	000160	TBEMS	R*4	000164	TB8AP4	R*4	000178	GAP3	R*4	N.R.
CAM4	R*4	N.R.	ENF	R*4	000194	ETAT	R*4	000198	HC	R*4	N.R.
VC	R*4	N.R.	ATMIX	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
CAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CCC	R*4	N.R.	CLALFF	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDW1	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFLL	R*4	N.R.	CELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKFL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKCE1	R*4	N.R.	SKCB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKRBF	R*4	N.R.	SKPF	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAF	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
ThTh	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	0003D4	VIN	R*4	N.R.
DELR	R*4	0003FC	RMAX	R*4	000410	DELFCR	R*4	000424	ENPCR	R*4	000438
DELWFL	R*4	N.R.	STFW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPFL	R*4	N.R.	FF	R*4	0004B4	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	0004E8	TBCRP	R*4	0004FC
TBSFC	R*4	000510	TBFCh	R*4	000530	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	000644	ALFR	R*4	000648	AMU	R*4	00064C	BHPA	R*4	000650
BHFR	R*4	000654	BHPSUP	R*4	000658	BHT	R*4	N.R.	BLP	R*4	000660
BR	R*4	000664	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARFT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.

CCT	R*4	N.R.	CCV	R*4	N.R.	CLW	R*4	00068C	CPIND	R*4	N.R.			
CPNLD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTCT	R*4	N.R.			
CRT	R*4	N.R.	CTF	R*4	N.R.	CV	R*4	N.R.	CX	R*4	000680			
CLOES	R*4	N.R.	CE	R*4	N.R.	DELRTH	R*4	00068C	DELTA	R*4	N.R.			
DF	R*4	N.R.	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.			
ELN	R*4	N.R.	ELOA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.			
EN	R*4	0006E4	ETAF	R*4	0006E8	FEH	R*4	N.R.	FEHI	R*4	N.R.			
FEFL	R*4	N.R.	FEFT	R*4	N.R.	FET	R*4	N.R.	FETCT	R*4	N.R.			
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.			
FN	R*4	N.R.	FF	R*4	000718	ETAP4	R*4	00071C	GAMDII	R*4	N.R.			
GLF	R*4	N.R.	GMODI	R*4	N.R.	H	R*4	000818	IDUM3	I*4	N.R.			
INDCRU	I*4	N.R.	INDCRG	I*4	N.R.	INDDYL	I*4	000828	INDETA	I*4	00082C			
INDFIX	I*4	N.R.	INDHUL	I*4	N.R.	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.			
INDPCW	I*4	N.R.	INDPRF	I*4	N.R.	INDROM	I*4	N.R.	IPRINT	I*4	000840			
LTFL	I*4	N.R.	NOCPF	I*4	N.R.	NOXPJ	I*4	N.R.	OWE	R*4	N.R.			
PEFF	R*4	000860	PI	R*4	000864	Q	R*4	000868	RHO	R*4	00086C			
REALJ	R*4	N.R.	RHPMF	R*4	000874	R	R*4	000878	RN	R*4	00087C			
SA	R*4	N.R.	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.			
SFC	R*4	000850	SHPF	R*4	N.R.	SHPR	R*4	000898	SHT	R*4	N.R.			
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	0008AC			
ST	R*4	000880	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.			
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.			
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2PHO	R*4	N.R.			
T	R*4	0008E0	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	0008EC			
TMAX	R*4	N.R.	TMF	R*4	0008F4	TPROP	R*4	0008F8	TK	R*4	N.R.			
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.			
V	R*4	000910	W	R*4	000914	WBAL	R*4	N.R.	WBALNT	R*4	N.R.			
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.			
WF	R*4	000930	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.			
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.			
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.			
WPCS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.			
WPRG	R*4	N.R.	WPRP	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.			
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.			
WTN	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.			
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	0009AC			
XLBF	R*4	N.R.	XLFL	R*4	0009B4	XLR	R*4	0009B8	XLW	R*4	0009BC			
YLS2	R*4	0009C0	TOVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	N.R.			
AF	R*4	N.R.	BHPF	R*4	0009D4	SEE	R*4	N.R.						

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
304	0CC666	301	CCC67C	15	0C06FA	1	00070A
2	CCC794	4	CCC7DA	5	0C083A	9	0008F4
7	0CC924	12	CCC9E4	11	CC0970	10	000986
8	0CC9AC	6	CCC9C2	13	CC0A84	14	000A8C
300	0CCB9A	299	CC0EAE				

CPTIONS IN EFFECT NAME= MAIN,CPT=C2,LINECNT=54,SIZE=0000K,

CPTIONS IN EFFECT SOURCE,EBCDIC,NCLIST,NCDECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SCURCE STATEMENTS = 136 ,FROGRAM SIZE = 3032

STATISTICS NO DIAGNCSTICS GENERATEC

****** END CF CCMPILATICN ****** 95K BYTES OF CORE NOT USED

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         COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                            SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002          SUBROUTINE CRUS2 (ICRUS)                                         00010000
           C**** MEMBER NAME BB1CRUS2                                              00020000
           C      PAGE 1    INPUT   LOC 0001 THRU 0050                             00030000
ISN 0003          COMMON    OPTIND    ,FULIND    ,DYLIND    ,CRGIND    ,OSWIND    ,00040000
                 1FIXIND    ,MOMIND    ,PRPIND    ,ETAIND    ,WC        ,XLBWO     ,00050000
                 2XLRLA     ,VGECVH    ,XLGD      ,HMAXD     ,FFCRHO    ,VMC       ,00060000
                 3EMLF      ,CK1       ,DELWF     ,CKFF      ,VDIVE     ,HOC       ,00070000
                 4RCC       ,TOC       ,CAP1(5)   ,SCTIND(12),ELHLOA    ,ELVLOA    ,00080000
                 5GAP2(6)                                                          00090000
           C      PAGE 2    INPUT   LOC 0051 THRU 0100                             00100000
ISN 0004          COMMON    AR        ,HS        ,TCR       ,TCT       ,SLM       ,00110000
                 1ARHT      ,TCHT      ,VEARH     ,SLMH      ,ARVT      ,TCVT      ,00120000
                 2VBARV     ,SLMVT     ,ELDN      ,ELDT      ,ELOGA     ,DLSWSH    ,00130000
                 3DSWET     ,DLVLHL    ,DVCL      ,CBYLOA    ,ENR       ,WVA       ,00140000
                 4DAM1      ,DAM2      ,EMR       ,DAM3      ,CLEYE     ,TFETMR    ,00150000
                 5XC        ,XMR       ,TVCMR     ,VT        ,CTSIGH    ,TVW       ,00160000
                 6HES       ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5) ,00170000
                 7GAP3                                                             00180000
           C      PAGE 3    INPUT   LOC 0101 THRU 140                              00190000
ISN 0005          COMMON    DAM4      ,ENF       ,ETAT      ,HC        ,VC        ,00200000
                 1ATMIY     ,CDVT      ,CDHT      ,DAM5      ,CLTAFE    ,FECPAG    ,00210000
                 2EXPDRG    ,CDC       ,CLALPH    ,CKVT      ,CKHT      ,CKF       ,00220000
                 3CKW       ,RELI      ,TCLN      ,TBCL1(8)  ,TBCDWI(8) ,GAP4(4)    00230000
           C      PAGE 4  INPUT   LOC 141 THRU 200   WEIGHT DATA                   00240000
ISN 0006          COMMON    WFE       ,WFUL      ,DELWFC    ,DELWP     ,DELWST    ,00250000
                 1SKCC      ,SKRC      ,SKSC      ,SKFW      ,SKTM      ,SKRCA     ,00260000
                 2SKSCA     ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2    ,00270000
                 3SKCB1     ,SKCB2     ,SKELNT    ,SKBAL     ,SKLG      ,SKWW      ,00280000
                 4ELF       ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB     ,00290000
                 5SKRBF     ,SKPH      ,SKAND     ,SKAR      ,SKPA      ,SKVTAR    ,00300000
                 6SKPDS     ,SKPDSZ    ,SKT       ,SKFS      ,SKPEI     ,SKPES     ,00310000
                 7SK1       ,SK2       ,DK3       ,DK4       ,SK5       ,SK6       ,00320000
                 8SK7       ,SK8       ,SK9       ,SK10      ,SK11      ,SK12      ,00330000
                 9SK13      ,SK14      ,SK15      ,PLIN      ,GAP5(3)               00340000
           C      PAGE 5  INPUT  LOC 201 THRU 300                                  00350000
ISN 0007          COMMON     TCLINC(5) ,XTGTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5)  ,00360000
                 1DELTH(5)  ,STH(5)    ,CRSINC(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)    ,00370000
                 2DELR(5)   ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)   ,00380000
                 3FFIN(5)   ,CAPE(10)                                              00390000
           C      PAGE 6  INPUT  LOC 301 THRU 400                                  00400000
ISN 0008          COMMON     CYCFFL    ,FF        ,SK3       ,SK4       ,TBH1(5)   ,00410000
                 1TETO(5)   ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPCW(8)  ,GAP7(60)   00420000
           C      WORKING COMMON                                                   00430000
ISN 0009          COMMON  ALFDES,ALFDL,ALFF,AML,                                   00440000
                 1          BFPA,BFFR,BFPSLP,BFT,BLP,BR,BS,BVT,                    00450000
                 2 CBARF,CBARHT,CBARVT,CBAFW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO00460000
                 3,CPTOT,CRT,CTP,CV,CX,CLDES,CE,                                   00470000
                 4 DELRTH,DELTA,DF,DSPLMT,      ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP, 00480000
                 5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4     00490000
ISN 0010          COMMON GAMD11(3,15),CLF,GMDC1(16),H,                             00500000
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                      7 ICUM4,INCCRU,INCDRG,INCCYL,INDETA,INDFIX,INCFUL,INDOPT,INCOSW,    00510000
                      8 INDPOW,INDPRP,INCADM,IPRINT                                       00520000
ISN 0011               COMMON LTHL,NCCPP,NCXP.,CWB,PEHP,PI,Q,RHC,REALJ,RHPMR,R,RA         00530000
ISN 0012               COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                      1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC         00550000
ISN 0013               COMMON T,TAF,TCEAF,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0014               COMMON W,WBAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,           00570000
                      1 WGSB,WFL,WHT,WLG,WMC,WPAYL,WPC,WPCS,WPEI,WPF,WPRB,WPRG,WPRP,WPSTR00580000
                      2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLC,WAC,WENV                  00590000
ISN 0015               COMMON XLALB,XLE,XLBF,XLFL,XLR,XLW,YLS2,TCVW                       00600000
ISN 0016               COMMON CMR,SICAR,AF,EFFP,SEE                                       00600001
ISN 0017               NAMELIST /NCRUS2/ LC1,YLS2,V,T,Q,CX,BHPR,BHPA,BLP,                 00610000
                      1         EHPSLP,FP,EA,INCETA,ETAP4,R,W,WF,ST                      00620000
ISN 0018               RTCD=57.2957795                                                    00620100
ISN 0019               HH=H                                                               00620200
ISN 0020               NETAP4 = ETAP4N + 0.1                                              00630000
ISN 0021               IF(IPRINT.NE.1) GO TO 3C1                                          00640000
ISN 0023               WRITE(6,3C2)VIN(ICRUS)                                             00650000
ISN 0024          3C2  FORMAT(7X,'CRUISE AT ',F6.1,2X,'KNOTS  TAS'/)                      00660000
ISN 0025          3C1  CONTINUE                                                          00670000
ISN 0026               IF(IPRINT.EQ.1) WRITE(6,1C05)                                      00680000
ISN 0028               IF(IPRINT.EQ.1) WRITE(6,1CC8)                                      00680100
ISN 0030          1CC5 FORMAT(2X,'TIME',7X,'RANGE',5X,'FUEL USED',5X,'WEIGHT',6X,'ALT.',600690000
                      1X,'TEMP',5X,'TAS',5X,'E.F.',4X,'PEHP',5X,'BHPR',4X,'ETAP',5X,'NMPP00700000
                      2',6X,'R.A.',4X,'CL'/                                              00710000
                      32X,'(HOURS)    (N.MI)     (POUNDS)    (POUNDS)     (FEET)   (DEG.F00720000
                      4)   (KT)'//)                                                      00730000
ISN 0031          1CC8 FORMAT(37X,'HULL LIFT',11X,'WING LIFT',7X,'RCTOR LIFT',8X,'ALPHA F00730100
                      1',16X,'ALPHA C/L'/38X,'(POUNDS)',12X,'(POUNDS)',7X,'(POUNDS)',10X,00730200
                      2'(DEG)',17X,'(DEG)'//)                                            00730300
ISN 0032               LC1 = 0                                                            00740000
ISN 0033               YLS2   =  1. - ENFCR(ICRUS)/ENP                                    00750000
ISN 0034               V      =    VIN(ICRUS)                                            00760000
ISN 0035               TEMP   =    TIN4(ICRUS)                                           00770000
ISN 0036               CALL  ATMCS( H , TEMP )                                            00780000
ISN 0037               IF( V. LT .(VMC/SSIGMA)) GO TO 1                                   00790000
ISN 0039               V  =  VMO/SSIGMA                                                   00800000
ISN 0040          1 Q  =  1.42636 * RHC * V * V                                           00810000
ISN 0041               CALL  LIFT                                                         00820000
ISN 0042               CALL  DRAG(ALFR)                                                   00830000
ISN 0043               BR=XLB/W                                                           00830100
ISN 0044               IF(INDCYL.GT.2) GO TO 2                                            00840000
ISN 0046               T  =  T  +  Q * DELFCR(ICRUS)                                      00850000
ISN 0047               IF( INDETA ) 3,3,4                                                 00860000
ISN 0048          4 TPROP = T                                                             00870000
ISN 0049               CALL POWER                                                         00880000
ISN 0050               BHPR=SHPR*BHPP*DELRTH*YLS2                                         00890000
ISN 0051               GO TO 5                                                            00900000
ISN 0052          3 ETAP4 = XLINT(TEEMS,TEEAP4,V,NETAP4,M)                                00910000
ISN 0053               IF(M.NE.0) WRITE(6,1C1) INDSGT                                     00920000
ISN 0055               ETAP=ETAP4                                                         00920100
ISN 0056          1C1  FORMAT(15X,'THIS ERROR IS IN THE V-ETAP4 TABLE    SGTINC(',I2,')')00930000
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ISN 0057           BHPR =  T * V /( 325.8 * ETAP4 * ETAT )                      00940000
ISN 0058           GO TO  5                                                     00950000
ISN 0059         2 CX  =  CX  +  2. * ANU * AML * DELFCR(ICRUS)/(PI * DMR * DMR *ENR)00960000
ISN 0060           CALL RCTPCW                                                  00970000
ISN 0061           BHPR  =  BHPMR/ETAT                                          00980000
ISN 0062         5 BLP = XLINT(TBH2,TBCRF,H,5,M)                                00990000
ISN 0063           IF(M.NE.0)WRITE(6,102)I                                      01000000
ISN 0065       102 FORMAT(22X,35HTHIS ERROR IS IN THE H-POWER TABLE /           01010000
                 1         22X, 7HSCTIND(,I2,')'/)                              01020000
ISN 0066           BLP=FACTR(BLP,HH,THETA,FF)                                   01030000
ISN 0067           BLK=BLP                                                      01030100
ISN 0068           BHPSUP = BLP * DELRTH * BHPP                                 01040000
ISN 0069           BHPA   = BHPSUP * YLS2                                       01050000
ISN 0070           IF(BHPR - BHPA) 6,6,7                                        01060000
ISN 0071         6 BHPA   =   BHPR                                              01070000
ISN 0072           BHPSUP =  BHPA/YLS2                                          01080000
ISN 0073           BLP    =  BHPSUP/(BHPP * DELRTH )                            01090000
ISN 0074           SFC    =  XLINT(TEPOW, TESFC , BLP, 8, M)                    01100000
ISN 0075           IF(M.NE.0) WRITE(6,103)I                                     01110000
ISN 0077       103 FORMAT(22X,30HTHIS ERROR IS IN THE SFC TABLE/                01120000
                 1         22X, 7HSCTIND(,I2,')'/)                              01130000
ISN 0078           F=SFC*BHPA*CKFF                                              01140000
ISN 0079           EN= V/F                                                      01150000
ISN 0080           IF(INDCYL.LT.3) ALFDL=-90.                                   01150100
ISN 0082           ALFD=ALFR*RTOD                                               01150200
ISN 0083           PEHF=BHPSUP/(BLK*BHPP*DELRTH)                                01150300
ISN 0084           IF(IPRINT.EQ.1)WRITE(6,1001)ST,R,WF,W,H,TMP,V,BR,PEHF,BHPR,ETAP, 01150400
                  1EN,RN,CLW                                                    01150500
ISN 0086           IF(IPRINT.EQ.1)WRITE(6,1009)XLHL,XLW,XLR,ALFD,ALFDL          01150600
ISN 0088           IF (LC1.EQ.1) GO TO 300                                      01160000
ISN 0090           RMAXI = RMAX(ICRUS)                                          01170000
ISN 0091           DELTAR= RMAXI - R                                            01180000
ISN 0092      1001 FORMAT(2X,F7.2,2X,F8.1,2X,F9.0,4X,F10.0,2X,F8.0,2X,F7.2,3X,F6.1,2X01230000
                  1,F6.3,2X,F6.3,2X,F8.0,2X,F5.2,2X,F9.6,2X,F6.3,2X,F5.2)       01240000
ISN 0093      1009 FORMAT(34X,F10.0,11X,F10.0,7X,F10.0,11X,F5.1,19X,F5.1/)      01240100
ISN 0094           IF(DELTAR.GT.DELR(ICRUS)) GO TO 13                           01250000
ISN 0096           IF(DELTAR.LE.DELR(ICRUS)) LC1=1                              01250100
ISN 0098           IF(LC1.EQ.1) GO TO 14                                        01250200
ISN 0100        13 DELTAR=DELR(ICRUS)                                           01250300
ISN 0101        14 R = R + DELTAR                                               01250400
ISN 0102           W  =  W - DELTAR/ EN                                         01260000
ISN 0103           WF =  WF+ DELTAR/EN                                          01270000
ISN 0104           ST =  ST+ DELTAR/ V                                          01280000
ISN 0105           GO TO 1                                                      01290000
ISN 0106       300 RETURN                                                       01300000
ISN 0107         7 NEXT=1                                                       01320000
ISN 0108           WRITE(6,1006)                                                01330000
ISN 0109      1006 FORMAT(15X,47HINSUFFICIENT POWER AVAILABLE FOR CRUISE(CRUS2)A) 01340000
ISN 0110           CALL CRUS1 (ICRUS)                                           01350000
ISN 0111           RETURN                                                       01360000
ISN 0112           END                                                          01370000
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NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.
F	SF		R*4	0003C0	H	SFA	C	R*4	000818	I	F		I*4	0003C4	M	FA		I*4	0003C8
Q	SF	C	R*4	000868	R	SF	C	R*4	000878	T	SF	C	R*4	0008E0	V	SFA	C	R*4	000910
W	SF	C	R*4	000914	AF		C	R*4	N.R.	AR		C	R*4	N.R.	BP	SF	C	R*4	000664
BS		C	R*4	N.R.	CB		C	R*4	N.R.	CV		C	R*4	N.R.	CX	SF	C	R*4	000680
DH		C	R*4	N.R.	EN	SF	C	R*4	000E84	FF	FA	C	R*4	000484	FM		C	R*4	N.R.
FP		C	R*4	000718	HC		C	R*4	N.R.	HH	SFA		R*4	0003CC	PI	F	C	R*4	000864
RN	F	C	R*4	00087C	SA		C	R*4	N.R.	ST	SF	C	R*4	000880	SW		C	R*4	N.R.
TR		C	R*4	N.R.	VC		C	R*4	N.R.	VT		C	R*4	N.R.	WE		C	R*4	N.R.
WF	SF	C	R*4	000930	WO		C	R*4	N.R.	WS		C	R*4	N.R.	WW		C	R*4	N.R.
XC		C	R*4	N.R.	AML	F	C	R*4	00064C	BHT		C	R*4	N.R.	BLK	SF		R*4	0003D0
BLP	SFA	C	R*4	000660	BMR		C	R*4	N.R.	BVT		C	R*4	N.R.	CCP		C	R*4	N.R.
CCT		C	R*4	N.R.	CDC		C	R*4	N.R.	CDV		C	R*4	N.R.	CKF		C	R*4	N.R.
CKW		C	R*4	N.R.	CK1		C	R*4	N.R.	CLW	F	C	R*4	000680	CRT		C	R*4	N.R.
CTP		C	R*4	N.R.	CK3		C	R*4	N.R.	DK4		C	R*4	N.R.	DMR	F	C	R*4	0009C8
ELC		C	R*4	N.R.	ELF		C	R*4	N.R.	ELN		C	R*4	N.R.	ELT		C	R*4	N.R.
ENP	F	C	R*4	000194	ENR	F	C	R*4	00011C	FEH		C	R*4	N.R.	FET		C	R*4	N.R.
FEW		C	R*4	N.R.	GLF		C	R*4	N.R.	HES		C	R*4	N.R.	HCO		C	R*4	N.R.
LC1	S		I*4	0003D4	CWE		C	R*4	N.R.	RHO	F	C	R*4	000B6C	RMI		C	R*4	N.R.
R00		C	R*4	N.R.	SA5		C	R*4	N.R.	SA6		C	R*4	N.R.	SA7		C	R*4	N.R.
SEE		C	R*4	N.R.	SFC	SF	C	R*4	000890	SHT		C	R*4	N.R.	SKT		C	R*4	N.R.
SK1		C	R*4	N.R.	SK2		C	R*4	N.R.	SK3		C	R*4	N.R.	SK4		C	R*4	N.R.
SK5		C	R*4	N.R.	SK6		C	R*4	N.R.	SK7		C	R*4	N.R.	SK8		C	R*4	N.R.
SK9		C	R*4	N.R.	SLN		C	R*4	N.R.	STH		C	R*4	N.R.	SVT		C	R*4	N.R.
TAF		C	R*4	N.R.	TCR		C	R*4	N.R.	TCT		C	R*4	N.R.	TMP	F	C	R*4	0008F4
TOO		C	R*4	N.R.	TVH		C	R*4	N.R.	ULF		C	R*4	N.R.	VHL		C	R*4	N.R.
VIN	F	C	R*4	0003E8	VMC	F	C	R*4	000040	WAC		C	R*4	N.R.	WCC		C	R*4	N.R.
WEP		C	R*4	N.R.	WES		C	R*4	N.R.	WFC		C	R*4	N.R.	WFE		C	R*4	N.R.
WFR		C	R*4	N.R.	WFS		C	R*4	N.R.	WFW		C	R*4	N.R.	WHL		C	R*4	N.R.
WHT		C	R*4	N.R.	WLG		C	R*4	N.R.	WMC		C	R*4	N.R.	WPC		C	R*4	N.R.
WPH		C	R*4	N.R.	WRC		C	R*4	N.R.	WSC		C	R*4	N.R.	WST		C	R*4	N.R.
WTM		C	R*4	N.R.	WVA		C	R*4	N.R.	WVT		C	R*4	N.R.	XLB	F	C	R*4	0009AC
XLR	F	C	R*4	000988	XLW	F	C	R*4	0009BC	XMR		C	R*4	N.R.	ALFD	SF		R*4	0003D8
ALFR	SFA	C	R*4	000648	ARHT		C	R*4	N.R.	ARVT		C	R*4	N.R.	BHPA	SF	C	R*4	000650
BHPP	F	C	R*4	0009D4	PHPR	SF	C	R*4	000654	CDHT		C	R*4	N.R.	CDVT		C	R*4	N.R.
CKFF	F	C	R*4	000050	CKHT		C	R*4	N.R.	CKVT		C	R*4	N.R.	CAM1		C	R*4	N.R.
CAM2		C	R*4	N.R.	CAM3		C	R*4	N.R.	CAM4		C	R*4	N.R.	CAM5		C	R*4	N.R.
DELR	F	C	R*4	0003FC	DRAG	SF	XF	R*4	000000	DVOL		C	R*4	N.R.	ELDN		C	R*4	N.R.
ELDT		C	R*4	N.R.	ELHT		C	R*4	N.R.	ELOA		C	R*4	N.R.	ELVT		C	R*4	N.R.
EMLF		C	R*4	N.R.	ETAF	SF	C	R*4	0006E8	ETAT	F	C	R*4	000198	FEHI		C	R*4	N.R.
FEHL		C	R*4	N.R.	FEHT		C	R*4	N.R.	FEVT		C	R*4	N.R.	FEWH		C	R*4	N.R.
FEWI		C	R*4	N.R.	GAP1		C	R*4	N.R.	GAP2		C	R*4	N.R.	GAP3		C	R*4	N.R.
GAP4		C	R*4	N.R.	GAP5		C	R*4	N.R.	GAP6		C	R*4	N.R.	GAP7		C	R*4	N.R.
HFIN		C	R*4	N.R.	LIFT	SF	XF	I*4	000000	LTHL		C	I*4	N.R.	NEXT	S		I*4	0003DC
PEHF	SF	C	R*4	000860	PLIN		C	R*4	N.R.	PELI		C	R*4	N.R.	PMAX	F	C	R*4	000410
RTOD	SF		R*4	0003E0	SHPA		C	R*4	N.R.	SHPR	F	C	R*4	000898	SHTE		C	R*4	N.R.
SHTW		C	R*4	N.R.	SKAC		C	R*4	N.R.	SKAR		C	R*4	N.R.	SKCC		C	R*4	N.R.
SKFS		C	R*4	N.R.	SKFW		C	R*4	N.R.	SKHL		C	R*4	N.R.	SKHT		C	R*4	N.R.
SKLG		C	R*4	N.R.	SKMC		C	R*4	N.R.	SKPA		C	R*4	N.R.	SKPH		C	R*4	N.R.
SKRC		C	R*4	N.R.	SKSC		C	R*4	N.R.	SKTM		C	R*4	N.R.	SKVT		C	R*4	N.R.
SKWP		C	R*4	N.R.	SKWW		C	R*4	N.R.	SK10		C	R*4	N.R.	SK11		C	R*4	N.R.

SK12		C	R*4	N.R.	SK13		C	R*4	N.R.	SK14		C	R*4	N.R.	SK15		C	R*4	N.R.
SLMH		C	R*4	N.R.	STPH		C	R*4	N.R.	SVTE		C	R*4	N.R.	SVTW		C	R*4	N.R.
SWTT		C	R*4	N.R.	TBH1		C	R*4	N.R.	TBH2	FA	C	R*4	0004E8	THTO		C	R*4	N.R.
TCHT		C	R*4	N.R.	TCLA		C	R*4	N.R.	TCVT		C	R*4	N.R.	TEMP	SFA		R*4	0003E4
TINY		C	R*4	N.R.	TIN2		C	R*4	N.R.	TIN4	F	C	R*4	0003D4	TMAX		C	R*4	N.R.
TOVW		C	R*4	N.R.	THTH		C	R*4	N.R.	WBAL		C	R*4	N.R.	WENV		C	R*4	N.R.
WFUL		C	R*4	N.R.	WCSB		C	R*4	N.R.	WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.
WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.	WRCA		C	R*4	N.R.
WSCA		C	R*4	N.R.	XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.	XLHL	F	C	R*4	0009B4
YLS2	SF	C	R*4	0009C0	ALFDL	SF	C	R*4	000644	ATMIY		C	R*4	N.R.	ATMCS	SF XF		R*4	000000
CBARF		C	R*4	N.R.	CEARW		C	R*4	N.R.	CLDES		C	R*4	N.R.	CLFYE		C	R*4	N.R.
CPIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPRO		C	R*4	N.R.
CPTGT		C	R*4	N.R.	CRLS1	SF XF		R*4	000000	CRUS2			R*4	0003E8	DELTA		C	R*4	N.R.
DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.	DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.
ELDOA		C	R*4	N.R.	ENPCR	F	C	R*4	000438	ETAP2		C	R*4	N.R.	ETAP4	SF	C	R*4	00071C
FACTR	F XF		R*4	000000	FETCT		C	R*4	N.R.	GMDD1		C	R*4	N.R.	HMAXD		C	R*4	N.R.
ICRUS	SFA		I*4	0003EC	ICUM4		C	I*4	N.R.	NOCPP		C	I*4	N.R.	NCXPJ		C	I*4	N.R.
PFET2		C	R*4	N.R.	PCWER	SF XF		R*4	000000	REALJ		C	R*4	N.R.	RHPWR	F	C	R*4	000874
RMAXI	SF		R*4	0003F0	SIGMA		C	R*4	N.R.	SIGMR		C	R*4	N.R.	SKAMD		C	R*4	N.R.
SKBAL		C	R*4	N.R.	SKCBI		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.
SKPEI		C	R*4	N.R.	SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKPBF		C	R*4	N.R.
SKRCA		C	R*4	N.R.	SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.
SWETH		C	R*4	N.R.	SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2FHC		C	R*4	N.R.
TBCL1		C	R*4	N.R.	TECRP	FA	C	R*4	0004FC	TBEM5	FA	C	R*4	000164	TBPOW	FA	C	R*4	000530
TBSFC	FA	C	R*4	000510	TCEAR		C	R*4	N.R.	THETA	FA	C	R*4	0008EC	TPROP	S	C	R*4	0008F8
TVCMR		C	R*4	N.R.	VEARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VCIVE		C	R*4	N.R.
VGASB		C	R*4	N.R.	VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.
XLALB		C	R*4	N.R.	XLBWC		C	R*4	N.R.	XLINT	F XF		R*4	000000	XLRLA		C	R*4	N.R.
ALFDES		C	R*4	N.R.	EHFSUP	SF	C	R*4	000658	CBARHT		C	R*4	N.R.	CBARVT		C	R*4	N.R.
CBYLOA		C	R*4	N.R.	CLALPH		C	R*4	N.R.	CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.
CYCPRL		C	R*4	N.R.	DELFCR	F	C	R*4	000424	DELRTH	F	C	R*4	0006BC	DELTAF	SF		R*4	0003F4
DELWFC		C	R*4	N.R.	DELWFL		C	R*4	N.R.	DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.
DLTAFE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.	DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.
DYLIND		C	R*4	N.R.	ELFLCA		C	R*4	N.R.	ELVLOA		C	R*4	N.R.	ETAIND		C	R*4	N.R.
ETAP4N	F	C	R*4	000160	EXPDRG		C	R*4	N.R.	FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.
GAMD11		C	R*4	N.R.	FULIND		C	R*4	N.R.	IBCOM#	F XF		I*4	000000	INDCRU		C	I*4	N.R.
INDDRG		C	I*4	N.R.	INDDYL		C	I*4	000828	INDETA		C	I*4	000820	INDFIX		C	I*4	N.R.
INDHUL		C	I*4	N.R.	INDOPT		C	I*4	N.R.	INDUSW		C	I*4	N.R.	INDPOW		C	I*4	N.R.
INDPPP		C	I*4	N.R.	INDRDM		C	I*4	N.R.	INDSGT	F		I*4	0003F8	IPRINT		C	I*4	00084C
NCRUS2				0000C0	NETAP4	SFA		I*4	0003FC	OPTIND		C	R*4	N.R.	OSWIND		C	R*4	N.R.
PRPIND		C	R*4	N.R.	PUMIND		C	R*4	N.R.	RHORHO		C	R*4	N.R.	RCTPOW	SF XF		R*4	0C0000
SGTIND		C	R*4	N.R.	SKELNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.
SKPDSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.	SSIGMA	F	C	R*4	0008AC	STHETA		C	R*4	N.R.
TBCDWI		C	R*4	N.R.	TBEAP4	FA	C	R*4	000178	THETMR		C	R*4	N.R.	TCLIND		C	R*4	N.R.
VGBOVH		C	R*4	N.R.	WBALNT		C	R*4	N.R.	WPAYLO		C	R*4	N.R.	XTGTA2		C	R*4	N.R.
XTGTA4		C	R*4	N.R.															

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	FULIND	R*4	N.R.	CYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	HC	R*4	N.R.	XLBWO	R*4	N.R.	XLPLA	R*4	N.R.
VGBCVH	R*4	N.R.	XLCC	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VHC	R*4	000040	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	000050	VDIVE	R*4	N.R.	HOO	R*4	N.R.	ROO	R*4	N.R.
TCC	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLCA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARF	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELCT	R*4	N.R.	ELDCA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLFL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENP	R*4	0001IC
WVA	R*4	N.R.	DAM1	R*4	N.R.	DAM2	R*4	N.R.	BMR	R*4	N.R.
DAM3	R*4	N.R.	CLEVE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	000160	TBEMS	R*4	000164	TB8AP4	R*4	00C178	GAP3	R*4	N.R.
DAM4	R*4	N.R.	ENF	R*4	000194	ETAT	R*4	000198	HC	R*4	N.R.
VC	R*4	N.R.	ATMIX	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CCC	R*4	N.R.	CLALFF	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDW1	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFLL	R*4	N.R.	CELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKFL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGE1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RVI	R*4	N.R.
SKWP	R*4	N.R.	SKFT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKREF	R*4	N.R.	SKPF	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAF	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	P*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	000304	VIN	R*4	0003E8
DELR	R*4	0003FC	RMAX	R*4	000410	DELFCR	R*4	000424	EXPCR	R*4	000438
DELWFL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	0004B4	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	000468	TBCRP	R*4	0004FC
TBSFC	R*4	000510	TBPCW	R*4	000530	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	000644	ALFF	R*4	000648	AMU	R*4	00064C	BHPA	R*4	000650
BHPR	R*4	000654	BHPSLP	R*4	000658	BHT	R*4	N.R.	BLP	R*4	000660
BR	R*4	000664	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	P*4	N.R.
CBARHT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CCV	R*4	N.R.	CLW	R*4	00068C	CPIND	R*4	N.R.

CPNLD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CPT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	N.R.	CX	R*4	000680
CLOES	R*4	N.R.	CE	R*4	N.R.	DELRTH	R*4	0006BC	DELTA	P*4	N.R.
CF	R*4	N.R.	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELCA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	0006E4	ETAP	R*4	0006E8	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETOT	R*4	N.R.
FEVT	R*4	N.R.	FEV	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FF	R*4	000718	ETAP4	R*4	00071C	GAMD11	R*4	N.R.
CLF	R*4	N.R.	GMDD1	R*4	N.R.	H	R*4	000818	IDUM4	I*4	N.R.
INDCRL	I*4	N.R.	INDCRC	I*4	N.R.	INDDYL	I*4	000828	INDETA	I*4	00082C
INDFIX	I*4	N.R.	INDFUL	I*4	N.R.	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPCH	I*4	N.R.	INDPRF	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	000840
LTFL	I*4	N.R.	NCCPF	I*4	N.R.	NOXPJ	I*4	N.R.	CWE	R*4	N.R.
PEFF	R*4	000860	PI	R*4	000864	Q	R*4	000868	RHO	R*4	000860
REALJ	R*4	N.R.	RFPMR	R*4	000874	R	R*4	000878	RN	R*4	000870
SA	R*4	N.R.	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.P.
SFC	R*4	000890	SFPA	R*4	N.R.	SHPR	R*4	000898	SHT	R*4	N.R.
SFTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	0008AC
ST	R*4	0008BC	STFETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	0008EC	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	0008EC
TMAX	R*4	N.R.	TMP	R*4	0008F4	TPROP	R*4	0008F8	TR	R*4	N.R.
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	000910	W	R*4	000914	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	000930	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPCS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WFRG	R*4	N.R.	WPRF	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	0009AC
XLBH	R*4	N.R.	XLHL	R*4	0009B4	XLR	R*4	0009B8	XLW	R*4	0009BC
YLS2	R*4	0009C0	TCWW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHFF	R*4	0009D4	SEE	R*4	N.R.			

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	PAGE 008
301	0CC5DC	1	CCC666	4	CC06C6	3	0006F2	
2	0CC756	5	CCC79E	6	C00812	13	00098E	
14	0CC9C6	3CC	CCCACC	7	CC0AC8			

CPTIONS IN EFFECT NAME= MAIN,CPT=02,LINECNT=54,SIZE=00CCK,

CPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 111 ,PROGRAM SIZE = 2662

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 99K BYTES OF CORE NOT USED

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      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002            SUBROUTINE CRUS3 (ICRUS)
               C**** MEMBER NAME BEICRUS3
               C    PAGE 1   INPUT   LOC 0001 THRU 0050
ISN 0003            COMMON     OPTIND    ,FULIND    ,DYLIND    ,ORGIND    ,OSWIND    ,
                   1FIXIND    ,RDMIND    ,PRFIND    ,ETAIND    ,WO        ,XLBWO     ,
                   2XLRLA     ,VGBCWH    ,XLCD      ,HMAXD     ,RHORHO    ,VMC       ,
                   3EMLF      ,CK1       ,DELWF     ,CKFF      ,VDIVE     ,HOC       ,
                   4ROC       ,TOC       ,CAF1(5)   ,SGTIND(12),ELHLOA    ,ELVLOA    ,
                   5GAP2(6)
               C    PAGE 2   INPUT   LOC 0051 THRU 0100
ISN 0004            COMMON     AR        ,WS        ,TCR       ,TCT       ,SLM       ,
                   1ARHT      ,TCHT      ,VEARH     ,SLMH      ,ARVT      ,TCVT      ,
                   2VBARV     ,SLMVT     ,ELDN      ,ELDT      ,ELDOA     ,DLSWSH    ,
                   3DSWET     ,DLVLFL    ,DVCL      ,CBYLOA    ,ENR       ,WVA       ,
                   4CAM1      ,CAM2      ,EMF       ,DAM3      ,CLEYE     ,TFETMR    ,
                   5XC        ,XMR       ,TVCMR     ,VT        ,CTSIGH    ,TVW       ,
                   6HES       ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5) ,
                   7GAP3
               C    PAGE 3   INPUT  LOC 0101 THRU 140
ISN 0005            COMMON     CAM4      ,ENF       ,ETAT      ,FC        ,VC        ,
                   1ATMIY     ,CDVT      ,CDFT      ,DAM5      ,DLTAFE    ,FEDRAG    ,
                   2EXFDRG    ,CDC       ,CLALPH    ,CKVT      ,CKHT      ,CKF       ,
                   3CKW       ,RELI      ,TCLN      ,TBCL1(8)  ,TBCDWI(8) ,GAP4(4)
               C    PAGE 4  INPUT   LOC 141 THRU 200   WEIGHT DATA
ISN 0006            COMMON     WFE       ,WFUL      ,DELWFC    ,DELWP     ,DELWST    ,
                   1SKCC      ,SKRC      ,SKSC      ,SKFW      ,SKTM      ,SKRCA     ,
                   2SKSCA     ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2    ,
                   3SKGB1     ,SKGB2     ,SKELNT    ,SKBAL     ,SKLG      ,SKWW      ,
                   4ELF       ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB     ,
                   5SKRBF     ,SKPH      ,SKAMD     ,SKAR      ,SKPA      ,SKVTAR    ,
                   6SKPDS     ,SKPDSZ    ,SKT       ,SKFS      ,SKPEI     ,SKPES     ,
                   7SK1       ,SK2       ,DK3       ,DK4       ,SK5       ,SK6       ,
                   8SK7       ,SK8       ,SK9       ,SK10      ,SK11      ,SK12      ,
                   9SK13      ,SK14      ,SK15      ,PLIN      ,GAP5(3)
               C    PAGE 5  INPUT   LOC 201 THRU 300
ISN 0007            COMMON     TCLIN(5)  ,XTGTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5)  ,
                   1DELTH(5)  ,STH(5)    ,CRSINC(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)    ,
                   2DELR(5)   ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)   ,
                   3FFIN(5)   ,GAP6(10)
               C    PAGE 6  INPUT   LOC 301 THRU 400
ISN 0008            COMMON     CYCPRL    ,FF        ,SK3       ,SK4       ,TBH1(5)   ,
                   1TBTO(5)   ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60)
               C    WORKING COMMON
ISN 0009            COMMON  ALFDES,ALFDL,ALFF,ANG,
                   1          BHPA,BHPR,BHPSLP,BHT,BLP,BR,BS,BVT,
                   2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO
                   3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,
                   4 DELRTH,DELTA,DF,DSPLMT,       ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP,
                   5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4
ISN 0010            COMMON GAMC11(3,15),GLF,GMDD1(16),H,
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               7 IDUM5,INDCRU,INDCRG,INDCYL,INDETA,INDFIX,INDHUL,INDOPT,INDOSW,   00510000
               8 INDPOW,INDPRP,INDRDM,IPRINT                                      00520000
ISN 0011         COMMON LTHL,NCCFF,NCXP.,CHE,PEHP,PI,Q,RHC,REALJ,RHPMR,R,RN       00530000
ISN 0012         COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPF,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
               1STHETA,STMAX,SWT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC        00550000
ISN 0013         COMMON T,TAF,TCEAF,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0014         COMMON W,WBAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,          00570000
               1 WGSB,WFL,WFT,WLG,WMC,WPAYL,WPC,WPCS,WPEI,WPF,WPRB,WPRG,WPRP,WPSTR00580000
               2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLC,WAC,WENV                 00590000
ISN 0015         COMMON XLALB,XLB,XLBH,XLFL,XLR,XLW,YLS2,TCVW                     00600000
ISN 0016         COMMON CMR,SIGMR,AF,BHPP,SEE                                     00600001
ISN 0017         NAMELIST /NCRUS3/ LC1,LC3,LC4,LC5,YLS2,V,T,Q,CX,BHPR,            00610000
               1           BHPA,ELF,BHPSLP,FP,EN,INDETA,ETAP4,EN2,EN1,R,W,WF,ST   00620000
ISN 0018         RTOD=57.2957795                                                  00620100
ISN 0019         HH=H                                                             00620200
ISN 0020         NETAP4 = ETAP4N + 0.1                                            00630000
ISN 0021         IF(IPRINT.EQ.1)WRITE(6,301)                                      00640000
ISN 0023     301 FORMAT(7X,'CRUISE AT SPEED FOR BEST SPECIFIC RANGE'/)            00650000
ISN 0024         IF(IPRINT.EQ.1) WRITE(6,1005)                                    00660000
ISN 0026         IF(IPRINT.EQ.1) WRITE(6,1008)                                    00660100
ISN 0028    1005 FORMAT(2X,'TIME',7X,'RANGE',5X,'FUEL USED',5X,'WEIGHT',6X,'ALT.',600670000
               1X,'TEMP',5X,'TAS',5X,'E.R.',4X,'PEHP',5X,'BHPR',4X,'ETAP',5X,'NMPP00680000
               2',6X,'R.N.',4X,'CL'/                                              00690000
               32X,'(HOURS)    (N.MI)      (POUNDS)     (POUNDS)      (FEET)   (DEG.F00700000
               4)    (KT)'//)                                                     00710000
ISN 0029    1008 FORMAT(37X,'HULL LIFT',11X,'WING LIFT',7X,'ROTOR LIFT',8X,'ALPHA H00710100
               1',16X,'ALPHA C/L'/38X,'(POUNDS)',12X,'(POUNDS)',7X,'(POUNDS)',10X,00710200
               2'(DEG)',17X,'(DEG)'//)                                            00710300
ISN 0030         LC1 = 0                                                          00720000
ISN 0031         LC3 = 0                                                          00730000
ISN 0032         LC4 = 0                                                          00740000
ISN 0033         LC5 = 0                                                          00750000
ISN 0034         YLS2 =  1. - ENFCR(ICRUS)/ENF                                    00760000
ISN 0035         TIN  = TIN4(ICRUS)                                               00770000
ISN 0036         CALL ATMOS( H , TIN)                                             00780000
ISN 0037         V  = VMC/SSIGMA                                                  00790000
ISN 0038         VMAX=V                                                           00790100
ISN 0039       1 Q  = 1.42636 * RHC * V * V                                       00800000
ISN 0040         LC3 = LC3 + 1                                                    00810000
ISN 0041         CALL LIFT                                                        00820000
ISN 0042         CALL DRAG(ALFR)                                                  00830000
ISN 0043         BR=XLB/W                                                         00830100
ISN 0044         IF(INDCYL-2) 2,2, 3                                              00840000
ISN 0045       2 T  =  T + Q * DELFCR(ICRUS)                                      00850000
ISN 0046         IF(INDETA) 4, 4, 5                                               00860000
ISN 0047       4 ETAP4  = XLINT( TBEM5, TE8AP4, V, NETAP4, M)                     00870000
ISN 0048         IF(M.NE.0) WRITE(6,101)I                                         00880000
ISN 0050         ETAP=ETAP4                                                       00880100
ISN 0051     101 FORMAT(22X,'THIS ERROR IS IN THE V-ETAP4 TABLE  SGTIND(',I2,')')  00890000
ISN 0052         BHPR  =   T * V / ( 325.8 * ETAP4 * ETAT)                        00900000
ISN 0053         GO TO 6                                                          00910000
ISN 0054       5 TPROP = T                                                        00920000
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ISN 0055            CALL PCWER                                                  00930000
ISN 0056            BHPR  =  SHPP * EHPP * DELRTH * YLS2                        00940000
ISN 0057            GO  TO  6                                                   00950000
ISN 0058          3 CX = CX + 2.0 * AMU * AML * DELFCR(ICRUS) / (PI * DMR * DMR * ENR)00960000
ISN 0059            CALL  RCTPCW                                                00970000
ISN 0060            BHPR  =  BHPMR / ETAT                                       00980000
ISN 0061          6 BLP   =  XLINT(TBH2,TBCRF,H,5,M)                            00990000
ISN 0062            IF(M.NE.0)WRITE(6,102)I                                     01000000
ISN 0064        102 FORMAT(22X,'THIS ERROR IS IN THE H-POWER TABLE  SGTIND(',I2,')')01010000
ISN 0065            BLF=FACTR(BLP,FF,THETA,FF)                                  01020000
ISN 0066            BLK=BLP                                                     01020100
ISN 0067            BHPSUP =  BLP * DELRTH * EHPP                               01030000
ISN 0068            BHPA   =  BHPSUP * YLS2                                     01040000
ISN 0069            IF(BHPA - BHPR) 8, 7,  7                                    01050000
ISN 0070          7 BHPA  =  BHPR                                               01060000
ISN 0071            BHPSUP=  BHPA / YLS2                                        01070000
ISN 0072            BLP   =  EHPSLP/(EHPP * DELRTH)                             01080000
ISN 0073            SFC   =  XLINT(TBPCW , TBSFC, BLP, 8, M)                    01090000
ISN 0074            IF(M.NE.0)WRITE(6,103)I                                     01100000
ISN 0076        103 FORMAT(22X,'THIS ERROR IS IN THE SFC TABLE  SGTIND(',I2,') BHPA.GE01110000
                   1.BHPR')                                                     01120000
ISN 0077            F=SFC*BHPA*CKFF                                             01130000
ISN 0078            LC5  = 1                                                    01140000
ISN 0079            IF(LC3 - 2 ) 10, 9,9                                        01150000
ISN 0080          9 EN2  =  V/F                                                 01160000
ISN 0081            IF(EN2 - EN1) 11,11, 12                                     01170000
ISN 0082         11 IF(LC4.EQ.1) GO TO 13                                       01180000
ISN 0084         16 V  =  V + 1.                                                01190000
ISN 0085            IF(V.GT.VMAX) V=VMAX                                        01190100
ISN 0087            IF(V.GE.VMAX) GO TO 13                                      01190200
ISN 0089            EN1=  EN2                                                   01200000
ISN 0090            LC4=  1                                                     01210000
ISN 0091         14 IF(V - 5.) 15 , 15,  1                                      01220000
ISN 0092         15 WRITE(6,104)I                                               01230000
ISN 0093        104 FORMAT(22X,'INSUFFICIENT POWER FOR CRUISE   SGTIND(',I2,')')01240000
ISN 0094            GO TO 302                                                   01250000
ISN 0095          8 SFC = XLINT(TBPCW, TBSFC, BLP, 8, M)                        01260000
ISN 0096            IF(M.NE.0)WRITE(6,105)I                                     01270000
ISN 0098        105 FORMAT(22X,'THIS ERROR IS IN THE SFC TABLE(BHPA.LT.BHPR)SGTIND(',I01280000
                   12,')')                                                      01290000
ISN 0099            F=SFC*BHPA*CKFF                                             01300000
ISN 0100            IF(LC5.EQ.1) GO TO 13                                       01310000
ISN 0102         10 EN1 =  V/F                                                  01320000
ISN 0103         17 V = V - 10.                                                 01330000
ISN 0104            GO TO 14                                                    01340000
ISN 0105         12 IF(LC4.EQ.1) GO TO 16                                       01350000
ISN 0107            EN1  =  EN2                                                 01360000
ISN 0108            GO TO 17                                                    01370000
ISN 0109         13 EN  =  EN1                                                  01380000
ISN 0110            V=V-1.                                                      01380001
ISN 0111            IF(INDGYL.LT.3) ALFDL=-90.                                  01380100
ISN 0113            ALFD=ALFR*RTOD                                              01380200
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ISN 0114         PEHF=BHPSLP/(BLK*BHPF*DELRTH)                                        01380300
ISN 0115         IF(IPRINT.EQ.1)WRITE(6,1003)ST,R,WF,W,H,TMP,V,BR,PEHF,BHPR,ETAP,     01380400
                1EN,RN,CLW                                                            01380500
ISN 0117         IF(IPRINT.EQ.1)WRITE(6,1009)XLHL,XLW,XLR,ALFC,ALFDL                  01380600
ISN 0119         IF(LC1.EQ.1) GO TO 300                                               01390000
ISN 0121         DELTAR  =  RMAX(ICRUS) - R                                           01400000
ISN 0122    1003 FORMAT(2X,F7.2,2X,F8.1,2X,F9.0,4X,F10.0,2X,F8.0,2X,F7.2,3X,F6.1,2X01450000
                1,F6.3,2X,F6.3,2X,F8.0,2X,F5.2,2X,F9.6,2X,F6.3,2X,F5.2)               01460000
ISN 0123    1009 FORMAT(34X,F10.0,11X,F10.0,7X,F10.0,11X,F5.1,19X,F5.1/)              01460100
ISN 0124         IF(DELTAR.GT.DELR(ICRUS)) GO TO 20                                   01470000
ISN 0126         IF(DELTAR.LE.DELR(ICRUS)) LC1=1                                      01470100
ISN 0128         IF(LC1.EQ.1) GO TO 21                                                01470200
ISN 0130      20 DELTAR=DELR(ICRUS)                                                   01470300
ISN 0131      21 R = R + DELTAR                                                       01470400
ISN 0132         W  =  W  - DELTAR/EN                                                 01480000
ISN 0133         WF =  WF + DELTAR/EN                                                 01490000
ISN 0134         ST =  ST + DELTAR/V                                                  01500000
ISN 0135         LC3= 0                                                               01510000
ISN 0136         LC4= 0                                                               01520000
ISN 0137         LC5= 0                                                               01530000
ISN 0138         GO TO 1                                                              01540000
ISN 0139     300 RETURN                                                               01550000
ISN 0140     302 WRITE(6,NCRUS3)                                                      01560000
ISN 0141         RETURN                                                               01560100
ISN 0142         END                                                                  01570000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
F	SF	R*4	000410	H	SFA C	R*4	000818	I	F	I*4	000414	M	FA	I*4	000418
G	SF C	R*4	000868	R	SF C	R*4	000878	T	SF C	R*4	000C8E0	V	SFA C	R*4	000910
W	SF C	R*4	000914	AF	C	R*4	N.R.	AR	C	R*4	N.R.	BR	SF C	R*4	000664
BS	C	R*4	N.R.	CB	C	R*4	N.R.	CV	C	R*4	N.R.	CX	SF C	R*4	000680
DH	C	R*4	N.R.	EN	SF C	R*4	0006E4	FF	FA C	R*4	000484	FM	C	R*4	N.R.
FP	C	R*4	000718	HC	C	R*4	N.R.	HH	SFA	R*4	000410	PI	F C	R*4	000864
RN	F C	R*4	000870	SA	C	R*4	N.R.	ST	SF C	R*4	000880	SW	C	R*4	N.R.
TR	C	R*4	N.R.	VC	C	R*4	N.R.	VT	C	R*4	N.R.	WE	C	R*4	N.R.
WF	SF C	R*4	000930	WO	C	R*4	N.R.	WS	C	R*4	N.R.	WW	C	R*4	N.R.
XC	C	R*4	N.R.	AMU	F C	R*4	00064C	BHT	C	R*4	N.R.	BLK	SF	R*4	000420
BLP	SFA C	R*4	000660	BMR	C	R*4	N.R.	BVT	C	R*4	N.R.	CCP	C	R*4	N.R.
CCT	C	R*4	N.R.	CDC	C	R*4	N.R.	CDV	C	R*4	N.R.	CKF	C	R*4	N.R.
CKW	C	R*4	N.R.	CK1	C	R*4	N.R.	CLW	F C	R*4	000680	CRT	C	R*4	N.R.
CTP	C	R*4	N.R.	CK3	C	R*4	N.R.	DK4	C	R*4	N.R.	DMR	F C	R*4	0C09C8
ELC	C	R*4	N.R.	ELF	C	R*4	N.R.	ELN	C	R*4	N.R.	ELT	C	R*4	N.R.
ENP	F C	R*4	000194	ENR	F C	R*4	00011C	EN1	SF	R*4	000424	EN2	SF	R*4	000428
FEH	C	R*4	N.R.	FET	C	R*4	N.R.	FEW	C	R*4	N.R.	GLF	C	R*4	N.R.
HES	C	R*4	N.R.	FOO	C	R*4	N.R.	LC1	S	I*4	000420	LC3	SF	I*4	000430
LC4	S	I*4	000434	LC5	S	I*4	000438	OWE	C	R*4	N.R.	RHO	F C	R*4	000860
RMI	C	R*4	N.R.	ROO	C	R*4	N.R.	SA5	C	R*4	N.R.	SA6	C	R*4	N.R.
SA7	C	R*4	N.R.	SEE	C	R*4	N.R.	SFC	SF C	R*4	000890	SHT	C	R*4	N.R.
SKT	C	R*4	N.R.	SK1	C	R*4	N.R.	SK2	C	R*4	N.R.	SK3	C	R*4	N.R.
SK4	C	R*4	N.R.	SK5	C	R*4	N.R.	SK6	C	R*4	N.R.	SK7	C	R*4	N.R.
SK8	C	R*4	N.R.	SK9	C	R*4	N.R.	SLM	C	R*4	N.R.	STH	C	R*4	N.R.
SVT	C	R*4	N.R.	TAF	C	R*4	N.R.	TCR	C	R*4	N.R.	TCT	C	R*4	N.R.
TIN	SFA	R*4	00043C	TMP	F C	R*4	0008F4	TOO	C	R*4	N.R.	TVW	C	R*4	N.R.
ULF	C	R*4	N.R.	VHL	C	R*4	N.R.	VIN	C	R*4	N.R.	VMO	F C	R*4	0C0940
WAC	C	R*4	N.R.	WCC	C	R*4	N.R.	WEP	C	P*4	N.R.	WES	C	R*4	N.R.
WFC	C	R*4	N.R.	WFE	C	R*4	N.R.	WFR	C	R*4	N.R.	WFS	C	R*4	N.R.
WFW	C	R*4	N.R.	WHL	C	R*4	N.R.	WHT	C	R*4	N.R.	WLG	C	R*4	N.R.
WMC	C	R*4	N.R.	WPC	C	R*4	N.R.	WPH	C	R*4	N.R.	WRC	C	R*4	N.R.
WSC	C	R*4	N.R.	WST	C	R*4	N.R.	WTM	C	R*4	N.R.	WVA	C	R*4	N.R.
WVT	C	R*4	N.R.	XLB	F C	R*4	0009AC	XLR	F C	R*4	000988	XLW	F C	R*4	0C09BC
XMR	C	R*4	N.R.	ALFD	SF	R*4	000440	ALFR	SFA C	R*4	000648	ARHT	C	R*4	N.R.
ARVT	C	R*4	N.R.	BHPA	SF C	R*4	000650	BHPP	F C	R*4	0009D4	BHPR	SF C	R*4	0C0654
CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.	CKFF	F C	R*4	000C50	CKHT	C	R*4	N.R.
CKVT	C	R*4	N.R.	CAM1	C	R*4	N.R.	CAM2	C	R*4	N.R.	CAM3	C	R*4	N.R.
CAM4	C	R*4	N.R.	CAM5	C	R*4	N.R.	DELR	F C	R*4	0003FC	CRAG	SF XF	R*4	000000
DVOL	C	R*4	N.R.	ELCN	C	R*4	N.R.	ELDT	C	R*4	N.R.	ELHT	C	R*4	N.R.
ELOA	C	R*4	N.R.	ELVT	C	R*4	N.R.	EMLF	C	R*4	N.R.	ETAP	SF C	R*4	0C06E8
ETAT	F C	R*4	000198	FEHI	C	R*4	N.R.	FEHL	C	R*4	N.R.	FEHT	C	R*4	N.R.
FEVT	C	R*4	N.R.	FEWH	C	R*4	N.R.	FEWI	C	R*4	N.R.	GAP1	C	R*4	N.R.
GAP2	C	R*4	N.R.	GAP3	C	R*4	N.R.	GAP4	C	R*4	N.R.	GAP5	C	R*4	N.R.
GAP6	C	R*4	N.R.	GAP7	C	R*4	N.R.	HFIN	C	R*4	N.R.	LIFT	SF XF	I*4	0C0000
LTHL	C	I*4	N.R.	PEFF	SF C	R*4	000860	PLIN	C	R*4	N.R.	RELI	C	R*4	N.R.
RMAX	F C	R*4	000410	RTOD	SF	R*4	000444	SHPA	C	R*4	N.R.	SHPR	F C	R*4	0C0898
SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.	SKAR	C	R*4	N.R.
SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.	SKHL	C	R*4	N.R.
SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.	SKPA	C	R*4	N.R.
SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.	SKTM	C	R*4	N.R.

SKVT		C	R*4	N.R.	SKWP		C	R*4	N.R.	SKWW		C	R*4	N.R.	SK10		C	R*4	N.R.
SK11		C	R*4	N.R.	SK12		C	R*4	N.R.	SK13		C	R*4	N.R.	SK14		C	R*4	N.R.
SK15		C	R*4	N.R.	SLMP		C	R*4	N.R.	STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.
SVTW		C	R*4	N.R.	SWTT		C	R*4	N.R.	TBH1		C	R*4	N.R.	TBH2	FA	C	R*4	0C04E8
TBTC		C	R*4	N.R.	TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.
TINY		C	R*4	N.R.	TIN2		C	R*4	N.R.	TIN4	F	C	R*4	0003D4	TMAX		C	R*4	N.R.
TOVW		C	R*4	N.R.	TWTW		C	R*4	N.R.	VMAX	SF		R*4	000448	WBAL		C	R*4	N.R.
WENV		C	R*4	N.R.	WFUL		C	R*4	N.R.	WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.
WPEI		C	R*4	N.R.	WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.
WRCA		C	R*4	N.R.	WSCA		C	R*4	N.R.	XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.
XLHL	F	C	R*4	0009B4	YLS2	SF	C	R*4	0009C0	ALFDL	SF	C	R*4	000644	ATMIY		C	R*4	N.R.
ATMOS	SF	XF	R*4	000000	CBARF		C	R*4	N.R.	CBARW		C	R*4	N.R.	CLDES		C	R*4	N.R.
CLEYE		C	R*4	N.R.	CFIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.	CPPAR		C	R*4	N.R.
CPPRO		C	R*4	N.R.	CFTCT		C	R*4	N.R.	CRUS3			R*4	00044C	DELTA		C	R*4	N.R.
DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.	DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.
ELDOA		C	R*4	N.R.	ENPCR	F	C	R*4	000438	ETAP2		C	R*4	N.R.	ETAP4	SF	C	R*4	00071C
FACTR	F	XF	R*4	000CC0	FETCT		C	R*4	N.R.	GNDD1		C	R*4	N.R.	HMAXD		C	R*4	N.R.
ICRUS	F		I*4	000450	ICUM5		C	I*4	N.R.	NOCPP		C	I*4	N.R.	NCXPJ		C	I*4	N.R.
PFET2		C	R*4	N.R.	PCWER	SF	XF	R*4	000000	REALJ		C	R*4	N.R.	RHPMR	F	C	R*4	000874
SIGMA		C	R*4	N.R.	SIGMR		C	R*4	N.R.	SKAMD		C	R*4	N.R.	SKBAL		C	R*4	N.R.
SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.
SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.	SKRCA		C	R*4	N.R.
SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH		C	R*4	N.R.
SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2RHO		C	R*4	N.R.	TBCL1		C	R*4	N.R.
TBCRP	FA	C	R*4	0004FC	TEEM5	FA	C	R*4	000164	TBPOW	FA	C	R*4	000530	TBSFC	FA	C	R*4	0C0510
TCBAR		C	R*4	N.R.	THETA	FA	C	R*4	0008EC	TPROP	S	C	R*4	0008F8	TVCMR		C	R*4	N.R.
VBARH		C	R*4	N.R.	VEARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.	VGASB		C	R*4	N.R.
VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.	XLALB		C	R*4	N.R.
XLBWC		C	R*4	N.R.	XLINT	F	XF	R*4	000000	XLRLA		C	R*4	N.R.	ALFDES		C	R*4	N.R.
BHPSUP	SF	C	R*4	000658	CBARFT		C	R*4	N.R.	CBARVT		C	R*4	N.R.	CBYLCA		C	R*4	N.R.
CLALPH		C	R*4	N.R.	CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.
DELFCR	F	C	R*4	000424	DELRTH	F	C	R*4	0006BC	DELTAR	SF		R*4	000454	DELWFC		C	R*4	N.R.
DELWPL		C	R*4	N.R.	DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.
DLVLHL		C	R*4	N.R.	DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.
ELHLOA		C	R*4	N.R.	ELVLCA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4A	F	C	R*4	000160
EXPDRG		C	R*4	N.R.	FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	FWRNL#	F	XF	I*4	000000
GAMD11		C	R*4	N.R.	HLLIND		C	R*4	N.R.	IBCOM#	F	XF	I*4	000000	INCCRU		C	I*4	N.R.
INDDRG		C	I*4	N.R.	INCCYL		C	I*4	000828	INDETA		C	I*4	000820	INCFIX		C	I*4	N.R.
INDHUL		C	I*4	N.R.	INCCPT		C	I*4	N.R.	INDOSW		C	I*4	N.R.	INDPOW		C	I*4	N.R.
INDPRP		C	I*4	N.R.	INCROW		C	I*4	N.R.	IPRINT		C	I*4	000840	NCRUS3	F			800809
NETAP4	SFA		I*4	000458	CPTIND		C	R*4	N.R.	OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.
RCMIND		C	R*4	N.R.	RHCRHO		C	R*4	N.R.	ROTPOW	SF	XF	R*4	000000	SGTIND		C	R*4	N.R.
SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.
SKVTAR		C	R*4	N.R.	SSIGMA	F	C	R*4	0008AC	STHETA		C	R*4	N.R.	TBCDWI		C	R*4	N.R.
TBBAP4	FA	C	R*4	000178	THETMR		C	R*4	N.R.	TOLIND		C	R*4	N.R.	VGBOVH		C	R*4	N.R.
WBALNT		C	R*4	N.R.	WPAYLC		C	R*4	N.R.	XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	PULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	PIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WC	R*4	N.R.	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBCVF	R*4	N.R.	XLCC	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VMC	R*4	000040	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	000050	VDIVE	R*4	N.R.	HOO	R*4	N.R.	RCO	R*4	N.R.
TCC	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELCT	R*4	N.R.	ELDCA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLFL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	00011C
WVA	R*4	N.R.	DAM1	R*4	N.R.	DAM2	R*4	N.R.	BMR	R*4	N.R.
DAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	000160	TBEMS	R*4	000164	TB8AP4	R*4	000178	GAP3	R*4	N.R.
DAM4	R*4	N.R.	ENP	R*4	000194	ETAT	R*4	000198	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CDC	R*4	N.R.	CLALFF	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCLI	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFLL	R*4	N.R.	CELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTW	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKFL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKCB1	R*4	N.R.	SKCB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKREF	R*4	N.R.	SKPF	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKFA	R*4	N.R.	SKVTAF	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLIN	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
THTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	000304	VIN	R*4	N.R.
DELR	R*4	0003FC	RMAX	R*4	000410	DELFCR	R*4	000424	ENPCR	R*4	000438
DELWFL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	0004B4	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	0004E8	TBCRP	R*4	0004FC
TBSFC	R*4	000510	TBPCW	R*4	000530	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	000644	ALFR	R*4	000648	AMU	R*4	00064C	BHPA	R*4	000650
BHPR	R*4	000654	BHPSLF	R*4	000658	BHT	R*4	N.R.	BLP	R*4	000660
BR	R*4	000664	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARFT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.

CCT	R*4	N.R.	CCV	R*4	N.R.	CLW	R*4	00068C	CPIND	R*4	N.R.
CPALC	R*4	N.R.	CPPAF	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CPT	R*4	N.R.	CTF	R*4	N.R.	CV	R*4	N.R.	CX	R*4	0006B0
CLDES	R*4	N.R.	CE	R*4	N.R.	DELRTH	R*4	0006BC	DELTA	R*4	N.R.
DF	R*4	N.R.	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELOA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	0006E4	ETAF	R*4	0006E8	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETCT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FF	R*4	000718	ETAP4	R*4	00071C	GAMDIL	R*4	N.R.
GLF	R*4	N.R.	GMCCI	R*4	N.R.	H	R*4	000818	IDUM5	I*4	N.R.
INDCFU	I*4	N.R.	INDCRG	I*4	N.R.	INDDYL	I*4	000828	INDETA	I*4	00082C
INDFIX	I*4	N.R.	INDHUL	I*4	N.R.	INDUPT	I*4	N.R.	INDCSW	I*4	N.R.
INDFCW	I*4	N.R.	INDPRP	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	000840
LTHL	I*4	N.R.	NOCPF	I*4	N.R.	NOXPJ	I*4	N.R.	CWE	R*4	N.R.
PEHF	R*4	000860	PI	R*4	000864	Q	R*4	000868	RHO	R*4	00086C
REALJ	R*4	N.R.	RHPWR	R*4	000874	R	R*4	000878	RN	R*4	00087C
SA	R*4	N.R.	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	000890	SHPA	R*4	N.R.	SHPR	R*4	000898	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	0008AC
ST	R*4	0008B0	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	0008EC	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	0008EC
TMAX	R*4	N.R.	TMP	R*4	0008F4	TPROP	R*4	0008F8	TR	R*4	N.R.
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	000910	W	R*4	000914	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	000930	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPCS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRF	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	000C9AC
XLBH	R*4	N.R.	XLHL	R*4	000984	XLR	R*4	000988	XLW	R*4	00098C
YLS2	R*4	0009C0	TGVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPF	R*4	000904	SEE	R*4	N.R.			

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
1	0CC742	2	CCC7E6	4	CC07A4	5	000806
3	0CC832	6	CCC87E	7	CC08F0	9	000964
11	0CC978	16	CCC97E	14	00C980	15	0009CC
8	CCC9FC	10	C0CA42	17	CC0A4E	12	000A5E
13	0CCA7C	2C	C00BCE	21	000BD6	300	000C16
302	0CCC22						

CPTIONS IN EFFECT NAME= MAIN,CPT=C2,LINECNT=54,SIZE=0000K,

CPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 141 ,PROGRAM SIZE = 3166

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 95K BYTES OF CORE NOT USED

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      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002              SUBROUTINE DRAG(ALFR)                                    00010000
                    C**** MEMBER NAME B81DRAG                                  00020000
                    C     PAGE 1   INPUT   LOC 0001 THRU 0050                  00030000
ISN 0003            COMMON   OPTIND   ,HULIND   ,DYLIND   ,DRGIND   ,DSWIND  ,00040000
                   1FIXIND   ,RDMIND  ,PRPIND   ,ETAIND   ,WO      ,XLBWO    ,00050000
                   2XLRLA    ,VGBOVH  ,XLGD     ,HMAXD    ,RHORHO  ,VMO      ,00060000
                   3EMLF     ,CK1     ,DELWF    ,CKEF     ,VDIVE   ,HOO      ,00070000
                   4ROO      ,TOO     ,GAP1(5)  ,SGTIND(12),ELHLOA ,ELVLOA    ,00080000
                   5GAP2(6)                                                    00090000
                    C     PAGE 2   INPUT   LOC 0051 THRU 0100                  00100000
ISN 0004            COMMON   AR      ,WS      ,TCR      ,TCT      ,SLM      ,00110000
                   1ARHT     ,TCHT    ,VBARH   ,SLMH     ,ARVT     ,TCVT     ,00120000
                   2VBARV    ,SLMVT   ,ELDN    ,ELDT     ,ELDOA    ,DLSWSH   ,00130000
                   3DSWET    ,DLVLHL  ,DVOL    ,CBYLOA   ,ENR      ,WVA      ,00140000
                   4DAM1     ,DAM2    ,BMR     ,DAM3     ,CLEYE    ,THETMR   ,00150000
                   5XC       ,XMR     ,TVCMR   ,VT       ,CTSIGH   ,TVW      ,00160000
ISN 0005            COMMON   HES     ,TINY    ,ETAP2    ,ETAP4N   ,TBEM5(5) ,00170000
                   1TB8AP4(5) ,GAP3                                            00180000
                    C     PAGE 3   INPUT  LOC 0101 THRU 140                    00190000
ISN 0006            COMMON   DAM4    ,ENP     ,ETAT     ,HC       ,VC       ,00200000
                   1ATMIY    ,CDVT    ,CDHT    ,DAM5     ,DLTAFE   ,FEDRAG   ,00210000
                   2EXPORG   ,CDC     ,CLALPH  ,CKVT     ,CKHT     ,CKF      ,00220000
                   3CKW      ,RELI    ,TCLN    ,TBCL1(8) ,TBCDWI(8) ,GAP4(4)  00230000
                    C     PAGE 4 INPUT  LOC 141 THRU 200  WEIGHT DATA          00240000
ISN 0007            COMMON   WFE     ,WFUL    ,DELWFC   ,DELWP    ,DELWST   ,00250000
                   1SKCC     ,SKRC    ,SKSC    ,SKFW     ,SKTM     ,SKKCA    ,00260000
                   2SKSCA    ,SKMC    ,SKAC    ,SKHL     ,SKENV1   ,SKENV2   ,00270000
                   3SKGB1    ,SKGB2   ,SKBLNT  ,SKBAL    ,SKLG     ,SKWW     ,00280000
                   4ELF      ,RMI     ,SKWP    ,SKHT     ,SKVT     ,SKPRB    ,00290000
                   5SKRBF    ,SKPH    ,SKAMD   ,SKAR     ,SKPA     ,SKVTAR   ,00300000
                   6SKPDS    ,SKPDSZ  ,SKT     ,SKFS     ,SKPEI    ,SKPES    ,00310000
                   7SK1      ,SK2     ,DK3     ,DK4      ,SK5      ,SK6      ,00320000
                   8SK7      ,SK8     ,SK9     ,SK10     ,SK11     ,SK12     ,00330000
                   9SK13     ,SK14    ,SK15    ,PLIN     ,GAP5(3)            00340000
                    C     PAGE 5  INPUT  LOC 201 THRU 300                      00350000
ISN 0008            COMMON   TGLIND(5) ,XTGTA2(5) ,TIN2(5)   ,TWTW(5)  ,PFET2(5) ,00360000
                   1DELTH(5) ,STH(5)   ,CRSIND(5) ,XTGTA4(5) ,TIN4(5)  ,VIN(5)   ,00370000
                   2DELR(5)  ,RMAX(5)  ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)  ,00380000
                   3HFIN(5)  ,GAP6(10)                                         00390000
                    C     PAGE 6  INPUT  LOC 301 THRU 400                      00400000
ISN 0009            COMMON   CYCPRL  ,FF      ,SK3     ,SK4      ,TBH1(5)  ,00410000
                   1TBTO(5)  ,TBH2(5) ,TBCRP(5) ,TBSFC(8) ,TBPOW(8) ,GAP7(60) 00420000
                    C     WORKING COMMON                                       00430000
ISN 0010            COMMON ALFDES,ALFDL,DUM1,AMU,                              00440000
                   1       BHPA,BHPR,BHPSUP,BHT,BLP,BR,BS,BVT,                 00450000
                   2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPR00460000
                   3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,                             00470000
                   4 DELRTH,DELTA,DH,DSPLMT,      ELC,ELHT,ELN,ELOA,ELT,ELVT,EN,ETAP,  00480000
                   5 FEH,FEHI,FEHL,FEHT,FET,FETOT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4  00490000
ISN 0011            COMMON GAMD11(3,15),GLF,GMDD1(16),H,                       00500000
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                      7 ICRUS,INDCRU,INDORG,INDDYL,INDETA,INDFIX,INCHUL,INDOPT,INDOSW,    00510000
                      8 INDPOW,INDPRP,INDRDM,IPRINT                                       00520000
ISN 0012              COMMON LTHL,NCCPP,NOXPJ,OWE,PEHF,PI,Q,RHO,REALJ,RHPMK,R,RN          00530000
ISN 0013              COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,  00540000
                     1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHO          00550000
ISN 0014              COMMON T,TAF,TCBAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V    00560000
ISN 0015              COMMON W,WBAL,WBALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,             00570000
                     1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR 00580000
                     2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                  00600000
ISN 0016              COMMON XLALB,XLB,XLBH,XLHL,XLR,XLW,YLS2,TOVW                        00610000
ISN 0017              COMMON DMR,SIGMR,AF,BHPP,SEE                                        00610100
ISN 0018              NAMELIST /NDRAG/ FEWH,FEHI,FEWI,FEH,FET,T,AMU,CX,CDWI,Q,RHO,SA5,V   00620000
ISN 0019              NTCL=TCLN+0.01                                                      00630000
ISN 0020              IF(INDDYL.EQ.2.OR.INDDYL.EQ.4) GO TO 10                             00640000
ISN 0022              IF (INDHUL.GT.1) GO TO 10                                           00650000
ISN 0024              FEWH=0.                                                             00660000
ISN 0025              FEHI=ELOA*DH*(CLALPH*ALFR**2+CDC*ALFR**2*ABS(ALFR))                 00670000
ISN 0026              FEWI=0.                                                             00680000
ISN 0027              GO TO 15                                                            00690000
ISN 0028           10 IF(INDHUL.EQ.3) GO TO 17                                            00700000
ISN 0030              CDWI=XLINT(TBCL1,TBCDWI,CLW,NTCL,M)                                 00700100
ISN 0031              IF (N.NE.0) WRITE(6,1002)                                           00710000
ISN 0033              FEWH=SA6*CDWI*SW                                                    00720000
ISN 0034              IF (INDHUL.EQ.1) GO TO 12                                           00730000
ISN 0036              FEWI=SW*(CLALPH*ALFR**2+CDC*ALFR**2*ABS(ALFR))                      00740000
ISN 0037              FEHI=0.0                                                            00750000
ISN 0038              GO TO 15                                                            00760000
ISN 0039           12 FEHI=ELOA*DH*(CLALPH*ALFR**2+CDC*ALFR**2*ABS(ALFR))                 00770000
ISN 0040              FEWI=SA7*CLW**2*SW                                                  00780000
ISN 0041           15 FEH=SA5                                                             00790000
ISN 0042              FET=FEH+FEWH+FEHI+FEWI                                              00800000
ISN 0043              Q=1.42636*RHO*V**2                                                  00810000
ISN 0044              T=FET*Q                                                             00820000
ISN 0045              IF (INDPRP.EQ.0) GO TO 16                                           00830000
ISN 0047              AMU=1.688*V/VT                                                      00840000
ISN 0048              CX=2.*AMU**2*FET/(PI*DMR**2*ENR)                                    00850000
ISN 0049         1002 FORMAT(22X,34HTHIS ERROR IS IN THE CL,CDWI TABLE)                   00860000
ISN 0050           16 RETURN                                                            00880000
ISN 0051           17 FEWI=0.0                                                          00880100
ISN 0052              FEHI=SW*(CLALPH*ALFR**2+CDC*ALFR**2*ABS(ALFR))                    00880200
ISN 0053              FEWH=0.0                                                          00880300
ISN 0054              GO TO 15                                                          00880400
ISN 0055              END                                                               00890000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	C	R*4	N.R.	M	FA C	I*4	0000E8	Q	SF C	R*4	000868	R	C	R*4	N.R.
T	S C	R*4	0008E0	V	F C	R*4	000910.	W	C	R*4	N.R.	AF	C	R*4	N.R.
AR	C	R*4	N.R.	BR	C	R*4	N.R.	BS	C	R*4	N.R.	CB	C	R*4	N.R.
CV	C	R*4	N.R.	CX	S C	R*4	0006B0	DH	F C	R*4	0006C4	EN	C	R*4	N.R.
FF	C	R*4	N.R.	FM	C	R*4	N.R.	FP	C	R*4	N.R.	HC	C	R*4	N.R.
PI	F C	R*4	000864	RN	C	R*4	N.R.	SA	C	R*4	N.R.	ST	C	R*4	N.R.
SW	F C	R*4	0008C8	TR	C	R*4	N.R.	VC	C	R*4	N.R.	VT	F C	R*4	000148
WE	C	R*4	N.R.	WF	C	R*4	N.R.	WO	C	R*4	N.R.	WS	C	R*4	N.R.
WW	C	R*4	N.R.	XC	C	R*4	N.R.	AMU	SF C	R*4	00064C	BHT	C	R*4	N.R.
BLP	C	R*4	N.R.	BMR	C	R*4	N.R.	BVT	C	R*4	N.R.	CCP	C	R*4	N.R.
CCT	C	R*4	N.R.	CDC	F C	R*4	0001C0	CDV	C	R*4	N.R.	CKF	C	R*4	N.R.
CKW	C	R*4	N.R.	CK1	C	R*4	N.R.	CLW	FA C	R*4	00068C	CRT	C	R*4	N.R.
CTP	C	R*4	N.R.	DK3	C	R*4	N.R.	DK4	C	R*4	N.R.	DMR	F C	R*4	0009C8
ELC	C	R*4	N.R.	ELF	C	R*4	N.R.	ELN	C	R*4	N.R.	ELT	C	R*4	N.R.
ENP	C	R*4	N.R.	ENR	F C	R*4	00011C	FEH	SF C	R*4	0006EC	FET	SF C	R*4	0006FC
FEW	C	R*4	N.R.	GLF	C	R*4	N.R.	HES	C	R*4	N.R.	HOO	C	R*4	N.R.
OWE	C	R*4	N.R.	RHO	F C	R*4	00086C	RMI	C	R*4	N.R.	ROO	C	R*4	N.R.
SA5	F C	R*4	000884	SA6	F C	R*4	000888	SA7	F C	R*4	00088C	SEE	C	R*4	N.R.
SFC	C	R*4	N.R.	SHT	C	R*4	N.R.	SKT	C	R*4	N.R.	SK1	C	R*4	N.R.
SK2	C	R*4	N.R.	SK3	C	R*4	N.R.	SK4	C	R*4	N.R.	SK5	C	R*4	N.R.
SK6	C	R*4	N.R.	SK7	C	R*4	N.R.	SK8	C	R*4	N.R.	SK9	C	R*4	N.R.
SLM	C	R*4	N.R.	STH	C	R*4	N.R.	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.
TCR	C	R*4	N.R.	TCT	C	R*4	N.R.	TMP	C	R*4	N.R.	TOO	C	R*4	N.R.
TVW	C	R*4	N.R.	ULF	C	R*4	N.R.	VHL	C	R*4	N.R.	VIN	C	R*4	N.R.
VMO	C	R*4	N.R.	WAC	C	R*4	N.R.	WCC	C	R*4	N.R.	WEP	C	R*4	N.R.
WES	C	R*4	N.R.	WFC	C	R*4	N.R.	WFE	C	R*4	N.R.	WFR	C	R*4	N.R.
WFS	C	R*4	N.R.	WFW	C	R*4	N.R.	WHL	C	R*4	N.R.	WHT	C	R*4	N.R.
WLG	C	R*4	N.R.	WMC	C	R*4	N.R.	WPC	C	R*4	N.R.	WPH	C	R*4	N.R.
WRC	C	R*4	N.R.	WSC	C	R*4	N.R.	WST	C	R*4	N.R.	WTM	C	R*4	N.R.
WVA	C	R*4	N.R.	WVT	C	R*4	N.R.	XLB	C	R*4	N.R.	XLR	C	R*4	N.R.
XLW	C	R*4	N.R.	XMR	C	R*4	N.R.	ALFR	FA	R*4	0000EC	ARHT	C	R*4	N.R.
ARVT	C	R*4	N.R.	BHPA	C	R*4	N.R.	BHPP	C	R*4	N.R.	BHPR	C	R*4	N.R.
CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.	CDWI	SF	R*4	0000F0	CKFF	C	R*4	N.R.
CKHT	C	R*4	N.R.	CKVT	C	R*4	N.R.	DAM1	C	R*4	N.R.	DAM2	C	R*4	N.R.
DAM3	C	R*4	N.R.	DAM4	C	R*4	N.R.	DAM5	C	R*4	N.R.	DELR	C	R*4	N.R.
DRAG		R*4	0000F4	DUM1	C	R*4	N.R.	DVOL	C	R*4	N.R.	ELDN	C	R*4	N.R.
ELDT	C	R*4	N.R.	ELHT	C	R*4	N.R.	ELOA	F C	R*4	000608	ELVT	C	R*4	N.R.
EMLF	C	R*4	N.R.	ETAP	C	R*4	N.R.	ETAT	C	R*4	N.R.	FEHI	SF C	R*4	0006F0
FEHL	C	R*4	N.R.	FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.	FEWH	SF C	R*4	00070C
FEWI	SF C	R*4	000710	GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.	GAP3	C	R*4	N.R.
GAP4	C	R*4	N.R.	GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.	GAP7	C	R*4	N.R.
HFIN	C	R*4	N.R.	LTHL	C	I*4	N.R.	NTCL	SFA	I*4	0000F8	PEHF	C	R*4	N.R.
PLIN	C	R*4	N.R.	RELI	C	R*4	N.R.	RMAX	C	R*4	N.R.	SHPA	C	R*4	N.R.
SHPR	C	R*4	N.R.	SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.
SKAR	C	R*4	N.R.	SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.
SKHL	C	R*4	N.R.	SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.
SKPA	C	R*4	N.R.	SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.
SKTM	C	R*4	N.R.	SKVT	C	R*4	N.R.	SKWP	C	R*4	N.R.	SKWW	C	R*4	N.R.
SK10	C	R*4	N.R.	SK11	C	R*4	N.R.	SK12	C	R*4	N.R.	SK13	C	R*4	N.R.
SK14	C	R*4	N.R.	SK15	C	R*4	N.R.	SLMH	C	R*4	N.R.	STPW	C	R*4	N.R.

SVTE		C	R*4	N.R.	SVTW		C	R*4	N.R.	SWTT		C	R*4	N.R.	TBH1		C	R*4	N.R.
TBH2		C	R*4	N.R.	TBTO		C	R*4	N.R.	TCHT		C	R*4	N.R.	TCLN	F	C	R*4	0001DC
TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.	TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.
TMAX		C	R*4	N.R.	TUVW		C	R*4	N.R.	TWTW		C	R*4	N.R.	WBAL		C	R*4	N.R.
WENV		C	R*4	N.R.	WFUL		C	R*4	N.R.	WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.
WPEI		C	R*4	N.R.	WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.
WRCA		C	R*4	N.R.	WSCA		C	R*4	N.R.	XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.
XLHL		C	R*4	N.R.	YLS2		C	R*4	N.R.	ALFDL		C	R*4	N.R.	ATMIY		C	R*4	N.R.
CBARF		C	R*4	N.R.	CBARW		C	R*4	N.R.	CLDES		C	R*4	N.R.	CLEYE		C	R*4	N.R.
CPIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPRO		C	R*4	N.R.
CPTGT		C	R*4	N.R.	DLLTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.
DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.	ELDOA		C	R*4	N.R.	ENPCR		C	R*4	N.R.
ETAP2		C	R*4	N.R.	ETAP4		C	R*4	N.R.	FETGT		C	R*4	N.R.	GMDD1		C	R*4	N.R.
HMAXD		C	R*4	N.R.	ICRUS		C	I*4	N.R.	NDRAG				000000	NOCPP		C	I*4	N.R.
NOXPJ		C	I*4	N.R.	PFET2		C	R*4	N.R.	REALJ		C	R*4	N.R.	RHPMR		C	R*4	N.R.
SIGMA		C	R*4	N.R.	SIGMR		C	R*4	N.R.	SKAMD		C	R*4	N.R.	SKBAL		C	R*4	N.R.
SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.
SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.	SKRCA		C	R*4	N.R.
SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH		C	R*4	N.R.
SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2RHO		C	R*4	N.R.	TBCL1	FA	C	R*4	0001E0
TBCRP		C	R*4	N.R.	TBEM5		C	R*4	N.R.	TBPOW		C	R*4	N.R.	TBSFC		C	R*4	N.R.
TCBAR		C	R*4	N.R.	THETA		C	R*4	N.R.	TPRGP		C	R*4	N.R.	TVCMR		C	R*4	N.R.
VBARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.	VGASB		C	R*4	N.R.
VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.	XLALB		C	R*4	N.R.
XLBWO		C	R*4	N.R.	XLINT	F XF	R*4	000000		XLRLA		C	R*4	N.R.	ALFDES		C	R*4	N.R.
BHPSUP		C	R*4	N.R.	CBARHT		C	R*4	N.R.	CBARVT		C	R*4	N.R.	CBYLOA		C	R*4	N.R.
CLALPH	F	C	R*4	0001C4	CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.
DELFCR		C	R*4	N.R.	DELRTH		C	R*4	N.R.	DELWFC		C	R*4	N.R.	DELWPL		C	R*4	N.R.
DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.
DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.	ELHLOA		C	R*4	N.R.
ELVLOA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4N		C	R*4	N.R.	EXPDRG		C	R*4	N.R.
FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	GAMD11		C	R*4	N.R.	HULIND		C	R*4	N.R.
IBCOM#	F	XF	I*4	000000	INDCRU		C	I*4	N.R.	INDDRG		C	I*4	N.R.	INDDYL		C	I*4	000028
INDETA			C	I*4	N.R.	INDFIX		C	I*4	N.R.	INDHUL		C	I*4	000834	INDOPT		C	I*4	N.R.
INDOSW			C	I*4	N.R.	INDPOW		C	I*4	N.R.	INDPRP		C	I*4	000844	INDRDM		C	I*4	N.R.
IPRINT			C	I*4	N.R.	OPTIND		C	R*4	N.R.	OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.
RDMIND			C	R*4	N.R.	RHORHO		C	R*4	N.R.	SGTIND		C	R*4	N.R.	SKBLNT		C	R*4	N.R.
SKENV1			C	R*4	N.R.	SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.
SSIGMA			C	R*4	N.R.	STHETA		C	R*4	N.R.	TBCDWI	FA	C	R*4	000200	TB8AP4		C	R*4	N.R.
THETMR			C	R*4	N.R.	TOLIND		C	R*4	N.R.	VGBOVH		C	R*4	N.R.	WBALNT		C	R*4	N.R.
WPAYLO			C	R*4	N.R.	XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.					

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	HULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WO	R*4	N.R.	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBOVH	R*4	N.R.	XLGD	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.

VMO	R*4	N.R.	EMLF	R*4	N.R.	CKI	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	HOO	R*4	N.R.	ROO	R*4	N.R.
TUO	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLOA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELDT	R*4	N.R.	ELDOA	R*4	N.R.	DLSwSH	R*4	N.R.	DSwET	R*4	N.R.
DLVLHL	R*4	N.R.	DVOL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	00011C
WVA	R*4	N.R.	DAM1	R*4	N.R.	DAM2	R*4	N.R.	BMR	R*4	N.R.
DAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	000148	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	HES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEM5	R*4	N.R.	TBBAP4	R*4	N.R.	GAP3	R*4	N.R.
DAM4	R*4	N.R.	ENP	R*4	N.R.	ETAT	R*4	N.R.	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	N.R.	DLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CDC	R*4	0001C0	CLALPH	R*4	0001C4	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	0001DC
TBCL1	R*4	0001E0	TBCDWI	R*4	000200	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFUL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKRBF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPFT	R*4	N.R.	SKPFS	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TOLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTA	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWPL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTU	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSEC	R*4	N.R.	TBPOW	R*4	N.R.	GAP7	R*4	N.R.	ALFOES	R*4	N.R.
ALFDL	R*4	N.R.	DUM1	R*4	N.R.	AMU	R*4	00064C	BHPA	R*4	N.R.
BHPR	R*4	N.R.	BHPSUP	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
BR	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARHT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	N.R.	CLW	R*4	00068C	CPIND	R*4	N.R.
CPNUD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CRT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	N.R.	CX	R*4	0006B0
CLDES	R*4	N.R.	CB	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DH	R*4	0006C4	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELOA	R*4	0006D8	ELT	R*4	N.R.	ELVT	R*4	N.R.

EN	R*4	N.R.	ETAP	R*4	N.R.	FEH	R*4	0006EC	FEHI	R*4	000oF0
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	0006FC	FETUT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	00070C	FEWI	R*4	000710
FM	R*4	N.R.	FP	R*4	N.R.	ETAP4	R*4	N.R.	GAMD11	R*4	N.R.
GLF	R*4	N.R.	GMDD1	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRU	I*4	N.R.	INDDRG	I*4	N.R.	INDDYL	I*4	000828	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDHUL	I*4	000834	INDOPT	I*4	N.R.	INDUSW	I*4	N.R.
INDPOW	I*4	N.R.	INDPRP	I*4	000844	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.
LTHL	I*4	N.R.	NOCPP	I*4	N.R.	NUXPJ	I*4	N.R.	OWE	R*4	N.R.
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	000868	RHO	R*4	00086C
REALJ	R*4	N.R.	RHPMR	R*4	N.R.	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	N.R.	SA5	R*4	000884	SA6	R*4	000888	SA7	R*4	00088C
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	0008C8	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	0008E0	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.
TMAX	R*4	N.R.	TMP	R*4	N.R.	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	N.R.	VGASB	R*4	N.R.	VGASK	R*4	N.R.	VHL	R*4	N.R.
V	R*4	000910	W	R*4	N.R.	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSB	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPDS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRP	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBH	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	N.R.	TOVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPP	R*4	N.R.	SEE	R*4	N.R.			

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     LABEL    ADDR                LABEL    ADDR                LABEL    ADDR                LABEL    ADDR          PAGE 007

        10  000280                  12  000302                  15  000342                  16  0003AC
        17  0003B4

*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

*STATISTICS*      SOURCE STATEMENTS =       54 ,PROGRAM SIZE =      1054

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  107K BYTES OF CORE NOT USED
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           COMPILER OPTIONS = NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                    SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002            SUBROUTINE ENGSZ                                                      00010000
              C**** MEMBER NAME B81ENGSZ                                                  00020000
              C     PAGE 1   INPUT   LOC 0001 THRU 0050                                   00030000
ISN 0003            COMMON     OPTIND     ,HULIND    ,DYLIND    ,CRGIND    ,OSWIND       ,00040000
                   1FIXIND    ,RDMIND    ,PRPIND    ,ETAIND    ,WO        ,XLBWO        ,00050000
                   2XLRLA     ,VGBOVH    ,XLGD      ,HMAXD     ,RHORHO    ,VMO          ,00060000
                   3EMLF      ,CK1       ,DELWF     ,CKFF      ,VDIVE     ,HOO          ,00070000
                   4ROO       ,TOO       ,GAP1(5)   ,SGTIND(12),ELHLOA    ,ELVLOA       ,00080000
                   5GAP2(6)                                                               00090000
              C     PAGE 2   INPUT   LOC 0051 THRU 0100                                   00100000
ISN 0004            COMMON     AR        ,WS        ,TCR       ,TCT       ,SLM          ,00110000
                   1ARHT      ,TCHT      ,VBARH     ,SLMH      ,ARVT      ,TCVT         ,00120000
                   2VBARV     ,SLMVT     ,ELDN      ,ELDT      ,ELDOA     ,DLSWSH       ,00130000
                   3DSWET     ,DLVLHL    ,DVOL      ,CBYLOA    ,ENR       ,WVA          ,00140000
                   4DAM1      ,DAM2      ,BMR       ,DAM3      ,CLEYE     ,THETMR       ,00150000
                   5XC        ,XMR       ,TVCMR     ,VT        ,CTSIGH    ,TVW           00160000
ISN 0005            COMMON     HES       ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)     ,00170000
                   1TB8AP4(5) ,GAP3                                                       00180000
              C     PAGE 3   INPUT   LOC 0101 THRU 140                                    00190000
ISN 0006            COMMON     DAM4      ,ENP       ,ETAT      ,HC        ,VC           ,00200000
                   1ATMIY     ,CDVT      ,CDHT      ,DAM5      ,DLTAFE    ,FEDRAG       ,00210000
                   2EXPDRG    ,CDC       ,CLALPH    ,CKVT      ,CKHT      ,CKF          ,00220000
                   3CKW       ,RELI      ,TCLN      ,TBCLI(8)  ,TBCDWI(8) ,GAP4(4)       00230000
              C     PAGE 4 INPUT  LOC 141 THRU 200  WEIGHT DATA                           00240000
ISN 0007            COMMON     WFE       ,WFUL      ,DELWFC    ,DELWP     ,DELWST       ,00250000
                   1SKCC      ,SKRC      ,SKSC      ,SKFW      ,SKTM      ,SKRCA        ,00260000
                   2SKSCA     ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2       ,00270000
                   3SKGB1     ,SKGB2     ,SKBLNT    ,SKBAL     ,SKLG      ,SKWW         ,00280000
                   4ELF       ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB        ,00290000
                   5SKRBF     ,SKPH      ,SKAMD     ,SKAR      ,SKPA      ,SKVTAR       ,00300000
                   6SKPDS     ,SKPDSZ    ,SKT       ,SKFS      ,SKPEI     ,SKPES        ,00310000
                   7SK1       ,SK2       ,DK3       ,DK4       ,SK5       ,SK6          ,00320000
                   8SK7       ,SK8       ,SK9       ,SK10      ,SK11      ,SK12         ,00330000
                   9SK13      ,SK14      ,SK15      ,PLIN      ,GAP5(3)                  00340000
              C     PAGE 5  INPUT  LOC 201 THRU 300                                       00350000
ISN 0008            COMMON     TOLIND(5) ,XTGTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5)     ,00360000
                   1DELTH(5)  ,STH(5)    ,CRSIND(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)       ,00370000
                   2DELR(5)   ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)      ,00380000
                   3HFIN(5)   ,GAP6(10)                                                   00390000
              C     PAGE 6   INPUT  LOC 301 THRU 400                                      00400000
ISN 0009            COMMON     CYCPRL    ,FF        ,SK3       ,SK4       ,TBH1(5)      ,00410000
                   1TBTO(5)   ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60)      00420000
              C     WORKING COMMON                                                        00430000
ISN 0010            COMMON ALFDES,ALFDL,ALFR,AMU,                                         00440000
                   1         BHPA,BHPR,BHPSUP,BHT,BLP,BR,BS,BVT,                          00450000
                   2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO00460000
                   3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,                                        00470000
                   4 DELRTH,DELTA,DH,DSPLMT,      ELC,ELHT,ELN,ELOA,ELT,ELVT,EN,ETAP,     00480000
                   5 FEH,FEHI,FEHL,FEHT,FET,FETOT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4          00490000
ISN 0011            COMMON GAMD11(3,15),GLF,GMDD1(16),H,                                  00500000
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                      7 ICRUS,INDCRU,INDDRG,INDDYL,INDETA,INDFIX,INDHUL,INDOPT,INDOSW,    00510000
                      8 INDPOW,INDPRP,INDRDM,IPRINT                                       00520000
ISN 0012               COMMON LTHL,NUCPP,NUXPJ,OWE,PEHF,PI,Q,RHO,REALJ,RHPMR,R,RN         00530000
ISN 0013               COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                      1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHO         00550000
ISN 0014               COMMON T,TAF,TCBAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0015               COMMON W,WBAL,WBALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,           00570000
                      1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR00580000
                      2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                  00600000
ISN 0016               COMMON XLALB,XLB,XLBH,XLHL,XLR,XLW,YLS2,TUVW                       00610000
ISN 0017               COMMON DMR,SIGNK,AF,BHPP,SEE                                      00610100
ISN 0018               NAMELIST /NENGSZ/ XLR,XLH,LE1,XLH2,B1,B2,DALFR,ALFR,LE2,CLW2,     00620000
                      1          CLW,BHPR,BLP,BHPPI,BHPP,I,ITER,IPROP,IPROPI              00630000
ISN 0019               IF (INDFIX.EQ.0) GO TO 22                                         00640000
ISN 0021               ALFR=0.0                                                          00640100
ISN 0022               V=VC                                                              00650000
ISN 0023               HH=HC                                                             00660000
ISN 0024               CALL ATMOS(HC,ATMIY)                                              00670000
ISN 0025               Q=1.42636*RHO*V**2                                                00680000
ISN 0026               IF (INDHUL.GT.1) GO TO 11                                         00690000
ISN 0028               XLR=0.0                                                           00700000
ISN 0029               IF (INDDYL.GT.2) GO TO 1                                          00710000
ISN 0031               GO TO 2                                                           00720000
ISN 0032             1 ALFR=0.                                                           00730000
ISN 0033               XLR=XLRLA*XLALB*XLBWO*WO                                          00740000
ISN 0034               CLW=0.0                                                           00750000
ISN 0035               IF (INDDYL.EQ.3) GO TO 2                                          00760000
ISN 0037               CLW=CLDES                                                         00770000
ISN 0038             2 IF (INDDYL.EQ.1) GO TO 3                                          00780000
ISN 0040               CLW=CLDES                                                         00790000
ISN 0041               ALFR=0.                                                           00800000
ISN 0042               GO TO 8                                                           00810000
ISN 0043             3 XLH=WO-(XLBWO*WO)                                                 00820000
ISN 0044               IF (XLH.GT.0) GO TO 4                                             00830000
ISN 0046               ALFR=0.0                                                          00840000
ISN 0047               CLW=0.0                                                           00850000
ISN 0048               GO TO 8                                                           00860000
ISN 0049             4 LE1=0                                                             00870000
ISN 0050               IF(INDHUL.EQ.3) SPL=SW                                            00870100
ISN 0052               IF(INDHUL.EQ.1) SPL=ELOA*DH                                       00870200
ISN 0054               IF(XLBWO.EQ.1.0) GO TO 10                                         00870300
ISN 0056               ALFR=0.08727                                                      00880000
ISN 0057             5 LE1=LE1+1                                                         00890000
ISN 0058               XLH2=Q*SPL*(CLALPH*ALFR+CDC*ALFR*ABS(ALFR))                       00900000
ISN 0059               IF (ABS((XLH-XLH2)/XLH).LT.0.01) GO TO 10                         00910000
ISN 0061               IF (LE1.LT.2) GO TO 6                                             00920000
ISN 0063               B2=XLH2-XLH                                                       00930000
ISN 0064               DALFR=(B2/(B1-B2))*DALFR                                          00940000
ISN 0065               B1=B2                                                             00950000
ISN 0066               GO TO 7                                                           00960000
ISN 0067             6 B1=XLH2-XLH                                                       00970000
ISN 0068               DALFR=0.17453                                                     00980000
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ISN 0069          7 ALFR=ALFR+DALFR                                        00990000
ISN 0070            GO TO 5                                                01000000
ISN 0071          8 IF (INDDYL.GT.2) GO TO 9                               01010000
ISN 0073            GO TO 10                                               01020000
ISN 0074          9 CTP=4.0*XLR/(RHO*VT**2*PI*DMR**2*ENR)                  01030000
ISN 0075            AMU=1.688*V/VT                                         01040000
ISN 0076         10 GO TO 17                                               01050000
ISN 0077         11 IF (INDDYL.EQ.2) GO TO 12                              01060000
ISN 0079            XLR=XLRLA*XLALB*XLBWO*WO                               01070000
ISN 0080            XLH=WO-XLR-XLBWO*WO                                    01080000
ISN 0081            CLW=XLH/(Q*SW)                                         01090000
ISN 0082            CLDES=CLW                                              01090100
ISN 0083            CTP=4.0*XLR/(RHO*VT**2*PI*DMR**2*ENR)                  01100000
ISN 0084            AMU=1.688*V/VT                                         01110000
ISN 0085            GO TO 13                                               01120000
ISN 0086         12 XLH=WO*(1.0-XLBWO)                                     01130000
ISN 0087            CLW=XLH/(Q*SW)                                         01140000
ISN 0088            CLDES=CLW                                              01140100
ISN 0089            XLR=0.0                                                01150000
ISN 0090         13 IF(INDHUL.EQ.3) GO TO 4                                01150100
ISN 0092            IF(XLBWO.EQ.1.0) GO TO 17                              01150200
ISN 0094            LE2=0                                                  01160000
ISN 0095            ALFR=0.08727                                           01170000
ISN 0096         14 LE2=LE2+1                                              01180000
ISN 0097            CLW2=CLALPH*ALFR+CDC*ALFR*ABS(ALFR)                    01190000
ISN 0098            IF (ABS((CLW-CLW2)/CLW).LT.0.01)GO TO 17               01200000
ISN 0100            IF (LE2.LT.2) GO TO 15                                 01210000
ISN 0102            B2=CLW2-CLW                                            01220000
ISN 0103            DALFR=(B2/(B1-B2))*DALFR                               01230000
ISN 0104            B1=B2                                                  01240000
ISN 0105            GO TO 16                                               01250000
ISN 0106         15 B1=CLW2-CLW                                            01260000
ISN 0107            DALFR=0.17453                                          01270000
ISN 0108         16 ALFR=ALFR+DALFR                                        01280000
ISN 0109            GO TO 14                                               01290000
ISN 0110         17 CALL DRAG(ALFR)                                        01300000
ISN 0111            IF(INDHUL.GT.1) ALFDES=ALFR                            01301000
ISN 0113            IF (INDDYL.GT.2) GO TO 20                              01310000
ISN 0115            IF (INDETA.GT.0.) GO TO 18                             01320000
ISN 0117            NETAP4 = ETAP4N + 0.1                                  01330000
ISN 0118            ETAP4=XLINT(TBEM5,TB8AP4,V,NETAP4,M)                   01340000
ISN 0119            IF(M.NE.0)WRITE(6,1001)                                01350000
ISN 0121            BHPR=T*V/(325.6365*ETAP4*ETAT)                         01360000
ISN 0122            GO TO 21                                               01370000
ISN 0123         18 BLP=XLINT(TBH2,TBCRP,HH,5,M)                           01380000
ISN 0124            IF(M.NE.0) WRITE(6,1002)                               01390000
ISN 0126            BLP=FACTR(BLP,HH,THETA,FF)                             01400000
ISN 0127            YLS2=1.0                                               01401000
ISN 0128            ITER=0                                                 01410000
ISN 0129            ETA=0.85                                               01420000
ISN 0130            TPROP=T                                                01430000
ISN 0131            TPROP1=TPROP                                           01440000
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ISN 0132            BHPP1=T*V/(325.6365*ETAT*DELRTH*BLP)                          01450000
ISN 0133         19 ITER=ITER+1                                                   01460000
ISN 0134            BHPP=BHPP1/ETA                                                01470000
ISN 0135            CALL THRUST(TPROP)                                            01480000
ISN 0136            IF (ABS(1.0-(TPROP/TPROP1)) .LT.005) GO TO 22                 01490000
ISN 0138            ETA=ETAP                                                      01500000
ISN 0139            IF (ITER.GT.25) WRITE(6,1003)                                 01510000
ISN 0141            GO TO 19                                                      01520000
ISN 0142         20 CALL ROTPOW                                                   01530000
ISN 0143            BHPR=RHPMR/ETAT                                               01540000
ISN 0144         21 BLP=XLINT(TBH2,TBCRP,HH,5,M)                                  01550000
ISN 0145            BLP=FACTR(BLP,   HH,THETA,FF)                                 01560000
ISN 0146            IF(M.NE.0) WRITE(6,1002)                                      01570000
ISN 0148            BHPP=BHPR/(BLP*DELRTH)                                        01580000
ISN 0149       1001 FORMAT(22X35HTHIS ERROR IS IN THE V-ETAP4 TABLE )             01590000
ISN 0150       1002 FORMAT(22X35HTHIS ERROR IS IN THE H-POWER TABLE )             01600000
ISN 0151       1003 FORMAT(22X,'  ERROR , THE NUMBER OF ITERATIONS IN THE ENGINE  01610000
                   1 SIZING ROUTINE EXCEEDED 25,CASE TERMINATED')                 01620000
ISN 0152         22 RETURN                                                        01630000
ISN 0153            END                                                           01650000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	C	R*4	N.R.	M	FA	I*4	0001D8	Q	SF C	R*4	000868	K	C	R*4	N.R.
T	F C	R*4	0008E0	V	SFA C	R*4	000910	W	C	R*4	N.R.	AP	C	R*4	N.R.
AR	C	R*4	N.R.	BR	C	R*4	N.R.	BS	C	R*4	N.R.	B1	SF	R*4	0001DC
B2	SF	R*4	0001E0	CB	C	R*4	N.R.	CV	C	R*4	N.R.	CX	C	R*4	N.R.
DH	F C	R*4	0006C4	EN	C	R*4	N.R.	FF	FA C	R*4	0004B4	FM	C	R*4	N.R.
FP	C	R*4	N.R.	HC	SFA C	R*4	00019C	HH	SFA	R*4	0001E4	PI	F C	R*4	000864
RN	C	R*4	N.R.	SA	C	R*4	N.R.	ST	C	R*4	N.R.	SW	F C	R*4	0008C8
TR	C	R*4	N.R.	VC	F C	R*4	0001A0	VT	F C	R*4	000148	WE	C	R*4	N.R.
WF	C	R*4	N.R.	WO	F C	R*4	000024	WS	C	R*4	N.R.	WW	C	R*4	N.R.
XC	C	R*4	N.R.	AMU	S C	R*4	00064C	BHT	C	R*4	N.R.	BLP	SFA C	R*4	000660
BMR	C	R*4	N.R.	BVT	C	R*4	N.R.	CCP	C	R*4	N.R.	CCT	C	R*4	N.R.
CDC	F C	R*4	0001C0	CDV	C	R*4	N.R.	CKF	C	R*4	N.R.	CKW	C	R*4	N.R.
CK1	C	R*4	N.R.	CLW	SFA C	R*4	00068C	CRT	C	R*4	N.R.	CTP	S C	R*4	0006A8
DK3	C	R*4	N.R.	DK4	C	R*4	N.R.	DMR	F C	R*4	0C09C8	ELC	C	R*4	N.R.
ELF	C	R*4	N.R.	ELN	C	R*4	N.R.	ELT	C	R*4	N.R.	ENP	C	R*4	N.R.
ENR	F C	R*4	00011C	ETA	SF	R*4	0001E8	FEH	C	R*4	N.R.	FET	C	R*4	N.R.
FEW	C	R*4	N.R.	GLF	C	R*4	N.R.	HES	C	R*4	N.R.	HOO	C	R*4	N.R.
LE1	SF	I*4	0001EC	LE2	SF	I*4	0001F0	OWE	C	R*4	N.R.	RHO	F C	R*4	00086C
RMI	C	R*4	N.R.	ROO	C	R*4	N.R.	SA5	C	R*4	N.R.	SA6	C	R*4	N.R.
SA7	C	R*4	N.R.	SEE	C	R*4	N.R.	SFC	C	R*4	N.R.	SHT	C	R*4	N.R.
SKT	C	R*4	N.R.	SK1	C	R*4	N.R.	SK2	C	R*4	N.R.	SK3	C	R*4	N.R.
SK4	C	R*4	N.R.	SK5	C	R*4	N.R.	SK6	C	R*4	N.R.	SK7	C	R*4	N.R.
SK8	C	R*4	N.R.	SK9	C	R*4	N.R.	SLM	C	R*4	N.R.	SPL	SF	R*4	0001F4
STH	C	R*4	N.R.	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.	TCR	C	R*4	N.R.
TCT	C	R*4	N.R.	TMP	C	R*4	N.R.	TOO	C	R*4	N.R.	TVW	C	R*4	N.R.
ULF	C	R*4	N.R.	VHL	C	R*4	N.R.	VIN	C	R*4	N.R.	VMO	C	R*4	N.R.
WAC	C	R*4	N.R.	WCC	C	R*4	N.R.	WEP	C	R*4	N.R.	WES	C	R*4	N.R.
WFC	C	R*4	N.R.	WFE	C	R*4	N.R.	WFR	C	R*4	N.R.	WFS	C	R*4	N.R.
WFW	C	R*4	N.R.	WHL	C	R*4	N.R.	WHT	C	R*4	N.R.	WLG	C	R*4	N.R.
WMC	C	R*4	N.R.	WPC	C	R*4	N.R.	WPH	C	R*4	N.R.	WRC	C	R*4	N.R.
WSC	C	R*4	N.R.	WST	C	R*4	N.R.	WTM	C	R*4	N.R.	WVA	C	R*4	N.R.
WVT	C	R*4	N.R.	XLB	C	R*4	N.R.	XLH	SFA	R*4	0001F8	XLR	SF C	R*4	000988
XLW	C	R*4	N.R.	XMR	C	R*4	N.R.	ALFR	SFA C	R*4	000648	ARHT	C	R*4	N.R.
ARVT	C	R*4	N.R.	BHPA	C	R*4	N.R.	BHPP	S C	R*4	0C09D4	BHPR	SF C	R*4	000654
CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.	CKFF	C	R*4	N.R.	CKHT	C	R*4	N.R.
CKVT	C	R*4	N.R.	CLW2	SFA	R*4	0001FC	DAM1	C	R*4	N.R.	DAM2	C	R*4	N.R.
DAM3	C	R*4	N.R.	DAM4	C	R*4	N.R.	DAM5	C	R*4	N.R.	DELR	C	R*4	N.R.
DRAG	SF XF	R*4	000C00	DVOL	C	R*4	N.R.	ELDN	C	R*4	N.R.	ELDT	C	R*4	N.R.
ELHT	C	R*4	N.R.	ELOA	F C	R*4	0006D8	ELVT	C	R*4	N.R.	EMLF	C	R*4	N.R.
ETAP	F C	R*4	0006E8	ETAT	F C	R*4	000198	FEHI	C	R*4	N.R.	FEHL	C	R*4	N.R.
FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.	FEWH	C	R*4	N.R.	FEWI	C	R*4	N.R.
GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.	GAP3	C	R*4	N.R.	GAP4	C	R*4	N.R.
GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.	GAP7	C	R*4	N.R.	HFIN	C	R*4	N.R.
ITER	SF	I*4	000200	LTHL	C	I*4	N.R.	PLHF	C	R*4	N.R.	PLIN	C	R*4	N.R.
RELI	C	R*4	N.R.	RMAX	C	R*4	N.R.	SHPA	C	R*4	N.R.	SHPR	C	R*4	N.R.
SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.	SKAR	C	R*4	N.R.
SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.	SKHL	C	R*4	N.R.
SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.	SKPA	C	R*4	N.R.
SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.	SKTM	C	R*4	N.R.
SKVT	C	R*4	N.R.	SKWP	C	R*4	N.R.	SKWW	C	R*4	N.R.	SK10	C	R*4	N.R.

SK11		C	R*4	N.R.	SK12		C	R*4	N.R.	SK13		C	R*4	N.R.	SK14		C	R*4	N.R.
SK15		C	R*4	N.R.	SLMH		C	R*4	N.R.	STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.
SVTW		C	R*4	N.R.	SWTT		C	R*4	N.R.	TBH1		C	R*4	N.R.	TBH2	FA	C	R*4	0004E8
TBTU		C	R*4	N.R.	TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.
TINY		C	R*4	N.R.	TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.	TMAX		C	R*4	N.R.
TUVW		C	R*4	N.R.	TWTW		C	R*4	N.R.	WBAL		C	R*4	N.R.	WENV		C	R*4	N.R.
WFUL		C	R*4	N.R.	WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.
WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.	WRCA		C	R*4	N.R.
WSCA		C	R*4	N.R.	XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.	XLHL		C	R*4	N.R.
XLH2	SFA		R*4	000204	YCS2	S	C	R*4	0009C0	ALFDL		C	R*4	N.R.	ATMIY	SFA	C	R*4	0001A4
ATMOS	SF	XF	R*4	000000	BHPP1	SF		R*4	000208	CBARF		C	R*4	N.R.	CBARW		C	R*4	N.R.
CLDES	SF	C	R*4	0006B4	CLEYE		C	R*4	N.R.	CPIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.
CPPAR		C	R*4	N.R.	CPPRD		C	R*4	N.R.	CPTOT		C	R*4	N.R.	DALFR	SF		R*4	000200
DELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.	DELWP		C	R*4	N.R.
DSWET		C	R*4	N.R.	ELDDA		C	R*4	N.R.	ENGSZ			R*4	000210	ENPCR		C	R*4	N.R.
ETAP2		C	R*4	N.R.	ETAP4	SF	C	R*4	00071C	FACTR	F	XF	R*4	000000	FETOT		C	R*4	N.R.
GMDD1		C	R*4	N.R.	HMAXD		C	R*4	N.R.	ICRUS		C	I*4	N.R.	NOCPP		C	I*4	N.R.
NOXPJ		C	I*4	N.R.	PFET2		C	R*4	N.R.	REALJ		C	R*4	N.R.	RHPMR	F	C	R*4	000874
SIGMA		C	R*4	N.R.	SIGMR		C	R*4	N.R.	SKAMD		C	R*4	N.R.	SKBAL		C	R*4	N.R.
SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.
SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.	SKRCA		C	R*4	N.R.
SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH		C	R*4	N.R.
SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2RHO		C	R*4	N.R.	TBCL1		C	R*4	N.R.
TBCRP	FA	C	R*4	0004FC	TBEM5	FA	C	R*4	000164	TBPOW		C	R*4	N.R.	TBSFC		C	R*4	N.R.
TCBAR		C	R*4	N.R.	THETA	FA	C	R*4	0008EC	TPROP	SFA	C	R*4	0C08F8	TVCMR		C	R*4	N.R.
VBARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.	VGASB		C	R*4	N.R.
VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.	XLALB	F	C	R*4	0009A8
XLBWO	F	C	R*4	000028	XLINT	F	XF	R*4	000000	XLRLA	F		C	R*4	00002C	ALFDES	S	C	R*4	000640
BHPSUP		C	R*4	N.R.	CBARHT		C	R*4	N.R.	CBARVT		C	R*4	N.R.	CBYLOA		C	R*4	N.R.
CLALPH	F	C	R*4	0001C4	CKSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.
DELFCR		C	R*4	N.R.	DELRTH	F	C	R*4	0006BC	DELWFC		C	R*4	N.R.	DELWPL		C	R*4	N.R.
DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.
DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.	ELHLOA		C	R*4	N.R.
ELVLOA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4N	F	C	R*4	000160	EXPDRG		C	R*4	N.R.
FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	GAMD11		C	R*4	N.R.	HULIND		C	R*4	N.R.
IBCOM#	F	XF	I*4	000000	INDCRU		C	I*4	N.R.	INDDRG		C	I*4	N.R.	INDDYL		C	I*4	000828
INDETA		C	I*4	00082C	INDFIX		C	I*4	000830	INDHUL		C	I*4	000834	INDOPT		C	I*4	N.R.
INDOSW		C	I*4	N.R.	INDPOW		C	I*4	N.R.	INDPRP		C	I*4	N.R.	INDRDM		C	I*4	N.R.
IPRINT		C	I*4	N.R.	NENGSZ				000001	NETAP4	SFA		I*4	000214	OPTIND		C	R*4	N.R.
OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.	RDMIND		C	R*4	N.R.	RHORHO		C	R*4	N.R.
ROTPOW	SF	XF	R*4	000000	SGTIND		C	R*4	N.R.	SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.
SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.	SSIGMA		C	R*4	N.R.
STHETA		C	R*4	N.R.	TBCDWI		C	R*4	N.R.	TBDAP4	FA	C	R*4	000178	THETMR		C	R*4	N.R.
THRUST	SF	XF	R*4	000000	TOLIND		C	R*4	N.R.	TPROP1	S A		R*4	000218	VGBOVH		C	R*4	N.R.
WBALNT		C	R*4	N.R.	WPAYLO		C	R*4	N.R.	XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	HULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WU	R*4	000024	XLBWU	R*4	000028	XLRLA	R*4	00002C
VGBOVH	R*4	N.R.	XLGD	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VMO	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	HUU	R*4	N.R.	ROU	R*4	N.R.
TUO	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLUA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELDT	R*4	N.R.	ELDUA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	DVOL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	00011C
WVA	R*4	N.R.	DAM1	R*4	N.R.	DAM2	R*4	N.R.	BMR	R*4	N.R.
DAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	000148	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	HES	R*4	N.R.	TINY	P*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	000160	TBEM5	R*4	000164	TBBAP4	R*4	000178	GAP3	R*4	N.R.
DAM4	R*4	N.R.	ENP	R*4	N.R.	ETAT	R*4	000198	HC	R*4	00019C
VC	R*4	0001A0	ATMIY	R*4	0001A4	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	N.R.	DLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CDC	R*4	0001C0	CLALPH	R*4	0001C4	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCLI	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFUL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKRBF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TOLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CKSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELPCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWPL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	000484	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTO	R*4	N.R.	TBH2	R*4	0004E8	TBCRP	R*4	0004FC
TBSFC	R*4	N.R.	TBPOW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	000640
ALFDL	R*4	N.R.	ALFR	R*4	000648	AMU	R*4	00064C	BHPA	R*4	N.R.
BHPR	R*4	000654	BHPSUP	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	000660
BR	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARHT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	N.R.	CLW	R*4	00068C	CPIND	R*4	N.R.

CPNUD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CRT	R*4	N.R.	CTP	R*4	0006A8	CV	R*4	N.R.	CX	R*4	N.R.
CLDES	R*4	000684	CB	R*4	N.R.	DELRTH	R*4	00068C	DELTA	R*4	N.R.
DH	R*4	0006C4	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELOA	R*4	0006D8	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	N.R.	ETAP	R*4	0006E8	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETOT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FP	R*4	N.R.	ETAP4	R*4	00071C	GAMD11	R*4	N.R.
GLF	R*4	N.R.	GMDDI	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRU	I*4	N.R.	INDORG	I*4	N.R.	INDOYL	I*4	000828	INDETA	I*4	00082C
INDFIX	I*4	000830	INDHUL	I*4	000834	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPOW	I*4	N.R.	INDPRP	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.
LTHL	I*4	N.R.	NOCPP	I*4	N.R.	NOXPJ	I*4	N.R.	OWE	R*4	N.R.
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	000868	RHO	R*4	00086C
REALJ	R*4	N.R.	RHPMR	R*4	000874	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	N.R.	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	0008C8	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	SZRHO	R*4	N.R.
T	R*4	0008E0	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	0008EC
TMAX	R*4	N.R.	TMP	R*4	N.R.	TPROP	R*4	0008F8	TR	R*4	N.R.
ULF	R*4	N.R.	VGASB	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	000910	W	R*4	N.R.	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSB	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPDS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRP	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLD	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	0009A8	XLB	R*4	N.R.
XLBH	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	0009B8	XLW	R*4	N.R.
YLS2	R*4	0009C0	YOVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPP	R*4	000904	SEE	R*4	N.R.			

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
1	000406	2	00043C	3	000458	4	00047E
5	0004CE	6	00052A	7	00053E	8	00054E
9	00055A	10	000592	11	000596	12	000610
13	00063A	14	00065C	15	0006B4	16	0006C8
17	0006D8	18	0007A2	19	00082E	20	000888
21	0008A0	22	0008FE				


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*OPTIONS IN EFFECT*      NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
*OPTIONS IN EFFECT*      SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
*STATISTICS*     SOURCE STATEMENTS =     152 ,PROGRAM SIZE =     2338
*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                          95K BYTES OF CORE NOT USED
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```
        COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                           SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002            FUNCTION FACTR (STAR,       HH,THETA,FF)                    00010000
                  C**** MEMBER NAME B81FACTR                                    00020000
ISN 0003            THESTD=0.7519                                               00030000
ISN 0004            IF (HH.LE.36089.) THESTD=1.0-0.000006875*HH                 00040000
ISN 0006            FACTR=STAR+FF*(THESTD-THETA)                                00050000
ISN 0007            RETURN                                                      00060000
ISN 0008            END                                                         00070000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
FF	F	R*4	000088	HH	F	R*4	00008C	STAR	F	R*4	000090	FACTR	S	R*4	000094
THETA	F	R*4	000098	THETSQ	SF	R*4	00009C								

OPTIONS IN EFFECT NAME= MAIN,OPT=02,LINECNT=54,SIZE=0000K,

OPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 7 ,PROGRAM SIZE = 294

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 123K BYTES OF CORE NOT USED

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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002                SUBROUTINE LIFT                                                 00010000
                C**** MEMBER NAME B81LIFT                                               00020000
                C     PAGE 1    INPUT   LOC 0001 THRU 0050                              00030000
ISN 0003                COMMON    OPTIND    ,HULIND    ,DYLIND    ,DRGIND    ,OSWIND  ,00040000
                        1FIXIND   ,RDMIND    ,PRPIND    ,ETAIND    ,WO        ,XLBWD   ,00050000
                        2XLRLA    ,VGBOVH    ,XLGD      ,HMAXD     ,RHORHO    ,VMD     ,00060000
                        3EMLF     ,CK1       ,DELWF     ,CKFF      ,VDIVE     ,HOO     ,00070000
                        4ROO      ,TOO       ,GAP1(5)   ,SGTIND(12),ELHLOA    ,ELVLOA  ,00080000
                        5GAP2(6)                                                        00090000
                C     PAGE 2    INPUT   LOC 0051 THRU 0100                              00100000
ISN 0004                COMMON    AR         ,WS        ,TCR       ,TCT       ,SLM     ,00110000
                        1ARHT     ,TCHT      ,VBARH     ,SLMH      ,ARVT      ,TCVT    ,00120000
                        2VBARV    ,SLMVT     ,ELDN      ,ELDT      ,ELDOA     ,DLSWSH  ,00130000
                        3DSWET    ,DLVLHL    ,DVOL      ,CBYLOA    ,ENR       ,WVA     ,00140000
                        4DAM1     ,DAM2      ,BMR       ,DAM3      ,CLEYE     ,THETMR  ,00150000
                        5XC       ,XMR       ,TVCMR     ,VT        ,CTSIGH    ,TVW     ,00160000
                        6HES      ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5),00170000
                        7GAP3                                                           00180000
                C     PAGE 3    INPUT  LOC 0101 THRU 140                                00190000
ISN 0005                COMMON    DAM4       ,ENP       ,ETAT      ,HC        ,VC      ,00200000
                        1ATMIY    ,CDVT      ,CDHT      ,DAM5      ,DLTAFE    ,FEDRAG  ,00210000
                        2EXPDRG   ,CDC       ,CLALPH    ,CKVT      ,CKHT      ,CKF     ,00220000
                        3CKW      ,RELI      ,TCLN      ,TBCLI(8)  ,TBCDWI(8) ,GAP4(4) 00230000
                C     PAGE 4 INPUT  LOC 141 THRU 200  WEIGHT DATA                     00240000
ISN 0006                COMMON    WFE        ,WFUL      ,DELWFC    ,CELWP     ,DELWST  ,00250000
                        1SKCC     ,SKRC      ,SKSC      ,SKFW      ,SKTM      ,SKRCA   ,00260000
                        2SKSCA    ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2  ,00270000
                        3SKGB1    ,SKGB2     ,SKBLNT    ,SKBAL     ,SKLG      ,SKWW    ,00280000
                        4ELF      ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB   ,00290000
                        5SKRBF    ,SKPH      ,SKAMU     ,SKAR      ,SKPA      ,SKVTAR  ,00300000
                        6SKPDS    ,SKPDSZ    ,SKT       ,SKFS      ,SKPEI     ,SKPES   ,00310000
                        7SK1      ,SK2       ,SK3       ,SK4       ,SK5       ,SK6     ,00320000
                        8SK7      ,SK8       ,SK9       ,SK10      ,SK11      ,SK12    ,00330000
                        9SK13     ,SK14      ,SK15      ,PLIN      ,GAP5(3)            00340000
                C     PAGE 5  INPUT  LOC 201 THRU 300                                 00350000
ISN 0007                COMMON    TOLIND(5) ,XTGTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5),00360000
                        1DELTH(5) ,STH(5)    ,CRSIND(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)  ,00370000
                        2DELR(5)  ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPWI(5),00380000
                        3HFIN(5)  ,GAP6(10)                                             00390000
                C     PAGE 6  INPUT  LOC 301 THRU 400                                 00400000
ISN 0008                COMMON    CYCPRL     ,FF        ,SK3       ,SK4       ,TBH1(5) ,00410000
                        1TBTO(5)  ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60) 00420000
                C     WORKING COMMON                                                  00430000
ISN 0009                COMMON  ALFDES,ALFDL,ALFR,AMU,                                00440000
                        1       BHPA,BHPR,BHPSUP,BHT,BLP,BR,BS,BVT,                   00450000
                        2 CBAKF,CBAKHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPR000460000
                        3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,                               00470000
                        4 DELRTH,DELTA,DH,DSPLMT,      ELC,ELHT,ELN,ELOA,ELT,ELVT,EN,ETAP,  00480000
                        5 FEH,FEHI,FEHL,FEHT,FET,FETOT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4 00490000
ISN 0010                COMMON GAMDII(3,15),GLF,GMDDI(16),H,                          00500000
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                     7 ICRUS,INDCRU,INDDRG,INDDYL,INDETA,INDFIX,INCHUL,INDOPT,INDUSW,    00510000
                     8 INDPOW,INDPRP,INDROM,IPRINT                                       00520000
ISN 0011              COMMON LTHL,NOCPP,NOXPJ,OWE,PEHF,PI,Q,RHO,REALJ,RHPMR,R,RN         00530000
ISN 0012              COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                     1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHO         00550000
ISN 0013              COMMON T,TAF,TCBAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0014              COMMON W,WBAL,WBALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WPS,WFW,           00570000
                     1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR00580000
                     2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                  00590000
ISN 0015              COMMON XLALB,XLB,XLBH,XLHL,XLK,XLW,YLS2,TOVW                       00600000
ISN 0016              COMMON DMR,SIGMR,AF,BHPP,SEE                                       C0600001
ISN 0017              NAMELIST /NLIFT/ XLB,XLHL,XLR,XLW,ALFR,LA1,LB1,LD1,XLHRW,          00610000
                     1          XLHRW1,XLHRW2,XLHRW3,XLHRWP,B1,B1A,B1B,B1C,B2,DALFR,RN,CL00620000
                     2W,XLHRW4,B1D                                                      C0620100
ISN 0018              CLW=0.0                                                            00620200
ISN 0019              TOT = XTGTA4(ICRUS)                                                00630000
ISN 0020              IF(TOT.EQ.1.0) XLB=XLBWO*WO                                        00630100
ISN 0022              IF(TOT.NE.1.0) XLB=(.076474*(TOT-1.)/(.076474-XLGD)+1.)*XLBWO*WO   00640000
ISN 0024              XLHRW=W-XLB                                                        00650000
ISN 0025              IF (INDDYL.EQ.2.OR.INDDYL.EQ.4) GO TO 30                           00650001
ISN 0027              IF(XLHRW.EQ.0.) GO TO 23                                           00650100
ISN 0029              IF(XLHRW.LT.0.) GO TO 23                                           00650200
ISN 0031           30 IF (INDDYL.EQ.2.OR.INDDYL.EQ.4) GO TO 10                           C0660000
ISN 0033              IF (INDDYL.NE.1.) GO TO 22                                         00670000
ISN 0035              LD1=0                                                              00680000
ISN 0036              ALFR=0.08727                                                       00690000
ISN 0037            7 LD1=LD1+1                                                          00700000
ISN 0038              XLHRW3=Q*ELOA*DH*(CLALPH*ALFR+CDC*ALFR*ABS(ALFR))                  00710000
ISN 0039              IF (ABS((XLHRW-XLHRW3)/XLHRW).LT.0.01) GO TO 8                     C0720000
ISN 0041              IF (LD1.LT.2) GO TO 5                                              00730000
ISN 0043              B1A=B1                                                             C0730100
ISN 0044              B2=XLHRW3-XLHRW                                                    C0740000
ISN 0045              DALFR=(B2/(B1-B2))*DALFR                                           00750000
ISN 0046              B1=B2                                                              C0760000
ISN 0047              GO TO 6                                                            00770000
ISN 0048            5 B1=XLHRW3-XLHRW                                                    C0780000
ISN 0049              DALFR=0.17453                                                      00790000
ISN 0050            6 ALFR=ALFR+DALFR                                                    00800000
ISN 0051              GO TO 7                                                            00810000
ISN 0052            8 XLHL=XLHRW                                                         C0820000
ISN 0053              XLR=0.                                                             00830000
ISN 0054              XLW=0.                                                             00840000
ISN 0055              GO TO 21                                                           00850000
ISN 0056           10 IF (INDHUL.GT.1) GO TO 20                                          00860000
ISN 0058              XLHRWP=XLHRW                                                       00870000
ISN 0059              XLR=0.                                                             00880000
ISN 0060              IF (INDDYL.EQ.2) GO TO 11                                          00890000
ISN 0062              XLHRWP=XLHRW*(1.-XLRLA)                                            00900000
ISN 0063              XLR=XLRLA*XLHRW                                                    C0910000
ISN 0064           11 LB1=0                                                              00920000
ISN 0065              ALFR=0.08727                                                       00930000
ISN 0066           12 LB1=LB1+1                                                          00940000
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ISN 0067            IF(W.LT.0.0) GO TO 23                                        00940100
ISN 0069            XLHRW2=Q*(ELOA*DH*(CLALPH*ALFR+CDC*ALFR*ABS(ALFR))+SW*6.28*(ALFR+A00950000
                   1LFDES))                                                      00950001
ISN 0070            IF (ABS((XLHRWP-XLHRW2)/XLHRWP).LT.0.01) GO TO 15            00960000
ISN 0072            IF (LB1.LT.2) GO TO 13                                       00970000
ISN 0074            B1B=B1                                                       00970100
ISN 0075            B2=XLHRW2-XLHRWP                                             00980000
ISN 0076            DALFR=(B2/(B1-B2))*DALFR                                     00990000
ISN 0077            B1=B2                                                        01000000
ISN 0078            GO TO 14                                                     01010000
ISN 0079         13 B1=XLHRW2-XLHRWP                                             01020000
ISN 0080            DALFR=0.17453                                                01030000
ISN 0081         14 ALFR=ALFR+DALFR                                              01040000
ISN 0082            GO TO 12                                                     01050000
ISN 0083         15 XLHL=Q*ELOA*DH*(CLALPH*ALFR+CDC*ALFR*ABS(ALFR))              01060000
ISN 0084            XLW=XLHRW-XLHL-XLR                                           01070000
ISN 0085            CLW=XLW/(Q*SW)                                               01070100
ISN 0086            GO TO 21                                                     01080000
ISN 0087         20 XLHRWP=XLHRW                                                 01090000
ISN 0088            XLHL=XLHRW                                                   01100000
ISN 0089            XLR=0.0                                                      01110000
ISN 0090            XLW=0.0                                                      01120000
ISN 0091            IF (INDDYL.EQ.2) GO TO 16                                    01130000
ISN 0093            XLHRWP=XLHRW*(1.-XLRLA)                                      01140000
ISN 0094            XLHL=XLHRWP                                                  01150000
ISN 0095            XLR=XLRLA*XLHRW                                              01160000
ISN 0096         16 IF (INDHUL.EQ.3) GO TO 28                                    01160100
ISN 0098            LA1 = 0                                                      01170000
ISN 0099            ALFR=0.08727                                                 01180000
ISN 0100         17 LA1=LA1+1                                                    01190000
ISN 0101            IF(XLHRW.EQ.0.) GO TO 23                                     01190100
ISN 0103            IF(W.LT.0.0) GO TO 23                                        01190200
ISN 0105            XLHRW1=Q*SW*(CLALPH*ALFR+CDC*ALFR*ABS(ALFR))                 01200000
ISN 0106            IF (ABS((XLHRWP-XLHRW1)/XLHRWP).LT.0.01) GO TO 21            01210000
ISN 0108            IF (LA1.LT.2) GO TO 18                                       01220000
ISN 0110            B1C=B1                                                       01220100
ISN 0111            B2=XLHRW1-XLHRWP                                             01230000
ISN 0112            DALFR=(B2/(B1-B2))*DALFR                                     01240000
ISN 0113            B1=B2                                                        01250000
ISN 0114            GO TO 19                                                     01260000
ISN 0115         28 LE1=0                                                        01260100
ISN 0116            IF(XLHRW.EQ.0.) GO TO 23                                     01260110
ISN 0118            IF(W.LT.0.0) GO TO 23                                        01260120
ISN 0120            ALFR=0.08727                                                 01260200
ISN 0121         26 LE1=LE1+1                                                    01260300
ISN 0122            XLHRW4=Q*SW*(CLALPH*ALFR+CDC*ALFR*ABS(ALFR))                 01260400
ISN 0123            IF (ABS((XLHRW-XLHRW4)/XLHRW).LT.0.01) GO TO 27              01260500
ISN 0125            IF (LE1.LT.2) GO TO 24                                       01260600
ISN 0127            B2=XLHRW4-XLHRW                                              01260700
ISN 0128            B1D=B1                                                       01260800
ISN 0129            DALFR=(B2/(B1-B2))*DALFR                                     01260900
ISN 0130            B1=B2                                                        01261000
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ISN 0131          GO TO 25                                                01261100
ISN 0132       24 B1=XLHRW4-XLHRW                                         01261200
ISN 0133          DALFR=0.17453                                           01261300
ISN 0134       25 ALFR=ALFR+DALFR                                         01261400
ISN 0135          GO TO 26                                                01261500
ISN 0136       27 GO TO 21                                                01261600
ISN 0137       18 B1=XLHRW1-XLHRWP                                        01270000
ISN 0138          DALFR=0.17453                                           01280000
ISN 0139       19 ALFR=ALFR+DALFR                                         01290000
ISN 0140          GO TO 17                                                01300000
ISN 0141       21 RN=XLR/XLHRW                                            01310000
ISN 0142          CTP=4.0*XLR/(RHO*VT**2*PI*DMR**2*ENR)                   01310100
ISN 0143          CLW=XLHL/(Q*SW)                                         01310200
ISN 0144          IF(INDHUL.EQ.1) CLW=XLW/(Q*SW)                          01310300
ISN 0146          RETURN                                                  01330000
ISN 0147       22 XLHL=0.0                                                01340000
ISN 0148          XLR=XLHRW                                               01350000
ISN 0149          CTP=4.0*XLR/(RHO*VT**2*PI*DMR**2*ENR)                   01350100
ISN 0150          XLW=0                                                   01360000
ISN 0151          RN=XLR/XLHRW                                            01370000
ISN 0152          RETURN                                                  01390000
ISN 0153       23 ALFR=0.0                                                01390100
ISN 0154          XLHL=0.0                                                01390200
ISN 0155          RN=0.                                                   01390300
ISN 0156          XLW=0.                                                  01390400
ISN 0157          XLR=0.                                                  01390500
ISN 0158          RETURN                                                  01390700
ISN 0159          END                                                     01400000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	C	R*4	N.R.	Q F	C	R*4	000868	R	C	R*4	N.R.	T	C	R*4	N.R.
V	C	R*4	N.R.	W F	C	R*4	000914	AF	C	R*4	N.R.	AR	C	R*4	N.R.
BR	C	R*4	N.R.	BS	C	R*4	N.R.	B1 SF		R*4	0000BC	B2 SF		R*4	0000C0
CB	C	R*4	N.R.	CV	C	R*4	N.R.	CX	C	R*4	N.R.	DH F	C	R*4	0006C4
EN	C	R*4	N.R.	FF	C	R*4	N.R.	FM	C	R*4	N.R.	FP	C	R*4	N.R.
HC	C	R*4	N.R.	PI F	C	R*4	000864	RN S	C	R*4	00087C	SA	C	R*4	N.R.
ST	C	R*4	N.R.	SW F	C	R*4	0008C8	TR	C	R*4	N.R.	VC	C	R*4	N.R.
VT F	C	R*4	000148	WE	C	R*4	N.R.	WF	C	R*4	N.R.	WO F	C	R*4	000024
WS	C	R*4	N.R.	WW	C	R*4	N.R.	XC	C	R*4	N.R.	AMU	C	R*4	N.R.
BHT	C	R*4	N.R.	BLP	C	R*4	N.R.	BMR	C	R*4	N.R.	BVT	C	R*4	N.R.
B1A S		R*4	0000C4	B1B S		R*4	0000C8	B1C S		R*4	0000CC	B1D S		R*4	0000D0
CCP	C	R*4	N.R.	CCT	C	R*4	N.R.	CDC F	C	R*4	0001C0	CDV	C	R*4	N.R.
CKF	C	R*4	N.R.	CKW	C	R*4	N.R.	CK1	C	R*4	N.R.	CLW S	C	R*4	00068C
CRT	C	R*4	N.R.	CTP S	C	R*4	0006A8	DK3	C	R*4	N.R.	DK4	C	R*4	N.R.
DMR F	C	R*4	0009C8	ELC	C	R*4	N.R.	ELF	C	R*4	N.R.	ELN	C	R*4	N.R.
ELT	C	R*4	N.R.	ENP	C	R*4	N.R.	ENR F	C	R*4	00011C	FEH	C	R*4	N.R.
FET	C	R*4	N.R.	FEW	C	R*4	N.R.	GLF	C	R*4	N.R.	HES	C	R*4	N.R.
HOO	C	R*4	N.R.	LA1 SF		I*4	0000D4	LB1 SF		I*4	0000D8	LD1 SF		I*4	0000DC
LE1 SF		I*4	0000E0	OWE	C	R*4	N.R.	RFO F	C	R*4	00086C	RMI	C	R*4	N.R.
ROO	C	R*4	N.R.	SA5	C	R*4	N.R.	SA6	C	R*4	N.R.	SA7	C	R*4	N.R.
SEE	C	R*4	N.R.	SFC	C	R*4	N.R.	SHT	C	R*4	N.R.	SKT	C	R*4	N.R.
SK1	C	R*4	N.R.	SK2	C	R*4	N.R.	SK3	C	R*4	N.R.	SK4	C	R*4	N.R.
SK5	C	R*4	N.R.	SK6	C	R*4	N.R.	SK7	C	R*4	N.R.	SK8	C	R*4	N.R.
SK9	C	R*4	N.R.	SLM	C	R*4	N.R.	STH	C	R*4	N.R.	SVT	C	R*4	N.R.
TAF	C	R*4	N.R.	TCR	C	R*4	N.R.	TCT	C	R*4	N.R.	TMP	C	R*4	N.R.
TOO	C	R*4	N.R.	TOT SF		R*4	0000E4	TVW	C	R*4	N.R.	ULF	C	R*4	N.R.
VHL	C	R*4	N.R.	VIN	C	R*4	N.R.	VMG	C	R*4	N.R.	WAC	C	R*4	N.R.
WCC	C	R*4	N.R.	WEP	C	R*4	N.R.	WES	C	R*4	N.R.	WFC	C	R*4	N.R.
WFE	C	R*4	N.R.	WFR	C	R*4	N.R.	WFS	C	R*4	N.R.	WFW	C	R*4	N.R.
WHL	C	R*4	N.R.	WHT	C	R*4	N.R.	WLG	C	R*4	N.R.	WMC	C	R*4	N.R.
WPC	C	R*4	N.R.	WPH	C	R*4	N.R.	WRC	C	R*4	N.R.	WSC	C	R*4	N.R.
WST	C	R*4	N.R.	WTM	C	R*4	N.R.	WVA	C	R*4	N.R.	WVT	C	R*4	N.R.
XLB SF	C	R*4	0009AC	XLR SF	C	R*4	000988	XLW SF	C	R*4	00098C	XMR	C	R*4	N.R.
ALFR SFA	C	R*4	000648	ARHT	C	R*4	N.R.	ARVT	C	R*4	N.R.	BHPA	C	R*4	N.R.
BHPP	C	R*4	N.R.	BHPR	C	R*4	N.R.	CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.
CKFF	C	R*4	N.R.	CKHT	C	R*4	N.R.	CKVT	C	R*4	N.R.	DAM1	C	R*4	N.R.
DAM2	C	R*4	N.R.	DAM3	C	R*4	N.R.	DAM4	C	R*4	N.R.	DAM5	C	R*4	N.R.
DELR	C	R*4	N.R.	DVOL	C	R*4	N.R.	ELDN	C	R*4	N.R.	ELDT	C	R*4	N.R.
ELHT	C	R*4	N.R.	ELOA F	C	R*4	0006D8	ELVT	C	R*4	N.R.	EMLF	C	R*4	N.R.
ETAP	C	R*4	N.R.	ETAT	C	R*4	N.R.	FEHI	C	R*4	N.R.	FEHL	C	R*4	N.R.
FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.	FEWH	C	R*4	N.R.	FEWI	C	R*4	N.R.
GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.	GAP3	C	R*4	N.R.	GAP4	C	R*4	N.R.
GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.	GAP7	C	R*4	N.R.	HFIN	C	R*4	N.R.
LIFT		I*4	0000E8	LTHL	C	I*4	N.R.	PEHF	C	R*4	N.R.	PLIN	C	R*4	N.R.
RELI	C	R*4	N.R.	RMAX	C	R*4	N.R.	SHPA	C	R*4	N.R.	SHPR	C	R*4	N.R.
SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.	SKAR	C	R*4	N.R.
SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.	SKHL	C	R*4	N.R.
SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.	SKPA	C	R*4	N.R.
SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.	SKTM	C	R*4	N.R.
SKVT	C	R*4	N.R.	SKWP	C	R*4	N.R.	SKWW	C	R*4	N.R.	SKIO	C	R*4	N.R.

SK11		C	R*4	N.R.	SK12		C	R*4	N.R.	SK13		C	R*4	N.R.	SK14		C	R*4	N.R.
SK15		C	R*4	N.R.	SLMH		C	R*4	N.R.	STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.
SVTW		C	R*4	N.R.	SWTT		C	R*4	N.R.	TBH1		C	R*4	N.R.	TBH2		C	R*4	N.R.
TBTO		C	R*4	N.R.	TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.
TIMY		C	R*4	N.R.	TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.	TMAX		C	R*4	N.R.
TOVW		C	R*4	N.R.	TWTW		C	R*4	N.R.	WBAL		C	R*4	N.R.	WENV		C	R*4	N.R.
WFUL		C	R*4	N.R.	WGS8		C	R*4	N.R.	WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.
WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.	WRCA		C	R*4	N.R.
WSCA		C	R*4	N.R.	XLBH		C	R*4	N.R.	XLGD	F	C	R*4	000034	XLHL	SF	C	R*4	0009B4
YLS2		C	R*4	N.R.	ALFDL		C	R*4	N.R.	ATMIY		C	R*4	N.R.	CBARF		C	R*4	N.R.
CBAKW		C	R*4	N.R.	CLDES		C	R*4	N.R.	CLEYE		C	R*4	N.R.	CPIND		C	R*4	N.R.
CPNUD		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPRD		C	R*4	N.R.	CPTOT		C	R*4	N.R.
DALFR	SF		R*4	0000EC	DELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.
DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.	ELDOA		C	R*4	N.R.	ENPCR		C	R*4	N.R.
ETAP2		C	R*4	N.R.	ETAP4		C	R*4	N.R.	FETOT		C	R*4	N.R.	GMDD1		C	R*4	N.R.
HMAXD		C	R*4	N.R.	ICRUS	F	C	I*4	00081C	NLIFT				000000	NUCPP		C	I*4	N.R.
NOXPJ		C	I*4	N.R.	PFET2		C	R*4	N.R.	REALJ		C	R*4	N.R.	RHPMR		C	R*4	N.R.
SIGMA		C	R*4	N.R.	SIGMR		C	R*4	N.R.	SKAMD		C	R*4	N.R.	SKBAL		C	R*4	N.R.
SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.
SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.	SKRCA		C	R*4	N.R.
SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH		C	R*4	N.R.
SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2RHO		C	R*4	N.R.	TBCLI		C	R*4	N.R.
TBCRP		C	R*4	N.R.	TBEM5		C	R*4	N.R.	TBPOW		C	R*4	N.R.	TBSFC		C	R*4	N.R.
TCBAR		C	R*4	N.R.	THETA		C	R*4	N.R.	TPRGP		C	R*4	N.R.	TVCMR		C	R*4	N.R.
VBARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.	VGASB		C	R*4	N.R.
VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.	XLALB		C	R*4	N.R.
XLBWD	F	C	R*4	000028	XLHRW	SFA		R*4	0000F0	XLRLA	F	C	R*4	00002C	ALFDES	F	C	R*4	000640
BHPSUP		C	R*4	N.R.	CBAKHT		C	R*4	N.R.	CBARVT		C	R*4	N.R.	CBYLOA		C	R*4	N.R.
CLALPH	F	C	R*4	0001C4	CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.
DELFCR		C	R*4	N.R.	DELRTH		C	R*4	N.R.	DELWFC		C	R*4	N.R.	DELWPL		C	R*4	N.R.
DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.
DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.	ELHLOA		C	R*4	N.R.
ELVLOA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4N		C	R*4	N.R.	EXPDRG		C	R*4	N.R.
FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	GAMDII		C	R*4	N.R.	HULIND		C	R*4	N.R.
INDCRU		C	I*4	N.R.	INDDRG		C	I*4	N.R.	INDDYL		C	I*4	000828	INDETA		C	I*4	N.R.
INDFIX		C	I*4	N.R.	INDHUL		C	I*4	000834	INDOPT		C	I*4	N.R.	INDOSW		C	I*4	N.R.
INDPOW		C	I*4	N.R.	INDPRP		C	I*4	N.R.	INDRUM		C	I*4	N.R.	IPRINT		C	I*4	N.R.
OPTIND		C	R*4	N.R.	OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.	RDMIND		C	R*4	N.R.
RHORHO		C	R*4	N.R.	SGTIND		C	R*4	N.R.	SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.
SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.	SSIGMA		C	R*4	N.R.
STHETA		C	R*4	N.R.	TBCDWI		C	R*4	N.R.	TB8AP4		C	R*4	N.R.	THETMR		C	R*4	N.R.
TOLIND		C	R*4	N.R.	VGBOVH		C	R*4	N.R.	WBALNT		C	R*4	N.R.	WPAYLO		C	R*4	N.R.
XLHRWP	SFA		R*4	0000F4	XLHRW1	SFA		R*4	0000F8	XLHRW2	SFA		R*4	0000FC	XLHRW3	SFA		R*4	000100
XLHR44	SFA		R*4	000104	XTGTA2		C	R*4	N.R.	XTGTA4	F	C	R*4	0003C0					

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK *. * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	HULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.

OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	ROMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WO	R*4	000024	XLBWO	R*4	000028	XLRLA	R*4	00002C
VGBOVH	R*4	N.R.	XLGD	R*4	000034	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VMO	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	HOO	R*4	N.R.	ROO	R*4	N.R.
TOO	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLOA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELDT	R*4	N.R.	ELDUA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	DVOL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	00011C
WVA	R*4	N.R.	DAM1	R*4	N.R.	DAM2	R*4	N.R.	BMR	R*4	N.R.
DAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	000148	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	HES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEM5	R*4	N.R.	T88AP4	R*4	N.R.	GAP3	R*4	N.R.
DAM4	R*4	N.R.	ENP	R*4	N.R.	ETAT	R*4	N.R.	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	N.R.	DLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CDC	R*4	0001C0	CLALPH	R*4	0001C4	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFUL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKRBF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TOLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	0003C0	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWPL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTO	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPOW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	000640
ALFDL	R*4	N.R.	ALFR	R*4	000648	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHPR	R*4	N.R.	BHPSUP	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
BR	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARHT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	N.R.	CLW	R*4	00068C	CPIND	R*4	N.R.
CPNUD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CRT	R*4	N.R.	CTP	R*4	0006A8	CV	R*4	N.R.	CX	R*4	N.R.

CLDES	R*4	N.R.	CB	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	N.R.	
DH	R*4	0006C4	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.	
ELN	R*4	N.R.	ELUA	R*4	0006D8	ELT	R*4	N.R.	ELVT	R*4	N.R.	
EN	R*4	N.R.	ETAP	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.	
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETOT	R*4	N.R.	
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.	
FM	R*4	N.R.	FP	R*4	N.R.	ETAP4	R*4	N.R.	GAMU11	R*4	N.R.	
GLF	R*4	N.R.	GMDD1	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	00081C	
INDCRU	I*4	N.R.	INDDRG	I*4	N.R.	INDDYL	I*4	000828	INDETA	I*4	N.R.	
INDFIX	I*4	N.R.	INDHOL	I*4	000834	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.	
INDPOW	I*4	N.R.	INDPRP	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.	
LTHL	I*4	N.R.	NOCPP	I*4	N.R.	NOXPJ	I*4	N.R.	OWE	R*4	N.R.	
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	000868	RHC	R*4	00086C	
REALJ	R*4	N.R.	RHPMR	R*4	N.R.	R	R*4	N.R.	RN	R*4	00087C	
SA	R*4	N.R.	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.	
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	N.R.	
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.	
ST	R*4	N.R.	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.	
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	0008C8	SWETH	R*4	N.R.	
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.	
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.	
TMAX	R*4	N.R.	TMP	R*4	N.R.	TPROP	R*4	N.R.	TR	R*4	N.R.	
ULF	R*4	N.R.	VGASB	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.	
V	R*4	N.R.	W	R*4	000914	WBAL	R*4	N.R.	WBALNT	R*4	N.R.	
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.	
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.	
WFW	R*4	N.R.	WGSB	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.	
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.	
WPDS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.	
WPRG	R*4	N.R.	WPRP	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.	
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.	
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.	
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	0009AC	
XLBH	R*4	N.R.	XLHL	R*4	0009B4	XLR	R*4	0009B8	XLW	R*4	0009BC	
YLS2	R*4	N.R.	TOVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	N.R.	
AF	R*4	N.R.	BHPP	R*4	N.R.	SEE	R*4	N.R.				

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	PAGE 009
30	000350	7	0003A2	5	0003FE	6	000412	
8	000422	10	00043A	11	000472	12	000494	
13	00050C	14	000520	15	000530	20	000582	
16	0005C0	17	0005DC	28	00064C	26	00067C	
24	0006D8	25	0006EC	27	0006FC	18	000700	
19	000714	21	000724	22	000786	23	0007DA	

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*OPTIONS IN EFFECT*      NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,

*OPTIONS IN EFFECT*      SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =     158 ,PROGRAM SIZE =     2070

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                          91K BYTES OF CORE NOT USED

*STATISTICS*  NO  DIAGNOSTICS THIS STEP
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        COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                           SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002            SUBROUTINE LOADER (X,I)                                          00010000
                   C**** MEMBER NAME B81LOADR                                        00020000
ISN 0003            DIMENSION T(5), IDENT(20), X(1)                                  00030000
ISN 0004            DATA KLANK /4H    /                                              00040000
ISN 0005          917 FORMAT(/47X,13HC A S C O M P/18X,53HCOMPREHENSIVE AIRSHIP SIZING C00050000
                     1OMPUTER PROGRAM    B-81,                                       00060000
                     2                          //15X76HTHE FOLLOWING IS A CARD BY CARD R00070000
                     3EPRODUCTION OF THE INPUT DECK FOR THIS CASE//9X,58HLOC.  CORRESPON00080000
                     4DS TO LOCATION NUMBER GIVEN ON INPUT SHEET / 9X,83HNUM   STANDS FO00090000
                     5R THE NUMBER OF SEQUENTIAL INPUT VALUES STARTING WITH LOC. (MAX. =00100000
                     65)/ 9X,53HVAL   EQUALS VALUE FOR VARIABLE CORRESPONDING TO LOC./9X00110000
                     7,4HVAL1,9X,5HVALUE,14X,26HCORRESPONDING TO LOC.+0001/9X,4HVAL2,9X,00120000
                     85HVALUE,14X,26HCORRESPONDING TO LOC.+0002/15X,4HETC.//11X,4HLOC.,700130000
                     9X,3HNUM,9X,3HVAL,15X,4HVAL1,14X,4HVAL2,14X,4HVAL3,14X,4HVAL4/)    00140000
ISN 0006          918 FORMAT(11X,I4,8X,I1,5X,5(G14.5,4X))                          00150000
ISN 0007          999 FORMAT(/47X,13HC A S C O M P/18X,53HCOMPREHENSIVE AIRSHIP SIZING C00160000
                     1OMPUTER PROGRAM    B-81//)                                     00170000
ISN 0008            IPRTIT = 0                                                     00210000
                   C     IDTST(ON 360)= 1077952576          IDTST(ON 94)=-17997958192 00220000
ISN 0009            IDTST = KLANK                                                  00230000
ISN 0010            KADD = 0                                                       00240000
ISN 0011            IADD = 0                                                       00250000
ISN 0012            GO TO (1,11),I                                                 00260000
ISN 0013          1 READ(5,2)K,J,(T(L),L=1,5)                                      00270000
ISN 0014          2 FORMAT(I4,I1,5E14.7)                                           00280000
ISN 0015            GO TO (4,4,4,4,4,20,6,13,14),J                                 00290000
ISN 0016         20   IADD = IADD + 1                                              00300000
ISN 0017            IF (IADD.EQ.1) KADD = 1000                                     00310000
ISN 0019            IF (IADD.EQ.2) KADD = 0                                        00320000
ISN 0021            IF (IADD.EQ.2) IADD = 0                                        00330000
ISN 0023            GO TO 1                                                        00340000
ISN 0024          4 CONTINUE                                                       00350000
ISN 0025            IF(IPRTIT.NE.0)  GO TO 99                                      00360000
ISN 0027            WRITE(6,11111)                                                 00370000
ISN 0028        11111 FORMAT(1H1)                                                  00380000
ISN 0029            WRITE(6,917)                                                   00390000
ISN 0030            IPRTIT= 1                                                      00400000
ISN 0031         99   K = K+ KADD                                                  00410000
ISN 0032            DO 5 L = 1,J                                                   00420000
ISN 0033            N = K + L - 1                                                  00430000
ISN 0034          5 X(N)= T(L)                                                     00440000
ISN 0035            WRITE (6,918) K,J,(X(IVY),IVY=K,N)                             00450000
ISN 0036            GO TO 1                                                        00460000
ISN 0037          6 READ(5,7)(IDENT(M),M=1,19)                                     00470000
ISN 0038          7 FORMAT(A4,2X,18A4)                                             00480000
ISN 0039            IF(IDENT(1)-IDTST) 8,10,8                                      00490000
ISN 0040          8 WRITE(6,9)                                                     00500000
ISN 0041          9 FORMAT(5X,43H*** ERROR - NO TITLE CARD AFTER SEVEN CARD,/      00510000
                     1       5X,44HCOLUMNS 1 THRU 6 ON TITLE CARD MUST BE BLANK/ 00520000
                     2       5X,45HOR THERE WAS A 6 IN COLUMN 5 OF AN INPUT CARD) 00530000
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ISN 0042            GO TO 14                                                    00540000
ISN 0043          10 IPAGE=0                                                    00550000
ISN 0044          11 IPAGE=IPAGE+1                                              00560000
ISN 0045             WRITE(6,12) (IDENT(M),M=2,19),IPAGE                        00570000
ISN 0046             IF(I.EQ.1) WRITE(6,917)                                    00580000
ISN 0048          12 FORMAT(1H1,1X18A4,6H PAGE I3//)                            00600000
ISN 0049             IF(I.NE.1) GO TO 113                                       00610000
ISN 0051             IPRTIT=1                                                   00620000
ISN 0052             GO TO 1                                                    00630000
ISN 0053         113 WRITE(6,999)                                               00640000
ISN 0054          13 RETURN                                                     00650000
ISN 0055          14 CALL EXIT                                                  00660000
ISN 0056             RETURN                                                     00670000
ISN 0057             END                                                        00680000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	F	I*4	000400	J	SF	I*4	000404	K	SF	I*4	000408	L	SF	I*4	00040C
M	F	I*4	000410	N	SF	I*4	000414	T	SF	R*4	000438	X	SF XR	R*4	000000
IVY	F	I*4	000418	EXIT	SF XF	R*4	000000	IADD	SF	I*4	00041C	KADD	SF	I*4	000420
IDENT	SF	I*4	00044C	IDTST	S	I*4	000424	IPAGE	SF	I*4	000428	KLANK	F	I*4	00042C
IBCCM#	F XF	I*4	000000	IPRTIT	S	I*4	000430	LOADER		I*4	000434				

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
1	000508	20	000558	4	00059C	99	000504
5	0005F6	6	000668	8	00069C	10	000684
11	00068C	113	000728	13	00073C	14	000744

OPTIONS IN EFFECT NAME= MAIN,OPT=02,LINECNT=54,SIZE=0000K,

OPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 56 ,PROGRAM SIZE = 1942

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 115K BYTES OF CORE NOT USED

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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                            SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
                                                                                        00010000
ISN 0002              SUBROUTINE POWER                                                  00020000
               C**** MEMBER NAME B81POWER                                               00030000
               C        PAGE 1    INPUT   LOC 0001 THRU 0050                            00040000
ISN 0003                COMMON    OPTIND    ,FLLIND    ,DYLIND    ,ORGIND    ,OSWIND    ,00050000
                       1FIXIND    ,RDMIND   ,FFFIND    ,ETAIND    ,WC        ,XLBWO     ,00060000
                       2XLRLA     ,VGECVF   ,XLCC      ,HMAXD     ,RHCRHO    ,VMC       ,00070000
                       3EMLF      ,CK1      ,CELWF     ,CKFF      ,VCIVE     ,HCC       ,00080000
                       4RCC       ,TOC      ,CAP1(5)   ,SGTIND(12),ELHLOA    ,ELVLOA    ,00090000
                       5GAP2(6)                                                          00100000
               C        PAGE 2    INPUT   LOC 0051 THRU 0100                             00110000
ISN 0004                COMMON    AR        ,WS        ,TCR       ,TCT       ,SLM       ,00120000
                       1ARFT      ,TCFT     ,VEARH     ,SLMH      ,ARVT      ,TCVT      ,00130000
                       2VEARV     ,SLMVT    ,ELDN      ,ELDT      ,ELCOA     ,OLSWSH    ,00140000
                       3DSWET     ,DLVLFL   ,DVCL      ,CBYLOA    ,ENR       ,WVA       ,00150000
                       4CAM1      ,CAM2     ,EMR       ,CAM3      ,CLEYE     ,TFETMR    ,00160000
                       5XC        ,XMR      ,TVCMR     ,VT        ,CTSIGH    ,TVW       ,00170000
                       6FES       ,TINY     ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5) ,00180000
                       7GAP3                                                             00190000
               C        PAGE 3    INPUT   LOC 0101 THRU 140                              00200000
ISN 0005                COMMON    CAM4      ,ENF       ,ETAT      ,HC        ,VC        ,00210000
                       1ATMIY     ,CDVT     ,CCHT      ,DAM5      ,CLTAFE    ,FECDRAG   ,00220000
                       2EXFDRG    ,CDC      ,CLALPF    ,CKVT      ,CKHT      ,CKF       ,00230000
                       3CKW       ,RELI     ,TCLN      ,TBCL1(8)  ,TBCDWI(8) ,GAP4(4)    00240000
               C        PAGE 4 INPUT  LOC 141 THRU 200    WEIGHT DATA                    00250000
ISN 0006                COMMON    WFE       ,WFLL      ,DELWFC    ,DELWP     ,DELWST    ,00260000
                       1SKCC      ,SKRC     ,SKSC      ,SKFW      ,SKTM      ,SKRCA     ,00270000
                       2SKSCA     ,SKMC     ,SKAC      ,SKHL      ,SKENV1    ,SKENV2    ,00280000
                       3SKGB1     ,SKGB2    ,SKELNT    ,SKBAL     ,SKLG      ,SKWW      ,00290000
                       4ELF       ,RMI      ,SKWP      ,SKHT      ,SKVT      ,SKRRB     ,00300000
                       5SKRBF     ,SKPF     ,SKAMD     ,SKAR      ,SKPA      ,SKVTAR    ,00310000
                       6SKPDS     ,SKPDSZ   ,SKT       ,SKFS      ,SKPEI     ,SKPES     ,00320000
                       7SK1       ,SK2      ,DK3       ,DK4       ,SK5       ,SK6       ,00330000
                       8SK7       ,SK8      ,SK9       ,SK10      ,SK11      ,SK12      ,00340000
                       9SK13      ,SK14     ,SK15      ,PLIN      ,CAP5(3)               00350000
               C        PAGE 5    INPUT.  LOC 201 THRU 300                               00360000
ISN 0007                COMMON    TCLINC(5) ,XTCTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5)  ,00370000
                       1DELTH(5)  ,STH(5)   ,CRSINC(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)    ,00380000
                       2DELR(5)   ,RMAX(5)  ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)   ,00390000
                       3FFIN(5)   ,GAP6(10)                                              00400000
               C        PAGE 6    INPUT   LOC 301 THRU 400                               00410000
ISN 0008                COMMON    CYCFFL    ,FF        ,SK3       ,SK4       ,TBH1(5)   ,00420000
                       1TBTO(5)   ,TBH2(5)  ,TBCFP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60)   00430000
               C        WORKING COMMON                                                   00440000
ISN 0009                COMMON  ALFDES,ALFDL,ALFF,AML,                                   00450000
                       1        BFPA,BFFR,BFPSLF,BHT,BLP,BR,BS,BVT,                      00460000
                       2 CBARF,CBARFT,CBARVT,CBAFW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO00470000
                       3,CPTOT,CRT,CTP,CV,CX,CLDES,CE,                                   00480000
                       4 DELRTF,DELTA,DF,DSPLMT,        ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP, 00490000
                       5 FEH,FEHI,FEHL,FEHT,FEI,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4     00500000
ISN 0010                COMMON GAMD11(3,15),CLF,CMDC1(16),H,
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ORIGINAL PAGE IS OF POOR QUALITY

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                      7 ICRUS,INDCRU,INDCRG,INDCYL,INDETA,INDFIX,INDHLL,INDOPT,INDOSW,   00510000
                      8 INDPOW,INDPRP,INDROM,IPRINT                                      00520000
ISN 0011                CCMMON LTHL,NCCPP,NCXPJ,CWB,PEHF,PI,Q,RHC,REALJ,RHPMR,R,RN       00530000
ISN 0012                CCMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST, 00540000
                      1STHETA,STMAX,SVT,SVTE,SVTH,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC        00550000
ISN 0013                CCMMON T,TAF,TCEAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V   00560000
ISN 0014                CCMMON W,WBAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,            00570000
                      1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPF,WPRB,WPRG,WPRP,WPSTR 00580000
                      2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                 00590000
ISN 0015                CCMMON XLALB,XLE,XLBH,XLHL,XLR,XLW,YLS2,TGVW                       00600000
ISN 0016                CCMMON CMR,SIGMR,AF,BHPP,SEE                                       00610001
ISN 0017                DIMENSION  SHP(10),ETAPP(10),TPROPP(10)                            00620100
ISN 0018                NAMELIST /NPOWER/ REALJ,ETAP,NOXPJ,NOCPP,CCP,CCT,LTHL,BLP,        00630000
                      1         SHPR,SHPA,TPRCP,IT1,P1,V                                 00640000
ISN 0019                NCXPJ=XPJNC+0.1                                                    00650000
ISN 0020                NCCPP=CPFNC+0.1                                                    00660000
ISN 0021                PI=3.14159                                                         00670000
ISN 0022                TPRCP1=TPRCP                                                       00680000
ISN 0023                IT1=0                                                              00690000
ISN 0024                ETAP=0.8                                                           00700000
ISN 0025                P1=0.0                                                             00710000
ISN 0026              14 IF (V.EQ.0.0) GO TO 11                                            00720000
ISN 0028                SHPR=(1.689*V*TPRCP1)/(550.0*ETAT*ETAP*DELTA*STHETA*BHPP*        00730000
                      1YLS2)                                                             00740000
ISN 0029              15 IF (LTHL.EQ.1) GO TO 23                                           00750000
ISN 0031                BLP=XLINT(TBH2,TBCRP,HH,5,M)                                     00760000
ISN 0032                BLP=FACTR(BLP,HH,THETA,FF)                                       00770000
ISN 0033                IF (M.NE.0) WRITE(6,9)                                           00780000
ISN 0035                GO TO 16                                                         00790000
ISN 0036              23 BLP=XLINT(TBH1,TETC,HH,5,M)                                     00800000
ISN 0037                BLP=FACTR(BLP,HH,THETA,FF)                                       00810000
ISN 0038                IF (M.NE.0) WRITE(6,8)                                           00820000
ISN 0040              16 SHPA=BLP                                                        00830000
ISN 0041                IF (SHPA.LT.SHPR) GO TO 25                                       00840000
ISN 0043              22 IF (IT1.GT.25) GO TO 5                                          00850000
ISN 0045                IT1=IT1+1                                                        00860000
ISN 0046              13 SHPA=SHPR                                                       00870000
ISN 0047                CALL THRUST(TPRCP,YLS2,ETAP)                                     00880000
ISN 0048                IF (ABS(1.0-TPRCP/TPRCP1).GT.0.005) GO TO 27                     00890000
ISN 0050                IF (ABS(1.0-P1/P).LE.0.01) GO TO 6                               00900000
ISN 0052              27 P1=P                                                            00910000
ISN 0053                IF (IT1.GT.10) GO TO 25                                          00920000
ISN 0055                GO TO 14                                                         00930000
ISN 0056              11 SHPR=TPRCP1**1.5*SQRT(4./(PI*DMR**2*ENR))/(550.*ETAT*ETAP*    00940000
                      1DELTA*STHETA*S2RHC*BHPP*YLS2)                                   00950000
ISN 0057                GO TO 15                                                         00960000
ISN 0058              5 WRITE(6,10)                                                      00970000
ISN 0059                WRITE(6,NPOWER)                                                  00980000
ISN 0060                GO TO 6                                                          00990000
ISN 0061              25 IF (LTHL.EQ.1) GO TO 23                                         01000000
ISN 0063                BLP=XLINT(TBH2,TBCRP,HH,5,M)                                     01010000
ISN 0064                BLP=FACTR(BLP,HH,THETA,FF)
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ISN 0065          IF (M.NE.C) WRITE(6,9)                                    01010000
ISN 0067          GC TO 231                                                 01020000
ISN 0068      230 BLP=XLINT(TBH1,TBTC,HH,5,M)                               01030000
ISN 0069          BLP=FACTR(BLP,HH,THETA,FF)                                01040000
ISN 0070          IF (M.NE.C) WRITE(6,8)                                    01050000
ISN 0072      231 SHPA=BLP                                                  01060000
ISN 0073          SHPMAX=SHPA                                               01070000
ISN 0074          SHPMIN=V*TPRCP1/(325.6365*ETAT*DELTA*BHPP*YLS2*STHETA)    01080000
ISN 0075          IF (V.EQ.C.0) SHPMIN=TPRCP1**1.5*SQRT(4./(PI*DMR**2*ENR))/ 01090000
                 1(550.*ETAT*ETAP*DELTA*STHETA*S2RHO*BHPP*YLS2)             01100000
ISN 0077          DELSHP=(SHPMAX-SHPMIN)/9.0                                01110000
ISN 0078          DO 20 I=1,10                                              01120000
ISN 0079          XI=I                                                      01130000
ISN 0080          SHP(I)=SHPMIN+DELSHP*(XI-1.0)                             01140000
ISN 0081          SHPR=SHP(I)                                               01150000
ISN 0082       21 SHPA=SHPR                                                 01160000
ISN 0083          CALL TPRCST(TPRCP,YLS2,ETAP)                              01170000
ISN 0084          ETAPP(I)=ETAP                                             01180000
ISN 0085          TPROPP(I)=TPRCP                                           01190000
ISN 0086          K=I                                                       01200000
ISN 0087          IF (K.LT.3) GO TO 20                                      01210000
ISN 0089          IF (TPRCP1.LT.TPROPP(K)) GO TO 215                        01220000
ISN 0091       20 CONTINUE                                                  01230000
ISN 0092          SHPR=1.1*SHPMA)                                           01240000
ISN 0093          WRITE(6,NPOWER)                                           01250000
ISN 0094          GO TO 6                                                   01260000
ISN 0095      215 ETAP=TABLE(TPRCP1,TPROPP,ETAPP,K,2,M)                     01270000
ISN 0096          SHPR=TABLE(TPRCP1,TPROPP,SHP,K,2,M)                       01280000
ISN 0097       10 FORMAT(10),'J DOES NOT CONVERGE IN TWENTY FIVE ITERATIONS - 01290000
                 1 SUBROUTINE POWER')                                       01300000
ISN 0098        9 FORMAT(22)39HTHIS ERROR IS IN THE CRUISE POWER TABLE)     01310000
ISN 0099        8 FORMAT(22X40HTHIS ERROR IS IN THE TAKEOFF POWER TABLE)    01320000
ISN 0100        6 RETURN                                                    01330000
ISN 0101          END                                                       01340000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	C	R*4	N.R.	I	SF	I*4	00020C	K	SFA	I*4	000210	M	FA	I*4	000214
P	FA	R*4	000218	Q	C	R*4	N.R.	R	C	R*4	N.R.	T	C	R*4	N.R.
V	F C	R*4	000910	W	C	R*4	N.R.	AF	C	R*4	N.R.	AR	C	R*4	N.R.
BR	C	R*4	N.R.	BS	C	R*4	N.R.	CB	C	R*4	N.R.	CV	C	R*4	N.R.
CX	C	R*4	N.R.	DH	C	R*4	N.R.	EN	C	R*4	N.R.	FF	FA C	R*4	000484
FM	C	R*4	N.R.	FP	C	R*4	N.R.	HC	C	R*4	N.R.	HH	FA	R*4	00021C
PI	SFA C	R*4	000864	P1	S A	R*4	000220	RN	C	R*4	N.R.	SA	C	R*4	N.R.
ST	C	R*4	N.R.	SW	C	R*4	N.R.	TR	C	R*4	N.R.	VC	C	R*4	N.R.
VT	C	R*4	N.R.	WE	C	R*4	N.R.	WF	C	R*4	N.R.	WO	C	R*4	N.R.
WS	C	R*4	N.R.	WW	C	R*4	N.R.	XC	C	R*4	N.R.	XI	SF	R*4	000224
AMU	C	R*4	N.R.	BHT	C	R*4	N.R.	BLP	SFA C	R*4	000660	BMP	C	R*4	N.R.
BVT	C	R*4	N.R.	CCP	C	R*4	00068C	CCT	C	R*4	000684	CDC	C	R*4	N.R.
CDV	C	R*4	N.R.	CKF	C	R*4	N.R.	CKW	C	R*4	N.R.	CK1	C	R*4	N.R.
CLW	C	R*4	N.R.	CRT	C	R*4	N.R.	CTP	C	R*4	N.R.	DK3	C	R*4	N.R.
DK4	C	R*4	N.R.	DMR	FA C	R*4	0009C8	ELC	C	R*4	N.R.	ELF	C	R*4	N.R.
ELN	C	R*4	N.R.	ELT	C	R*4	N.R.	ENP	C	R*4	N.R.	ENR	FA C	R*4	00011C
FEH	C	R*4	N.R.	FET	C	R*4	N.R.	FEW	C	R*4	N.R.	GLF	C	R*4	N.R.
HES	C	R*4	N.R.	HCC	C	R*4	N.R.	ITI	SF	I*4	000228	GWE	C	R*4	N.R.
RHC	C	R*4	N.R.	RMI	C	R*4	N.R.	ROO	C	R*4	N.R.	SA5	C	R*4	N.R.
SA6	C	R*4	N.R.	SA7	C	R*4	N.R.	SEE	C	R*4	N.R.	SFC	C	R*4	N.R.
SHP	SFA	R*4	000248	SHT	C	R*4	N.R.	SKT	C	R*4	N.R.	SK1	C	R*4	N.R.
SK2	C	R*4	N.R.	SK3	C	R*4	N.R.	SK4	C	R*4	N.R.	SK5	C	R*4	N.R.
SK6	C	R*4	N.R.	SK7	C	R*4	N.R.	SK8	C	R*4	N.R.	SK9	C	R*4	N.R.
SLM	C	R*4	N.R.	STH	C	R*4	N.R.	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.
TCR	C	R*4	N.R.	TCT	C	R*4	N.R.	TMP	C	R*4	N.R.	TGO	C	R*4	N.R.
TVW	C	R*4	N.R.	ULF	C	R*4	N.R.	VHL	C	R*4	N.R.	VIN	C	R*4	N.R.
VMC	C	R*4	N.R.	WAC	C	R*4	N.R.	WCC	C	R*4	N.R.	WEP	C	R*4	N.R.
WES	C	R*4	N.R.	WFC	C	R*4	N.R.	WFE	C	R*4	N.R.	WFR	C	R*4	N.R.
WFS	C	R*4	N.R.	WFW	C	R*4	N.R.	WHL	C	R*4	N.R.	WHT	C	R*4	N.R.
WLG	C	R*4	N.R.	WMC	C	R*4	N.R.	WPC	C	R*4	N.R.	WPH	C	R*4	N.R.
WRC	C	R*4	N.R.	WSC	C	R*4	N.R.	WST	C	R*4	N.R.	WTM	C	R*4	N.R.
WVA	C	R*4	N.R.	WVT	C	R*4	N.R.	XLB	C	R*4	N.R.	XLR	C	R*4	N.R.
XLW	C	R*4	N.R.	XMR	C	R*4	N.R.	ALFR	C	R*4	N.R.	ARHT	C	R*4	N.R.
ARVT	C	R*4	N.R.	BHPA	C	R*4	N.R.	BHPP	F C	R*4	0009D4	BHPR	C	R*4	N.R.
CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.	CKFF	C	R*4	N.R.	CKHT	C	R*4	N.R.
CKVT	C	R*4	N.R.	DAM1	C	R*4	N.R.	DAM2	C	R*4	N.R.	DAM3	C	R*4	N.R.
DAM4	C	R*4	N.R.	DAM5	C	R*4	N.R.	DELR	C	R*4	N.R.	DVCL	C	R*4	N.R.
ELON	C	R*4	N.R.	ELDT	C	R*4	N.R.	ELHT	C	R*4	N.R.	ELCA	C	R*4	N.R.
ELVT	C	R*4	N.R.	EMLF	C	R*4	N.R.	ETAP	SFA C	R*4	0006E8	ETAT	F C	R*4	000198
FEHI	C	R*4	N.R.	FEHL	C	R*4	N.R.	FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.
FEWH	C	R*4	N.R.	FEWI	C	R*4	N.R.	GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.
GAP3	C	R*4	N.R.	GAP4	C	R*4	N.R.	GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.
GAP7	C	R*4	N.R.	HFIN	C	R*4	N.R.	LTHL	C	I*4	000850	PEHF	C	R*4	N.R.
PLIN	C	R*4	N.R.	RELI	C	R*4	N.R.	RMAX	C	R*4	N.R.	SHPA	SF C	R*4	000894
SHPR	SF C	R*4	000898	SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.
SKAR	C	R*4	N.R.	SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.
SKHL	C	R*4	N.R.	SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.
SKPA	C	R*4	N.R.	SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.
SKTM	C	R*4	N.R.	SKVT	C	R*4	N.R.	SKWP	C	R*4	N.R.	SKWW	C	R*4	N.R.
SK10	C	R*4	N.R.	SK11	C	R*4	N.R.	SK12	C	R*4	N.R.	SK13	C	R*4	N.R.

SK14		C	R*4	N.R.	SK15		C	R*4	N.R.	SLMH		C	R*4	N.R.	STPW		C	R*4	N.R.
SVTE		C	R*4	N.R.	SVTW		C	R*4	N.R.	SWTT		C	R*4	N.R.	TBH1	FA	C	R*4	0004C0
TBH2	FA	C	R*4	0004E8	TBTC	FA	C	R*4	0004D4	TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.
TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.	TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.
TMAX		C	R*4	N.R.	TOVW		C	R*4	N.R.	TWTW		C	R*4	N.R.	WBAL		C	R*4	N.R.
WENV		C	R*4	N.R.	WFUL		C	R*4	N.R.	WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.
WPEI		C	R*4	N.R.	WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.
WRCA		C	R*4	N.R.	WSCA		C	R*4	N.R.	XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.
XLHL		C	R*4	N.R.	YLS2	SFA	C	R*4	0009C0	ALFDL		C	R*4	N.R.	ATMIY		C	R*4	N.R.
CBARF		C	R*4	N.R.	CEARW		C	R*4	N.R.	CLDES		C	R*4	N.R.	CLEYE		C	R*4	N.R.
CPIND		C	R*4	N.R.	CPNUC		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPNO	F		R*4	00022C
CPPRC		C	R*4	N.R.	CPTOT		C	R*4	N.R.	DELTA	F	C	R*4	0006C0	DELTH		C	R*4	N.R.
DELWF		C	R*4	N.R.	DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.	ELDCA		C	R*4	N.R.
ENPCR		C	R*4	N.R.	ETAPF	SFA		R*4	0C027C	ETAP2		C	R*4	N.R.	ETAP4		C	R*4	N.R.
FACTR	F	XF	R*4	000CC0	FETCT		C	R*4	N.R.	GMDD1		C	R*4	N.R.	HMAXD		C	R*4	N.R.
ICRUS		C	I*4	N.R.	NCCPP	S	C	I*4	000854	NGXPJ	S	C	I*4	000858	PFET2		C	R*4	N.R.
POWER			R*4	000230	REALJ		C	R*4	000870	RHPMP		C	R*4	N.R.	SIGMA		C	R*4	N.R.
SIGMR		C	R*4	N.R.	SKAMD		C	R*4	N.R.	SKMAL		C	R*4	N.R.	SKGBI		C	R*4	N.R.
SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.	SKPES		C	R*4	N.R.
SKPR8		C	R*4	N.R.	SKRBF		C	R*4	N.R.	SKRCA		C	R*4	N.R.	SKSCA		C	R*4	N.R.
SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH		C	R*4	N.R.	SWEXP		C	R*4	N.R.
SWWET		C	R*4	N.R.	S2RFC	F	C	R*4	0008DC	TABLE	F	XF	R*4	000000	TBCLI		C	R*4	N.R.
TBCRP	FA	C	R*4	0004FC	TBEMS		C	R*4	N.R.	TBPOW		C	R*4	N.R.	TBSFC		C	R*4	N.R.
TCBAR		C	R*4	N.R.	THETA	FA	C	R*4	0008EC	TPROP	SFA	C	R*4	0008F8	TVCMR		C	R*4	N.R.
VBAPH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.	VGASB		C	R*4	N.R.
VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.	XLALB		C	R*4	N.R.
XLBWO		C	R*4	N.R.	XLINT	F	XF	R*4	000000	XLRLA		C	R*4	N.R.	XPJNO	F		R*4	000234
SQRT		XF	R*4	000000	FRXPR#		XF	R*4	000000	ALFDES		C	R*4	N.R.	BHPSUP		C	R*4	N.R.
CBARHT		C	R*4	N.R.	CEARVT		C	R*4	N.R.	CBYLOA		C	R*4	N.R.	CLALPH		C	R*4	N.R.
CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.	DELFCR		C	R*4	N.R.
DELRTH		C	R*4	N.R.	DELSHP	SF		R*4	000238	DELWFC		C	R*4	N.R.	DELWPL		C	R*4	N.R.
DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.
DPGIND		C	R*4	N.R.	DSFLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.	ELHLOA		C	R*4	N.R.
ELVLOA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4N		C	R*4	N.R.	EXPDRG		C	R*4	N.R.
FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	FWRNL#	F	XF	I*4	000000	GAMDII		C	R*4	N.R.
HULIND		C	R*4	N.R.	IBCCM#	F	XF	I*4	000J00	INDCRU		C	I*4	N.R.	INDDRG		C	I*4	N.R.
INDDYL		C	I*4	N.R.	INCETA		C	I*4	N.R.	INDFIX		C	I*4	N.R.	INCHUL		C	I*4	N.R.
INDOPT		C	I*4	N.R.	INCCSW		C	I*4	N.R.	INDPOW		C	I*4	N.R.	INDPPP		C	I*4	N.R.
INDRDM		C	I*4	N.R.	IPRINT		C	I*4	N.R.	NPOWER	F			000002	OPTIND		C	R*4	N.R.
OSWIND		C	R*4	N.R.	PRFIND		C	R*4	N.R.	RDMIND		C	R*4	N.R.	RHCRHO		C	R*4	N.R.
SGTIND		C	R*4	N.R.	SHFMAX	SF		R*4	00023C	SHPMIN	SF		R*4	000240	SKBLNT		C	R*4	N.R.
SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.	SKPOSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.
SSIGMA		C	R*4	N.R.	STHETA	F	C	R*4	0008B4	TBCDWI		C	R*4	N.R.	TB8AP4		C	R*4	N.R.
THETMR		C	R*4	N.R.	THRLST	SF	XF	R*4	000000	TOLIND		C	R*4	N.R.	TPROPP	SFA		R*4	000298
TPROPI	SFA		R*4	000244	VGBOVH		C	R*4	N.R.	WBALNT		C	R*4	N.R.	WPAYLO		C	R*4	N.R.
XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.										

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	PULIND	R*4	N.R.	DYLIND	R*4	N.R.	CRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WC	R*4	N.R.	XLBWG	R*4	N.R.	XLBLA	R*4	N.R.
VGBCVH	R*4	N.R.	XLGE	R*4	N.R.	HMAXD	R*4	N.R.	RHCRHO	R*4	N.R.
VMC	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VCIVE	R*4	N.R.	HOO	R*4	N.R.	RCO	R*4	N.R.
TCC	P*4	N.R.	GAP1	R*4	N.R.	SGTIND	P*4	N.R.	ELHLCA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VEARF	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VEARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELDT	R*4	N.R.	ELDOA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLFL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	000110
WVA	R*4	N.R.	CAM1	R*4	N.R.	CAM2	R*4	N.R.	BMR	R*4	N.R.
CAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEM5	R*4	N.R.	TBGAP4	R*4	N.R.	GAP3	R*4	N.R.
CAM4	R*4	N.R.	ENF	R*4	N.R.	ETAT	R*4	000198	HC	R*4	N.R.
VC	R*4	N.R.	ATMIV	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
CAM5	R*4	N.R.	ELTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CCC	R*4	N.R.	CLALFF	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCLI	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	P*4	N.R.
WFLL	R*4	N.R.	CELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	P*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	P*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKRBF	R*4	N.R.	SKPF	R*4	N.R.	SKAMD	R*4	N.R.	SKAP	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	SK3	P*4	N.R.	SK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
THTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTCTA4	P*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
CELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWFL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	0004B4	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	0004C0	TBTC	R*4	0004D4	TBH2	R*4	0004E8	TBCRP	R*4	0004FC
TBSFC	R*4	N.R.	TBPCW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHFR	R*4	N.R.	BHPSUF	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	000660
ER	R*4	N.R.	ES	R*4	N.R.	BVT	R*4	N.R.	CBAFF	R*4	N.R.
CBARHT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	000680
CCT	R*4	000684	CCV	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	N.R.

CPALC	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTCT	R*4	N.R.
CRT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	N.R.	CX	R*4	N.R.
CLDES	R*4	N.R.	CE	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	0006C0
CF	R*4	N.R.	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELCA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	N.R.	ETAP	R*4	0006E8	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETCT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FP	R*4	N.R.	ETAP4	R*4	N.R.	GAMD11	R*4	N.R.
GLF	R*4	N.R.	GMOD1	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRU	I*4	N.R.	INDCRC	I*4	N.R.	INDDYL	I*4	N.R.	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDHLL	I*4	N.R.	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDFGW	I*4	N.R.	INDPRF	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.
LTHL	I*4	000850	NCOPF	I*4	000854	NOXPJ	I*4	000858	OWE	R*4	N.R.
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	N.R.	RHO	R*4	N.R.
REALJ	R*4	000870	RHFMR	R*4	N.R.	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	N.R.	SAS	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	000894	SHPR	R*4	000898	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	0008B4	SYMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	0008DC
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	0008EC
TMAX	R*4	N.R.	TMF	R*4	N.R.	TPROP	R*4	0008F8	TR	R*4	N.R.
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	000910	W	R*4	N.R.	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPCS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRF	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WWT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBH	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	0009C0	TCVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPF	R*4	0009D4	SEE	R*4	N.R.			

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
14	000446	15	0004DE	23	000534	16	000580
22	000598	13	0005AE NR	27	0005F6	11	000610
5	00066C	25	000694	230	0006EC	231	000738
21	00081C NR	20	000864	215	00088C	6	0008B8

OPTIONS IN EFFECT NAME= MAIN,OPT=02,LINECNT=54,SIZE=0000K,

OPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 100 ,PROGRAM SIZE = 2268

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 95K BYTES OF CORE NOT USED

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        COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                           SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002            SUBROUTINE PRFRM                                                  00010000
              C**** MEMBER NAME B81PRFRM                                              00020000
              C      PAGE 1   INPUT   LOC 0001 THRU 0050                              00030000
ISN 0003             COMMON      OPTIND    ,HULIND    ,DYLIND    ,DRGIND    ,OSWIND   ,00040000
                    1FIXIND    ,RDMIND    ,PRPIND    ,ETAIND    ,WO        ,XLBWO    ,00050000
                    2XLRLA     ,VGBOVH    ,XLGD      ,HMAXD     ,RHORHO    ,VMO      ,00060000
                    3EMLF      ,CK1       ,DELWF     ,CKFF      ,VDIVE     ,HOO      ,00070000
                    4ROO       ,TOO       ,GAP1(5)   ,SGTIND(12),ELHLOA    ,ELVLOA   ,00080000
                    5GAP2(6)                                                          00090000
              C      PAGE 2   INPUT   LOC 0051 THRU 0100                              00100000
ISN 0004             COMMON      AR        ,WS        ,TCR       ,TCT       ,SLM      ,00110000
                    1ARHT      ,TCHT      ,VBARH     ,SLMH      ,ARVT      ,TCVT     ,00120000
                    2VBARV     ,SLMVT     ,ELDN      ,ELDT      ,ELDOA     ,DLSWSH   ,00130000
                    3DSWET     ,DLVLHL    ,DVOL      ,CBYLOA    ,ENR       ,WVA      ,00140000
                    4DAM1      ,DAM2      ,BMR       ,DAM3      ,CLEYE     ,THETMR   ,00150000
                    5XC        ,XMR       ,TVCMR     ,VT        ,CTSIGH    ,TVW      ,00160000
                    6HES       ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5),00170000
                    7GAP3                                                             00180000
              C      PAGE 3   INPUT  LOC 0101 THRU 140                                00190000
ISN 0005             COMMON      DAM4      ,ENP       ,ETAT      ,HC        ,VC       ,00200000
                    1ATMIY     ,CDVT      ,CDHT      ,DAM5      ,DLTAFE    ,FEDRAG   ,00210000
                    2EXPDRG    ,CDC       ,CLALPH    ,CKVT      ,CKHT      ,CKF      ,00220000
                    3CKW       ,RELI      ,TCLN      ,TBCL1(8)  ,TBCDWI(8) ,GAP4(4)   00230000
              C      PAGE 4 INPUT  LOC 141 THRU 200  WEIGHT DATA                      00240000
ISN 0006             COMMON      WFE       ,WFUL      ,DELWFC    ,DELWP     ,DELWST   ,00250000
                    1SKCC      ,SKRC      ,SKSC      ,SKFW      ,SKTN      ,SKRCA    ,00260000
                    2SKSCA     ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2   ,00270000
                    3SKGB1     ,SKGB2     ,SKBLNT    ,SKBAL     ,SKLG      ,SKWW     ,00280000
                    4ELF       ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB    ,00290000
                    5SKRBF     ,SKPH      ,SKAMD     ,SKAR      ,SKPA      ,SKVTAR   ,00300000
                    6SKPDS     ,SKPDSZ    ,SKT       ,SKFS      ,SKPEI     ,SKPES    ,00310000
                    7SK1       ,SK2       ,DK3       ,DK4       ,SK5       ,SK6      ,00320000
                    8SK7       ,SK8       ,SK9       ,SK10      ,SK11      ,SK12     ,00330000
                    9SK13      ,SK14      ,SK15      ,PLIN      ,GAP5(3)              00340000
              C      PAGE 5  INPUT  LOC 201 THRU 300                                  00350000
ISN 0007             COMMON     TOLIND(5) ,XTGTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5) ,00360000
                    1DELTH(5)  ,STH(5)    ,CRSIND(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)   ,00370000
                    2DELR(5)   ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)  ,00380000
                    3HFIN(5)   ,GAP6(10)                                              00390000
              C      PAGE 6  INPUT  LOC 301 THRU 400                                  00400000
ISN 0008             COMMON     CYCPRL    ,FF        ,SK3       ,SK4       ,TBH1(5)  ,00410000
                    1TBTO(5)   ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60)  00420000
              C      WORKING COMMON                                                   00430000
ISN 0009             COMMON   ALFDES,ALFDL,ALFR,AMU,                                  00440000
                    1         BHPA,BHPR,BHPSUP,BHT,BLP,BR,BS,BVT,                     00450000
                    2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPR00460000
                    3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,                                   00470000
                    4 DELRTH,DELTA,DH,DSPLMT,      ELC,ELHT,ELN,ELOA,ELT,ELVT,EN,ETAP, 00480000
                    5 FEH,FEHI,FEHL,FEHT,FET,FETOT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4     00490000
ISN 0010             COMMON GAMD11(3,15),GLF,GMDD1(16),H,                             00500000
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                     7 ICRUS,INDCRU,INDDRG,INDDYL,INDETA,INDFIX,INCHUL,INDOPT,INDOSW,    00510000
                     8 INDPOW,INDPRP,INDRDM,IPRINT                                      00520000
ISN 0011              COMMON LTHL,NOCPP,NOXPJ,OWE,PEHF,PI,Q,RHO,REALJ,RHPMR,R,RN        00530000
ISN 0012              COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                     1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWIT,SWWET,S2RHO        00550000
ISN 0013              COMMON T,TAF,TCBAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0014              COMMON W,WBAL,WBALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,           00570000
                     1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR00580000
                     2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                 00590000
ISN 0015              COMMON XLALB,XLB,XLBH,XLHL,XLR,XLW,YLS2,TOVW                       00600000
ISN 0016              COMMON DMR,SIGMR,AF,BHPP,SEE                                      00600001
ISN 0017              IF(IPRINT.EQ.1) WRITE(6,1001)                                     00610000
ISN 0019            1001 FORMAT(/1H1,15X,24HMISSION PERFORMANCE DATA/)                  00620000
ISN 0020              W    =  WO                                                        00630000
ISN 0021              WF   =   0.                                                       00640000
ISN 0022              ST   =   TOO                                                      00650000
ISN 0023              R    =   ROO                                                      00660000
ISN 0024              H    =   HOO                                                      00670000
ISN 0025              WPAYLO = WPAYL                                                    00680000
ISN 0026              ITOHL = 0                                                         00690000
ISN 0027              ICRUS = 0                                                         00700000
ISN 0028              ICHGPL= 0                                                         00710000
ISN 0029              ITRALT= 0                                                         00720000
ISN 0030              I = 1                                                             00730000
ISN 0031              NEXT=0.                                                           00730500
ISN 0032              INDSGT = SGTIND(I) + 0.1                                          00740000
ISN 0033             100 INDEX  = INDSGT                                                00750000
ISN 0034              GO TO (1,2,1,4,1,1,1,8,9),INDEX                                   00760000
ISN 0035              IF(I.EQ.1)GO TO 20                                                00770000
ISN 0037              WFSR= WF                                                          00780000
ISN 0038              WFR = CK1 * WF + DELWF                                            00790000
ISN 0039              WFRE= WFR - WF                                                    00800000
ISN 0040              IF(IPRINT.EQ.1)WRITE(6,1002) WFSR,WFRE, WFR                       00810000
ISN 0042            1002 FORMAT(//15X,23HMISSION FUEL REQUIRED =,F9.0                   00820000
                     1        /15X,23HRESERVE FUEL REQUIRED =,F9.0                     00830000
                     2        /15X,23HTOTAL   FUEL REQUIRED =,F9.0)                    00840000
ISN 0043              IF(IPRINT.NE.1) GO TO 300                                         00840100
ISN 0045              W  =  WO                                                          00850000
ISN 0046              WF =   0.                                                         00860000
ISN 0047              ST =  TOO                                                         00870000
ISN 0048              R  =  ROO                                                         00880000
ISN 0049              H  =  HOO                                                         00890000
ISN 0050              IF((IPRINT.EQ.1).AND.(INDEX.EQ.0))WRITE(6,1003)                   00900000
ISN 0052            1003 FORMAT(1H1,15X,17HSECONDARY MISSION/)                          00910000
ISN 0053              IF((IPRINT.EQ.1).AND.(INDEX.EQ.100)) WRITE(6,1004)                00920000
ISN 0055            1004 FORMAT(//15X,22HEND OF SUCCESSFUL CASE)                        00930000
ISN 0056              IF(INDEX.EQ.0)GO TO 201                                           00940000
ISN 0058              GO TO 300                                                         00950000
ISN 0059             1 WRITE(6,1005)                                                    00960000
ISN 0060            1005 FORMAT(//15X,80HTAXI ,CLIMB, DESCEND, LOITER, AND CHGFUEL  SUBROUT00970000
                     1INES ARE NOT AVAILABLE  ******)                                  00980000
ISN 0061              NEXT = 1                                                          00990000
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ISN 0062          GO TO 200
ISN 0063       20 WRITE(6,1006)
ISN 0064     1006 FORMAT(15X,44H******  FIRST SEGMENT IS ZERO OR 100  ******)
ISN 0065          NEXT = 1
ISN 0066          GO TO 200
ISN 0067        2 ITOHL = ITOHL + 1
ISN 0068          CALL TOHL(ITOHL)
ISN 0069          GO TO 200
ISN 0070        4 ICRUS = ICRUS + 1
ISN 0071          INDCRU = CRSIND(ICRUS) + 0.1
ISN 0072          IF(INDCRU - 2)11,12,13
ISN 0073       11 CALL CRUS1(ICRUS)
ISN 0074          GO TO 200
ISN 0075       12 CALL CRUS2(ICRUS)
ISN 0076          GO TO 200
ISN 0077       13 CALL CRUS3(ICRUS)
ISN 0078          GO TO 200
ISN 0079        8 ICHGPL = ICHGPL + 1
ISN 0080          CALL CHGPL(ICHGPL)
ISN 0081          GO TO 200
ISN 0082        9 ITRALT = ITRALT + 1
ISN 0083          CALL TRALT(ITRALT)
ISN 0084      200 IF(NEXT.NE.0)GO TO 300
ISN 0086      201 I = I + 1
ISN 0087          INDSGT = SGTIND(I) + 0.1
ISN 0088          GO TO 100
ISN 0089      300 RETURN
ISN 0090          END
```

NAME	TAG	TYPE	ADD.
H	S C	R*4	000818
T	C	R*4	N.R.
AR	C	R*4	N.R.
CV	C	R*4	N.R.
FF	C	R*4	N.R.
PI	C	R*4	N.R.
SW	C	R*4	N.R.
WE	C	R*4	N.R.
WW	C	R*4	N.R.
BLP	C	R*4	N.R.
CCT	C	R*4	N.R.
CKW	C	R*4	N.R.
CTP	C	R*4	N.R.
ELC	C	R*4	N.R.
ENP	C	R*4	N.R.
FEW	C	R*4	N.R.
GWE	C	R*4	N.R.
SA5	C	R*4	N.R.
SFC	C	R*4	N.R.
SK2	C	R*4	N.R.
SK6	C	R*4	N.R.
SLM	C	R*4	N.R.
TCR	C	R*4	N.R.
TVW	C	R*4	N.R.
VMO	C	R*4	N.R.
WES	C	R*4	N.R.
WFS	C	R*4	N.R.
WLG	C	R*4	N.R.
WRC	C	R*4	N.R.
WVA	C	R*4	N.R.
XLW	C	R*4	N.R.
ARVT	C	R*4	N.R.
CDHT	C	R*4	N.R.
CKVT	C	R*4	N.R.
DAM4	C	R*4	N.R.
ELDN	C	R*4	N.R.
ELVT	C	R*4	N.R.
FEHI	C	R*4	N.R.
FEWH	C	R*4	N.R.
GAP3	C	R*4	N.R.
GAP7	C	R*4	N.R.
PEHF	C	R*4	N.R.
SHPA	C	R*4	N.R.
SKAC	C	R*4	N.R.
SKFW	C	R*4	N.R.
SKPC	C	R*4	N.R.
SKSC	C	R*4	N.R.
SKWW	C	R*4	N.R.
SK13	C	R*4	N.R.
STPW	C	R*4	N.R.

NAME	TAG	TYPE	ADD.
I	SF C	I*4	000220
V	C	R*4	N.R.
BR	C	R*4	N.R.
CX	C	R*4	N.R.
FM	C	R*4	N.R.
RN	C	R*4	N.R.
TR	C	R*4	N.R.
WF	SF C	R*4	000930
XC	C	R*4	N.R.
BMR	C	R*4	N.R.
CDC	C	R*4	N.R.
CKL	F C	R*4	000048
DK3	C	R*4	N.R.
ELF	C	R*4	N.R.
ENR	C	R*4	N.R.
GLF	C	R*4	N.R.
RHO	C	R*4	N.R.
SA6	C	R*4	N.R.
SHT	C	R*4	N.R.
SK3	C	R*4	N.R.
SK7	C	R*4	N.R.
STH	C	R*4	N.R.
TCT	C	R*4	N.R.
ULF	C	R*4	N.R.
WAC	C	R*4	N.R.
WFC	C	R*4	N.R.
WFW	C	R*4	N.R.
WMC	C	R*4	N.R.
WSC	C	R*4	N.R.
WVT	C	R*4	N.R.
XMR	C	R*4	N.R.
BHPA	C	R*4	N.R.
CDVT	C	R*4	N.R.
DAM1	C	R*4	N.R.
DAM5	C	R*4	N.R.
ELDT	C	R*4	N.R.
EMLF	C	R*4	N.R.
FEHL	C	R*4	N.R.
FEWI	C	R*4	N.R.
GAP4	C	R*4	N.R.
HFIN	C	R*4	N.R.
PLIN	C	R*4	N.R.
SHPR	C	R*4	N.R.
SKAR	C	R*4	N.R.
SKHL	C	R*4	N.R.
SKPA	C	R*4	N.R.
SKTM	C	R*4	N.R.
SK10	C	R*4	N.R.
SK14	C	R*4	N.R.
SVTE	C	R*4	N.R.

NAME	TAG	TYPE	ADD.
Q	C	R*4	N.R.
W	S C	R*4	000914
BS	C	R*4	N.R.
DH	C	R*4	N.R.
FP	C	R*4	N.R.
SA	C	R*4	N.R.
VC	C	R*4	N.R.
WO	F C	R*4	000024
AMU	C	R*4	N.R.
BVT	C	R*4	N.R.
CDV	C	R*4	N.R.
CLW	C	R*4	N.R.
DK4	C	R*4	N.R.
ELN	C	R*4	N.R.
FEH	C	R*4	N.R.
HES	C	R*4	N.R.
RMI	C	R*4	N.R.
SA7	C	R*4	N.R.
SKT	C	R*4	N.R.
SK4	C	R*4	N.R.
SK8	C	R*4	N.R.
SVT	C	R*4	N.R.
TMP	C	R*4	N.R.
VHL	C	R*4	N.R.
WCC	C	R*4	N.R.
WFE	C	R*4	N.R.
WHL	C	R*4	N.R.
WPC	C	R*4	N.R.
WST	C	R*4	N.R.
XLB	C	R*4	N.R.
ALFR	C	R*4	N.R.
BHPP	C	R*4	N.R.
CKFF	C	R*4	N.R.
DAM2	C	R*4	N.R.
DELR	C	R*4	N.R.
ELHT	C	R*4	N.R.
ETAP	C	R*4	N.R.
FEHT	C	R*4	N.R.
GAP1	C	R*4	N.R.
GAP5	C	R*4	N.R.
LTHL	C	I*4	N.R.
RELI	C	R*4	N.R.
SHTE	C	R*4	N.R.
SKCC	C	R*4	N.R.
SKHT	C	R*4	N.R.
SKPH	C	R*4	N.R.
SKVT	C	R*4	N.R.
SK11	C	R*4	N.R.
SK15	C	R*4	N.R.
SVTW	C	R*4	N.R.

NAME	TAG	TYPE	ADD.
R	S C	R*4	000878
AF	C	R*4	N.R.
CB	C	R*4	N.R.
EN	C	R*4	N.R.
HC	C	R*4	N.R.
ST	S C	R*4	000880
VT	C	R*4	N.R.
WS	C	R*4	N.R.
BHT	C	R*4	N.R.
CCP	C	R*4	N.R.
CKF	C	R*4	N.R.
CRT	C	R*4	N.R.
DMR	C	R*4	N.R.
ELT	C	R*4	N.R.
FET	C	R*4	N.R.
HOO	F C	R*4	000058
ROO	F C	R*4	00005C
SEE	C	R*4	N.R.
SK1	C	R*4	N.R.
SK5	C	R*4	N.R.
SK9	C	R*4	N.R.
TAF	C	R*4	N.R.
TOO	F C	R*4	000060
VIN	C	R*4	N.R.
WEP	C	R*4	N.R.
WFR	SF C	R*4	000938
WHT	C	R*4	N.R.
WPH	C	R*4	N.R.
WTM	C	R*4	N.R.
XLR	C	R*4	N.R.
ARHT	C	R*4	N.R.
BHPR	C	R*4	N.R.
CKHT	C	R*4	N.R.
DAM3	C	R*4	N.R.
DVOL	C	R*4	N.R.
ELOA	C	R*4	N.R.
ETAT	C	R*4	N.R.
FEVT	C	R*4	N.R.
GAP2	C	R*4	N.R.
GAP6	C	R*4	N.R.
NEXT	S	I*4	000224
RMAX	C	R*4	N.R.
SHTW	C	R*4	N.R.
SKFS	C	R*4	N.R.
SKLG	C	R*4	N.R.
SKRC	C	R*4	N.R.
SKWP	C	R*4	N.R.
SK12	C	R*4	N.R.
SLMH	C	R*4	N.R.
SWTT	C	R*4	N.R.

TBH1		C	R*4	N.R.	TBH2		C	R*4	N.R.	TBTO		C	R*4	N.R.	TCHT		C	R*4	N.R.
TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.	TIN2		C	R*4	N.R.
TIN4		C	R*4	N.R.	TMAX		C	R*4	N.R.	TOHL	SF	XF	R*4	0C0000	TOVW		C	R*4	N.R.
TWTW		C	R*4	N.R.	WBAL		C	R*4	N.R.	WENV		C	R*4	N.R.	WFRE	SF		R*4	000228
WFSR	SF		R*4	00022C	WFUL		C	R*4	N.R.	WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.
WPEI		C	R*4	N.R.	WPRB		C	R*4	N.R.	WPPG		C	R*4	N.R.	WPRP		C	R*4	N.R.
WRCA		C	R*4	N.R.	WSCA		C	R*4	N.R.	XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.
XLHL		C	R*4	N.R.	YLS2		C	R*4	N.R.	ALFDL		C	R*4	N.R.	ATMIY		C	R*4	N.R.
CBARF		C	R*4	N.R.	CBARW		C	R*4	N.R.	CHGPL	SF	XF	R*4	0C0000	CLDES		C	R*4	N.R.
CLEYE		C	R*4	N.R.	CPIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.	CPPAR		C	R*4	N.R.
CPPRO		C	R*4	N.R.	CPTOT		C	R*4	N.R.	CRUS1	SF	XF	R*4	0C0000	CRUS2		XF	R*4	000000
CRUS3	SF	XF	R*4	000000	DELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	00004C
DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.	ELDCA		C	R*4	N.R.	ENPCR		C	R*4	N.R.
ETAP2		C	R*4	N.R.	ETAP4		C	R*4	N.R.	FETOT		C	R*4	N.R.	GMD01		C	R*4	N.R.
HMAXD		C	R*4	N.R.	ICRUS	SFA	C	I*4	00081C	INDEX	SF		I*4	0C0230	ITOHL	SFA		I*4	000234
NOCPP		C	I*4	N.R.	NUXPJ		C	I*4	N.R.	PFET2		C	R*4	N.R.	PRFRM			R*4	000238
REALJ		C	R*4	N.R.	RHPMR		C	R*4	N.R.	SIGMA		C	R*4	N.R.	SIGMR		C	R*4	N.R.
SKAMD		C	R*4	N.R.	SKBAL		C	R*4	N.R.	SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.
SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.	SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.
SKR9F		C	R*4	N.R.	SKRCA		C	R*4	N.R.	SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.
STMAX		C	R*4	N.R.	SWETH		C	R*4	N.R.	SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.
S2RHO		C	R*4	N.R.	TBCLI		C	R*4	N.R.	TBCRP		C	R*4	N.R.	TBEM5		C	R*4	N.R.
TBPOW		C	R*4	N.R.	TBSFC		C	R*4	N.R.	TCBAR		C	R*4	N.R.	THETA		C	R*4	N.R.
TPROP		C	R*4	N.R.	TRALT	SF	XF	R*4	000000	TVCMR		C	R*4	N.R.	VBARH		C	R*4	N.R.
VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.	VGASB		C	R*4	N.R.	VGASR		C	R*4	N.R.
WPAYL	F	C	R*4	000958	WPSTR		C	R*4	N.R.	XLALB		C	R*4	N.R.	XLBWD		C	R*4	N.R.
XLRLA		C	R*4	N.R.	ALFDES		C	R*4	N.R.	BHPSUP		C	R*4	N.R.	CBARHT		C	R*4	N.R.
CBARVT		C	R*4	N.R.	CBYLOA		C	R*4	N.R.	CLALPH		C	R*4	N.R.	CRSIND		C	R*4	0003AC
CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.	DELFCR		C	R*4	N.R.	DELRTH		C	R*4	N.R.
DELWFC		C	R*4	N.R.	DELWPL		C	R*4	N.R.	DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.
DLTAPE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.	DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.
DYLIND		C	R*4	N.R.	ELHLOA		C	R*4	N.R.	ELVLOA		C	R*4	N.R.	ETAIND		C	R*4	N.R.
ETAP4N		C	R*4	N.R.	EXPURG		C	R*4	N.R.	FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.
GAMD11		C	R*4	N.R.	HULIND		C	R*4	N.R.	IBCOM#	F	XF	I*4	000000	ICHGPL	SFA		I*4	00023C
INDCRUS		C	I*4	000820	INDORG		C	I*4	N.R.	INDDYL		C	I*4	N.R.	INDETA		C	I*4	N.R.
INDFIX		C	I*4	N.R.	INDHUL		C	I*4	N.R.	INDOPT		C	I*4	N.R.	INDOSW		C	I*4	N.R.
INDPOW		C	I*4	N.R.	INDPRP		C	I*4	N.R.	INDRDM		C	I*4	N.R.	INDSGT	SF		I*4	000240
IPRINT		C	I*4	00084C	ITRALT	SFA		I*4	000244	OPTIND		C	R*4	N.R.	OSWIND		C	R*4	N.R.
PRPIND		C	R*4	N.R.	RDMIND		C	R*4	N.R.	RHORHO		C	R*4	N.R.	SGTIND	F	C	R*4	000078
SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.
SKVTAR		C	R*4	N.R.	SSIGMA		C	R*4	N.R.	STHETA		C	R*4	N.R.	TBCDWI		C	R*4	N.R.
TBBAP4		C	R*4	N.R.	THETMR		C	R*4	N.R.	TOLIND		C	R*4	N.R.	VGBOVH		C	R*4	N.R.
WBALNT		C	R*4	N.R.	WPAYLOS		C	R*4	00099C	XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	HULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.

OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RCMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WO	R*4	000024	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBOVH	R*4	N.R.	XLGD	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VMO	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	000048	DELWF	R*4	00004C
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	H00	R*4	000058	R00	R*4	00005C
TCO	R*4	000060	GAP1	R*4	N.R.	SGTIND	R*4	000078	ELHLOA	R*4	N.R.
ELVLUA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	HS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELDT	R*4	N.R.	ELDOA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	DVOL	R*4	N.R.	CBYLCA	R*4	N.R.	ENR	R*4	N.R.
WVA	R*4	N.R.	DAM1	R*4	N.R.	DAM2	R*4	N.R.	BMR	R*4	N.R.
DAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	HES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEM5	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
DAM4	R*4	N.R.	ENP	R*4	N.R.	ETAT	R*4	N.R.	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	N.R.	DLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CDC	R*4	N.R.	CLALPH	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFUL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKRBF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TOLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	0003AC	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWPL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTO	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPOW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFDL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHPR	R*4	N.R.	BHPSUP	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
BR	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARHT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPNUD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CRT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	N.R.	CX	R*4	N.R.

CLDES	R*4	N.R.
DH	R*4	N.R.
ELN	R*4	N.R.
EN	R*4	N.R.
FEHL	R*4	N.R.
FEVT	R*4	N.R.
FM	R*4	N.R.
GLF	R*4	N.R.
INDCRU	I*4	000820
INDFIX	I*4	N.R.
INDPOW	I*4	N.R.
LTHL	I*4	N.R.
PEHF	R*4	N.R.
REALJ	R*4	N.R.
SA	R*4	N.R.
SFC	R*4	N.R.
SHTE	R*4	N.R.
ST	R*4	000880
SVTE	R*4	N.R.
SWEXP	R*4	N.R.
T	R*4	N.R.
TMAX	R*4	N.R.
ULF	R*4	N.R.
V	R*4	N.R.
WCC	R*4	N.R.
WF	R*4	000930
WFW	R*4	N.R.
WLG	R*4	N.R.
WPDS	R*4	N.R.
WPRG	R*4	N.R.
WRCA	R*4	N.R.
WTM	R*4	N.R.
WAC	R*4	N.R.
XLBH	R*4	N.R.
YLS2	R*4	N.R.
AF	R*4	N.R.

CB	R*4	N.R.
DSPLMT	R*4	N.R.
ELOA	R*4	N.R.
ETAP	R*4	N.R.
FEHT	R*4	N.R.
FEW	R*4	N.R.
FP	R*4	N.R.
GMDD1	R*4	N.R.
INDDRG	I*4	N.R.
INDHUL	I*4	N.R.
INDPRP	I*4	N.R.
NOCPP	I*4	N.R.
PI	R*4	N.R.
RHPMR	R*4	N.R.
SA5	R*4	N.R.
SHPA	R*4	N.R.
SHTW	R*4	N.R.
STHETA	R*4	N.R.
SVTW	R*4	N.R.
SWTT	R*4	N.R.
TAF	R*4	N.R.
TMP	R*4	N.R.
VGASB	R*4	N.R.
W	R*4	000914
WE	R*4	N.R.
WFC	R*4	N.R.
WGSB	R*4	N.R.
WMC	R*4	N.R.
WPEI	R*4	N.R.
WPRP	R*4	N.R.
WSC	R*4	N.R.
WVT	R*4	N.R.
WENV	R*4	N.R.
XLHL	R*4	N.R.
TOVW	R*4	N.R.
BHPP	R*4	N.R.

DELRTH	R*4	N.R.
ELC	R*4	N.R.
ELT	R*4	N.R.
FEH	R*4	N.R.
FET	R*4	N.R.
FEWH	R*4	N.R.
ETAP4	R*4	N.R.
H	R*4	000818
INDDYL	I*4	N.R.
INDOPT	I*4	N.R.
INDROM	I*4	N.R.
NOXPJ	I*4	N.R.
Q	R*4	N.R.
R	R*4	000878
SA6	R*4	N.R.
SHPR	R*4	N.R.
SIGMA	R*4	N.R.
STMAX	R*4	N.R.
SW	R*4	N.R.
SWWET	R*4	N.R.
TCBAR	R*4	N.R.
TPROP	R*4	N.R.
VGASR	R*4	N.R.
WBAL	R*4	N.R.
WEP	R*4	N.R.
WFR	R*4	000938
WHL	R*4	N.R.
WPAYL	R*4	000958
WPH	R*4	N.R.
WPSTR	R*4	N.R.
WSCA	R*4	N.R.
WW	R*4	N.R.
XLALB	R*4	N.R.
XLR	R*4	N.R.
DMR	R*4	N.R.
SEE	R*4	N.R.

DELTA	R*4	N.R.
ELHT	R*4	N.R.
ELVT	R*4	N.R.
FEHI	R*4	N.R.
FETOT	R*4	N.R.
FEWI	R*4	N.R.
GAMD11	R*4	N.R.
ICRUS	I*4	00081C
INDETA	I*4	N.R.
INDOSW	I*4	N.R.
IPRINT	I*4	00084C
OWE	R*4	N.R.
RHO	R*4	N.R.
RN	R*4	N.R.
SA7	R*4	N.R.
SHT	R*4	N.R.
SSIGMA	R*4	N.R.
SVT	R*4	N.R.
SWETH	R*4	N.R.
S2RHO	R*4	N.R.
THETA	R*4	N.R.
TR	R*4	N.R.
VHL	R*4	N.R.
WBALNT	R*4	N.R.
WES	R*4	N.R.
WFS	R*4	N.R.
WHT	R*4	N.R.
WPC	R*4	N.R.
WPRB	R*4	N.R.
WRC	R*4	N.R.
WST	R*4	N.R.
WPAYLO	R*4	00099C
XLB	R*4	N.R.
XLW	R*4	N.R.
SIGMR	R*4	N.R.

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
100	000310	1	000422	20	00043E	2	00045A
4	000476	11	0004B4	12	0004C6	13	0004D8
8	0004EA	9	000506	200	00051E	201	000524
300	00054C						

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*OPTIONS IN EFFECT*      NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,

*OPTIONS IN EFFECT*      SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =      89 ,PROGRAM SIZE =    1392

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                          103K BYTES OF CORE NOT USED
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002               SUBROUTINE ROTPOW
                 C**** MEMBER NAME B81ROTPW
                 C     PAGE 1   INPUT   LOC 0001 THRU 0050
ISN 0003               COMMON     OPTIND    ,HULIND    ,DYLIND    ,DRGIND    ,OSWIND    ,
                      1FIXIND    ,RDMIND    ,PRPIND    ,ETAIND    ,WO        ,XLBWO     ,
                      2XLRLA     ,VGBOVH    ,XLGD      ,HMAXD     ,RHORHO    ,VMO       ,
                      3EMLF      ,CKI       ,DELWF     ,CKFF      ,VDIVE     ,HOO       ,
                      4ROO       ,TOO       ,GAP1(5)   ,SGTIND(12),ELHLOA    ,ELVLOA    ,
                      5GAP2(6)
                 C     PAGE 2   INPUT   LOC 0051 THRU 0100
ISN 0004               COMMON     AR        ,WS        ,TCR       ,TCT       ,SLM       ,
                      1ARHT      ,TCHT      ,VBARH     ,SLMH      ,ARVT      ,TCVT      ,
                      2VBARV     ,SLMVT     ,ELDN      ,ELDT      ,ELDOA     ,DLSWSH    ,
                      3DSWET     ,DLVLHL    ,DVOL      ,CBYLOA    ,ENR       ,WVA       ,
                      4DAM1      ,DAM2      ,BMR       ,DAM3      ,CLEYE     ,THETMR    ,
                      5XC        ,XMK       ,TVCMR     ,VT        ,CTSIGH    ,TVW       ,
                      6HES       ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5) ,
                      7GAP3
                 C     PAGE 3   INPUT  LOC 0101 THRU 140
ISN 0005               COMMON     DAM4      ,ENP       ,ETAT      ,HC        ,VC        ,
                      1ATMIY     ,CDVT      ,CDHT      ,DAM5      ,DLTAFE    ,FEDRAG    ,
                      2EXPDRG    ,CDC       ,CLALPH    ,CKVT      ,CKHT      ,CKF       ,
                      3CKW       ,RELI      ,TCLN      ,TBCL1(8)  ,TBCDWI(8) ,GAP4(4)
                 C     PAGE 4 INPUT  LOC 141 THRU 200  WEIGHT DATA
ISN 0006               COMMON     WFE       ,WFUL      ,DELWFC    ,DELWP     ,DELWST    ,
                      1SKCC      ,SKRC      ,SKSC      ,SKFW      ,SKTM      ,SKRCA     ,
                      2SKSCA     ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2    ,
                      3SKGB1     ,SKGB2     ,SKBLNT    ,SKBAL     ,SKLG      ,SKWW      ,
                      4ELF       ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB     ,
                      5SKRBF     ,SKPH      ,SKAMD     ,SKAR      ,SKPA      ,SKVTAR    ,
                      6SKPDS     ,SKPDSZ    ,SKT       ,SKFS      ,SKPEI     ,SKPES     ,
                      7SK1       ,SK2       ,DK3       ,DK4       ,SK5       ,SK6       ,
                      8SK7       ,SK8       ,SK9       ,SK10      ,SK11      ,SK12      ,
                      9SK13      ,SK14      ,SK15      ,PLIN      ,GAP5(3)
                 C     PAGE 5   INPUT   LOC 201  THRU 300
ISN 0007               COMMON     TOLIND(5) ,XTGTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5)  ,
                      1DELTH(5)  ,STH(5)    ,CRSIND(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)    ,
                      2DELR(5)   ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)
                      3HFIN(5)   ,GAP6(10)
                 C     PAGE 6   INPUT   LOC 301  THRU 400
ISN 0008               COMMON     CYCPRL    ,FF        ,SK3       ,SK4       ,TBH1(5)   ,
                      1TBTO(5)   ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60)
                 C     WORKING COMMON
ISN 0009               COMMON  ALFDES,ALFDL,ALFR,AMU,
                      1         BHPA,BHPR,BHPSUP,BHT,BLP,BR,BS,BVT,
                      2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO
                      3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,
                      4 DELRTH,DELTA,DH,DSPLMT,       ELC,ELHT,ELN,ELOA,ELT,ELVT,EN,ETAP,
                      5 FEH,FEHI,FEHL,FEHT,FET,FETOT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4
ISN 0010               COMMON GAMD11(3,15),GLF,GMOD1(16),H,
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                      7 ICRUS,INDCRU,INDDRG,INDDYL,INDETA,INDFIX,INDHUL,INDOPT,INDOSW,    00510000
                      8 INDPOW,INDPRP,INDRDM,IPRINT                                       00520000
ISN 0011               COMMON LTHL,NOCPP,NOXPJ,OWE,PEHE,PI,Q,RHO,REALJ,RHPMR,K,RN         00530000
ISN 0012               COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                      1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHO         00550000
ISN 0013               COMMON T,TAF,TCRAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0014               COMMON W,WBAL,WBALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,           00570000
                      1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR00580000
                      2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                  00590000
ISN 0015               COMMON XLALB,XLB,XLBH,XLHL,XLR,XLW,YLS2,TOVW                        00600000
ISN 0016               COMMON DMR,SIGMR,AF,BHPP,SEE                                        00600001
ISN 0017               COMMON /RTPOW/ CTTBLE(12),THTBLE(5),DKHTB(12,5),AMUTB(20),          00601000
                      1              CKNDTB(20),DMDBB(9),CKBLH(9),CTT(10),CKHUVT(10)      00602000
ISN 0018               NAMELIST /NRTPOW/ CTMR,CTSMR,CDB,DCDM,CDOMR,EMD,FM,TOVW,           00610000
                      1        CTPSMR,AMU,V,CPPRO,CPIND,CPPAR,CPNUC,DCDS,CKPER,          00620000
                      2        ALFDL,RHPMR,BHPR,EPS,SVI,FFMR,CKINDM,CKHOVM,CKNUDM,       00630000
                      3        DKHVM,DKHVRM,LC2,DL,INDTOL,B1,B2,DTOVW                    00640000
ISN 0019               RTOD=57.2957795                                                   00640100
ISN 0020               INDTOL=TOLIND(ITOHL)                                              00640200
ISN 0021               CPPRO=0.0                                                         00650000
ISN 0022               CPIND=0.0                                                         00660000
ISN 0023               CPPAR=0.0                                                         00670000
ISN 0024               CPNUD=0.0                                                         00680000
ISN 0025               CDUMP=0.0                                                         00690000
ISN 0026               DCDS=0.0                                                          00700000
ISN 0027               DCDM=0.0                                                          00710000
ISN 0028               Q=1.42636*RHO*V**2                                                00720000
ISN 0029               LC2=0                                                             00730000
ISN 0030               DL=TVW-1.0                                                        00740000
ISN 0031               IF (V.EQ.0.0) GO TO 10                                            00750000
ISN 0033               CT=4.0*XLR*TVW/(RHO*PI*DMR**2*ENR*VT**2)                          00760000
ISN 0034               SVI=VT*SQRT((SQRT(AMU**4+CT**2)-AMU**2)/2.0)                      00770000
ISN 0035               EPS=ATAN(2.0*SVI/(1.689*V))                                       00780000
ISN 0036               AMUP=SQRT((1.689*V)**2+SVI**2)/VT                                 00790000
ISN 0037               CTP=CTP*(1.0+DL*SIN(EPS)**2)                                      00800000
ISN 0038               CT=4.0*XLR*(1.0+DL*SIN(EPS)**2)/(RHO*PI*ENR*(DMR*VT)**2)          00810000
ISN 0039               GO TO 51                                                          00820000
ISN 0040            10 IF (INDTOL.EQ.1) GO TO 50                                         00830000
ISN 0042            15 LC2=LC2+1                                                         00840000
ISN 0043            50 XLA=ABS(XLR)                                                      00850000
ISN 0044               CT=4.0*XLA*TOVW/(RHO*PI*ENR*(DMR*VT)**2)                          00850100
ISN 0045            51 CTSMR=CT/SIGMR                                                    00860000
ISN 0046               CTMR=CT                                                           00870000
ISN 0047               CDBO=.00995                                                       00880000
ISN 0048               CKH1=-.028                                                        00890000
ISN 0049               CKH2=.262                                                         00900000
ISN 0050               CKH3=.276                                                         00910000
ISN 0051               CKH4=2.45                                                         00920000
ISN 0052               EMDBO=.865                                                        00930000
ISN 0053               CDB=CTSMR*(CKH2*CTSMR+CKH1)+CDBO                                  00940000
ISN 0054               IB=BMR-1                                                          00950000
ISN 0055               EMDB=EMDBO+DMDBB(IB)-0.0028*THETMR-.0252                          00960000
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ISN 0056            EMD=EMDB-CKH4*CTSMR                                          00970000
ISN 0057            EMT=VT/(SA*1.688)                                            00980000
ISN 0058            DELTAM=EMT-EMD                                               00990000
ISN 0059            DCDM=CKH3*DELTAM**2                                          01000000
ISN 0060            IF (DELTAM.LE.0.0) DCDM=0.0                                  01010000
ISN 0062            IF (V.NE.0.0) GO TO 60                                       01020000
ISN 0064            CDO=CDB+DCDM                                                 01030000
ISN 0065            CDOMR=CDO                                                    01040000
ISN 0066            CPPRO=CDO*SIGMR*(1.0-XC)/8.0                                 01050000
ISN 0067            GO TO 70                                                     01060000
ISN 0068         60 CDBP=CDB                                                     01070000
ISN 0069            DCDMP=DCDM                                                   01080000
ISN 0070            CTPSMR=CTP/SIGMR                                             01090000
ISN 0071            CDB8=.0105                                                   01100000
ISN 0072            CKC1=2.82                                                    01110000
ISN 0073            CKC2=.09                                                     01120000
ISN 0074            CKC3=1.17                                                    01130000
ISN 0075            CKC4=.00124                                                  01140000
ISN 0076            CKC5=.758                                                    01150000
ISN 0077            EMDO=.743                                                    01160000
ISN 0078            FG=(CTP/(SIGMR*((1.0-AMU)**2))*(1.0+CX/CTP))-CKC2            01170000
ISN 0079            FFMR=FG                                                      01180000
ISN 0080            EMD=EMDO-CKC5*CTP/SIGMR                                      01190000
ISN 0081            EMT90=(1.088*V+VT)/(SA*1.688)                                01200000
ISN 0082            DCDS=CKC1*FG**3*(1.0-AMU)**2*COS(EPS)**2                     01210000
ISN 0083            IF (DCDS.LT.0.0) DCDS=0.0                                    01220000
ISN 0085            DM90=EMT90-EMD                                               01230000
ISN 0086            IF (DM90.LE.0.0) GO TO 67                                    01240000
ISN 0088            DCDM=(CKC3*DM90**3+CKC4*DM90)*COS(EPS)**2+DCDMP*SIN(EPS)**2  01250000
ISN 0089            GO TO 65                                                     01260000
ISN 0090         67 DCDM=DCDMP*SIN(EPS)**2                                       01270000
ISN 0091         65 CDO=CDB8*COS(EPS)**2+CDBP*SIN(EPS)**2+DCDS+DCDM              01280000
ISN 0092            CDOMR=CDO                                                    01290000
ISN 0093            CPPRO=CDO*SIGMR*(1.0+4.65*AMU**2)*(1.0-XC)/8.0               01300000
ISN 0094            CT=4.0*XLR*(1.0+DL*SIN(EPS)**2)/(RHO*PI*ENR*(DMR*VT)**2)     01310000
ISN 0095         70 CKHOVA=XLINT(CTT,CKHOVT,CT,10,M)                             01320000
ISN 0096            IF (M.NE.0) WRITE(6,1003)                                    01330000
ISN 0098            DKHVTH=XLKUP(CT,THETMR,CTTBLE,12,THTBLE,5,DKHTB,12,5,IX,IY)  01340000
ISN 0099            DKHVM=DKHVTH                                                 01350000
ISN 0100            IF (IX.NE.0) WRITE(6,1004)                                   01360000
ISN 0102            IF (IY.NE.0) WRITE(6,1005)                                   01370000
ISN 0104      1003 FORMAT(10X,55HTHIS ERROR IS IN THE CT,KHOVA TABLE - SUBROUTINE ROT01380000
                 1POW)                                                           01390000
ISN 0105      1004 FORMAT(10X,82HTHIS ERROR IS IN THE CT PART OF THE DELTA KHOVER THE01400000
                 1TA T TABLE - SUBROUTINE ROTPOW)                                01410000
ISN 0106      1005 FORMAT(10X,86HTHIS ERROR IS IN THE THETA MR PART OF THE DELTA KHOV01420000
                 1ER THETA TABLE - SUBROUTINE ROTPOW)                            01430000
ISN 0107      1006 FORMAT(10X,82HTHIS ERROR IS IN THE CT PART OF THE DELTA KHOVER THE01440000
                 1TA T TABLE - SUBROUTINE ROTPOW)                                01450000
ISN 0108      1007 FORMAT(10X,89HTHIS ERROR IS IN THE THETA REF PART OF THE DELTA KHO01460000
                 1VER THETA T TABLE - SUBROUTINE ROTPOW)                         01470000
ISN 0109            THETRF=-9.                                                   01480000
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ISN 0110          DKHVTR=XLKUP(CT,THETRF,CTTBLE,12,THTBLE,5,DKHTB,12,5,IX,IY)      01490000
ISN 0111          DKHVRM=DKHVTR                                                    01500000
ISN 0112          IF (IX.NE.0) WRITE(6,1006)                                       01510000
ISN 0114          IF (IY.NE.0) WRITE(6,1007)                                       01520000
ISN 0116          CKHOV=CKBLH(IB)*(CKHOVA+DKHVTH-DKHVTR-1.0)+1.0                   01530000
ISN 0117          CKHOVM=CKHOV                                                     01540000
ISN 0118          IF (V.EQ.0.0) GO TO 100                                          01550000
ISN 0120          CKHOVP=CKHOV                                                     01560000
ISN 0121          CKIND=1.1*COS(EPS)**2+CKHOVP*SIN(EPS)**2                         01570000
ISN 0122          CKINDM=CKIND                                                     01580000
ISN 0123          CPIND=0.5*CKIND*CTP**2/AMUP                                      01590000
ISN 0124          CKPER=1.0+12.8*AMU**4                                            01600000
ISN 0125          CPPAR=AMU*CX*CKPER                                               01610000
ISN 0126          CKNUD=XLINT(AMUTB,CKNDTB,AMU,20,M)                               01620000
ISN 0127          CKNUDM=CKNUD                                                     01630000
ISN 0128          IF (M.NE.0) WRITE(6,1009)                                        01640000
ISN 0130       1009 FORMAT(10X,52HTHIS ERROR IS IN THE MU,KNUD TABLE SUBROUTINE ROTPOW01650000
                  1)                                                              01660000
ISN 0131          CPNUD=2.0*CTP*SIGMR*CKNUD/(BMR**2*(1.0+DL*SIN(EPS)**2))          01670000
ISN 0132          CPTOT=CPPRO+CPIND+CPPAR+CPNUD                                    01680000
ISN 0133          RHPMR=RHO*PI*DMR**2*ENR*VT**3*CPTOT/2200.                        01690000
ISN 0134          ALFDL=-ATAN(CX*(1.0+DL*SIN(EPS)**2)/CTP)*RTOD                    01700000
ISN 0135          RETURN                                                           01710000
ISN 0136       100 CPIND=0.707*CKHOV*CT**1.5                                       01720000
ISN 0137          CPTOT=CPPRO+CPIND                                                01730000
ISN 0138          FM=0.707*CT**1.5/CPTOT                                           01740000
ISN 0139          RHPMR=RHO*PI*DMR**2*ENR*VT**3*CPTOT/2200.                        01750000
ISN 0140          BHPR=RHPMR/ETAT                                                  01760000
ISN 0141          IF (INDTOL.EQ.2.) GO TO 110                                      01770000
ISN 0143          RETURN                                                           01780000
ISN 0144       110 IF (ABS((BHPA-BHPR)/BHPA).LT.0.01) GO TO 140                    01790000
ISN 0146          IF (LC2.LT.2) GO TO 120                                          01800000
ISN 0148          B2=BHPR-BHPA                                                     01810000
ISN 0149          DTOVW=B2*DTOVW/(B1-B2)                                           01820000
ISN 0150          B1=B2                                                            01830000
ISN 0151          GO TO 130                                                        01840000
ISN 0152       120 B1=BHPR-BHPA                                                    01850000
ISN 0153          DTOVW=-0.5                                                       01860000
ISN 0154       130 TOVW=TOVW-DTOVW                                                 01870000
ISN 0155          GO TO 15                                                         01880000
ISN 0156       140 RETURN                                                          01890000
ISN 0157          END                                                              01910000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	C	R*4	N.R.	M	FA	I*4	0003F0	Q	S C	R*4	000868	R	C	R*4	N.R.
T	C	R*4	N.R.	V	FA C	R*4	000910	W	C	R*4	N.R.	AF	C	R*4	N.R.
AR	C	R*4	N.R.	BR	C	R*4	N.R.	BS	C	R*4	N.R.	B1	SF	R*4	0003F4
B2	SF	R*4	0003F8	CB	C	R*4	N.R.	CT	SFA	R*4	0003FC	CV	C	R*4	N.R.
CX	FA C	R*4	000680	DH	C	R*4	N.R.	CL	SFA	R*4	000400	EN	C	R*4	N.R.
FF	C	R*4	N.R.	FG	SF	R*4	000404	FM	S C	R*4	000714	FP	C	R*4	N.R.
HC	C	R*4	N.R.	IB	SF	I*4	000408	IX	FA	I*4	00040C	IY	FA	I*4	000410
PI	F C	R*4	000864	RN	C	R*4	N.R.	SA	F C	R*4	000880	ST	C	R*4	N.R.
SW	C	R*4	N.R.	TR	C	R*4	N.R.	VC	C	R*4	N.R.	VT	F C	R*4	000148
WE	C	R*4	N.R.	WF	C	R*4	N.R.	WO	C	R*4	N.R.	WS	C	R*4	N.R.
WW	C	R*4	N.R.	XC	F C	R*4	00013C	AMU	FA C	R*4	00064C	BHT	C	R*4	N.R.
BLP	C	R*4	N.R.	BMR	F C	R*4	00012C	BVT	C	R*4	N.R.	CCP	C	R*4	N.R.
CCT	C	R*4	N.R.	CDB	SF	R*4	000414	CDC	C	R*4	N.R.	CDD	SF	R*4	000418
CDV	C	R*4	N.R.	CKF	C	R*4	N.R.	CKW	C	R*4	N.R.	CK1	C	R*4	N.R.
CLW	C	R*4	N.R.	CRT	C	R*4	N.R.	CTP	SFA C	R*4	0006A8	CTT	FA C	R*4	00021C
DK3	C	R*4	N.R.	DK4	C	R*4	N.R.	DMR	F C	R*4	000C8	ELC	C	R*4	N.R.
ELF	C	R*4	N.R.	ELN	C	R*4	N.R.	ELT	C	R*4	N.R.	EMD	SF	R*4	00041C
EMT	SF	R*4	000420	ENP	C	R*4	N.R.	ENR	F C	R*4	00011C	EPS	SFA	R*4	000424
FEH	C	R*4	N.R.	FET	C	R*4	N.R.	FEW	C	R*4	N.R.	GLF	C	R*4	N.R.
HES	C	R*4	N.R.	HOO	C	R*4	N.R.	LC2	SF	I*4	000428	OWE	C	R*4	N.R.
RHO	F C	R*4	00086C	RMI	C	R*4	N.R.	ROO	C	R*4	N.R.	SA5	C	R*4	N.R.
SA6	C	R*4	N.R.	SA7	C	R*4	N.R.	SEE	C	R*4	N.R.	SFC	C	R*4	N.R.
SHT	C	R*4	N.R.	SKT	C	R*4	N.R.	SK1	C	R*4	N.R.	SK2	C	R*4	N.R.
SK3	C	R*4	N.R.	SK4	C	R*4	N.R.	SK5	C	R*4	N.R.	SK6	C	R*4	N.R.
SK7	C	R*4	N.R.	SK8	C	R*4	N.R.	SK9	C	R*4	N.R.	SLM	C	R*4	N.R.
STH	C	R*4	N.R.	SVI	SFA	R*4	00042C	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.
TCR	C	R*4	N.R.	TCT	C	R*4	N.R.	TMP	C	R*4	N.R.	TOO	C	R*4	N.R.
TVW	F C	R*4	000150	ULF	C	R*4	N.R.	VHL	C	R*4	N.R.	VIN	C	R*4	N.R.
VMO	C	R*4	N.R.	WAC	C	R*4	N.R.	WCC	C	R*4	N.R.	WEP	C	R*4	N.R.
WES	C	R*4	N.R.	WFC	C	R*4	N.R.	WFE	C	R*4	N.R.	WFR	C	R*4	N.R.
WFS	C	R*4	N.R.	WFW	C	R*4	N.R.	WHL	C	R*4	N.R.	WHT	C	R*4	N.R.
WLG	C	R*4	N.R.	WMC	C	R*4	N.R.	WPC	C	R*4	N.R.	WPH	C	R*4	N.R.
WRC	C	R*4	N.R.	WSC	C	R*4	N.R.	WST	C	R*4	N.R.	WTM	C	R*4	N.R.
WVA	C	R*4	N.R.	WVT	C	R*4	N.R.	XLA	SF	R*4	000430	XLB	C	R*4	N.R.
XLR	FA C	R*4	000988	XLW	C	R*4	N.R.	XMR	C	R*4	N.R.	ALFR	C	R*4	N.R.
AMUP	SF	R*4	000434	ARHT	C	R*4	N.R.	ARVT	C	R*4	N.R.	BHPA	FA C	R*4	000650
BHPP	C	R*4	N.R.	BHPR	SFA C	R*4	000654	CDBB	SF	R*4	000438	CDBO	SF	R*4	00043C
CDBP	SF	R*4	000440	CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.	CKC1	SF	R*4	000444
CKC2	SF	R*4	000448	CKC3	SF	R*4	00044C	CKC4	SF	R*4	000450	CKC5	SF	R*4	000454
CKFF	C	R*4	N.R.	CKHT	C	R*4	N.R.	CKH1	SF	R*4	000458	CKH2	SF	R*4	00045C
CKH3	SF	R*4	000460	CKH4	SF	R*4	000464	CKVT	C	R*4	N.R.	CTMR	S	R*4	000468
DAM1	C	R*4	N.R.	DAM2	C	R*4	N.R.	DAM3	C	R*4	N.R.	DAM4	C	R*4	N.R.
DAM5	C	R*4	N.R.	DCDM	SF	R*4	00046C	DCDS	SF	R*4	000470	DELR	C	R*4	N.R.
DM90	SF	R*4	000474	DVOL	C	R*4	N.R.	ELDN	C	R*4	N.R.	ELDT	C	R*4	N.R.
ELHT	C	R*4	N.R.	ELOA	C	R*4	N.R.	ELVT	C	R*4	N.R.	EMD8	SF	R*4	000478
EMDO	SF	R*4	00047C	ENLF	C	R*4	N.R.	ETAP	C	R*4	N.R.	ETAT	F C	R*4	000198
FEHI	C	R*4	N.R.	FEHL	C	R*4	N.R.	FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.
FEWH	C	R*4	N.R.	FEWI	C	R*4	N.R.	FFMR	S	R*4	000480	GAP1	C	R*4	N.R.
GAP2	C	R*4	N.R.	GAP3	C	R*4	N.R.	GAP4	C	R*4	N.R.	GAP5	C	R*4	N.R.
GAP6	C	R*4	N.R.	GAP7	C	R*4	N.R.	HFIN	C	R*4	N.R.	LTHL	C	I*4	N.R.

PLHF		C	R*4	N.R.	PLIN		C	R*4	N.R.	RELI		C	R*4	N.R.	RMAX		C	R*4	N.R.
RTOD	SF		R*4	000484	SHPA		C	R*4	N.R.	SHPR		C	R*4	N.R.	SHTE		C	R*4	N.R.
SHTW		C	R*4	N.R.	SKAC		C	R*4	N.R.	SKAR		C	R*4	N.R.	SKCC		C	R*4	N.R.
SKFS		C	R*4	N.R.	SKFW		C	R*4	N.R.	SKHL		C	R*4	N.R.	SKHT		C	R*4	N.R.
SKLG		C	R*4	N.R.	SKMC		C	R*4	N.R.	SKPA		C	R*4	N.R.	SKPH		C	R*4	N.R.
SKRC		C	R*4	N.R.	SKSC		C	R*4	N.R.	SKTM		C	R*4	N.R.	SKVT		C	R*4	N.R.
SKWP		C	R*4	N.R.	SKWW		C	R*4	N.R.	SK10		C	R*4	N.R.	SK11		C	R*4	N.R.
SK12		C	R*4	N.R.	SK13		C	R*4	N.R.	SK14		C	R*4	N.R.	SK15		C	R*4	N.R.
SLMH		C	R*4	N.R.	STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.	SVTW		C	R*4	N.R.
SWTT		C	R*4	N.R.	TBH1		C	R*4	N.R.	TBH2		C	R*4	N.R.	TBTU		C	R*4	N.R.
TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.
TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.	TMAX		C	R*4	N.R.	TOVW	SF	C	R*4	00C9C4
TWTW		C	R*4	N.R.	WBAL		C	R*4	N.R.	WENV		C	R*4	N.R.	WFUL		C	R*4	N.R.
WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.	WPR8		C	R*4	N.R.
WPRG		C	R*4	N.R.	WRP		C	R*4	N.R.	WRCA		C	R*4	N.R.	WSCA		C	R*4	N.R.
XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.	XLHL		C	R*4	N.R.	YLS2		C	R*4	N.R.
ALFDL	S	C	R*4	000644	AMUTB	FA	C	R*4	000134	ATMIY		C	R*4	N.R.	CBARF		C	R*4	N.R.
CBARA		C	R*4	N.R.	CDDMR	S		R*4	000488	CKBLH	F	C	R*4	0001F8	CKHOV	SF		R*4	00048C
CKIND	SF		R*4	000490	CKNUD	SF		R*4	000494	CKPEK	SF		R*4	000498	CLDES		C	R*4	N.R.
CLEYE		C	R*4	N.R.	CPIND	SF	C	R*4	000690	CPNUD	SF	C	R*4	000694	CPPAR	SF	C	R*4	000698
CPPRO	SF	C	R*4	00069C	CPTUT	SF	C	R*4	0006A0	CTSMR	SF		R*4	00049C	DCDMP	SF		R*4	0004A0
DELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.	DELWP		C	R*4	N.R.
DKHTB	FA	C	R*4	000044	DKHVM	S		R*4	0004A4	DMDBB	F	C	R*4	0001D4	DSWET		C	R*4	N.R.
DTOVW	SF		R*4	0004A8	ELDOA		C	R*4	N.R.	EMDBO	SF		R*4	0004AC	EMT90	SF		R*4	0004B0
ENPCR		C	R*4	N.R.	ETAP2		C	R*4	N.R.	ETAP4		C	R*4	N.R.	FETOT		C	R*4	N.R.
GMDD1		C	R*4	N.R.	HMAXD		C	R*4	N.R.	ICRUS		C	I*4	N.R.	ITOHL	F		I*4	0004B4
NOCPP		C	I*4	N.R.	NOXPJ		C	I*4	N.R.	PEET2		C	R*4	N.R.	REALJ		C	R*4	N.R.
RHPNR	SF	C	R*4	000874	SIGMA		C	R*4	N.R.	SIGMR	F	C	R*4	0009CC	SKAMD		C	R*4	N.R.
SKBAL		C	R*4	N.R.	SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.
SKPEI		C	R*4	N.R.	SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.
SKRCA		C	R*4	N.R.	SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.
SWETH		C	R*4	N.R.	SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2RHO		C	R*4	N.R.
TBCL1		C	R*4	N.R.	TBCRP		C	R*4	N.R.	TBEM5		C	R*4	N.R.	TBPOW		C	R*4	N.R.
TBSFC		C	R*4	N.R.	TCBAR		C	R*4	N.R.	THETA		C	R*4	N.R.	TPROP		C	R*4	N.R.
TVCMR		C	R*4	N.R.	VBARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.
VGASB		C	R*4	N.R.	VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.
XLALB		C	R*4	N.R.	XLBWO		C	R*4	N.R.	XLINT	F	XF	R*4	000000	XLKUP	F	XF	R*4	000000
XLRLA		C	R*4	N.R.	FRXPR#		XF	R*4	000000	COS		XF	R*4	000000	SIN		XF	R*4	000000
ATAN		XF	R*4	000000	SQRT		XF	R*4	000000	ALFDES		C	R*4	N.R.	BHPSUP		C	R*4	N.R.
CBARHT		C	R*4	N.R.	CBARVT		C	R*4	N.R.	CBYLCA		C	R*4	N.R.	CKHOVA	SF		R*4	0004B8
CKHOVM	S		R*4	0004BC	CKHOVP	SF		R*4	0004C0	CKHOVT	FA	C	R*4	000244	CKINDM	S		R*4	0004C4
CKNDTB	FA	C	R*4	000184	CKNUDM	S		R*4	0004C8	CLALPH		C	R*4	N.R.	CRSIND		C	R*4	N.R.
CTPSMR	S		R*4	0004CC	CTSIGH		C	R*4	N.R.	CTTBLE	FA	C	R*4	000000	CYCPRL		C	R*4	N.R.
DELFCR		C	R*4	N.R.	DELRTH		C	R*4	N.R.	DELTAM	SF		R*4	0004D0	DELWFC		C	R*4	N.R.
DELWPL		C	R*4	N.R.	DELWST		C	R*4	N.R.	DKHVRM	S		R*4	0004D4	DKHVTH	SF		R*4	0004D8
DKHVTR	SF		R*4	0004DC	DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.
DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.	ELHLOA		C	R*4	N.R.
ELVLOA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4N		C	R*4	N.R.	EXPDRG		C	R*4	N.R.
FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	GAMD11		C	R*4	N.R.	HULIND		C	R*4	N.R.
IBCOM#	F	XF	I*4	000000	INDCRU		C	I*4	N.R.	INDDRG		C	I*4	N.R.	INDDYL		C	I*4	N.R.
INDETA		C	I*4	N.R.	INDFIX		C	I*4	N.R.	INDHUL		C	I*4	N.R.	INDOPT		C	I*4	N.R.
INDOSW		C	I*4	N.R.	INDPOW		C	I*4	N.R.	INDPRP		C	I*4	N.R.	INDRDM		C	I*4	N.R.

INDTOL	S		I*4	0004E0	IPRINT		C	I*4	N.R.	NRTPOW				0CFF00	OPTIND		C	R*4	N.R.
OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.	RDMIND		C	R*4	N.R.	RHORHO		C	R*4	N.R.
ROTPOW			R*4	0004E4	SGTIND		C	R*4	N.R.	SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.
SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.	SSIGMA		C	R*4	N.R.
STHETA		C	R*4	N.R.	TBCDWI		C	R*4	N.R.	TB8AP4		C	R*4	N.R.	THETMR	FA	C	R*4	000138
THETRF	SFA		R*4	0004E8	THTBLE	FA	C	R*4	000030	TOLIND	F	C	R*4	0C0320	VGBOVH		C	R*4	N.R.
WBALNT		C	R*4	N.R.	WPAYLO		C	R*4	N.R.	XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	HULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WO	R*4	N.R.	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBOVH	R*4	N.R.	XLGD	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VMO	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	H00	R*4	N.R.	R00	R*4	N.R.
T00	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLOA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELDT	R*4	N.R.	ELDOA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	DVOL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	00011C
WVA	R*4	N.R.	DAM1	R*4	N.R.	DAM2	R*4	N.R.	BMR	R*4	00012C
DAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	000138	XC	R*4	00013C
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	000148	CTSIGH	R*4	N.R.
TVW	R*4	000150	HES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEM5	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
DAM4	R*4	N.R.	ENP	R*4	N.R.	ETAT	R*4	000198	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	N.R.	DLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPORG	R*4	N.R.
CDC	R*4	N.R.	CLALPH	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFUL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKRBF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.

SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TOLIND	R*4	000320	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWPL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTO	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPOW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFDL	R*4	000644	ALFR	R*4	N.R.	AMU	R*4	00064C	BHPA	R*4	000650
BHPR	R*4	000654	BHPSUP	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
BR	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARHT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	000690
CPNUD	R*4	000694	CPPAR	R*4	000698	CPPKO	R*4	00069C	CPTOT	R*4	0006A0
CRT	R*4	N.R.	CTP	R*4	0006A8	CV	R*4	N.R.	CX	R*4	000680
CLDES	R*4	N.R.	CB	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DH	R*4	N.R.	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELUA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	N.R.	ETAP	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETOT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	000714	FP	R*4	N.R.	ETAP4	R*4	N.R.	GAMD11	R*4	N.R.
GLF	R*4	N.R.	GMDD1	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRU	I*4	N.R.	INDDKG	I*4	N.R.	INDDYL	I*4	N.R.	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDHUL	I*4	N.R.	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPOW	I*4	N.R.	INDPRP	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.
LTHL	I*4	N.R.	NOCPP	I*4	N.R.	NOXPJ	I*4	N.R.	OWE	R*4	N.R.
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	000868	RHO	R*4	00086C
REALJ	R*4	N.R.	RHPMR	R*4	000874	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	000880	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	N.R.
SHTF	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.
TMAX	R*4	N.R.	TMP	R*4	N.R.	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	N.R.	VGASB	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	000910	W	R*4	N.R.	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSB	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPDS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRP	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBH	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	0009B8	XLW	R*4	N.R.
YLS2	R*4	N.R.	TOVW	R*4	0009C4	DMR	R*4	0009C8	SIGMR	R*4	0009CC
AF	R*4	N.R.	BHPP	R*4	N.R.	SEE	R*4	N.R.			

NAME OF COMMON BLOCK * RTPOW* SIZE OF BLOCK 00026C HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
CTTBLE	R*4	000000	THTBLE	R*4	000030	DKHTB	R*4	000044	AMUTB	R*4	000134
CKNDTB	R*4	000184	DMDBB	R*4	0001D4	CKBLH	R*4	0001F8	CTT	R*4	00021C
CKHOVT	R*4	000244									

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
10	000934	15	00093A	50	000944	51	000978
60	000A46	67	000B78	65	000B98	70	000C24
100	000E9C	110	000F42	120	000F8E	130	000FA4
140	000FB4						

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*OPTIONS IN EFFECT*      NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
*OPTIONS IN EFFECT*      SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
*STATISTICS*     SOURCE STATEMENTS =     156 ,PROGRAM SIZE =     4056
*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                                  87K BYTES OF CORE NOT USED
*STATISTICS*  NO  DIAGNOSTICS THIS STEP
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      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF                00010000
ISN 0002                SUBROUTINE SIZTR                                                     00020000
      C**** MEMBER NAME BEISIZTR                                                             00030000
      C     PAGE 1    INPUT   LOC 0001 THRU 0050
ISN 0003              COMMON    OPTIND    ,FLLIND    ,DYLIND    ,ORGIND    ,OSWIND    ,00040000
                     1FIXIND    ,ROMIND    ,PFFIND    ,ETAIND    ,WC        ,XLBWO     ,00050000
                     2XLRLA     ,VGECVH    ,XLCO      ,HMAXO     ,RHCRHO    ,VMC       ,00060000
                     3EMLF      ,CK1       ,CELWF     ,CKFF      ,VDIVE     ,HOC       ,00070000
                     4RCC       ,TOO       ,CAPI(5)   ,SGTIND(12),ELHLOA    ,ELVLOA    ,00080000
                     5GAP2(6)                                                              00090000
      C     PAGE 2    INPUT   LOC 0051 THRU 0100                                           00100000
ISN 0004              COMMON    AR         ,WS        ,TCR       ,TCT       ,SLN       ,00110000
                     1ARFT      ,TCFT      ,VEARH     ,SLMH      ,ARVT      ,TCVT      ,00120000
                     2VBARV     ,SLMVT     ,ELCN      ,ELDT      ,ELCOA     ,DLSWSH    ,00130000
                     3DSWET     ,CLVLFL    ,CVCL      ,CBYLOA    ,ENR       ,WVA       ,00140000
                     4CAM1      ,CAM2      ,EMR       ,CAM3      ,CLEVE     ,THETMR    ,00150000
                     5XC        ,XMR       ,TVCMR     ,VT        ,CTSIGH    ,TVW       ,00160000
                     6HES       ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5) ,00170000
                     7GAP3                                                                 00180000
      C     PAGE 3    INPUT   LOC 0101 THRU 140                                            00190000
ISN 0005              COMMON    CAM4       ,ENF       ,ETAT      ,FC        ,VC        ,00200000
                     1ATMTY     ,CDVT      ,CDFT      ,CAM5      ,CLTAFE    ,FEDRAG    ,00210000
                     2EXFDRG    ,CDC       ,CLALPF    ,CKVT      ,CKFT      ,CKF       ,00220000
                     3CKW       ,RELI      ,TCLN      ,TBCL1(8)  ,TBCDWI(8) ,GAP4(4)   ,00230000
      C     PAGE 4 INPUT  LOC 141 THRU 200  WEIGHT DATA                                    00240000
ISN 0006              COMMON    WFE        ,WFUL      ,DELWFC    ,CELWP     ,DELWST    ,00250000
                     1SKCC      ,SKRC      ,SKSC      ,SKFW      ,SKTM      ,SKRCA     ,00260000
                     2SKSCA     ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2    ,00270000
                     3SKCB1     ,SKGE2     ,SKELNT    ,SKBAL     ,SKLG      ,SKWW      ,00280000
                     4ELF       ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB     ,00290000
                     5SKRBF     ,SKFF      ,SKAND     ,SKAR      ,SKPA      ,SKVTAR    ,00300000
                     6SKPDS     ,SKPDSZ    ,SKT       ,SKFS      ,SKPEI     ,SKPES     ,00310000
                     7SK1       ,SK2       ,SK3       ,SK4       ,SK5       ,SK6       ,00320000
                     8SK7       ,SK8       ,SK9       ,SK10      ,SK11      ,SK12      ,00330000
                     9SK13      ,SK14      ,SK15      ,PLIN      ,CAP5(3)               00340000
      C     PAGE 5  INPUT  LOC 201 THRU 300                                              00350000
ISN 0007              COMMON    TCLIMC(5) ,XTGTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5)  ,00360000
                     1CELTH(5)  ,STH(5)    ,CRSIND(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)    ,00370000
                     2DELR(5)   ,RMAX(5)   ,CELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STRW(5)   ,00380000
                     3FFIN(5)   ,GAP6(10)                                                 00390000
      C     PAGE 6  INPUT  LOC 301 THRU 400                                              00400000
ISN 0008              COMMON    CYCFFL    ,FF        ,SK3       ,SK4       ,TBHI(5)   ,00410000
                     1TBTO(5)   ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60)   00420000
      C     WORKING COMMON                                                               00430000
ISN 0009              COMMON ALFDES,ALFCL,ALFR,ANU,                                      00440000
                     1        BFPA,BFPR,BHPSLP,EHT,BLP,BR,BS,BVT,                       00450000
                     2 CBARF,CBARFT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRO00460000
                     3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,                                   00470000
                     4 CELRTH,CELTA,DF,DSPLMT,        ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP, 00480000
                     5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4      00490000
ISN 0010              COMMON GAMD11(3,15),GLF,CMDC1(16),H,                               00500000
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                7 ICRUS,INDCRU,INDCRG,INDCYL,INDETA,INDFIX,INDHUL,INDOPT,INDOSW,    00510000
                8 INDPOW,INDPRP,INDRDM,IPRINT                                       00520000
ISN 0011          COMMON LTHL,NCCFF,NCXF.,CWE,FEHF,PI,Q,RHC,REALJ,RHPMR,R,RN        00530000
ISN 0012          COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC         00550000
ISN 0013          COMMON T,TAF,TCEAR,THETA,TMAX,TMP,TPRCP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0014          COMMON W,WEAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,           00570000
                1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPCS,WPEI,WPF,WPRB,WPRG,WPRP,WPSTR00580000
                2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLC,WAC,WENV                  00600000
ISN 0015          COMMON XLALB,XLB,XLBH,XLHL,XLR,XLW,YLS2,TCVW                      00610000
ISN 0016          COMMON CMR,SIGMR,AF,BHFP,SEE                                      00610100
ISN 0017          NAMELIST /NSIZTR/ CPTINC,HULIND,DYLIND,ORGINC,CSWIND,FIXINC,      00620000
                1           RCMINC,PRFIND,ETAINC,WO,VGASR,VGASB,VHL,XLALB,DH,       00630000
                2           ELN,ELT,ELC,ELCA,SWETH,CV,EK1,EK2,EK3,EK4,EK5,EK6,      00640000
                3           LC1,SW1,VHL1,VHL2,SW,BS,CRT,DELSW,B1,B2,TMAX,CBARW,     00650000
                4           RHC,G,CLDES,ALFDES,TCBAR,SKTP,SWEXP,SWWET,XLRH,TAF,     00660000
                5           SIGAR,CBARHT,SVT,SHT,SVTW,SHTW,SHTE,SVTE,DSPLMT,        00670000
                6           ELHT,ELVT,BHT,BVT,CRHT,CRVT,CTHT,CTVT,CBARHT,CBARVT,    00680000
                7           SKTH,SKTV                                               00690000
ISN 0018          SWWET = 0.0                                                       00700000
ISN 0019          PI=3.14159                                                        00700100
ISN 0020          VGASR=(XLBWC*WC)/(0.076474-XLGD)                                  00710000
ISN 0021          VGASB=VGASR/RHCRHC                                                00720000
ISN 0022          VHL=VGASE/VGBCVH                                                  00730000
ISN 0023          XLALB=(1.0/XLEWC)-1.0                                             00740000
ISN 0024          IF (INDHUL.EQ.2) GO TO 1                                          00750000
ISN 0026          IF(INDHUL.GT.2) GO TO 10                                          00750100
ISN 0028          DHC=(PI*(ELDOA/4.-ELDN/12.-7.*ELDT/60.)*(1.0+DLVLHL))             00760000
ISN 0029          DH=((VHL-DVCL)/DHC)**0.333                                        00770000
ISN 0030          ELN=ELDN*DH                                                       00780000
ISN 0031          ELT=ELDT*DH                                                       00790000
ISN 0032          ELC=ELDCA*DH-ELN-ELT                                              00800000
ISN 0033          ELCA=ELDCA*DH                                                     00810000
ISN 0034          SWETH=DH*(2.40*ELN+3.14*ELC+2.07*ELT+0.46*DH)*(1.0+DLSWSH)+DSWET  00820000
ISN 0035          CV=4.0*VHL/(PI*DH**2*ELCA)                                        00840000
ISN 0036          GO TO 6                                                           00850000
ISN 0037        1 EK1=0.13493-0.07917*(1.0-SLM)**1.5+0.021*(1.0-SLM)**2             00860000
ISN 0038          EK2=-0.06642+0.0253*(1.0-SLM)**3-0.01422*(1.0-SLM)**4+            00870000
                10.003383*(1.0-SLM)**5                                              00880000
ISN 0039          SW=(((VHL-DVCL)*AR**0.5*(1.+SLM)**2)/(10.*PI*TCR*(EK1+EK2)*       00890000
                1(1.+DLVLHL)))**0.66667                                             00900000
ISN 0040        5 BS=SQRT(SW*AR)                                                    00910000
ISN 0041          CRT=2.*SW/(BS*(SLM+1.0))                                          00920000
ISN 0042          EK3=4.4075*(1.-SLM)**2-2.494*(1.-SLM)**2.5-4.1755*(1.-SLM)**      00930000
                13.5+2.4115*(1.-SLM)**4.5-0.6695*(1.-SLM)**5.5+0.3969*(1.-SLM)      00940000
                2**3+1.4765*(1.-SLM)**4+0.64975*(1.-SLM)**5-1.7434*(1.-SLM)**       00950000
                36+1.26835*(1.-SLM)**7-0.41225*(1.-SLM)**8+0.06439*(1.-SLM)**9      00960000
ISN 0043          EK4=5.49415                                                       00970000
ISN 0044          EK5=7.4225*(1.-SLM)**2-1.4965*(1.-SLM)**2.5-2.9825*(1.-SLM)**     00980000
                13.5+1.87575*(1.-SLM)**4.5-0.5479*(1.-SLM)**5.5+0.2646*(1.-SLM)     00990000
                2**3+1.10755*(1.-SLM)**4+0.51975*(1.-SLM)**5-1.453*(1.-SLM)**6      01000000
                3+1.08715*(1.-SLM)**7-0.3607*(1.-SLM)**8+0.0572*(1.-SLM)**9         01010000
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ORIGINAL PAGE IS OF POOR QUALITY

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ISN 0045          EK6=1.44513                                                    01020000
ISN 0046          SWETH=EK6*(CRT**3*TCR**2*EK3/BS+CRT*3.*BS*SLM/2.+CRT*3.*BS*    01030000
                 1(1.-SLM)/4.+CRT*TCR**2*(EK4-EK5)/BS)*(1.+DLSWSH)+DSWET         01040000
ISN 0047          TMAX=TCR*CRT                                                   01050000
ISN 0048          ELCA=CRT                                                       01060000
ISN 0049          CBARW=CRT*0.5*(1.0+SLM)                                        01070000
ISN 0050          DSPLMT=0.076474*VHL                                            01080000
ISN 0051          IF (INDHLL.GT.1) GO TO 7                                       01090000
ISN 0053          IF (INDCYL.EQ.1.OR.INDCYL.EQ.3) GO TO 7                        01100000
ISN 0055          SW=(1.0-XLRLA)*XLALB*XLBWC*WC/WS                               01110000
ISN 0056          IF(INDCYL.EQ.2) SW=XLALB*XLBWC*WO/WS                           01120000
ISN 0058          HH=HC                                                          01130000
ISN 0059          V=VC                                                           01140000
ISN 0060          CALL ATMOS(HC,ATMIY)                                           01150000
ISN 0061          Q=1.42636*RHO*V**2                                             01170000
ISN 0062          CLDES=WS/Q                                                     01180000
ISN 0063          ALPDES=CLDES/6.28                                              01190000
ISN 0064          BS=SQRT(SW*AR)                                                 01200000
ISN 0065          CBARW=SW/BS                                                    01210000
ISN 0066          TCBAR=0.5*(TCR+TCT)                                            01220000
ISN 0067          SKTP=1.25*TCBAR**2+0.2*TCBAR+2.0                               01230000
ISN 0068          BSTOT=BS+DH                                                    01240000
ISN 0069          ARTOT=BSTOT/CBARW                                              01250000
ISN 0070          SWEXP=SW                                                       01260000
ISN 0071          SWTOT=SW+DH*CBARW                                              01270000
ISN 0072          SWWET=SWEXP*SKTP                                               01280000
ISN 0073          IF (INDRDM.EQ.1) GO TO 8                                       01290000
ISN 0075          HH=HES                                                         01300000
ISN 0076          CALL ATMOS(HES,TINY)                                           01310000
ISN 0077          XLRH=WO*(1.0-XLEWC)                                            01330000
ISN 0078          IF(XLBWC.EQ.1.0) XLRH=WC*(TVW-1.0)                             01340000
ISN 0080          DMR=SQRT(4.0*XLRH/(PI*WVA*ENR))                                01350000
ISN 0081          SIGMR=4.0*XLRH*TVW/(RHO*PI*DMR**2*ENR*VT**2*CTSIGH)            01360000
ISN 0082          IF (INDPRP.EQ.1) GO TO 9                                       01370000
ISN 0084          SIGAR=SIGMR                                                    01380000
ISN 0085          TAF=2450.*SIGAR                                                01390000
ISN 0086          AF=TAF/BMR                                                     01400000
ISN 0087          GO TO 9                                                        01410000
ISN 0088        8 IF (INDPRP.EQ.0) TAF=AF*ENR                                    01420000
ISN 0090          IF(INDPRP.EQ.0) SIGMR=TAF/2450.                                01420100
ISN 0092        9 ELHT=(1.-(CBYLCA+ELHLCA))*ELCA                                 01430000
ISN 0093          ELVT=(1.-(CBYLCA+ELVLCA))*ELCA                                 01440000
ISN 0094          SHT=VBARH*VHL/ELHT                                             01450000
ISN 0095          SVT=VBARV*VHL/ELVT                                             01460000
ISN 0096          BHT=SQRT(ARHT*SHT/2.)                                          01470000
ISN 0097          BVT=SQRT(ARVT*SVT/2.)                                          01480000
ISN 0098          CRHT=2.*BHT/(ARHT*(1.0+SLMH))                                  01490000
ISN 0099          CRVT=2.*BVT/(ARVT*(1.0+SLMVT))                                 01500000
ISN 0100          CTHT=SLMH*CRHT                                                 01510000
ISN 0101          CTVT=SLMVT*CRVT                                                01520000
ISN 0102          CBARHT=(CRHT+CTHT)/2.                                          01530000
ISN 0103          CBARVT=(CRVT+CTVT)/2.                                          01540000
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ISN 0104          SKTH=1.25*(TCHT)**2+0.2*TCHT+2.0                                C1550000
ISN 0105          SKTV=1.25*(TCVT)**2+0.2*TCVT+2.0                                C1560000
ISN 0106          SHTW=SKTH*SHT                                                   C1570000
ISN 0107          SVTW=SKTV*SVT                                                   C1580000
ISN 0108          SHTE=SHTW                                                       C1590000
ISN 0109          SVTE=SVTW                                                       01600000
ISN 0110          GO TO 12                                                        01610100
ISN 0111       10 IF(INDHUL.GT.3) GO TO 11                                        01610200
ISN 0113          CRT=2.*((3.*(VHL-CVCL))/(PI**2*AR*TCR*(1.+DLVLHL)))**0.333      01610300
ISN 0114          BS = PI * AR* CRT/4.                                            01610400
ISN 0115          TMAX = TCR * CRT                                                01610500
ISN 0116          XMEE = 1. - (TMAX/BS)**2                                        01610600
ISN 0117          XEE=1.57096-0.44062*XMEE+0.16289*XMEE**2-0.29316*XMEE**3        01610700
ISN 0118          SWETH=PI*CRT*BS*XEE*(1.+DLSWSH)/2.+DSWET                        01610800
ISN 0119          SW=PI*CRT*BS/4.                                                 01610900
ISN 0120          ELCA=CRT                                                        01611000
ISN 0121          CBARW = SW/BS                                                   01611100
ISN 0122          SLN=0.0                                                         01611110
ISN 0123          GO TO 6                                                         01611200
ISN 0124       11 CRT=2.*((3.*(VHL-CVCL))/(4.*PI*TCR*(1.+DLVLHL)))**0.333         01611300
ISN 0125          BS=CRT                                                          01611400
ISN 0126          AR = 1.27324                                                    01611500
ISN 0127          TMAX=TCR*CRT                                                    01611600
ISN 0128          XECC=(1.-(TCR)**2)**0.5                                         01611700
ISN 0129          SWETH=(PI/2.*CRT**2+PI/4.*TMAX**2/XECC*ALOG((1.+XECC)/(1.-XECC)))*01611800
                  1(1.+DLSWSH)+DSWET                                              01611900
ISN 0130          SW=PI/4.*CRT**2                                                 01612000
ISN 0131          CBARW = SW/BS                                                   01612100
ISN 0132          ELCA=CRT                                                        01612200
ISN 0133          SLN=0.0                                                         01612210
ISN 0134          GO TO 6                                                         01612300
ISN 0135       12 CONTINUE                                                        01612400
ISN 0136          CB=ELOA*CBYLOA                                                  01612500
ISN 0137          RETURN                                                          01620000
ISN 0138          END                                                             01630000
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NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.
H		C	R*4	N.R.	Q	SF	C	R*4	000868	R		C	R*4	N.R.	T		C	R*4	N.R.
V	SF	C	R*4	000910	h		C	R*4	N.R.	AF	SF	C	R*4	0009D0	AR	SFA	C	R*4	0000C8
BR		C	R*4	N.R.	BS	SF	C	R*4	000668	B1			R*4	000248	B2			R*4	00024C
CB	S	C	R*4	0006B8	CV	S	C	R*4	0006AC	CX		C	R*4	N.R.	DH	SF	C	R*4	0006C4
EN		C	R*4	N.R.	FF		C	R*4	N.R.	FM		C	R*4	N.R.	FP		C	R*4	N.R.
HC	SFA	C	R*4	000190	HH	S		R*4	000250	PI	SFA	C	R*4	000864	PN		C	R*4	N.R.
SA		C	R*4	N.R.	ST		C	R*4	N.R.	SW	SFA	C	R*4	0008C8	TR		C	R*4	N.R.
VC	F	C	R*4	0001A0	VT	F	C	R*4	000148	WE		C	R*4	N.R.	WF		C	R*4	N.R.
WC	F	C	R*4	000024	WS	F	C	R*4	0000CC	WW		C	R*4	N.R.	XC		C	R*4	N.R.
AMU		C	R*4	N.R.	EHT	SF	C	R*4	00065C	BLP		C	R*4	N.R.	BMR	F	C	R*4	00012C
BVT	SF	C	R*4	00066C	CCP		C	R*4	N.R.	CCT		C	R*4	N.R.	CDC		C	R*4	N.R.
CDV		C	R*4	N.R.	CKF		C	R*4	N.R.	CKW		C	R*4	N.R.	CK1		C	R*4	N.R.
CLW		C	R*4	N.R.	CRT	SF	C	R*4	0006A4	CTP		C	R*4	N.R.	DHD	SF		R*4	000254
DK3		C	R*4	N.R.	DK4		C	R*4	N.R.	DMR	SF	C	R*4	0009C8	EK1	SF		R*4	000258
EK2	SF		R*4	00025C	EK3	SF		R*4	000260	EK4	SF		R*4	000264	EK5	SF		R*4	000268
EK6	SF		R*4	00026C	ELC	SF	C	R*4	0006CC	ELF		C	R*4	N.R.	ELN	SF	C	R*4	0006D4
ELT	SF	C	R*4	0006CC	ENP		C	R*4	N.R.	ENR	FA	C	R*4	000110	FEH		C	R*4	N.R.
FET		C	R*4	N.R.	FEW		C	R*4	N.R.	GLF		C	R*4	N.R.	HES	SFA	C	R*4	000154
HGC		C	R*4	N.R.	LC1			I*4	000270	OWE		C	R*4	N.R.	RHC	F	C	R*4	000B6C
RMI		C	R*4	N.R.	ROO		C	R*4	N.R.	SA5		C	R*4	N.R.	SA6		C	R*4	N.R.
SA7		C	R*4	N.R.	SEE		C	R*4	N.R.	SFC		C	R*4	N.R.	SHT	SFA	C	R*4	000B9C
SKT		C	R*4	N.R.	SK1		C	R*4	N.R.	SK2		C	R*4	N.R.	SK3		C	R*4	N.R.
SK4		C	R*4	N.R.	SK5		C	R*4	N.R.	SK6		C	R*4	N.R.	SK7		C	R*4	N.R.
SK8		C	R*4	N.R.	SK9		C	R*4	N.R.	SLM	SF	C	R*4	0000D8	STH		C	R*4	N.R.
SVT	SFA	C	R*4	0008BC	Sh1			R*4	000274	TAF	SF	C	R*4	0008E4	TCR	F	C	R*4	000000
TCT	F	C	R*4	000004	TMP		C	R*4	N.R.	TOO		C	R*4	N.R.	TVW	F	C	R*4	000150
ULF		C	R*4	N.R.	VFL	SF	C	R*4	000900	VIN		C	R*4	N.R.	VMO		C	R*4	N.R.
WAC		C	R*4	N.R.	WCC		C	R*4	N.R.	WEP		C	R*4	N.R.	WES		C	R*4	N.R.
WFC		C	R*4	N.R.	WFE		C	R*4	N.R.	WFR		C	R*4	N.R.	WFS		C	R*4	N.R.
WFW		C	R*4	N.R.	WGL		C	R*4	N.R.	WHT		C	R*4	N.R.	WLG		C	R*4	N.R.
WMC		C	R*4	N.R.	WPC		C	R*4	N.R.	WPH		C	R*4	N.R.	WRC		C	R*4	N.R.
WSC		C	R*4	N.R.	WST		C	R*4	N.R.	WTM		C	R*4	N.R.	WVA	FA	C	R*4	000120
WVT		C	R*4	N.R.	XEE	SF		R*4	000278	XLB		C	R*4	N.R.	XLR		C	R*4	N.R.
XLW		C	R*4	N.R.	XMR		C	R*4	N.R.	ALFR		C	R*4	N.R.	ARHT	FA	C	R*4	0000DC
ARVT	FA	C	R*4	0000EC	BHPA		C	R*4	N.R.	BHPP		C	R*4	N.R.	BHPR		C	R*4	N.R.
CDHT		C	R*4	N.R.	CDVT		C	R*4	N.R.	CKFF		C	R*4	N.R.	CKHT		C	R*4	N.R.
CKVT		C	R*4	N.R.	CRHT	SF		R*4	00027C	CRVT	SF		R*4	000280	CTHT	SF		R*4	000284
CTVT	SF		R*4	000288	DAM1		C	R*4	N.R.	DAM2		C	R*4	N.R.	DAM3		C	R*4	N.R.
DAM4		C	R*4	N.R.	DAM5		C	R*4	N.R.	DELR		C	R*4	N.R.	DVOL	F	C	R*4	000114
ELDN	F	C	R*4	0000FC	ELDT	F	C	R*4	000100	ELHT	SF	C	R*4	0006DC	ELOA	SF	C	R*4	0006D8
ELVT	SF	C	R*4	0006E0	EMLF		C	R*4	N.R.	ETAP		C	R*4	N.R.	ETAT		C	R*4	N.R.
FEHI		C	R*4	N.R.	FEFL		C	R*4	N.R.	FEHT		C	R*4	N.R.	FEVT		C	R*4	N.R.
FEWH		C	R*4	N.R.	FEWI		C	R*4	N.R.	GAP1		C	R*4	N.R.	GAP2		C	R*4	N.R.
GAP3		C	R*4	N.R.	GAP4		C	R*4	N.R.	GAP5		C	R*4	N.R.	GAP6		C	R*4	N.R.
GAP7		C	R*4	N.R.	FFIN		C	R*4	N.R.	LTHL		C	I*4	N.R.	PEHF		C	R*4	N.R.
PLIN		C	R*4	N.R.	RELI		C	R*4	N.R.	RMAX		C	R*4	N.R.	SHPA		C	R*4	N.R.
SHPR		C	R*4	N.R.	SHTE	S	C	R*4	0008A0	SHTW	SF	C	R*4	0008A4	SKAC		C	R*4	N.R.
SKAR		C	R*4	N.R.	SKCC		C	R*4	N.R.	SKFS		C	R*4	N.R.	SKFW		C	R*4	N.R.
SKHL		C	R*4	N.R.	SKHT		C	R*4	N.R.	SKLG		C	R*4	N.R.	SKMC		C	R*4	N.R.
SKPA		C	R*4	N.R.	SKPH		C	R*4	N.R.	SKRC		C	R*4	N.R.	SKSC		C	R*4	N.R.

SKTH	SF		R*4	00028C	SKTM		C	R*4	N.R.	SKTP	SF		R*4	000290	SKTV	SF		R*4	000294
SKVT		C	R*4	N.R.	SKWP		C	R*4	N.R.	SKWW		C	R*4	N.R.	SK10		C	R*4	N.R.
SK11		C	R*4	N.R.	SK12		C	R*4	N.R.	SK13		C	R*4	N.R.	SK14		C	R*4	N.R.
SK15		C	R*4	N.R.	SLMH	F	C	R*4	0000E8	STPW		C	R*4	N.R.	SVTE	S	C	R*4	0008C0
SVTW	SF	C	R*4	0008C4	SWTT		C	R*4	N.R.	TBH1		C	R*4	N.R.	TBH2		C	R*4	N.R.
T8TO		C	R*4	N.R.	TCHT	F	C	R*4	0000EC	TCLN		C	R*4	N.R.	TCVT	F	C	R*4	0000F0
TINY	SFA	C	R*4	000158	TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.	TMAX	SF	C	R*4	0008F0
TOVW		C	R*4	N.R.	TWTW		C	R*4	N.R.	VHL1			R*4	000298	VHL2			R*4	00029C
WBAL		C	R*4	N.R.	WENV		C	R*4	N.R.	WFUL		C	R*4	N.R.	WGSB		C	R*4	N.R.
WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.	WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.
WPRP		C	R*4	N.R.	WRCA		C	R*4	N.R.	WSCA		C	R*4	N.R.	XECC	SFA		R*4	0002A0
XLBH		C	R*4	N.R.	XLCD	F	C	R*4	000034	XLHL		C	R*4	N.R.	XLRH	SFA		R*4	0002A4
XMEE	SF		R*4	0002A8	YLS2		C	R*4	N.R.	ALFDL		C	R*4	N.R.	ARTOT	S		R*4	0002AC
ATMIY	SFA	C	R*4	0001A4	ATMCS	SF XF		R*4	000000	BSTOT	SF		R*4	0002B0	CBARF		C	R*4	N.R.
CBARW	SF	C	R*4	00067C	CLDES	SF	C	R*4	0006B4	CLEYE		C	R*4	N.R.	CPIND		C	R*4	N.R.
CPNUD		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPRO		C	R*4	N.R.	CPTCT		C	R*4	N.R.
CELSW			R*4	0002B4	CELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.
DELWP		C	R*4	N.R.	DSWET	F	C	R*4	0001DC	ELDOA	F	C	R*4	000104	ENPCR		C	R*4	N.R.
ETAP2		C	R*4	N.R.	ETAP4		C	R*4	N.R.	FETOT		C	R*4	N.R.	CMDD1		C	R*4	N.R.
HMAXD		C	R*4	N.R.	ICRLS		C	I*4	N.R.	NOCPP		C	I*4	N.R.	NCXPJ		C	I*4	N.R.
PFET2		C	R*4	N.R.	REALJ		C	R*4	N.R.	RHPMR		C	R*4	N.R.	SIGAR	SF		R*4	0002B8
SIGMA		C	R*4	N.R.	SICMR	SF	C	R*4	0009CC	SIZTR			R*4	0002BC	SKAMD		C	R*4	N.R.
SKBAL		C	R*4	N.R.	SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.
SKPEI		C	R*4	N.R.	SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.
SKRCA		C	R*4	N.R.	SKSCA		C	R*4	N.R.	SLMVT	F	C	R*4	0000F8	STMAX		C	R*4	N.R.
SWETH	S	C	R*4	0008CC	SWEXP	SF	C	R*4	0008D0	SWTOT	S		R*4	0002C0	SWWET	S	C	R*4	0008D8
S2RHC		C	R*4	N.R.	TBCL1		C	R*4	N.R.	TBCRP		C	R*4	N.R.	TBEM5		C	R*4	N.R.
T8POW		C	R*4	N.R.	TBSFC		C	R*4	N.R.	TCBAR	SF	C	R*4	0008E8	THETA		C	R*4	N.R.
TPROP		C	R*4	N.R.	TVCMR		C	R*4	N.R.	VBARH	F	C	R*4	0000E4	VBARV	F	C	R*4	0000F4
VDIVE		C	R*4	N.R.	VGAS8	SF	C	R*4	000904	VGASP	SF	C	R*4	000908	WPAYL		C	K*4	N.R.
WPSTR		C	R*4	N.R.	XLALB	SF	C	R*4	0009A8	XLBWO	F	C	R*4	000028	XLRLA	F	C	R*4	00002C
ALOG		XF	R*4	000000	SQRT		XF	R*4	000000	FRXPR#		XF	R*4	000000	ALFDES	S	C	R*4	000640
BHPSUP		C	R*4	N.R.	CEARHT	S	C	R*4	000674	CBARVT	S	C	R*4	000678	CBYLOA	F	C	R*4	000118
CLALPH		C	R*4	N.R.	CRSIND		C	R*4	N.R.	CTSIGH	F	C	R*4	00014C	CYCPRL		C	R*4	N.R.
DELFCR		C	R*4	N.R.	DELRTH		C	R*4	N.R.	DELWFC		C	R*4	N.R.	DELWPL		C	R*4	N.R.
DELWST		C	R*4	N.R.	DLSWSH	F	C	R*4	0001C8	DLTAFE		C	R*4	N.R.	DLVLHL	F	C	R*4	000110
DRGIND		C	R*4	0000CC	DSELMT	S	C	R*4	0006C8	DYLIND		C	R*4	000008	ELHLOA	F	C	R*4	0000A8
ELVLOA	F	C	R*4	0000AC	ETAIND		C	R*4	000020	ETAP4N		C	R*4	N.R.	EXPDRG		C	R*4	N.R.
FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	000014	GAMD11		C	R*4	N.R.	HULIND		C	R*4	000004
INDCRL		C	I*4	N.R.	INDDRG		C	I*4	N.R.	INDDYL		C	I*4	000828	INDETA		C	I*4	N.R.
INDFIX		C	I*4	N.R.	INDHUL		C	I*4	000834	INDOPT		C	I*4	N.R.	INDOSW		C	I*4	N.R.
INDPOW		C	I*4	N.R.	INDPRP		C	I*4	000844	INDRDM		C	I*4	000848	IPRINT		C	I*4	N.R.
NSIZTR				000000	CPTIND		C	R*4	000000	OSWIND		C	R*4	000010	PRPIND		C	R*4	00001C
RCMIND		C	R*4	000018	RHORHO	F	C	R*4	00003C	SGTIND		C	R*4	N.R.	SKBLNT		C	R*4	N.R.
SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.
SSIGMA		C	R*4	N.R.	STHETA		C	R*4	N.R.	TBCDWI		C	R*4	N.R.	TB8AP4		C	R*4	N.R.
THETMR		C	R*4	N.R.	TCLIND		C	R*4	N.R.	VGBOVH	F	C	R*4	000030	WBALNT		C	R*4	N.R.
WPAYLO		C	R*4	N.R.	XTGTA2		C	R*4	N.R.	XTGTA4		C	R*4	N.R.					

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	000000	FULIND	R*4	000004	DYLIND	R*4	000008	DRGIND	R*4	00000C
OSWIND	R*4	000010	FIXIND	R*4	000014	RDMIND	R*4	000018	PRPIND	R*4	00001C
ETAIND	R*4	000020	WC	R*4	000024	XLBWO	R*4	000028	XLRLA	R*4	00002C
VGBCWH	R*4	000030	XLGC	R*4	000034	HMAXD	R*4	N.R.	RHORHO	R*4	00003C
VMG	R*4	N.R.	EMLF	R*4	N.R.	CKI	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	HOO	R*4	N.R.	RCO	R*4	N.R.
TCC	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLCA	R*4	0000A8
ELVLCA	R*4	0000AC	GAP2	R*4	N.R.	AR	R*4	0000C8	WS	R*4	0000CC
TCR	R*4	0000D0	TCT	R*4	0000D4	SLM	R*4	0000D8	ARHT	R*4	0000DC
TCHT	R*4	0000E0	VBARF	R*4	0000E4	SLMH	R*4	0000E8	ARVT	R*4	0000EC
TCVT	R*4	0000F0	VBARV	R*4	0000F4	SLMVT	R*4	0000F8	ELCN	R*4	0000FC
ELCT	R*4	000100	ELCOA	R*4	000104	CLSWSH	R*4	000108	DSWET	R*4	00010C
DLVLHL	R*4	000110	CVCL	R*4	000114	CBYLOA	R*4	000118	ENR	R*4	00011C
WVA	R*4	000120	CAM1	R*4	N.R.	CAM2	R*4	N.R.	BMR	R*4	00012C
CAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	000148	CTSIGH	R*4	00014C
TVW	R*4	000150	FES	R*4	000154	TINY	R*4	000158	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEMS	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
CAM4	R*4	N.R.	ENF	R*4	N.R.	ETAT	R*4	N.R.	HC	R*4	00019C
VC	R*4	0001AC	ATMIX	R*4	0001A4	CDVT	R*4	N.R.	CDHT	R*4	N.R.
CAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CDC	R*4	N.R.	CLALPH	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFLL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKFL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKREF	R*4	N.R.	SKFF	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAF	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK1C	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWFL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCFRL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPCW	R*4	N.R.	GAP7	R*4	N.R.	ALFCES	R*4	000640
ALFCL	R*4	N.R.	ALFF	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHFR	R*4	N.R.	BHPSUF	R*4	N.R.	BHT	R*4	00065C	BLP	R*4	N.R.
ER	R*4	N.R.	BS	R*4	000668	BVT	R*4	00066C	CBARF	R*4	N.R.

CEARHT	R*4	000674	CEARVT	R*4	000678	CBARW	R*4	00067C	CCP	R*4	N.R.
CCT	R*4	N.R.	CCV	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPNUC	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CRT	R*4	0006A4	CTF	R*4	N.R.	CV	R*4	0006AC	CX	R*4	N.R.
CLDES	R*4	0006B4	CE	R*4	0006B8	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DH	R*4	0006C4	DSPLM1	R*4	0006C8	ELC	R*4	0006CC	ELHT	R*4	0006D0
ELN	R*4	0006D4	ELCA	R*4	0006D8	ELT	R*4	0006DC	ELVT	R*4	0006E0
EN	R*4	N.R.	ETAP	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETCT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FP	R*4	N.R.	ETAP4	R*4	N.R.	GAMDII	R*4	N.R.
GLF	R*4	N.R.	GMDCI	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRL	I*4	N.R.	INDDRG	I*4	N.R.	INDDYL	I*4	000828	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INCHUL	I*4	000834	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPCW	I*4	N.R.	INDPRF	I*4	000844	INDRDM	I*4	000848	IPRINT	I*4	N.R.
LTHL	I*4	N.R.	NOCPF	I*4	N.R.	NOXPJ	I*4	N.R.	OWE	R*4	N.R.
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	000868	RHO	R*4	00086C
REALJ	R*4	N.R.	RHPMF	R*4	N.R.	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	N.R.	SAS	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	000890
SHTE	R*4	0008A0	SHTW	R*4	0008A4	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	0008BC
SVTE	R*4	0008C0	SVTW	R*4	0008C4	SW	R*4	0008C8	SWETH	R*4	0008CC
SWEXP	R*4	0008D0	SWTT	R*4	N.R.	SWWET	R*4	0008D8	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	0008E4	TCBAR	R*4	0008E8	THETA	R*4	N.R.
TMAX	R*4	0008F0	TMP	R*4	N.R.	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	N.R.	VGASE	R*4	000904	VGASR	R*4	000908	VHL	R*4	00090C
V	R*4	000910	W	R*4	N.R.	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPCS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRF	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	0009A8	XLB	R*4	N.R.
XLEH	R*4	N.R.	XLFL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	N.R.	TCVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	0009CC
AF	R*4	0009D0	BHPF	R*4	N.R.	SEE	R*4	N.R.			

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
1	000EE2	5	0009CE NR	6	000C16	7	000D38
8	000EC8	9	000E34	10	000F88	11	001080
12	0011A6						


```
*OPTIONS IN EFFECT*      NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,

*OPTIONS IN EFFECT*      SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =     137 ,PROGRAM SIZE =     4570

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                   83K BYTES OF CORE NOT USED
```

```
      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002              FUNCTION TABLE (X,XTAB,YTAB,NXPTS,NORD,IER)                00010000
               C****  MEMBER NAME BSITABLE                                       00020000
               C      ACCLANG                                                    00030000
               C      LAGRANGIAN INTERPOLATION FUNCTION                          00040000
ISN 0003              DIMENSION XTAB(1), YTAB(1)                                 00050000
ISN 0004              IF (NORD.GE.NXPTS) GO TO 20                                00060000
ISN 0006              L=MOD(NORD,2)                                              00070000
ISN 0007              IER = 0                                                    00080000
ISN 0008              IF (XTAB(1).GT.XTAB(2)) GO TO 19                           00090000
               C      TABLE INCREASING                                           00100000
ISN 0010              NNN = NXPTS - 1                                            00110000
ISN 0011              DO  18  I = 1,NNN                                          00120000
ISN 0012                  IF ((X.GT.XTAB(I)).AND.( X.LT.XTAB(I+1))) GO TO 17     00130000
ISN 0014                  IF ( X.EQ.XTAB(I)) GO TO 16                            00140000
ISN 0016           18     CONTINUE                                               00150000
               C      ARGUMENT DOES NOT LIE IN TABLE                             00160000
               C      SET ERROR FLAG(IER) TO 3 AND RETURN THE LAST ENTRY IN THE TABLE AS 00170000
               C      THE RESULT                                                 00180000
ISN 0017           21 CONTINUE                                                   00190000
ISN 0018              IER = 3                                                    00200000
ISN 0019              TABLE = YTAB(NXPTS)                                        00210000
ISN 0020              IF  (X.LT.XTAB(1))   TABLE = YTAB(1)                       00220000
ISN 0022              RETURN                                                     00230000
               C      ORDER GREATER THAN OR EQUAL TO NUMBER OF POINTS SET ERROR FLAG(IER 00240000
               C       TO 2 AND RETURN 0.0 AS THE RESULT                         00250000
ISN 0023           20 IER = 2                                                    00260000
ISN 0024              TABLE =0.0                                                 00270000
ISN 0025              RETURN                                                     00280000
               C      TABLE DECREASING                                           00290000
ISN 0026           19 NNN = NXPTS - 1                                            00300000
ISN 0027              DO  15  I = 1,NNN                                          00310000
ISN 0028                  IF ((X.LT.XTAB(I)) .AND. (X.GT.XTAB(I+1))) GO TO 171   00320000
ISN 0030                  IF ( X.EQ.XTAB(I)) GO TO 16                            00330000
ISN 0032           15     CONTINUE                                               00340000
ISN 0033              GO TO 21                                                   00350000
               C      SET UP LIMITS ON PRODUCT                                   00360000
ISN 0034           17 CONTINUE                                                   00370000
ISN 0035          180 J = I - NORD/2                                             00380000
ISN 0036              K = I + NORD/2                                             00390000
ISN 0037              IF (L.NE.0) K=K+1                                          00400000
               C      PRODUCT FORMULA                                            00410000
ISN 0039           14 TABLE =0.0                                                 00420000
               C      TEST IF J AND K ARE BETWEEN 1 AND NXPTS                    00430000
ISN 004C              IF (J.LE.0) GO TO 10                                       00440000
ISN 0042              IF ( K.GT.NXPTS ) GO TO 9                                  00450000
ISN 0044           8  DO 11 I = J,K                                              00460000
ISN 0045              ANUM =1.0                                                  00470000
ISN 0046              ADEN =1.0                                                  00480000
ISN 0047              DO 13 M= J,K                                               00490000
ISN 0048                  IF ( M.EQ.I) GO TO 13                                  00500000
```

```
ISN 0050                ANUM = ANUM * (X-XTAB(M))                       00510000
ISN 0051                ADEN = ADEN * (XTAB(I)-XTAB(M))                 00520000
ISN 0052          13    CONTINUE                                        00530000
ISN 0053          11 TABLE = ANUM * YTAB(I) /ADEN + TABLE               00540000
ISN 0054             RETURN                                             00550000
ISN 0055          10 J= 1                                               00560000
ISN 0056             K= NORD+1                                          00570000
ISN 0057             GO TO 8                                            00580000
ISN 0058           9 J = J-1                                            00590000
ISN 0059             K= K-1                                             00600000
ISN 0060             IF (K.GT.NXPTS) GO TO 5                            00610000
ISN 0062             GO TO 14                                           00620000
ISN 0063         171 CONTINUE                                           00630000
ISN 0064         182 J = I - NORD/2                                     00640000
ISN 0065             K = I + NORD/2                                     00650000
ISN 0066             IF ( L.NE.0 ) J= J+1                               00660000
ISN 0068             GO TO 14                                           00670000
                 C   ARGUMENT IN TABLE                                  00680000
ISN 0069          16 TABLE = YTAB(I)                                    00690000
ISN 007C             RETURN                                             00700000
ISN 0071             END                                                00710000
```

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	SF	I*4	000C8C	J	SF	I*4	000090	K	SF	I*4	000094	L	S	I*4	000098
M	SF	I*4	000C9C	X	F	R*4	0000A0	IER	S	I*4	0000A4	NAN	SF	I*4	0000A8
ADEN	SF	R*4	0000AC	ANUM	SF	R*4	0000B0	NORD	FA	I*4	0000B4	XTAB	F XR	R*4	000000
YTAB	F XR	R*4	0000C0	NXPTS	F	I*4	0000B8	TABLE	SF	R*4	0000BC				

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
18	000198	21	0001AE	20	0001E8	19	000200
15	000266	17	000278	18C	00027C NR	14	0002A4
8	0002BE	13	0002EE	11	000338	10	000368
9	000376	171	000388	182	000392 NR	16	0003C6

OPTIONS IN EFFECT NAME= MAIN,OPT=02,LINECNT=54,SIZE=30000K,

OPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 70 ,PROGRAM SIZE = 1134

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 111K BYTES OF CORE NOT USED

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      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002                SUBROUTINE THRUST(TPROP)                                        00010000
                  C**** MEMBER NAME B81THRST                                            00020000
                  C      PAGE 1   INPUT   LOC 0001 THRU 0050                            00030000
ISN 0003                 COMMON    OPTIND    ,HULIND    ,DYLIND    ,DRGIND    ,OSWIND   ,00040000
                        1FIXIND   ,RDMIND    ,PRPIND    ,ETAIND    ,WO        ,XLBWO    ,00050000
                        2XLRLA    ,VGBOVH    ,XLGD      ,HMAXD     ,RHORHO    ,VMO      ,00060000
                        3EMLF     ,CK1       ,DELWF     ,CKFF      ,VDIVE     ,HOO      ,00070000
                        4ROO      ,TOO       ,GAP1(5)   ,SGTIND(12),ELHLOA    ,ELVLOA   ,00080000
                        5GAP2(6)                                                        00090000
                  C      PAGE 2   INPUT   LOC 0051 THRU 0100                            00100000
ISN 0004                 COMMON     AR        ,WS        ,TCR       ,TCT       ,SLM      ,00110000
                        1ARHT     ,TCHT      ,VBARH     ,SLMH      ,ARVT      ,TCVT     ,00120000
                        2VBARV    ,SLMVT     ,ELDN      ,ELDT      ,ELDUA     ,DLSWSH   ,00130000
                        3DSWET    ,DLVLHL    ,DVOL      ,CBYLOA    ,ENR       ,WVA      ,00140000
                        4DAM1     ,DAM2      ,BMR       ,DAM3      ,CLEVE     ,THETMR   ,00150000
                        5XC       ,XMR       ,TVCMR     ,VT        ,CTSIGH    ,TVW      ,00160000
                        6HES      ,TINY      ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5),00170000
                        7GAP3                                                           00180000
                  C      PAGE 3   INPUT  LOC 0101 THRU 140                              00190000
ISN 0005                 COMMON     DAM4      ,ENP       ,ETAT      ,HC        ,VC       ,00200000
                        1ATMIY    ,CDVT      ,CDHT      ,DAM5      ,DLTAFE    ,FEDRAG   ,00210000
                        2EXPDRG   ,CDC       ,CLALPH    ,CKVT      ,CKHT      ,CKF      ,00220000
                        3CKW      ,RELI      ,TCLN      ,TBCL1(8)  ,TBCDWI(8) ,GAP4(4)  00230000
                         PAGE 4 INPUT  LOC 141 THRU 200  WEIGHT DATA                    00240000
ISN 0006                 COMMON     WFE       ,WFUL      ,DELWFC    ,DELWP     ,DELWST   ,00250000
                        1SKCC     ,SKRC      ,SKSC      ,SKFW      ,SKTM      ,SKRCA    ,00260000
                        2SKSCA    ,SKMC      ,SKAC      ,SKHL      ,SKENV1    ,SKENV2   ,00270000
                        3SKGB1    ,SKGB2     ,SKBLNT    ,SKBAL     ,SKLG      ,SKWW     ,00280000
                        4ELF      ,RMI       ,SKWP      ,SKHT      ,SKVT      ,SKPRB    ,00290000
                        5SKRBF    ,SKPH      ,SKAMD     ,SKAR      ,SKPA      ,SKVTAR   ,00300000
                        6SKPDS    ,SKPDSZ    ,SKT       ,SKFS      ,SKPEI     ,SKPES    ,00310000
                        7SK1      ,SK2       ,DK3       ,DK4       ,SK5       ,SK6      ,00320000
                        8SK7      ,SK8       ,SK9       ,SK10      ,SK11      ,SK12     ,00330000
                        9SK13     ,SK14      ,SK15      ,PLIN      ,GAP5(3)             00340000
                  C      PAGE 5  INPUT  LOC 201 THRU 300                                00350000
ISN 0007                 COMMON     TOLIND(5) ,XTGTA2(5) ,TIN2(5)   ,TWTA(5)   ,PFET2(5) ,00360000
                        1DELTH(5) ,STH(5)    ,CRSIND(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)   ,00370000
                        2DELR(5)  ,RMAX(5)   ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)  ,00380000
                        3HFIN(5)  ,GAP6(10)                                             00390000
                  C      PAGE 6  INPUT  LOC 301 THRU 400                                00400000
ISN 0008                 COMMON     CYCPRL    ,FF        ,SK3       ,SK4       ,TBH1(5)  ,00410000
                        1TBTO(5)  ,TBH2(5)   ,TBCRP(5)  ,TBSFC(8)  ,TBPOW(8)  ,GAP7(60)  00420000
                  C      WORKING COMMON                                                 00430000
ISN 0009                 COMMON  ALFDES,ALFDL,ALFR,AMU,                                 00440000
                        1        BHPA,BHPR,BHPSUP,BHT,BLP,BR,BS,BVT,                    00450000
                        2 CBARF,CBARHT,CBARVT,CBARW,CCP,CCT,CDV,CLW,CPINU,CPNUD,CPPAR,CPPRD00460000
                        3,CPTOT,CRT,CTP,CV,CX,CLDES,CB,                                 00470000
                        4 DELRTH,DELTA,DH,DSPLMT,      ELC,ELHT,ELN,ELOA,ELT,ELVT,EN,ETAP,  00480000
                        5 FEH,FEHI,FEHL,FEHT,FET,FETOT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4   00490000
ISN 0010                 COMMON GAMD11(3,15),GLF,GMDD1(16),H,                           00500000
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      7 ICRUS,INDCRU,INDDRG,INDDYL,INDETA,INDFIX,INDHUL,INDOPT,INDOSW,    00510000
      8 INDPOW,INDPRP,INDRDM,IPRINT                                       00520000
ISN 0011      COMMON LTHL,NOCPP,NOXPJ,OWE,PEHF,PI,Q,RHO,REALJ,RHPMR,R,RN  00530000
ISN 0012      COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
     1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHO          00550000
ISN 0013      COMMON T,TAF,TCBAR,THETA,TMAX,TMP,DUM2,TR,ULF,VGASB,VGASR,VHL,V 00560000
ISN 0014      COMMON W,WBAL,WBALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,      00570000
     1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR00580000
     2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                   00590000
ISN 0015      COMMON XLALB,XLB,XLBH,XLHL,XLR,XLW,YLS2,TOVW                00600000
ISN 0016      COMMON DMR,SIGMR,AF,BHPP,SEE                                00600001
ISN 0017      COMMON /ODD/ A0(3,15),A1(3,15),A2(3,15),BB0(16),BB1(16),BB2(16), 00600002
     1       RJ3(10),CPOW3(10),ETAI3(10,10),RJ4(10),CPOW4(10),           00600003
     2       ETAI4(10,10),AMACH(3),CLLL(15),CLGAM(16),CPOW33(20),        00600004
     3       CTI3(20),CTI4(20)                                           00600005
ISN 0018      NAMELIST /NTHRST/ REALJ,ETAP,NOXPJ,NOCPP,CCP,CCI,ETAI,EMH75, 00610000
     1         GAMD2,TANP,PHIT,SINP,CLIK,CL1,GAMD1,DELGM1,CL2,           00620000
     2         DELGM2,ITER,CL3,CTIND,V                                   00630000
ISN 0019      NOXPJ=XPJNO+0.1                                             00640000
ISN 0020      NOCPP=CPPNO+0.1                                             00650000
ISN 0021      PI=3.14159                                                  00660000
ISN 0022      DTOR=0.01745329                                             00660100
ISN 0023      RTOD=57.2957795                                             00660200
ISN 0024      SIGS=0.5*SIGMR                                              00660300
ISN 0025      SHPA=BLP                                                    00660400
ISN 0026      EM=V/SA                                                     00660500
ISN 0027      REALJ=1.689*PI*V/VT                                         00670000
ISN 0028      CCP=2200.*(PI*STHETA)**3*BHPP*YLS2*SHPA*ETAT/(0.009507*VT**3 00680000
     1*DMR**2*ENR)                                                       00690000
ISN 0029      ITER=0                                                      00700000
ISN 0030    7 IF (REALJ.EQ.0.0) GO TO 19                                  00710000
ISN 0032      EMH75=EM*SQRT((C.75*PI/REALJ)**2+1.0)                       00720000
ISN 0033      IF (EMH75.LT.0.70) EMH75=0.70                               00730000
ISN 0035      GAMD2=1.0                                                   00740000
ISN 0036      TANP=4.0*REALJ/(3.0*PI)                                     00750000
ISN 0037      IF (BMR.EQ.3.0) ETAI=BIV(REALJ,CCP,RJ3,CPOW3,ETAI3,10,10,10,10) 00760000
ISN 0039      IF (BMR.EQ.4.0) ETAI=BIV(REALJ,CCP,RJ4,CPOW4,ETAI4,10,10,10,10) 00770000
ISN 0041      PHIT=ATAN(TANP/ETAI)                                        00780000
ISN 0042      SINP=SIN(PHIT)                                              00790000
ISN 0043      CLIK=4.0*CCP/(SIGS*SINP*(COS(PHIT)+SINP*TANP)**2*(0.75*PI)**4) 00800000
ISN 0044      CL1=CLIK/(1.+TAN(GAMD2*DTOR)*COTAN(PHIT))                   00810000
ISN 0045      GAMD1=BIV(EMH75,CL1,AMACH,CLLL,GAMD11,3,15,3,15)            00820000
ISN 0046      DELGM1=GAMD1-GAMD2                                          00830000
ISN 0047      CL2=CLIK/(1.0+TAN(GAMD1*DTOR)*COTAN(PHIT))                  00840000
ISN 0048     23 GAMD1=BIV(EMH75,CL2,AMACH,CLLL,GAMD11,3,15,3,15)          00850000
ISN 0049      GAMD2=ATAN(TAN(PHIT)*(CLIK/CL2-1.0))*RTOD                   00860000
ISN 0050      DELGM2=GAMD1-GAMD2                                          00870000
ISN 0051      IF (ABS(DELGM2).LE.0.02)  GO TO 3                           00880000
ISN 0053      ITER=ITER+1                                                 00890000
ISN 0054      IF (ITER.GT.20) GO TO 16                                    00900000
ISN 0056      CL3=(CL1*DELGM2-CL2*DELGM1)/(DELGM2-DELGM1)                 00910000
ISN 0057      CL1=CL2                                                     00920000
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ISN 0058          CL2=CL3                                                                00930000
ISN 0059          DELGM1=DELGM2                                                          00940000
ISN 0060          GO TO 23                                                               00950000
ISN 0061        3 ETAP=TANP/TAN(GAMD1*DTOR+PHIT)                                         00960000
ISN 0062          CCT=ETAP*CCP/REALJ                                                     00970000
ISN 0063       21 TPROP=0.C09507*SIGMA*(DMR*VT)**2*ENR*CCT/(4.*PI)                       00980000
ISN 0064          GO TO 36                                                               01000000
ISN 0065       19 IF (BMR.EQ.3.0) CTIND=XLINT(CPOW33,CTI3,CCP,10,M)                      01010000
ISN 0067          IF (BMR.EQ.4.0) CTIND=XLINT(CPOW33,CTI4,CCP,10,M)                      01020000
ISN 0069          IF (M.NE.0) WRITE(6,45)                                                01030000
ISN 0071       45 FORMAT(9X,52HTHIS ERROR IS IN THE CT/CP TABLE - SUBROUTINE THRUST)     01040000
ISN 0072          PHIT=ATAN(CCP/(C.75*PI*CTIND))                                         01060000
ISN 0073          SINP=SIN(PHIT)                                                         01070000
ISN 0074          GAMD2=1.0                                                              01080000
ISN 0075          CLIK=4.0*CCP/((0.75*PI)**4*SIGS*SINP*COS(PHIT)**2)                     01090000
ISN 0076          CL1=CLIK/(1.+TAN(GAMD2*DTOR)*COTAN(PHIT))                              01100000
ISN 0077          GAMD1=TABLE(CL1,CLGAM,GMDD1,11,2,M)                                    01110000
ISN 0078          IF (M.NE.0) WRITE(6,47)                                                01120000
ISN 0080       47 FORMAT(9X,83HTHIS ERROR IS IN THE PROPELLER EQUIVALENT LIFT/DRAG P01130000
                 1OLAR TABLE - SUBROUTINE THRUST     )                                 01140000
ISN 0081          DELGM1=GAMD1-GAMD2                                                     01150000
ISN 0082          CL2=CLIK/(1.0+TAN(GAMD1*DTOR)*COTAN(PHIT))                             01160000
ISN 0083       14 GAMD1=TABLE(CL2,CLGAM,GMDD1,11,2,M)                                    01170000
ISN 0084          IF (M.NE.0) WRITE(6,47)                                                01180000
ISN 0086          GAMD2=ATAN(TAN(PHIT)*(CLIK/CL2-1.0))*RTOD                              01190000
ISN 0087          DELGM2=GAMD1-GAMD2                                                     01200000
ISN 0088          IF (ABS(DELGM2).LE.0.02) GO TO 12                                      01210000
ISN 0090          ITER=ITER+1                                                            01220000
ISN 0091          IF (ITER.GT.20) GO TO 16                                               01230000
ISN 0093          CL3=(CL1*DELGM2-CL2*DELGM1)/(DELGM2-DELGM1)                            01240000
ISN 0094          CL1=CL2                                                                01250000
ISN 0095          CL2=CL3                                                                01260000
ISN 0096          DELGM1=DELGM2                                                          01270000
ISN 0097          GO TO 14                                                               01280000
ISN 0098       12 CCT=CCP*(COTAN(GAMD1*DTOR+PHIT)/(0.75*PI))                             01290000
ISN 0099          ETAP=0.798*CCT**1.5/CCP                                                01300000
ISN 0100          GO TO 21                                                               01310000
ISN 0101       16 WRITE(6,43)                                                            01320000
ISN 0102          WRITE(6,NTHRST)                                                        01330000
ISN 0103       43 FORMAT(10X,65HGAMMA FAILED TO CONVERGE IN TWENTY ITERATIONS - SUBR01340000
                 1OUTINE THRUST/)                                                       01350000
ISN 0104       36 RETURN                                                                 01360000
ISN 0105          END                                                                    01370000
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NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.	NAME	TAG		TYPE	ADD.
H		C	R*4	N.R.	M	FA		I*4	000314	Q		C	R*4	N.R.	R		C	R*4	N.R.
T		C	R*4	N.R.	V	F	C	R*4	000910	W		C	R*4	N.R.	AF		C	R*4	N.R.
AR		C	R*4	N.R.	A0		C	R*4	N.R.	A1		C	R*4	N.R.	A2		C	R*4	N.R.
BR		C	R*4	N.R.	BS		C	R*4	N.R.	CB		C	R*4	N.R.	CV		C	R*4	N.R.
CX		C	R*4	N.R.	DH		C	R*4	N.R.	EM	SF		R*4	000318	EN		C	R*4	N.R.
FF		C	R*4	N.R.	FM		C	R*4	N.R.	FP		C	R*4	N.R.	HC		C	R*4	N.R.
PI	SFA	C	R*4	000864	RN		C	R*4	N.R.	SA	F	C	R*4	000880	ST		C	R*4	N.R.
SW		C	R*4	N.R.	TR		C	R*4	N.R.	VC		C	R*4	N.R.	VT	F	C	R*4	000148
WE		C	R*4	N.R.	WF		C	R*4	N.R.	WO		C	R*4	N.R.	WS		C	R*4	N.R.
WW		C	R*4	N.R.	XC		C	R*4	N.R.	AMU		C	R*4	N.R.	BB0		C	R*4	N.R.
BB1		C	R*4	N.R.	BB2		C	R*4	N.R.	BHT		C	R*4	N.R.	BIV	F	XF	R*4	000000
BLP	F	C	R*4	000660	BMR		C	R*4	00012C	BVT		C	R*4	N.R.	CCP	SFA	C	R*4	000680
CCT	SF	C	R*4	000684	CDC		C	R*4	N.R.	CDV		C	R*4	N.R.	CKF		C	R*4	N.R.
CKW		C	R*4	N.R.	CK1		C	R*4	N.R.	CLW		C	R*4	N.R.	CL1	SFA		R*4	00031C
CL2	SFA		R*4	000320	CL3	SF		R*4	000324	CRT		C	R*4	N.R.	CTP		C	R*4	N.R.
CK3		C	R*4	N.R.	DK4		C	R*4	N.R.	DMR	F	C	R*4	0009C8	ELC		C	R*4	N.R.
ELF		C	R*4	N.R.	ELN		C	R*4	N.R.	ELT		C	R*4	N.R.	ENP		C	R*4	N.R.
ENR	F	C	R*4	00011C	FEH		C	R*4	N.R.	FET		C	R*4	N.R.	FEW		C	R*4	N.R.
GLF		C	R*4	N.R.	HES		C	R*4	N.R.	HOO		C	R*4	N.R.	OWE		C	R*4	N.R.
RHO		C	R*4	N.R.	RJ3	FA	C	R*4	0002DC	RJ4	FA	C	R*4	0004BC	RMI		C	R*4	N.R.
RCO		C	R*4	N.R.	SA5		C	R*4	N.R.	SA6		C	R*4	N.R.	SA7		C	R*4	N.R.
SEE		C	R*4	N.R.	SFC		C	R*4	N.R.	SHT		C	R*4	N.R.	SKT		C	R*4	N.R.
SK1		C	R*4	N.R.	SK2		C	R*4	N.R.	SK3		C	R*4	N.R.	SK4		C	R*4	N.R.
SK5		C	R*4	N.R.	SK6		C	R*4	N.R.	SK7		C	R*4	N.R.	SK8		C	R*4	N.R.
SK9		C	R*4	N.R.	SLM		C	R*4	N.R.	STH		C	R*4	N.R.	SVT		C	R*4	N.R.
TAF		C	R*4	N.R.	TCR		C	R*4	N.R.	TCT		C	R*4	N.R.	TMP		C	R*4	N.R.
TCO		C	R*4	N.R.	TVW		C	R*4	N.R.	ULF		C	R*4	N.R.	VHL		C	R*4	N.R.
VIN		C	R*4	N.R.	VMO		C	R*4	N.R.	WAC		C	R*4	N.R.	WCO		C	R*4	N.R.
WEP		C	R*4	N.R.	WES		C	R*4	N.R.	WFC		C	R*4	N.R.	WFE		C	R*4	N.R.
WFR		C	R*4	N.R.	WFS		C	R*4	N.R.	WFW		C	R*4	N.R.	WHL		C	R*4	N.R.
WHT		C	R*4	N.R.	WLG		C	R*4	N.R.	WMC		C	R*4	N.R.	WPC		C	R*4	N.R.
WPH		C	R*4	N.R.	WRC		C	R*4	N.R.	WSC		C	R*4	N.R.	WST		C	R*4	N.R.
WTM		C	R*4	N.R.	WVA		C	R*4	N.R.	WVT		C	R*4	N.R.	XLB		C	R*4	N.R.
XLR		C	R*4	N.R.	XLW		C	R*4	N.R.	XMR		C	R*4	N.R.	ALFR		C	R*4	N.R.
ARHT		C	R*4	N.R.	ARVT		C	R*4	N.R.	BHPA		C	R*4	N.R.	BHPP	F	C	R*4	0009D4
BHPR		C	R*4	N.R.	CDHT		C	R*4	N.R.	CDVT		C	R*4	N.R.	CKFF		C	R*4	N.R.
CKHT		C	R*4	N.R.	CKVT		C	R*4	N.R.	CLIK	SFA		R*4	000328	CLLL	FA	C	R*4	0006A8
CTI3	FA	C	R*4	000774	CTI4	FA	C	R*4	0007C4	DAM1		C	R*4	N.R.	DAM2		C	R*4	N.R.
DAM3		C	R*4	N.R.	DAM4		C	R*4	N.R.	DAM5		C	R*4	N.R.	DELR		C	R*4	N.R.
DTOR	SFA		R*4	00032C	DUM2		C	R*4	N.R.	DVOL		C	R*4	N.R.	ELDN		C	R*4	N.R.
ELDT		C	R*4	N.R.	ELHT		C	R*4	N.R.	ELOA		C	R*4	N.R.	ELVT		C	R*4	N.R.
EMLF		C	R*4	N.R.	ETAI	SFA		R*4	000330	ETAP	SF	C	R*4	0006E8	ETAT	F	C	R*4	000198
FEHI		C	R*4	N.R.	FEHL		C	R*4	N.R.	FEHT		C	R*4	N.R.	FEVT		C	R*4	N.R.
FFWH		C	R*4	N.R.	FEWI		C	R*4	N.R.	GAP1		C	R*4	N.R.	GAP2		C	R*4	N.R.
GAP3		C	R*4	N.R.	GAP4		C	R*4	N.R.	GAP5		C	R*4	N.R.	GAP6		C	R*4	N.R.
GAP7		C	R*4	N.R.	HFIN		C	R*4	N.R.	ITER	SF		I*4	000334	LTHL		C	I*4	N.R.
PEHF		C	R*4	N.R.	PHIT	SFA		R*4	000338	PLIN		C	R*4	N.R.	RELI		C	R*4	N.R.
RMAX		C	R*4	N.R.	RTOD	SF		R*4	00033C	SHPA	SF	C	R*4	000894	SHPR		C	R*4	N.R.
SFTE		C	R*4	N.R.	SHTW		C	R*4	N.R.	SIGS	SF		R*4	000340	SINP	SF		R*4	000344
SKAC		C	R*4	N.R.	SKAR		C	R*4	N.R.	SKCC		C	R*4	N.R.	SKFS		C	R*4	N.R.

SKFW		C	R*4	N.R.	SKHL		C	R*4	N.R.	SKHT		C	R*4	N.R.	SKLG		C	R*4	N.R.
SKMC		C	R*4	N.R.	SKPA		C	R*4	N.R.	SKPH		C	R*4	N.R.	SKRC		C	R*4	N.R.
SKSC		C	R*4	N.R.	SKTM		C	R*4	N.R.	SKVT		C	R*4	N.R.	SKWP		C	R*4	N.R.
SKWW		C	R*4	N.R.	SK10		C	R*4	N.R.	SK11		C	R*4	N.R.	SK12		C	R*4	N.R.
SK13		C	R*4	N.R.	SK14		C	R*4	N.R.	SK15		C	R*4	N.R.	SLMH		C	R*4	N.R.
STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.	SVTW		C	R*4	N.R.	SWTT		C	R*4	N.R.
TANP	SFA		R*4	000348	TBH1		C	R*4	N.R.	TBH2		C	R*4	N.R.	TBTO		C	R*4	N.R.
TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.
TIN2		C	R*4	N.R.	TIN4		C	R*4	N.R.	TMAX		C	R*4	N.R.	TOVW		C	R*4	N.R.
TWTW		C	R*4	N.R.	WBAL		C	R*4	N.R.	WENV		C	R*4	N.R.	WFUL		C	R*4	N.R.
WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.	WPRB		C	R*4	N.R.
WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.	WRCA		C	R*4	N.R.	WSCA		C	R*4	N.R.
XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.	XLHL		C	R*4	N.R.	YLS2	F	C	R*4	0009C0
ALFDL		C	R*4	N.R.	AMACH	FA	C	R*4	00069C	ATMIY		C	R*4	N.R.	CBARF		C	R*4	N.R.
CBARW		C	R*4	N.R.	CLDES		C	R*4	N.R.	CLEYE		C	R*4	N.R.	CLGAM	FA	C	R*4	0006E4
CPIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.	CPOW3	FA	C	R*4	000304	CPOW4	FA	C	R*4	0004E4
CPPAR		C	R*4	N.R.	CPPNU	F		R*4	00034C	CPPRO		C	R*4	N.R.	CPTOT		C	R*4	N.R.
CTIND	SFA		R*4	000350	DELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.
DELWP		C	R*4	N.R.	DSWET		C	R*4	N.R.	ELDOA		C	R*4	N.R.	EMH75	SFA		R*4	000354
ENPCR		C	R*4	N.R.	ETAI3	FA	C	R*4	00032C	ETAI4	FA	C	R*4	000500	ETAP2		C	R*4	N.R.
ETAP4		C	R*4	N.R.	FETOT		C	R*4	N.R.	GAMD1	SFA		R*4	000358	GAMD2	SFA		R*4	00035C
GMCD1	FA	C	R*4	000708	HMAXD		C	R*4	N.R.	ICRUS		C	I*4	N.R.	NOCPP	S	C	I*4	000854
NOXPJ	S	C	I*4	000858	PFET2		C	R*4	N.R.	REALJ	SFA	C	R*4	000870	RHPMR		C	R*4	N.R.
SIGMA	F	C	R*4	000848	SIGMR	F	C	R*4	0009CC	SKAMD		C	R*4	N.R.	SKBAL		C	R*4	N.R.
SKGB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.	SKPEI		C	R*4	N.R.
SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.	SKRCA		C	R*4	N.R.
SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH		C	R*4	N.R.
SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2RHO		C	R*4	N.R.	TABLE	F	XF	R*4	000000
TBCL1		C	R*4	N.R.	TBCRP		C	R*4	N.R.	TBEM5		C	R*4	N.R.	TBPOW		C	R*4	N.R.
TBSFC		C	R*4	N.R.	TCBAR		C	R*4	N.R.	THETA		C	R*4	N.R.	TPROP	S		R*4	000360
TVCMR		C	R*4	N.R.	VBARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VDIVE		C	R*4	N.R.
VGASB		C	R*4	N.R.	VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.
XLALB		C	R*4	N.R.	XLBWO		C	R*4	N.R.	XLINT	F	XF	R*4	000000	XLRLA		C	R*4	N.R.
XPJNO	F		R*4	000364	FRXPR#		XF	R*4	000000	COTAN		XF	R*4	000000	TAN		XF	R*4	000000
COS		XF	R*4	000000	SIN		XF	R*4	000000	ATAN		XF	R*4	000000	SQRT		XF	R*4	000000
ALFDFS		C	R*4	N.R.	BHPSUP		C	R*4	N.R.	CBARHT		C	R*4	N.R.	CBARVT		C	R*4	N.R.
CBYLCA		C	R*4	N.R.	CLALPH		C	R*4	N.R.	CPOW33	FA	C	R*4	000724	CRSIND		C	R*4	N.R.
CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.	DELFCR		C	R*4	N.R.	DELGM1	SF		R*4	000368
DELGM2	SFA		R*4	000360	DELRTH		C	R*4	N.R.	DELWFC		C	R*4	N.R.	DELWPL		C	R*4	N.R.
DELWST		C	R*4	N.R.	DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.
DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.	DYLIND		C	R*4	N.R.	ELHLDA		C	R*4	N.R.
ELVLCA		C	R*4	N.R.	ETAIND		C	R*4	N.R.	ETAP4N		C	R*4	N.R.	EXPDRG		C	R*4	N.R.
FEDRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.	FWRNL#	F	XF	I*4	000000	GAMD11	FA	C	R*4	000720
HULIND		C	R*4	N.R.	IBCOM#	F	XF	I*4	000000	INDCRU		C	I*4	N.R.	INDDRG		C	I*4	N.R.
INDDYL		C	I*4	N.R.	INDETA		C	I*4	N.R.	INDFIX		C	I*4	N.R.	INDHUL		C	I*4	N.R.
INDCPT		C	I*4	N.R.	INDOSW		C	I*4	N.R.	INDPOW		C	I*4	N.R.	INDPRP		C	I*4	N.R.
INDROM		C	I*4	N.R.	IPRINT		C	I*4	N.R.	NTHRST	F			000001	OPTIND		C	R*4	N.R.
OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.	RDMIND		C	R*4	N.R.	RHORHO		C	R*4	N.R.
SGTIND		C	R*4	N.R.	SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.
SKPDSZ		C	R*4	N.R.	SKVTAR		C	R*4	N.R.	SSIGMA		C	R*4	N.R.	STHETA	F	C	R*4	0008B4
TBCDWI		C	R*4	N.R.	T88AP4		C	R*4	N.R.	THETMR		C	R*4	N.R.	THRUST			R*4	000370
TOLIND		C	R*4	N.R.	VGBOVH		C	R*4	N.R.	WBALNT		C	R*4	N.R.	WPAYLD		C	R*4	N.R.

XTGTA2 C R*4 N.R. XTGTA4 C R*4 N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
CPTIND	R*4	N.R.	HULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
CSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WO	R*4	N.R.	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBOVH	R*4	N.R.	XLGD	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VMO	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VDIVE	R*4	N.R.	HOO	R*4	N.R.	ROO	R*4	N.R.
TOO	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLOA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELDT	R*4	N.R.	ELDOA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	00011C
WVA	R*4	N.R.	DAM1	R*4	N.R.	DAM2	R*4	N.R.	BMR	R*4	00012C
DAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	000148	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	HES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEM5	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
DAM4	R*4	N.R.	EAP	R*4	N.R.	ETAT	R*4	000198	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
DAM5	R*4	N.R.	DLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CDC	R*4	N.R.	CLALPH	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCL1	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFUL	R*4	N.R.	DELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGB1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPP5	R*4	N.R.
SKRBF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	DK3	R*4	N.R.	DK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TOLIND	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWPL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.

TBH1	R*4	N.R.	TBTO	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPOW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFDL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHPR	R*4	N.R.	BHPSUP	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	000660
BR	R*4	N.R.	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARHT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	000680
CCT	R*4	000684	CDV	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPNUD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CRT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	N.R.	CX	R*4	N.R.
CLDES	R*4	N.R.	CB	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DH	R*4	N.R.	DSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELGA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	N.R.	ETAP	R*4	0006E8	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETOT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FP	R*4	N.R.	ETAP4	R*4	N.R.	GAMD11	R*4	000720
GLF	R*4	N.R.	GMDD1	R*4	0007D8	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRU	I*4	N.R.	INDDRG	I*4	N.R.	INDDYL	I*4	N.R.	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDHUL	I*4	N.R.	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPOW	I*4	N.R.	INDPRP	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.
LTHL	I*4	N.R.	NOCPP	I*4	000854	NOXPJ	I*4	000858	OWE	R*4	N.R.
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	N.R.	RHO	R*4	N.R.
REALJ	R*4	000870	RHPMR	R*4	N.R.	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	000880	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	000894	SHPR	R*4	N.R.	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	0008A8	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	0008B4	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.
TMAX	R*4	N.R.	TMP	R*4	N.R.	DUM2	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	N.R.	VGASB	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	000910	W	R*4	N.R.	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	N.R.	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSB	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPDS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRP	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBH	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	0009C0	TOVW	R*4	N.R.	DMR	R*4	0009C8	SIGMR	R*4	0009CC
AF	R*4	N.R.	BHPP	R*4	0009D4	SEE	R*4	N.R.			

NAME OF COMMON BLOCK * ODD* SIZE OF BLOCK 000814 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
A0	R*4	N.R.	A1	R*4	N.R.	A2	R*4	N.R.	BB0	R*4	N.R.
BB1	R*4	N.R.	BB2	R*4	N.R.	RJ3	R*4	0002DC	CPOW3	R*4	000304

ETAI3	R*4	00032C	RJ4	R*4	0004BC	CPOW4	R*4	0004E4	ETAI4	R*4	00050C
AMACH	R*4	00069C	CLLL	R*4	0006A8	CLGAM	R*4	0006E4	CPOW33	R*4	000724
CTI3	R*4	000774	CTI4	R*4	0007C4						

7	00063E NR	23	000824	3	0008C8	21	000902
19	000930	14	000AFE	12	0008BE	16	000C1C
36	000C40						

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*OPTIONS IN EFFECT*      NAME=  MAIN,CPT=02,LINECNT=54,SIZE=0000K,

*OPTIONS IN EFFECT*      SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =     104 ,PROGRAM SIZE =     3196

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  91K BYTES OF CORE NOT USED

*STATISTICS*  NO  DIAGNOSTICS THIS STEP
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     COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                        SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002          SUBROUTINE TOHL(ITOHL)                                            00010000
            C**** MEMBER NAME 881TOHL                                               00020000
            C     PAGE 1   INPUT   LOC 0001 THRU 0050                               00030000
ISN 0003          COMMON   OPTIND    ,HLLIND    ,DYLIND    ,ORGIND    ,CSWIND    ,00040000
                 1FIXIND   ,RONIND   ,PRFIND    ,ETAIND    ,WO        ,XLBWO     ,00050000
                 2XLRLA    ,VGECVH   ,XLCC      ,HMAXD     ,RHORHO    ,VMC       ,00060000
                 3EMLF     ,CK1      ,DELWF     ,CKFF      ,VDIVE     ,HCC       ,00070000
                 4RCC      ,TCC      ,GAP1(5)   ,SGTIND(12),ELHLOA    ,ELVLCA    ,00080000
                 5GAP2(6)                                                           00090000
            C     PAGE 2   INPUT   LOC 0051 THRU 0100                               00100000
ISN 0004          COMMON   AR        ,WS        ,TCR       ,TCT       ,SLM       ,00110000
                 1ARHT     ,TCHT     ,VEARH     ,SLMH      ,ARVT      ,TCVT      ,00120000
                 2VEARV    ,SLMVT    ,ELDN      ,ELDT      ,ELDOA     ,DLSWSH    ,00130000
                 3DSWET    ,DLVLHL   ,DVCL      ,CBYLCA    ,ENR       ,WVA       ,00140000
                 4DAM1     ,DAM2     ,ENF       ,DAM3      ,CLEYE     ,TFETMR    ,00150000
                 5XC       ,XMR      ,TVCMR     ,VT        ,CTSIGH    ,TVW       ,00160000
                 6HES      ,TINY     ,ETAP2     ,ETAP4N    ,TBEM5(5)  ,TB8AP4(5) ,00170000
                 7GAP3                                                              00180000
            C     PAGE 3   INPUT   LOC 0101 THRU 140                                00190000
ISN 0005          COMMON   DAM4      ,ENF       ,ETAT      ,HC        ,VC        ,00200000
                 1ATMIY    ,CDVT     ,CDHT      ,DAM5      ,CLTAFE    ,FEDRAG    ,00210000
                 2EXFDRG   ,CDC      ,CLALPH    ,CKVT      ,CKHT      ,CKF       ,00220000
                 3CKW      ,RELI     ,TCLN      ,TBCLI(8)  ,TBCDWI(8) ,GAP4(4)    00230000
            C     PAGE 4  INPUT   LOC 141 THRU 200   WEIGHT DATA                    00240000
ISN 0006          COMMON   WFE       ,WFUL      ,DELWFC    ,DELWP     ,DELWST    ,00250000
                 1SKCC     ,SKRC     ,SKSC      ,SKFW      ,SKTM      ,SKRCA     ,00260000
                 2SKSCA    ,SKMC     ,SKAC      ,SKHL      ,SKENV1    ,SKENV2    ,00270000
                 3SKCBL    ,SKGE2    ,SKELNT    ,SKBAL     ,SKLG      ,SKWW      ,00280000
                 4ELF      ,RMI      ,SKWP      ,SKHT      ,SKVT      ,SKPRB     ,00290000
                 5SKRBF    ,SKPF     ,SKAND     ,SKAR      ,SKPA      ,SKVTAR    ,00300000
                 6SKPDS    ,SKPDSZ   ,SKT       ,SKFS      ,SKPEI     ,SKPES     ,00310000
                 7SK1      ,SK2      ,DK3       ,DK4       ,SK5       ,SK6       ,00320000
                 8SK7      ,SK8      ,SK9       ,SK10      ,SK11      ,SK12      ,00330000
                 9SK13     ,SK14     ,SK15      ,PLIN      ,GAP5(3)               00340000
            C     PAGE 5  INPUT   LOC 201 THRU 300                                  00350000
ISN 0007          COMMON     TCLINC(5) ,XTCTA2(5) ,TIN2(5)   ,TWTW(5)   ,PFET2(5)  ,00360000
                 1DELTH(5) ,STH(5)   ,CRSINC(5) ,XTGTA4(5) ,TIN4(5)   ,VIN(5)    ,00370000
                 2DELR(5)  ,RMAX(5)  ,DELFCR(5) ,ENPCR(5)  ,DELWPL(5) ,STPW(5)   ,00380000
                 3FFIN(5)  ,GAP6(10)                                                00390000
            C     PAGE 6  INPUT   LOC 301 THRU 400                                  00400000
ISN 0008          COMMON     CYCFRL    ,FF        ,SK3       ,SK4       ,TBH1(5)   ,00410000
                 1TBTO(5)  ,TBH2(5)  ,TBCRP(5)  ,TBSFC(8)  ,TBFCW(8)  ,GAP7(60)   00420000
            C     WORKING COMMON                                                    00430000
ISN 0009          COMMON  ALFDES,ALFCL,ALFF,AML,                                    00440000
                 1        BFFA,BFFR,EFFSLF,EHT,ELP,ER,BS,BVT,                      00450000
                 2 CEARF,CEARHT,CEARVT,CEARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPRC00460000
                 3,CPTOT,CRT,CTP,CV,CX,CLDES,CE,                                    00470000
                 4 DELRTH,DELTA,DF,DSPLMT,      ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP, 00480000
                 5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4     00490000
ISN 0010          COMMON GAMD11(3,15),GLF,GMDC1(16),H,                              00500000
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ORIGINAL PAGE IS OF POOR QUALITY

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                      7 ICRUS,INCCRU,INCCRG,INCCYL,INDETA,INDFIX,INDFLL,INDOPT,INDOSW,    00510000
                      8 INDPOW,INDPRP,INDROM,IPRINT                                       00520000
ISN 0011               COMMON LTHL,NCCPP,NOXP,,CWB,PEHF,PI,Q,RHC,REALJ,RHPMR,R,RN         00530000
ISN 0012               COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                      1STHETA,STMAX,SV1,SVTE,SW1W,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC         00550000
ISN 0013               COMMON T,TAF,TCEAR,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V  00560000
ISN 0014               COMMON W,WBAL,WBALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,           00570000
                      1 WGSB,WFL,WFT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPF,WPRB,WPRG,WPRP,WPSTR00580000
                      2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                  00590000
ISN 0015               COMMON XLALB,XLE,XLBH,XLHL,XLR,XLW,YLS2,TOVW                       00600000
ISN 0016               COMMON CMR,SIGMR,AF,BHFP,SEE                                       00600001
ISN 0017               NAMELIST /NTCHL/ YLS2,LTHL,W,STMAX,XLBH,BLP,SFC,BHPA,TR,           00610000
                      1          TPROP,BHPR,FP,TCVW,XLR,PEHF,WF,ST,LC2,TOT,BHPSUP,       00620000
                      2          SHPR,E1,E2,CTCVW,BR                                     00630000
ISN 0018               INDTOL=TCLIND(ITCHL)                                               00640000
ISN 0019            100 FORMAT(22X,4CHTHIS ERROR IS IN THE TAKEOFF POWER TABLE)           00650000
ISN 0020            103 FORMAT(2X,F7.2,2X,F8.1,3X,F5.0,3X,F10.0,3X,F8.0,3X,F7.2,2X,       00660000
                      1F6.1,2X,F6.3,2X,F6.3,2X,F8.0,1X,F5.2,1X,F6.3,2X,F7.0,2X,F8.0)      00670000
ISN 0021            8999 FORMAT(7X34HTAKEOFF, HOVER, OR LAND AT PEHF = ,F5.3,5H FOR ,     00680000
                      1F6.3,5H HRS.)                                                      00690000
ISN 0022            9000 FORMAT(/7X34HTAKEOFF, HOVER, OR LAND AT  T/W = ,F5.3,5H FOR ,    00700000
                      1F6.3,5H HRS.)                                                      00710000
ISN 0023            9001 FORMAT(2X,'TIME',7X,'RANGE',5X,'FUEL USED',5X,'WEIGHT',6X,       00720000
                      1'ALT.',6X,'TEMP',5X,'TAS',5X,'B.R.',4X,'PEHF',5X,'BHPR',4X,        00730000
                      2'FM',4X,'T/W',3X,'THRUST',3X,'FUEL FLOW'/2X,'HOURS',5X,'(N.MI.)',40X00740000
                      3X,'(POUNDS)',5X,'(POUNDS)',4X,'FEET',5X,'(DEG.F)',2X,'(KTS)',40X,'00750000
                      4(POUNDS)',3X,'(LB/HR)'//)                                          00760000
ISN 0024               IF (IPRINT.EQ.0.) GO TO 27                                         00770000
ISN 0026               IF (INDTOL       .EQ.1) WRITE(6,9000) TWTW(ITOHL),STH(ITCHL)       00780000
ISN 0028               IF (INDTOL       .EQ.2) WRITE(6,8999) PFET2(ITCHL),STH(ITCHL)      00790000
ISN 0030               WRITE(6,9001)                                                      00800000
ISN 0031            27 STMAX=ST+STH(ITCHL)                                                00810000
ISN 0032               PI=3.14159                                                         00820000
ISN 0033               LC2=0                                                              00830000
ISN 0034               HH=H                                                               00840000
ISN 0035               LTHL=1                                                             00850000
ISN 0036               V=0.                                                               00860000
ISN 0037               AML=0.                                                             00870000
ISN 0038               CX=0.                                                              00880000
ISN 0039               IF (INDTOL       .EQ.1) TCVW=TWTW(ITOHL)                           00890000
ISN 0041               IF (INDTOL       .EQ.2) TCVW=1.0                                   00900000
ISN 0043               TOT=XTOTA2(ITCHL)                                                  00910000
ISN 0044            350 CALL ATMOS(HH,TIN2(ITCHL))                                        00920000
ISN 0045              1 IF(TOT.EQ.1.0) XLBH=XLBWC*WC                                      00930000
ISN 0047               IF(TOT.NE.1.0) XLBH=((0.076474*(TOT-1.0)/(0.076474-XLGD))+1.0)*XLB00930100
                      1WC*WO                                                              00930200
ISN 0049               XLR=W-XLBH                                                         00940000
ISN 0050               IF(XLBWC.EQ.1.0) XLR=WC*(TCVW-1.0)                                 00940100
ISN 0052               XLA=ABS(XLR)                                                       00940200
ISN 0053               TR=XLA*TCVW                                                        00950000
ISN 0054               BLP=XLINT(TBH1,TBTC,HH,5,M)                                        00960000
ISN 0055               BLP=FACTR(BLP,HH,THETA,FF)                                         00970000
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ISN 0056          IF (M.NE.C) WRITE(6,1CC)                                    C0980000
ISN 0058          IF (INCTCL      .EQ.2) GC TC 5                              C0990000
ISN 006C          BHPSUP=ELP*BHPP*DELRTH                                      01000000
ISN 0061          IF (INDCYL.GT.2) GO TO 2                                    01010000
ISN 0063          IF (INDETA.EQ.C) GC TC 3                                    01020000
ISN 0065          TPROP=TR                                                    01030000
ISN 0066          CALL PCWER                                                  01040000
ISN 0067          BHPR=SHPR*BHPP*YLS2*DELRTH                                  01050000
ISN 0068          GC TO 4                                                     01060000
ISN 0069        3 BHPR=(TCVW)**1.5*)LA**1.5/(275.*ETAT*ETAP2*DNR*SQRT(2.*RHC*  C1070000
                1PI*ENR))                                                     01080000
ISN 0070          GC TO 4                                                     01090000
ISN 0071        2 CALL RCTPCH                                                 01100000
ISN 0072        4 IF (BHPSCP.LT.EHPR) WRITE(6,1C2)                            01110000
ISN 0074      1C2 FCRMAT(7X,4CHCALTICN ** PEHF   IS GREATER THAN 1.0 **)      01120000
ISN 0075          BLP=BHPR/(BHPP*DELRTH)                                      01130000
ISN 0076          SFC=XLINT(TBPCW,TESFC,ELP,8,M)                              01140000
ISN 0077          IF (M.NE.C) WRITE(6,1C1)                                    01150000
ISN 0079      1C1 FCRMAT(22X3CHTHIS ERRCR IS IN THE SFC TABLE)                01160000
ISN 008C          FP=SFC*BHPR*CKFF                                            01170000
ISN 0081          GC TO 6                                                     01180000
ISN 0082        5 PEHF=PFET2(ITCHL)                                           01190000
ISN 0083          SHPR=BLP*PEHF                                               01200000
ISN 0084          BHPA=SHPR*BHPP*DELRTH                                       01210000
ISN 0085          BLP=SHPR                                                    01220000
ISN 0086          SFC=XLINT(TBPCW,TESFC,ELP,8,M)                              01230000
ISN 0087          IF (M.NE.C) WRITE(6,1C1)                                    01240000
ISN 0089          FP=SFC*BHPA*CKFF                                            01250000
ISN 0090          IF (INDCYL.GT.2) GC TO 7                                    01260000
ISN 0092          IF (INDETA.EQ.C) GC TO 8                                    01270000
ISN 0094          LC2=0                                                       01280000
ISN 0095          TR=XLR*TCVW                                                 01290000
ISN 0096          TPROP=TR                                                    01300000
ISN 0097       10 LC2=LC2+1                                                   01310000
ISN 0098          CALL PCWER                                                  01320000
ISN 0099          BHPR=SHPR*BHPP*YLS2*DELRTH                                  01330000
ISN 0100          IF (ABS((BHPA-BHPR)/BHPA).LT.0.01) GO TO 6                  01340000
ISN 0102          IF (LC2.LT.2) GC TC 12                                      01350000
ISN 0104          B2=BHPR-BHPA                                                01360000
ISN 0105          DTCVW=B2*DTCVW/(B1-B2)                                      01370000
ISN 0106          B1=B2                                                       01380000
ISN 0107          GC TO 13                                                    01390000
ISN 0108       12 B1=BHPR-BHPA                                                01400000
ISN 0109          DTCVW=-C.5                                                  01410000
ISN 0110       13 TCVW=TOVW-DTOVW                                             01420000
ISN 0111          GC TO 1C                                                    01430000
ISN 0112        7 CALL RCTPCH                                                 01440000
ISN 0113          GC TO 6                                                     01450000
ISN 0114        8 TCVW=(275.*BHPA*ETAT*ETAP2*DNR*SQRT(2.*RHO*PI*ENR)/XLA**1.5)  01460000
                1**C.6667                                                     01470000
ISN 0115          BHPR=BHPA                                                   01480000
ISN 0116        6 BR=XL BH/W                                                  01490000
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ISN 0117            TMP=THETA*518.69-459.69                                    01530000
ISN 0118            IF (IPRINT.EQ.C) GO TO 531                                 01510000
ISN 0120            IF (INDTOL.EQ.1) PEHP=EHPR/BHPSUP                          01520000
ISN 0122            IF(INDETA.EC.C) FP=ETAP2                                   01520100
ISN 0124            WRITE(6,103)ST,R,WF,W,P,TMP,V,BR,PEHP,BHPR,FP,TOVW,XLR,FP  01530000
ISN 0125        531 DLTTH=DELTH(ITCHL)                                         01540000
ISN 0126            IF (ST.GE.STMAX) GO TO 541                                 01550000
ISN 0128            IF (ST.LT.(STMAX-DLTTH)) GO TO 369                         01560000
ISN 0130            DLTTH=STMAX-ST                                             01570000
ISN 0131            GO TO 369                                                  01580000
ISN 0132        541 LTHL=0                                                     01590000
ISN 0133            RETURN                                                     01610000
ISN 0134        369 R=R-FP*DLTTH                                               01620000
ISN 0135            WF=WF+FP*DLTTH                                             01630000
ISN 0136            ST=ST+DLTTH                                                01640000
ISN 0137            GO TO 350                                                  01650000
ISN 0138            END                                                        01660000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	F C	R*4	000818	M	FA	I*4	000354	Q	C	R*4	N.R.	R	F C	R*4	000878
T	C	R*4	N.R.	V	SF C	R*4	000910	W	SF C	R*4	000914	AF	C	R*4	N.R.
AR	C	R*4	N.R.	BR	SF C	R*4	000664	BS	C	R*4	N.R.	B1	SF	R*4	000358
B2	SF	R*4	00035C	CB	C	R*4	N.R.	CV	C	R*4	N.R.	CX	S C	R*4	000680
DH	C	R*4	N.R.	EN	C	R*4	N.R.	FF	FA C	R*4	000484	FM	SF C	R*4	000714
FP	SF C	R*4	000718	HC	C	R*4	N.R.	HH	SFA	R*4	000360	PI	SFA C	R*4	000864
RN	C	R*4	N.R.	SA	C	R*4	N.R.	ST	SF C	R*4	000880	SW	C	R*4	N.R.
TR	SF C	R*4	0008FC	VC	C	R*4	N.R.	VT	C	R*4	N.R.	WE	C	R*4	N.R.
WF	SF C	R*4	000930	WU	F C	R*4	000024	WS	C	R*4	N.R.	WW	C	R*4	N.R.
XC	C	R*4	N.R.	AML	S C	R*4	00064C	BHT	C	R*4	N.R.	BLP	SFA C	R*4	000660
BMR	C	R*4	N.R.	BVT	C	R*4	N.R.	CCP	C	R*4	N.R.	CCT	C	R*4	N.R.
CDC	C	R*4	N.R.	CDV	C	R*4	N.R.	CKF	C	R*4	N.R.	CKW	C	R*4	N.R.
CK1	C	R*4	N.R.	CLW	C	R*4	N.R.	CRT	C	R*4	N.R.	CTP	C	R*4	N.R.
DK3	C	R*4	N.R.	DK4	C	R*4	N.R.	DMR	F C	R*4	0009C8	ELC	C	R*4	N.R.
ELF	C	R*4	N.R.	ELN	C	R*4	N.R.	ELT	C	R*4	N.R.	ENP	C	R*4	N.R.
ENR	FA C	R*4	00011C	FEH	C	R*4	N.R.	FET	C	R*4	N.R.	FEW	C	R*4	N.R.
GLF	C	R*4	N.R.	HES	C	R*4	N.R.	HOO	C	R*4	N.R.	LC2	SF	I*4	000364
GWE	C	R*4	N.R.	MFC	FA C	R*4	00086C	RMI	C	R*4	N.R.	FCC	C	R*4	N.R.
SA5	C	R*4	N.R.	SA6	C	R*4	N.R.	SA7	C	R*4	N.R.	SEE	C	R*4	N.R.
SFC	SF C	R*4	000890	SHT	C	R*4	N.R.	SKT	C	R*4	N.R.	SK1	C	R*4	N.R.
SK2	C	R*4	N.R.	SK3	C	R*4	N.R.	SK4	C	R*4	N.R.	SK5	C	R*4	N.R.
SK6	C	R*4	N.R.	SK7	C	R*4	N.R.	SK8	C	R*4	N.R.	SK9	C	R*4	N.R.
SLM	C	R*4	N.R.	STH	F C	R*4	000398	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.
TCR	C	R*4	N.R.	TCT	C	R*4	N.R.	TMP	SF C	R*4	000BF4	TCC	C	R*4	N.R.
TOT	SF	R*4	000368	TVW	F C	R*4	000150	ULF	C	R*4	N.R.	VHL	C	R*4	N.R.
VIN	C	R*4	N.R.	WMC	C	R*4	N.R.	WAC	C	R*4	N.R.	WCC	C	R*4	N.R.
WEP	C	R*4	N.R.	WES	C	R*4	N.R.	WFC	C	R*4	N.R.	WFE	C	R*4	N.R.
WFR	C	R*4	N.R.	WFS	C	R*4	N.R.	WFW	C	R*4	N.R.	WHL	C	R*4	N.R.
WHT	C	R*4	N.R.	WLG	C	R*4	N.R.	WMC	C	R*4	N.R.	WPC	C	R*4	N.R.
WPH	C	R*4	N.R.	WRC	C	R*4	N.R.	WSC	C	R*4	N.R.	WST	C	R*4	N.R.
WTM	C	R*4	N.R.	WVA	C	R*4	N.R.	WVT	C	R*4	N.R.	XLA	SF	R*4	00036C
XLB	C	R*4	N.R.	XLR	SFA C	R*4	000988	XLW	C	R*4	N.R.	XMR	C	R*4	N.R.
ALFR	C	R*4	N.R.	ARHT	C	R*4	N.R.	ARVT	C	R*4	N.R.	BHPA	SFA C	R*4	000650
BHPP	F C	R*4	0009D4	BHPR	SFA C	R*4	000654	CDHT	C	R*4	N.R.	CDVT	C	R*4	N.R.
CKFF	F C	R*4	000050	CKHT	C	R*4	N.R.	CKVT	C	R*4	N.R.	DAM1	C	R*4	N.R.
DAM2	C	R*4	N.R.	DAM3	C	R*4	N.R.	DAM4	C	R*4	N.R.	DAM5	C	R*4	N.R.
DELR	C	R*4	N.R.	DVCL	C	R*4	N.R.	ELDN	C	R*4	N.R.	ELDT	C	R*4	N.R.
ELHT	C	R*4	N.R.	ELOA	C	R*4	N.R.	ELVT	C	R*4	N.R.	EMLF	C	R*4	N.R.
ETAP	C	R*4	N.R.	ETAT	F C	R*4	000198	FEHI	C	R*4	N.R.	FEHL	C	R*4	N.R.
FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.	FEWH	C	R*4	N.R.	FEWI	C	R*4	N.R.
GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.	GAP3	C	R*4	N.R.	GAP4	C	R*4	N.R.
GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.	GAP7	C	R*4	N.R.	HFIN	C	R*4	N.R.
LTHL	S C	I*4	000850	PEHF	SF C	R*4	000860	PLIN	C	R*4	N.R.	RELI	C	R*4	N.R.
RMAX	C	R*4	N.R.	SHPA	C	R*4	N.R.	SHPR	SF C	R*4	000898	SHTE	C	R*4	N.R.
SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.	SKAR	C	R*4	N.R.	SKCC	C	R*4	N.R.
SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.	SKHL	C	R*4	N.R.	SKHT	C	R*4	N.R.
SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.	SKPA	C	R*4	N.R.	SKPH	C	R*4	N.R.
SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.	SKTM	C	R*4	N.R.	SKVT	C	R*4	N.R.
SKWP	C	R*4	N.R.	SKWW	C	R*4	N.R.	SK10	C	R*4	N.R.	SK11	C	R*4	N.R.
SK12	C	R*4	N.R.	SK13	C	R*4	N.R.	SK14	C	R*4	N.R.	SK15	C	R*4	N.R.

SLMH		C	R*4	N.R.	STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.	SVTW		C	R*4	N.R.
SWTT		C	R*4	N.R.	TBH1	FA	C	R*4	0C04C0	TBH2		C	R*4	N.R.	TBTO	FA	C	P*4	0004D4
TCHT		C	R*4	N.R.	TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.
TIN2	SFA	C	R*4	000348	TIN4		C	R*4	N.R.	TMAX		C	R*4	N.R.	TOHL			R*4	0C0370
TOVW	SF	C	R*4	0009C4	TWTW	F	C	R*4	00035C	WFAL		C	R*4	N.R.	WENV		C	R*4	N.R.
WFUL		C	R*4	N.R.	WGSB		C	R*4	N.R.	WPDS		C	R*4	N.R.	WPEI		C	R*4	N.R.
WPRB		C	R*4	N.R.	WPRG		C	R*4	N.R.	WPRP		C	R*4	N.R.	WPCA		C	R*4	N.R.
WSCA		C	R*4	N.R.	XLBH	SF	C	R*4	0009BC	XLGD	F	C	R*4	000034	XLHL		C	R*4	N.R.
YLS2	F	C	R*4	0009C0	ALFCL		C	R*4	N.R.	ATMIY		C	R*4	N.R.	ATMCS	SF	XF	R*4	0C0000
CBARF		C	R*4	N.R.	CBARW		C	R*4	N.R.	CLDES		C	R*4	N.R.	CLEYE		C	R*4	N.R.
CPIND		C	R*4	N.R.	CPNUD		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPRO		C	R*4	N.R.
CPTOT		C	R*4	N.R.	DELTA		C	R*4	N.R.	DELTH	F	C	R*4	000384	DELWF		C	R*4	N.R.
DELWP		C	R*4	N.R.	ELTTH	SF		R*4	000374	DSWET		C	R*4	N.R.	DTCVW	SF		R*4	000378
ELDOA		C	R*4	N.R.	ENPCR		C	R*4	N.R.	ETAP2	F	C	R*4	000150	ETAP4		C	R*4	N.R.
FACTR	F	XF	R*4	000000	FETOT		C	R*4	N.R.	GMDD1		C	R*4	N.R.	HMAXD		C	R*4	N.R.
ICRUS		C	I*4	N.R.	ITCHL	SFA		I*4	000370	NCCPP		C	I*4	N.R.	NCXPJ		C	I*4	N.R.
NTOHL				000000	PFET2	F	C	R*4	000370	POWER	SF	XF	R*4	000000	REALJ		C	R*4	N.R.
RHPMR		C	R*4	N.R.	SIGMA		C	R*4	N.R.	SIGMP		C	R*4	N.R.	SKAMD		C	R*4	N.R.
SKBAL		C	R*4	N.R.	SKCB1		C	R*4	N.R.	SKGB2		C	R*4	N.R.	SKPDS		C	R*4	N.R.
SKPEI		C	R*4	N.R.	SKPES		C	R*4	N.R.	SKPRB		C	R*4	N.R.	SKRBF		C	R*4	N.R.
SKRCA		C	R*4	N.R.	SKSCA		C	R*4	N.R.	SLMVT		C	R*4	N.R.	STMAX	SF	C	R*4	0C08B8
SWETH		C	R*4	N.R.	SWEXP		C	R*4	N.R.	SWWET		C	R*4	N.R.	S2PHC		C	R*4	N.R.
TBCL1		C	R*4	N.R.	TECRP		C	R*4	N.R.	TBEM5		C	R*4	N.R.	TBPOW	FA	C	R*4	0C0530
TBSFC	FA	C	R*4	00051C	TCBAR		C	R*4	N.R.	THETA	FA	C	R*4	0008EC	TPFOP	S	C	R*4	0C08F8
TVCMR		C	R*4	N.R.	VBARH		C	R*4	N.R.	VBARV		C	R*4	N.R.	VCIVE		C	P*4	N.R.
VGASB		C	R*4	N.R.	VGASR		C	R*4	N.R.	WPAYL		C	R*4	N.R.	WPSTR		C	R*4	N.R.
XLALB		C	R*4	N.R.	XLBWO	F	C	R*4	000028	XLINT	F	XF	R*4	000000	XLRLA		C	R*4	N.R.
SQRT		XF	R*4	000000	FBXPR#		XF	R*4	000000	ALFDES		C	R*4	N.R.	BHPSUP	SF	C	R*4	0C0658
CBARHT		C	R*4	N.R.	CBARVT		C	R*4	N.R.	CBYLOA		C	R*4	N.R.	CLALPH		C	R*4	N.R.
CRSIND		C	R*4	N.R.	CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.	DELFCR		C	R*4	N.R.
DELPTH	F	C	R*4	0006BC	DELWFC		C	R*4	N.R.	DELWPL		C	R*4	N.R.	DELWST		C	R*4	N.R.
DLSWSH		C	R*4	N.R.	DLTAFE		C	R*4	N.R.	DLVLHL		C	R*4	N.R.	DNGIND		C	R*4	N.R.
DSPLMT		C	R*4	N.R.	DYLINC		C	R*4	N.R.	ELHLOA		C	R*4	N.R.	ELVLCA		C	R*4	N.R.
ETAIND		C	R*4	N.R.	ETAP4N		C	R*4	N.R.	EXPORG		C	R*4	N.R.	FEDRAG		C	R*4	N.R.
FIXIND		C	R*4	N.R.	GAMC11		C	R*4	N.R.	HULIND		C	R*4	N.R.	IBCOM#	F	XF	I*4	000000
INDCRU		C	I*4	N.R.	INDORG		C	I*4	N.R.	INDOYL		C	I*4	000328	INDETA		C	I*4	00082C
INDFIX		C	I*4	N.R.	INCHUL		C	I*4	N.R.	INDOPT		C	I*4	N.R.	INDOSW		C	I*4	N.R.
INDPOW		C	I*4	N.R.	INDPRF		C	I*4	N.R.	INDRDM		C	I*4	N.R.	INDTCL	S		I*4	000380
IPRINT		C	I*4	00084C	CPTIND		C	R*4	N.R.	OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.
RDMIND		C	R*4	N.R.	RECRHO		C	R*4	N.R.	RGTPOW	SF	XF	R*4	000000	SGTIND		C	R*4	N.R.
SKBLNT		C	R*4	N.R.	SKENV1		C	R*4	N.R.	SKENV2		C	R*4	N.R.	SKPDSZ		C	R*4	N.R.
SKVTAR		C	R*4	N.R.	SSIGMA		C	R*4	N.R.	STHETA		C	R*4	N.R.	TBCDWI		C	R*4	N.R.
TEBAP4		C	R*4	N.R.	THETMR		C	R*4	N.R.	TOLIND	F	C	R*4	000320	VGBOVH		C	R*4	N.R.
WBALNT		C	R*4	N.R.	WPAYLO		C	R*4	N.R.	XTGTA2	F	C	R*4	000334	XTGTA4		C	R*4	N.R.

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.

OPTIND	R*4	N.R.	HULIND	R*4	N.R.	CYLIND	R*4	N.R.	DRGIND	R*4	N.R.
CSWIND	R*4	N.R.	FIXIND	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WC	R*4	000024	XLBWO	R*4	000028	XLPLA	R*4	N.R.
VGBCVF	R*4	N.R.	XLGC	R*4	000034	HMAXD	R*4	N.R.	RHCRHO	R*4	N.R.
VMC	R*4	N.R.	EMLF	R*4	N.R.	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	000C50	VDIVE	R*4	N.R.	HOO	R*4	N.R.	RCO	R*4	N.R.
TCC	R*4	N.R.	CAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLCA	R*4	N.R.
ELVLCA	R*4	N.R.	CAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TC1	R*4	N.R.	SLM	R*4	N.R.	APHT	R*4	N.R.
TCHT	R*4	N.R.	VBARH	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELCN	R*4	N.R.
ELCT	R*4	N.R.	ELCOA	R*4	N.R.	CLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLHL	R*4	N.R.	CVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENF	R*4	00011C
WVA	R*4	N.R.	CAM1	R*4	N.R.	CAM2	R*4	N.R.	DMR	R*4	N.R.
CAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVW	R*4	000150	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	00015C
ETAP4N	R*4	N.R.	TBEMS	R*4	N.R.	TB84P4	R*4	N.R.	GAP3	R*4	N.R.
CAM4	R*4	N.R.	ENF	R*4	N.R.	ETAT	R*4	000198	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
CAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CCC	R*4	N.R.	CLALPH	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCLL	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFE	R*4	N.R.
WFLL	R*4	N.R.	CELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKRCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKCEL	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLG	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWP	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKREF	R*4	N.R.	SKPF	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK1C	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLIND	R*4	000320	XTGTA2	R*4	000334	TIN2	R*4	000348
TWTW	R*4	00035C	PFET2	R*4	000370	DELTH	R*4	000384	STH	R*4	000398
CRSIND	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCP	R*4	N.R.
DELWFL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPFL	R*4	N.R.	FF	R*4	000484	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	0004C0	TBTC	R*4	000404	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	000510	TBPCW	R*4	000530	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	000640	BHPA	R*4	000650
BHPR	R*4	000654	BHPSUP	R*4	000658	BHT	R*4	N.R.	BLP	R*4	000660
ER	R*4	000664	BS	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARFT	R*4	N.R.	CBARVT	R*4	N.R.	CBAKW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPNLD	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTCT	R*4	N.R.

CRT	R*4	N.R.	CTP	R*4	N.R.	CV	R*4	N.R.	CX	R*4	000680
CLOES	R*4	N.R.	CE	R*4	N.R.	DELRTH	R*4	000690	DELTA	R*4	N.R.
CF	R*4	N.R.	CSPLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELA	R*4	N.R.	ELCA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	N.R.	ETAP	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETCT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	000714	FP	R*4	000718	ETAP4	R*4	N.R.	GAMC11	R*4	N.R.
GLF	R*4	N.R.	GMCC1	R*4	N.R.	H	R*4	000818	ICRUS	I*4	N.R.
INDCRL	I*4	N.R.	INDDRC	I*4	N.R.	INDDYL	I*4	000828	INDETA	I*4	00082C
INDFIX	I*4	N.R.	INDHUL	I*4	N.R.	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPCH	I*4	N.R.	INDPRP	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	000840
LTHL	I*4	000850	NOCPP	I*4	N.R.	NOXPJ	I*4	N.R.	ONE	R*4	N.R.
PEFF	R*4	000860	PI	R*4	000864	Q	R*4	N.R.	RHO	R*4	000860
REALJ	R*4	N.R.	RHPMR	R*4	N.R.	R	R*4	000878	RN	R*4	N.R.
SA	R*4	N.R.	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	000890	SHPA	R*4	N.R.	SHPR	R*4	000898	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	0008B0	STHETA	R*4	N.R.	STMAX	R*4	0008B8	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	0008EC
TMAX	R*4	N.R.	TMP	R*4	0008F4	TPROP	R*4	0008F8	TR	R*4	0008FC
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	000910	W	R*4	000914	WBAL	R*4	N.R.	WBALNT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	000930	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WPC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPES	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPFG	R*4	N.R.	WPRP	R*4	N.R.	WPSTR	R*4	N.R.	WPC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WENV	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBF	R*4	000980	XLFL	R*4	N.R.	XLR	R*4	000988	XLW	R*4	N.R.
YLS2	R*4	000990	TCVW	R*4	000994	DMR	R*4	000998	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPF	R*4	0009D4	SEE	R*4	N.R.			

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
27	CCCE4C	350	CCC6BC	1	C006D6 NR	3	0007F0
2	CCCE7C	4	CCC87C	5	CC08F8	10	000984
12	CCC9DE	13	CCC9F2	7	CC0A02	8	000A12
6	CCCA98	531	CC0B6E	541	000B9C	369	000BA8

CPTIONS IN EFFECT NAME= MAIN,CPT=02,LINECNT=54,SIZE=0000K,

CPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 137.,PROGRAM SIZE = 3078

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 95K BYTES OF CORE NOT USED

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      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002              SUBROUTINE TRALT (ITRALT)
              C**** MEMBER NAME B81TRALT
              C       PAGE 1    INPUT   LOC 0001 THRU 0050
ISN 0003              COMMON      OPTIND     ,FULIND     ,DYLIND     ,ORGIND     ,OSWIND
                     1FIXIND     ,RDMIND     ,PFFIND     ,ETAIND     ,WC         ,XLBWO
                     2XLRLA      ,VGBCVH     ,XLCD       ,HMAXD      ,RHORHO     ,VMC
                     3EMLF       ,CK1        ,DELWF      ,CKFF       ,VDIVE      ,HOG
                     4ROO        ,TOO        ,GAP1(5)    ,SGTIND(12),ELHLOA      ,ELVLOA
                     5GAP2(6)
              C       PAGE 2    INPUT   LOC 0051 THRU 0100
ISN 0004              COMMON      AR         ,WS         ,TCR        ,TCT        ,SLM
                     1ARHT       ,TCHT       ,VEARH      ,SLMH       ,ARVT       ,TCVT
                     2VEARV      ,SLMVT      ,ELDN       ,ELDT       ,ELDOA      ,DLSWSH
                     3DSWET      ,CLVLFL     ,CVCL       ,CBYLOA     ,ENR        ,WVA
                     4CAM1       ,CAM2       ,EMR        ,DAM3       ,CLEYE      ,THETMR
                     5XC         ,XMR        ,TVCMR      ,VT         ,CTSIGH     ,TVW
                     6HES        ,TINY       ,ETAP2      ,ETAP4N     ,TBEM5(5)   ,TB8AP4(5)
                     7GAP3
              C       PAGE 3    INPUT   LOC 0101 THRU 140
ISN 0005              COMMON      CAM4       ,ENF        ,ETAT       ,HC         ,VC
                     1ATMIY      ,CDVT       ,CDHT       ,DAM5       ,DLTAFE     ,FEDRAG
                     2EXFDRG     ,CCC        ,CLALPH     ,CKVT       ,CKHT       ,CKF
                     3CKW        ,RELI       ,TCLN       ,TBCL1(8)   ,TBCDWI(8)  ,GAP4(4)
              C       PAGE 4  INPUT   LOC 141 THRU 200   WEIGHT DATA
ISN 0006              COMMON      WFE        ,WFLL       ,DELWFC     ,DELWP      ,DELWST
                     1SKCC       ,SKRC       ,SKSC       ,SKFW       ,SKTM       ,SKRCA
                     2SKSCA      ,SKMC       ,SKAC       ,SKHL       ,SKENV1     ,SKENV2
                     3SKCB1      ,SKCB2      ,SKELNT     ,SKBAL      ,SKLG       ,SKWW
                     4ELF        ,RMI        ,SKWP       ,SKHT       ,SKVT       ,SKPRB
                     5SKRBF      ,SKPF       ,SKAMD      ,SKAR       ,SKPA       ,SKVTAR
                     6SKPDS      ,SKPDSZ     ,SK1        ,SKFS       ,SKPEI      ,SKPES
                     7SK1        ,SK2        ,CK3        ,DK4        ,SK5        ,SK6
                     8SK7        ,SK8        ,SK9        ,SK10       ,SK11       ,SK12
                     9SK13       ,SK14       ,SK15       ,PLIN       ,GAP5(3)
              C       PAGE 5  INPUT   LOC 201 THRU 300
ISN 0007              COMMON      TOLIND(5)  ,XTGTA2(5)  ,TIN2(5)    ,TWTW(5)    ,PFET2(5)
                     1DELTH(5)   ,STH(5)     ,CRSIND(5)  ,XTGTA4(5)  ,TIN4(5)    ,VIN(5)
                     2DELR(5)    ,RMAX(5)    ,DELFCR(5)  ,ENPCR(5)   ,DELWPL(5)  ,STFW(5)
                     3HFIN(5)    ,GAP6(10)
              C       PAGE 6   INPUT  LOC 301 THRU 400
ISN 0008              COMMON      CYCPFL     ,FF         ,SK3        ,SK4        ,TBH1(5)
                     1TBTO(5)    ,TBH2(5)    ,TBCRP(5)   ,TBSFC(8)   ,TBPOW(8)   ,GAP7(60)
              C       WORKING COMMON
ISN 0009              COMMON  ALFDES,ALFDL,ALFF,AML,
                     1          BHPA,BHPR,BHPSLP,BHT,BLP,BP,BS,BVT,
                     2 CEARF,CEARHT,CEARVT,CEARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPR
                     3,CPTOT,CRT,CTF,CV,CX,CLDES,CE,
                     4 DELRTH,DELTA,DF,DSPLMT,        ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP,
                     5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4
ISN 0010              COMMON GAMD11(3,15),GLF,GMDC1(16),H,
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ORIGINAL PAGE IS OF POOR QUALITY

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                      7 ICRUS,INCCRU,INCCRG,INCCYL,INDETA,INDFIX,INDFUL,INDOPT,INCOSW,    00510000
                      8 INDPOW,INDPRF,INDRDM,IPRINT                                       00520000
ISN 0011                COMMON LTHL,NCCPP,NCXP,,CWE,PEHF,PI,Q,RHC,REALJ,RHPMR,R,RN        00530000
ISN 0012                COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPR,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST, 00540000
                     1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC           00550000
ISN 0013                COMMON T,TAF,TCEAF,THETA,TMAX,TMP,TPRCP,TR,ULF,VGASB,VGASR,VHL,V    00560000
ISN 0014                COMMON W,WBAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,             00570000
                     1 WGSB,WFL,WHT,WLC,WMC,WPAYL,WPC,WPDS,WPEI,WPF,WPRB,WPRG,WPRP,WPSTR 00580000
                     2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                  00590000
ISN 0015                COMMON XLALB,XLE,XLBH,XLFL,XLR,XLW,YLS2,TCVW                        00600000
ISN 0016                COMMON DMR,SIGMR,AF,BFFP,SEE                                        00610001
ISN 0017                HCLD  = H                                                           00610000
ISN 0018                H = HFIN(ITRALT)                                                    00620000
ISN 0019                IF(IPRINT.NE.1)GO TO 300                                            00630000
ISN 0021                WRITE(6,100)HCLD,H                                                  00640000
ISN 0022          100 FORMAT( 7X,'TRANSFER ALTITUDE FROM  ',F8.0,2X,'FEET'/18X,'TO',4X,     00650000
                     1F8.0,2X,'FEET'/)                                                    00660000
ISN 0023                WRITE(6,102)                                                        00670000
ISN 0024          102 FORMAT(7X,'TIME',8X,'RANGE',6X,'FUEL USED',6X,'WEIGHT',7X,'ALT'/    00680000
                     17X,'(HOURS)',5X,'(N.MI)',6X,'(POUNDS)',5X,'(POUNDS)',6X,'(FEET)'/)  00690000
ISN 0025                WRITE(6,103)ST,R,WF,W,HCLD                                          00700000
ISN 0026                WRITE(6,103)ST,R,WF,W,H                                             00710000
ISN 0027          103 FORMAT(7X,F7.2,4X,F8.1,4X,F9.0,4X,F10.0,4X,F8.0)                    00720000
ISN 0028          300 RETURN                                                              00730000
ISN 0029              END                                                                 00740000
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NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
H	SF C	R*4	000818	Q	C	R*4	N.R.	R	F C	R*4	000878	T	C	R*4	N.R.
V	C	R*4	N.R.	W	F C	R*4	000914	AF	C	R*4	N.R.	AR	C	R*4	N.R.
BR	C	R*4	N.R.	BS	C	R*4	N.R.	CB	C	R*4	N.R.	CV	C	R*4	N.R.
CX	C	R*4	N.R.	DH	C	R*4	N.R.	EN	C	R*4	N.R.	FF	C	R*4	N.R.
FM	C	R*4	N.R.	FP	C	R*4	N.R.	HC	C	R*4	N.R.	PI	C	R*4	N.R.
RN	C	R*4	N.R.	SA	C	R*4	N.R.	ST	F C	R*4	000880	SW	C	R*4	N.R.
TR	C	R*4	N.R.	VC	C	R*4	N.R.	VT	C	R*4	N.R.	WE	C	R*4	N.R.
WF	F C	R*4	000930	WO	C	R*4	N.R.	WS	C	R*4	N.R.	WW	C	R*4	N.R.
XC	C	R*4	N.R.	AMC	C	R*4	N.R.	BHT	C	R*4	N.R.	BLP	C	R*4	N.R.
BMR	C	R*4	N.R.	BVT	C	R*4	N.R.	CCP	C	R*4	N.R.	CCT	C	R*4	N.R.
CDC	C	R*4	N.R.	CDV	C	R*4	N.R.	CKF	C	R*4	N.R.	CKW	C	R*4	N.R.
CK1	C	R*4	N.R.	CLW	C	R*4	N.R.	CRT	C	R*4	N.R.	CTP	C	R*4	N.R.
DK3	C	R*4	N.R.	DK4	C	R*4	N.R.	DMR	C	R*4	N.R.	ELC	C	R*4	N.R.
ELF	C	R*4	N.R.	ELN	C	R*4	N.R.	ELT	C	R*4	N.R.	ENP	C	R*4	N.R.
ENR	C	R*4	N.R.	FEH	C	R*4	N.R.	FET	C	R*4	N.R.	FEW	C	R*4	N.R.
GLF	C	R*4	N.R.	HES	C	R*4	N.R.	HOO	C	R*4	N.R.	CWE	C	R*4	N.R.
RHO	C	R*4	N.R.	RMI	C	R*4	N.R.	ROO	C	R*4	N.R.	SA5	C	R*4	N.R.
SA6	C	R*4	N.R.	SA7	C	R*4	N.R.	SEE	C	R*4	N.R.	SFC	C	R*4	N.R.
SHT	C	R*4	N.R.	SKT	C	R*4	N.R.	SK1	C	R*4	N.R.	SK2	C	R*4	N.R.
SK3	C	R*4	N.R.	SK4	C	R*4	N.R.	SK5	C	R*4	N.R.	SK6	C	R*4	N.R.
SK7	C	R*4	N.R.	SK8	C	R*4	N.R.	SK9	C	R*4	N.R.	SLM	C	R*4	N.R.
STH	C	R*4	N.R.	SVT	C	R*4	N.R.	TAF	C	R*4	N.R.	TCR	C	R*4	N.R.
TCT	C	R*4	N.R.	TMP	C	R*4	N.R.	TOO	C	R*4	N.R.	TVW	C	R*4	N.R.
ULF	C	R*4	N.R.	VHL	C	R*4	N.R.	VIN	C	R*4	N.R.	VMC	C	R*4	N.R.
WAC	C	R*4	N.R.	WCC	C	R*4	N.R.	WEP	C	R*4	N.R.	WES	C	R*4	N.R.
WFC	C	R*4	N.R.	WFE	C	R*4	N.R.	WFR	C	R*4	N.R.	WFS	C	R*4	N.R.
WFW	C	R*4	N.R.	WHL	C	R*4	N.R.	WHT	C	R*4	N.R.	WLG	C	R*4	N.R.
WMC	C	R*4	N.R.	WPC	C	R*4	N.R.	WPH	C	R*4	N.R.	WRC	C	R*4	N.R.
WSC	C	R*4	N.R.	WST	C	R*4	N.R.	WTM	C	R*4	N.R.	WVA	C	R*4	N.R.
WVT	C	R*4	N.R.	XLB	C	R*4	N.R.	XLR	C	R*4	N.R.	XLW	C	R*4	N.R.
XMR	C	R*4	N.R.	ALFR	C	R*4	N.R.	ARHT	C	R*4	N.R.	ARVT	C	R*4	N.R.
BHPA	C	R*4	N.R.	BHPP	C	R*4	N.R.	BHPR	C	R*4	N.R.	CDHT	C	R*4	N.R.
CDVT	C	R*4	N.R.	CKFF	C	R*4	N.R.	CKHT	C	R*4	N.R.	CKVT	C	R*4	N.R.
DAM1	C	R*4	N.R.	DAM2	C	R*4	N.R.	DAM3	C	R*4	N.R.	DAM4	C	R*4	N.R.
DAM5	C	R*4	N.R.	DELR	C	R*4	N.R.	DVOL	C	R*4	N.R.	ELDN	C	R*4	N.R.
ELDT	C	R*4	N.R.	ELHT	C	R*4	N.R.	ELOA	C	R*4	N.R.	ELVT	C	R*4	N.R.
EMLF	C	R*4	N.R.	ETAP	C	R*4	N.R.	ETAT	C	R*4	N.R.	FEHI	C	R*4	N.R.
FEHL	C	R*4	N.R.	FEHT	C	R*4	N.R.	FEVT	C	R*4	N.R.	FEWH	C	R*4	N.R.
FEWI	C	R*4	N.R.	GAP1	C	R*4	N.R.	GAP2	C	R*4	N.R.	GAP3	C	R*4	N.R.
GAP4	C	R*4	N.R.	GAP5	C	R*4	N.R.	GAP6	C	R*4	N.R.	GAP7	C	R*4	N.R.
HFIN	F C	R*4	000474	HOLD	SF	R*4	000148	LTHL	C	I*4	N.R.	PEHF	C	R*4	N.R.
PLIN	C	R*4	N.R.	RELI	C	R*4	N.R.	RMAX	C	R*4	N.R.	SHPA	C	R*4	N.R.
SHPR	C	R*4	N.R.	SHTE	C	R*4	N.R.	SHTW	C	R*4	N.R.	SKAC	C	R*4	N.R.
SKAR	C	R*4	N.R.	SKCC	C	R*4	N.R.	SKFS	C	R*4	N.R.	SKFW	C	R*4	N.R.
SKHL	C	R*4	N.R.	SKHT	C	R*4	N.R.	SKLG	C	R*4	N.R.	SKMC	C	R*4	N.R.
SKPA	C	R*4	N.R.	SKPH	C	R*4	N.R.	SKRC	C	R*4	N.R.	SKSC	C	R*4	N.R.
SKTM	C	R*4	N.R.	SKVT	C	R*4	N.R.	SKWP	C	R*4	N.R.	SKWW	C	R*4	N.R.
SK10	C	R*4	N.R.	SK11	C	R*4	N.R.	SK12	C	R*4	N.R.	SK13	C	R*4	N.R.
SK14	C	R*4	N.R.	SK15	C	R*4	N.R.	SLMH	C	R*4	N.R.	STPW	C	R*4	N.R.
SVTE	C	R*4	N.R.	SVTW	C	R*4	N.R.	SWTT	C	R*4	N.R.	TBH1	C	R*4	N.R.

TBH2	C	R*4	N.R.	TBTC	C	R*4	N.R.	TCHT	C	R*4	N.R.	TCLA	C	R*4	N.R.	
TCVT	C	R*4	N.R.	TINY	C	R*4	N.R.	TIN2	C	R*4	N.R.	TIN4	C	R*4	N.R.	
TMAX	C	R*4	N.R.	TCVM	C	R*4	N.R.	TWTW	C	R*4	N.R.	WBAL	C	R*4	N.R.	
WENV	C	R*4	N.R.	WFUL	C	R*4	N.R.	WGSB	C	R*4	N.R.	WPDS	C	R*4	N.R.	
WPEI	C	R*4	N.R.	WPRB	C	R*4	N.R.	WPRG	C	R*4	N.R.	WPRP	C	R*4	N.R.	
WRCA	C	R*4	N.R.	WSCA	C	R*4	N.R.	XLBH	C	R*4	N.R.	XLGD	C	R*4	N.R.	
XLHL	C	R*4	N.R.	XYLS2	C	R*4	N.R.	ALFDL	C	R*4	N.R.	ATMIY	C	R*4	N.R.	
CBARF	C	R*4	N.R.	CBARW	C	R*4	N.R.	CLDES	C	R*4	N.R.	CLEYL	C	R*4	N.R.	
CPIND	C	R*4	N.R.	CPNLD	C	R*4	N.R.	CPPAR	C	R*4	N.R.	CPPFC	C	R*4	N.R.	
CPTOT	C	R*4	N.R.	DELTA	C	R*4	N.R.	DELTH	C	R*4	N.R.	DELWF	C	R*4	N.R.	
DELWP	C	R*4	N.R.	DSWET	C	R*4	N.R.	ELDOA	C	R*4	N.R.	ENPCR	C	R*4	N.R.	
ETAP2	C	R*4	N.R.	ETAP4	C	R*4	N.R.	FETOT	C	R*4	N.R.	GMDD1	C	R*4	N.R.	
HMAXD	C	R*4	N.R.	ICRLS	C	I*4	N.R.	NOCPP	C	I*4	N.R.	NCXPJ	C	I*4	N.R.	
PFET2	C	R*4	N.R.	REALJ	C	R*4	N.R.	RHPMR	C	R*4	N.R.	SIGMA	C	R*4	N.R.	
SIGMR	C	R*4	N.R.	SKAMD	C	R*4	N.R.	SKBAL	C	R*4	N.R.	SKGB1	C	R*4	N.R.	
SKGB2	C	R*4	N.R.	SKPDS	C	P*4	N.R.	SKPEI	C	R*4	N.R.	SKPES	C	R*4	N.R.	
SKPR8	C	R*4	N.R.	SKRBF	C	R*4	N.R.	SKRCA	C	R*4	N.R.	SKSCA	C	R*4	N.R.	
SLMVT	C	R*4	N.R.	STMAX	C	P*4	N.R.	SWETH	C	R*4	N.R.	SWEXP	C	R*4	N.R.	
SWWET	C	R*4	N.R.	S2RFC	C	R*4	N.R.	TBCL1	C	R*4	N.R.	TBCRP	C	R*4	N.R.	
TBEMS	C	R*4	N.R.	TEPOW	C	R*4	N.R.	TBSFC	C	R*4	N.R.	TCBAR	C	R*4	N.R.	
THETA	C	R*4	N.R.	TFRCP	C	P*4	N.R.	TRALT		R*4	00014C	TVCMR	C	P*4	N.R.	
VBARH	C	R*4	N.R.	VBARV	C	R*4	N.R.	VDIVE	C	R*4	N.R.	VGASB	C	R*4	N.R.	
VGASR	C	R*4	N.R.	WPAYL	C	R*4	N.R.	WPSTP	C	R*4	N.R.	XLALB	C	R*4	N.R.	
XLBWC	C	R*4	N.R.	XLRLA	C	R*4	N.R.	ALFDES	C	R*4	N.R.	BHPSUP	C	R*4	N.R.	
CBARHT	C	R*4	N.R.	CBARVT	C	R*4	N.R.	CBYLOA	C	R*4	N.R.	CLALPH	C	R*4	N.R.	
CRSIND	C	R*4	N.R.	CTSIGH	C	R*4	N.R.	CYCPRL	C	R*4	N.R.	DELFCF	C	R*4	N.R.	
DELRTH	C	R*4	N.R.	DELWFC	C	R*4	N.R.	DELWPL	C	R*4	N.R.	DELWST	C	R*4	N.R.	
DLSWSH	C	R*4	N.R.	DLTAPE	C	R*4	N.R.	DLVLHL	C	R*4	N.R.	DRGIND	C	P*4	N.R.	
DSPLMT	C	R*4	N.R.	DYLIND	C	R*4	N.R.	ELHLOA	C	R*4	N.R.	ELVLCA	C	P*4	N.R.	
ETAIND	C	R*4	N.R.	ETAP4A	C	R*4	N.R.	EXPORG	C	R*4	N.R.	FECRAG	C	R*4	N.R.	
FIXINC	C	R*4	N.R.	GAMD11	C	R*4	N.R.	HULIND	C	R*4	N.R.	IBCOM4	F XF	I*4	000000	
INDCRU	C	I*4	N.R.	INCDRG	C	I*4	N.R.	INDDYL	C	I*4	N.R.	INDETA	C	I*4	N.R.	
INDFIX	C	I*4	N.R.	INDHUL	C	I*4	N.R.	INDOPT	C	I*4	N.R.	INDCSW	C	I*4	N.R.	
INDPOW	C	I*4	N.R.	INDPRP	C	I*4	N.R.	INDRDM	C	I*4	N.R.	IPRINT	C	I*4	00084C	
ITRALT	F	I*4	000150	OPTIND	C	R*4	N.R.	OSWIND	C	R*4	N.R.	PRPIND	C	R*4	N.R.	
RDMINC	C	R*4	N.R.	RHORHO	C	R*4	N.R.	SGTIND	C	R*4	N.R.	SKBLNT	C	R*4	N.R.	
SKENV1	C	R*4	N.R.	SKENV2	C	R*4	N.R.	SKPDSZ	C	R*4	N.R.	SKVTAR	C	R*4	N.R.	
SSIGMA	C	R*4	N.R.	STFETA	C	R*4	N.R.	TBCOWI	C	R*4	N.R.	TBBAP4	C	R*4	N.R.	
THETMR	C	R*4	N.R.	TCLIND	C	R*4	N.R.	VGBOVH	C	R*4	N.R.	WBALNT	C	R*4	N.R.	
WPAYLC	C	R*4	N.R.	XTGTA2	C	R*4	N.R.	XTGTA4	C	R*4	N.R.					

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***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	HULINC	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.
OSWIND	R*4	N.R.	FIXINC	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAIND	R*4	N.R.	WC	R*4	N.R.	XLBWO	R*4	N.R.	XLRLA	R*4	N.R.
VGBOVH	R*4	N.R.	XLGD	R*4	N.R.	HMAXD	R*4	N.R.	RHORHO	R*4	N.R.
VPC	R*4	N.R.	EMLF	R*4	N.R.	CK1	P*4	N.R.	DELWF	R*4	N.R.

CKFF	R*4	N.R.	VCIVE	R*4	N.R.	HOO	R*4	N.R.	RCC	R*4	N.R.
TCC	R*4	N.R.	CAPI	R*4	N.R.	SGTIND	R*4	N.R.	ELHLCA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	N.R.	WS	R*4	N.R.
TCR	R*4	N.R.	TCT	R*4	N.R.	SLM	R*4	N.R.	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARF	R*4	N.R.	SLMH	R*4	N.R.	APVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELCN	R*4	N.R.
ELCT	R*4	N.R.	ELCCA	R*4	N.R.	DLSWSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLFL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	EAR	R*4	N.R.
WVA	R*4	N.R.	CAM1	R*4	N.R.	CAM2	R*4	N.R.	PWR	R*4	N.R.
CAM3	R*4	N.R.	CLEVE	R*4	N.R.	THETAP	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	N.R.	TVCMR	R*4	N.R.	VT	R*4	N.R.	CTSIGH	R*4	N.R.
TVW	R*4	N.R.	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEMS	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
CAM4	R*4	N.R.	ENF	R*4	N.R.	ETAT	R*4	N.R.	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
CAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CCC	R*4	N.R.	CLALFF	R*4	N.R.	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKW	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCLI	R*4	N.R.	TBCDWI	R*4	N.R.	GAP4	R*4	N.R.	WFF	R*4	N.R.
WFLL	R*4	N.R.	CELWFC	R*4	N.R.	DELWP	R*4	N.R.	DELWST	R*4	N.R.
SKCC	R*4	N.R.	SKRC	R*4	N.R.	SKSC	R*4	N.R.	SKFW	R*4	N.R.
SKTM	R*4	N.R.	SKPCA	R*4	N.R.	SKSCA	R*4	N.R.	SKMC	R*4	N.R.
SKAC	R*4	N.R.	SKHL	R*4	N.R.	SKENV1	R*4	N.R.	SKENV2	R*4	N.R.
SKGE1	R*4	N.R.	SKGB2	R*4	N.R.	SKBLNT	R*4	N.R.	SKBAL	R*4	N.R.
SKLC	R*4	N.R.	SKWW	R*4	N.R.	ELF	R*4	N.R.	RMI	R*4	N.R.
SKWF	R*4	N.R.	SKHT	R*4	N.R.	SKVT	R*4	N.R.	SKPRB	R*4	N.R.
SKREF	R*4	N.R.	SKPH	R*4	N.R.	SKAMD	R*4	N.R.	SKAR	R*4	N.R.
SKPA	R*4	N.R.	SKVTAR	R*4	N.R.	SKPDS	R*4	N.R.	SKPDSZ	R*4	N.R.
SKT	R*4	N.R.	SKFS	R*4	N.R.	SKPEI	R*4	N.R.	SKPES	R*4	N.R.
SK1	R*4	N.R.	SK2	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
SK5	R*4	N.R.	SK6	R*4	N.R.	SK7	R*4	N.R.	SK8	R*4	N.R.
SK9	R*4	N.R.	SK10	R*4	N.R.	SK11	R*4	N.R.	SK12	R*4	N.R.
SK13	R*4	N.R.	SK14	R*4	N.R.	SK15	R*4	N.R.	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLINC	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
TWTW	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSINC	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
DELR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCR	R*4	N.R.
DELWFL	R*4	N.R.	STPW	R*4	N.R.	HFIN	R*4	000474	GAP6	R*4	N.R.
CYCPRL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	N.R.	SK4	R*4	N.R.
TBH1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPCW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	N.R.	ALFF	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHPR	R*4	N.R.	BHPSLP	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
ER	R*4	N.R.	ES	R*4	N.R.	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARFT	R*4	N.R.	CBARVT	R*4	N.R.	CBARW	R*4	N.R.	CCP	R*4	N.R.
CCT	R*4	N.R.	CDV	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPNLC	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTCT	R*4	N.R.
CPT	R*4	N.R.	CTF	R*4	N.R.	CV	R*4	N.R.	CX	R*4	N.R.
CLCES	R*4	N.R.	CB	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DF	R*4	N.R.	DSPLNT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELN	R*4	N.R.	ELCA	R*4	N.R.	ELT	R*4	N.R.	ELVT	R*4	N.R.
EN	R*4	N.R.	ETAF	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.

FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETCT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEXT	R*4	N.R.
FN	R*4	N.R.	FF	R*4	N.R.	ETAP4	R*4	N.R.	GAMDII	R*4	N.R.
CLF	R*4	N.R.	GMCD1	R*4	N.R.	H	R*4	000818	ICHUS	I*4	N.R.
INDCRC	I*4	N.R.	INDCRG	I*4	N.R.	INDDYL	I*4	N.R.	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDHUL	I*4	N.R.	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPCW	I*4	N.R.	INDPRF	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	00084C
LTFL	I*4	N.R.	NCCFF	I*4	N.R.	NOXPJ	I*4	N.R.	CWE	R*4	N.R.
PEFF	R*4	N.R.	PI	R*4	N.R.	Q	R*4	N.R.	RHO	R*4	N.R.
REALJ	R*4	N.R.	RFFMR	R*4	N.R.	R	R*4	000878	RN	R*4	N.R.
SA	R*4	N.R.	SAS	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	N.R.
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	000860	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	N.R.
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	N.R.	SWETH	R*4	N.R.
SWEXP	R*4	N.R.	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.
TMAX	R*4	N.R.	TMF	R*4	N.R.	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	N.R.	VGASE	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	N.R.	W	R*4	000914	WBAL	R*4	N.R.	WBALAT	R*4	N.R.
WCC	R*4	N.R.	WE	R*4	N.R.	WEP	R*4	N.R.	WES	R*4	N.R.
WF	R*4	000930	WFC	R*4	N.R.	WFR	R*4	N.R.	WFS	R*4	N.R.
WFW	R*4	N.R.	WGSE	R*4	N.R.	WHL	R*4	N.R.	WHT	R*4	N.R.
WLG	R*4	N.R.	WMC	R*4	N.R.	WPAYL	R*4	N.R.	WPC	R*4	N.R.
WPDS	R*4	N.R.	WPEI	R*4	N.R.	WPH	R*4	N.R.	WPRB	R*4	N.R.
WPRG	R*4	N.R.	WPRF	R*4	N.R.	WPSTR	R*4	N.R.	WRC	R*4	N.R.
WRCA	R*4	N.R.	WSC	R*4	N.R.	WSCA	R*4	N.R.	WST	R*4	N.R.
WTM	R*4	N.R.	WVT	R*4	N.R.	WW	R*4	N.R.	WPAYLO	R*4	N.R.
WAC	R*4	N.R.	WEAT	R*4	N.R.	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLEF	R*4	N.R.	XLHL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	N.R.	TCVW	R*4	N.R.	DMR	R*4	N.R.	SIGMR	R*4	N.R.
AF	R*4	N.R.	BHPF	R*4	N.R.	SEE	R*4	N.R.			

300 000230

OPTIONS IN EFFECT NAME= MAIN,OPT=02,LINECNT=54,SIZE=0000K,

OPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 28 ,PROGRAM SIZE = 620

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 111K BYTES OF CORE NOT USED

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COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                   SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002          SUBROUTINE WGHTR                                                          00010000
            C**** MEMBER NAME B81WGHTR                                                      00020000
            C       PAGE 1    INPUT    LOC 0001 THRU 0050                                   00030000
ISN 0003            COMMON      OPTIND     ,FULIND     ,DYLIND     ,ERGIND     ,OSWIND     ,00040000
                   1FIXIND      ,PDMIND     ,PFFIND     ,ETAIND     ,WC         ,XLBWO      ,00050000
                   2XLRLA       ,VGBCVP     ,XLCD       ,HMAXD      ,RHCRHO     ,VMC        ,00060000
                   3EMLF        ,CKI        ,CELWF      ,CKFF       ,VCIVE      ,HCC        ,00070000
                   4RCC         ,TCC        ,GAP1(5)    ,SGTIND(12) ,ELHLOA     ,ELVLOA     ,00080000
                   5GAP2(6)                                                                 00090000
            C       PAGE 2    INPUT    LOC 0051 THRU 0100                                   00100000
ISN 0004            COMMON      AR         ,WS         ,TCR        ,TCT        ,SLM        ,00110000
                   1APFT        ,TCFT       ,VEARH      ,SLMH       ,ARVT       ,TCVT       ,00120000
                   2VBARV       ,SLMVT      ,ELEN       ,ELDT       ,ELCOA      ,DLSWSH     ,00130000
                   3DSWET       ,CLVLHL     ,CVCL       ,CBYLOA     ,ENR        ,WVA        ,00140000
                   4CAM1        ,CAM2       ,EMF        ,DAM3       ,CLEYE      ,THETMR     ,00150000
                   5XC          ,XMR        ,TVCMR      ,VT         ,CTSIGH     ,TVW        ,00160000
                   6HES         ,TINY       ,ETAP2      ,ETAP4N     ,TBEM5(5)   ,TB8AP4(5)  ,00170000
                   7GAF3                                                                    00180000
            C       PAGE 3    INPUT    LOC 0101 THRU 140                                    00190000
ISN 0005            COMMON      CAM4       ,ENF        ,ETAT       ,HC         ,VC         ,00200000
                   1ATMIY       ,CDVT       ,CDHT       ,DAM5       ,DLTAFE     ,FEDRAG     ,00210000
                   2EXFDRG      ,CDC        ,CLALPH     ,CKVT       ,CKHT       ,CKF        ,00220000
                   3CKW         ,RELI       ,TCLN       ,TBCL1(8)   ,TBCDWI(8)  ,GAP4(4)     00230000
            C       PAGE 4 INPUT   LOC 141 THRU 200   WEIGHT DATA                           00240000
ISN 0006            COMMON      WFE        ,WFUL       ,DELWFC     ,DELWP      ,DELWST     ,00250000
                   1SKCC        ,SKRC       ,SKSC       ,SKFW       ,SKTM       ,SKRCA      ,00260000
                   2SKSCA       ,SKMC       ,SKAC       ,SKHL       ,SKENVI     ,SKENV2     ,00270000
                   3SKCB1       ,SKGB2      ,SKELNT     ,SKBAL      ,SKLG       ,SKWW       ,00280000
                   4ELF         ,RMI        ,SKWP       ,SKHT       ,SKVT       ,SKPRB      ,00290000
                   5SKRBF       ,SKPF       ,SKAND      ,SKAR       ,SKPA       ,SKVTAR     ,00300000
                   6SKPDS       ,SKPDSZ     ,SK1        ,SKFS       ,SKPEI      ,SKPES      ,00310000
                   7SK1         ,SK2        ,CK3        ,DK4        ,SK5        ,SK6        ,00320000
                   8SK7         ,SK8        ,SK9        ,SK10       ,SK11       ,SK12       ,00330000
                   9SK13        ,SK14       ,SK15       ,PLIN       ,GAP5(3)                 00340000
            C       PAGE 5   INPUT   LOC 201 THRU 300                                       00350000
ISN 0007            COMMON      TCLINC(5)  ,XTGTA2(5) ,TIN2(5)    ,TWTW(5)    ,PFET2(5)   ,00360000
                   1DELTH(5)    ,STH(5)     ,CRSIND(5)  ,XTGTA4(5)  ,TIN4(5)    ,VIN(5)     ,00370000
                   2DELR(5)     ,RMAX(5)    ,DELFCR(5)  ,ENPCR(5)   ,DELWPL(5)  ,STPW(5)    ,00380000
                   3HFIN(5)     ,GAP6(10)                                                   00390000
            C       PAGE 6   INPUT   LOC 301 THRU 400                                       00400000
ISN 0008            COMMON      CYCPFL     ,FF         ,SK3        ,SK4        ,TBH1(5)    ,00410000
                   1TBTO(5)     ,TBH2(5)    ,TBCRP(5)   ,TBSFC(8)   ,TBPOW(8)   ,GAP7(60)    00420000
            C       WORKING COMMON                                                          00430000
ISN 0009            COMMON   ALFDES,ALFDL,ALFF,AMU,                                         00440000
                   1        BFPA,BFFF,BFFSLP,BHT,BLP,BR,BS,BVT,                             00450000
                   2 CEARF,CEARFT,CEARVT,CEARW,CCP,CCT,CDV,CLW,CPIND,CPNUD,CPPAR,CPPR00460000
                   3,CFTOT,CRT,CTP,CV,CX,CLDES,CB,                                          00470000
                   4 DELRTH,DELTA,DF,CSPLMT,          ELC,ELHT,ELN,ELCA,ELT,ELVT,EN,ETAP,   00480000
                   5 FEH,FEHI,FEHL,FEHT,FET,FETCT,FEVT,FEW,FEWH,FEWI,FM,FP,ETAP4            00490000
ISN 0010            COMMON GAMD11(3,15),GLF,GMDD1(16),H,                                    00500000
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                     1 ICRUS,INDCRU,INDCRG,INDCYL,INDETA,INDFIX,INDFLL,INDOPT,INDCSW,    00510000
                     2 INDPOW,INDPRP,INDROW,IPRINT                                       00520000
      ISN 0011        COMMON LTHL,NCCPP,NCXP,,CWE,PEHF,PI,Q,RHC,REALJ,RHPMR,R,RN         00530000
      ISN 0012        COMMON SA,SA5,SA6,SA7,SFC,SHPA,SHPP,SHT,SHTE,SHTW,SIGMA,SSIGMA,ST,00540000
                     1STHETA,STMAX,SVT,SVTE,SVTW,SW,SWETH,SWEXP,SWTT,SWWET,S2RHC         00550000
      ISN 0013        COMMON T,TAF,TCEAF,THETA,TMAX,TMP,TPROP,TR,ULF,VGASB,VGASR,VHL,V    00560000
      ISN 0014        COMMON W,WBAL,WEALNT,WCC,WE,WEP,WES,WF,WFC,WFR,WFS,WFW,             00570000
                     1 WGSB,WHL,WHT,WLG,WMC,WPAYL,WPC,WPDS,WPEI,WPH,WPRB,WPRG,WPRP,WPSTR00580000
                     2,WRC,WRCA,WSC,WSCA,WST,WTM,WVT,WW,WPAYLO,WAC,WENV                  00590000
      ISN 0015        COMMON XLALB,XLE,XLBH,XLFL,XLR,XLW,YLS2,TCVW                        00600000
      ISN 0016        COMMON DMR,SIGMR,AF,BHPP,SEE                                        00600001
      ISN 0017        NAMELIST /NWGHTR/ WE,OWE,WEP,WPEI,WPRP,WPRG,WPH,WPRB,WPDS,WFS,      00610000
                     1          WPSTR,WLG,WHT,WVT,WES,WW,WST,WHL,WGSE,WBALNT,WCC,WSC,    00620000
                     2          WPC,WRC,WTM,WRCA,WSCA,WFW,WMC,WBAL,WFC,WFE,WFUL,         00630000
                     3          WPAYL,CLF,ULF,WAC,WENV                                   00640000
      ISN 0018        WFW=0.0                                                             00650000
      ISN 0019        WW=0.0                                                              00660000
      ISN 0020        CLF=0.0                                                             00670000
      ISN 0021        WX=W0*(1.0-XLB*C)                                                   00680000
      ISN 0022        WCR=WX/ENR                                                          00690000
      ISN 0023        WEP=SK3*BHPP+SK4*ENP                                                00700000
      ISN 0024        WPEI=SKPEI*WEP                                                      00710000
      ISN 0025        IF (SKPEI.GT.1) GO TO 1                                             00720000
      ISN 0027        GO TO 2                                                             00730000
      ISN 0028      1 WPEI=SKPEI                                                          00740000
      ISN 0029      2 IF (INDCYL.GT.2) GO TO 3                                            00750000
      ISN 0031        RMR=0.5*DMR                                                         00760000
      ISN 0032        SRMR=XMR*DMR/2.                                                     00770000
      ISN 0033        PR=BHPP/ENR                                                         00780000
      ISN 0034        WPFP=ENR*SKAR*(SRMR**0.25*(0.01*SKPA*PR)**0.5*(0.01*SKVTAR*         00790000
                     1VT)*(SIGMR*PI*DMR**2/4.))**0.67                                    00800000
      ISN 0035        WPRG=0.0                                                            00810000
      ISN 0036        WPH=0.0                                                             00820000
      ISN 0037        WPRB=0.0                                                            00830000
      ISN 0038        GO TO 4                                                             00840000
      ISN 0039      3 SKC=1200.                                                           00850000
      ISN 0040        PR=BHPP/ENR                                                         00860000
      ISN 0041        RMR=0.5*DMR                                                         00870000
      ISN 0042        TMR=TVCMR*SIGMR*PI*RMR/ENR                                          00880000
      ISN 0043        SKCRP=RMR**1.6/(SKC*TMR)                                            00890000
      ISN 0044        SRMR=XMR*RMR                                                        00900000
      ISN 0045        IF (SKCRP.LT.1.0)  SKCRP=1.0                                        00910000
      ISN 0047        TRM1=PI*WGR*ENLF*(RMR-SRMR)*SIGMR*SKRBF*SKCRP*RMR**3                00920000
      ISN 0048        WPRB=SKPRB*(1.0E-7*TRM1)**0.438                                     00930000
      ISN 0049        TRM2=900.*VT**2*WPRB*PR*SRMR**1.82*BMR**2.5*SKAMD*1.0E-11           00940000
      ISN 0050        WPH=SKPH*(TRM2/(BMR*RMR*PI**2))**0.358                              00950000
      ISN 0051        WPRG=ENR*(SK1*WPRB+SK2*WFH)                                         00960000
      ISN 0052        WPRP=0.0                                                            00970000
      ISN 0053      4 PX=BHPP                                                             00980000
      ISN 0054        WPDS=SKPDS*(PX*SKPDSZ**0.25*PI*RMR*SKT/(30.*VT))**0.67              00990000
      ISN 0055        WFS=SKFS*WFR                                                        01000000
      ISN 0056        WPSTR=WPRG+SK3*WPRP+SK4*WPDS+SK5*WEP+WPEI+WFS+CELWP                 01010000
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ISN 0057          IF (INDDYL.EQ.1.OR.INDCYL.EQ.3) GO TO 5                                01020000
ISN 0059          IF(INDHUL.EQ.1) XD1=PI*AF/(1.0+SQRT((PI*AR/6.28)**2+1.0))              01030000
ISN 0061          IF(INDHUL.GT.1) XD1=PI*AF/(1.0+SQRT((PI*AR/CLALPH)**2+1.0))            01030100
ISN 0063          ELF=1.0+(0.00545*WC/(0.0126*BBARW+0.06216*WX*ELF/(SW*XD1)))            01040000
ISN 0064        5 ULF=1.5*EMLF                                                           01050000
ISN 0065          IF (ELF.GT.EMLF)  ULF=1.5*ELF                                          01060000
ISN 0067          IF (INDHUL.EQ.1) GO TO 6                                               01070000
ISN 0069          BH=BS                                                                  01080000
ISN 0070          GO TO 7                                                                01090000
ISN 0071        6 BH=DH                                                                  01100000
ISN 0072        7 WFL=SKFL*((WO/1000.)**0.7*(SWETH/1000.)*BH*ELOA**0.5*                  01110000
                 1ALOG10(VDIVE)*ULF**0.3)**0.685                                         01120000
ISN 0073          IF (SKENV1.NE.0.) WHL=0.0                                              01130000
ISN 0075          WENV=SWETH*(SKENV1*BH+SKENV2)                                          01140000
ISN 0076          WGSB=SKGB1*SWETH+SKGB2*BH**2                                           01150000
ISN 0077        9 WBALNT=SKBLNT*SWETH                                                    01160000
ISN 0078          WBAL=SKBAL*WO                                                          01170000
ISN 0079          WLG=SKLG*WO                                                            01180000
ISN 0080          WHT=SKHT*SHT                                                           01190000
ISN 0081          WVT=SKVT*SVT                                                           01200000
ISN 0082          WES=SKPES*WEP                                                          01210000
ISN 0083          IF (INDCYL.EQ.1.OR.INDCYL.EQ.3) GO TO 11                               01220000
ISN 0085          IF (INDHUL.GT.1) GO TO 11                                              01230000
ISN 0087          IF (SKWW.EQ.0.) GO TO 10                                               01240000
ISN 0089          WW=SKWW*(PMI*(W)*ELF/1000.)*SW/100.*ALOG10(BS/DH)*((1.0+               01250000
                 1SLM)/(2.*TCR))**0.5*ULF**0.5*ALOG10(VDIVE)*ALOG10(AR))**0.585          01260000
ISN 0090          GO TO 11                                                               01270000
ISN 0091       10 WW=SKWP*SWEXP                                                          01280000
ISN 0092       11 WST=SK6*(WFL+WENV)+SK7*WGSB+SK8*WW+SK9*WHT+SK10*WVT+SK11*WLG+WES+     01290000
                 1DELWST+WBALNT                                                          01300000
ISN 0093          WCC=SKCC*(WC/1000.)**0.41                                              01310000
ISN 0094          WAC=SKAC*WC                                                            01320000
ISN 0095          IF (INDCYL.GT.2) GO TO 12                                              01330000
ISN 0097          WTM=SKTM*WPRP                                                          01340000
ISN 0098          WRCA=SKRCA*WPRP                                                        01350000
ISN 0099          WSCA=SKSCA*(WPRP*ENR/100.)**0.84                                       01360000
ISN 0100          WPC=WRCA+WSCA                                                          01370000
ISN 0101          WRC=0.                                                                 01380000
ISN 0102          WSC=0.                                                                 01390000
ISN 0103          GO TO 13                                                               01400000
ISN 0104       12 WSC=SKSC*((WPRB+WPB)*ENR/100.)**0.84                                   01410000
ISN 0105          WPC=0.0                                                                01420000
ISN 0106          WTM=0.0                                                                01420000
ISN 0107          WRC=SKRC*WPRG                                                          01440000
ISN 0108          IF (SKRC.GT.1.) WRC=SKRC*(PI*SIGMR*RMR**1.5/EMR*(WPRB*ENR/             01450000
                 1100.)**0.5)**1.11                                                      01460000
ISN 0110       13 IF (INDCYL.EQ.2.OR.INDCYL.EQ.4) WFW=SKFW*WO                            01470000
ISN 0112          WMC=SKMC                                                               01480000
ISN 0113          WFC=WCC+WAC+SK12*WRC+SK13*WSC+SK14*WFW+WTM+SK15*WPC+WMC+DELWFC+        01490000
                 1WEAL                                                                   01500000
ISN 0114          WE=WPSTR+WST+WFC+WFE                                                   01510000
ISN 0115          CWE=WE+WFLL                                                            01520000
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ISN 0116        WPAYL=W0-WE-WFUL-WFR                    01530000
ISN 0117        RETURN                                  01550000
ISN 0118        END                                     01560000
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NAME	TAG		TYPE	ADD.
H		C	R*4	N.R.
V		C	R*4	N.R.
BH	SF		R*4	0001E0
CV		C	R*4	N.R.
FF		C	R*4	N.R.
PI	FA	C	R*4	000864
SA		C	R*4	N.R.
VC		C	R*4	N.R.
WC	F	C	R*4	000024
XC		C	R*4	N.R.
BMR	F	C	R*4	00012C
CDC		C	R*4	N.R.
CK1		C	R*4	N.R.
DK3	F	C	R*4	0002DC
ELF	F	C	R*4	00028C
ENR	F	C	R*4	00011C
GLF	SF	C	R*4	0007D4
RHO		C	R*4	N.R.
SA5		C	R*4	N.R.
SFC		C	R*4	N.R.
SK1	F	C	R*4	0002C4
SK5	F	C	R*4	0002E4
SK9	F	C	R*4	0002F4
TAF		C	R*4	N.R.
TMR	SF		R*4	0001F8
VHL		C	R*4	N.R.
WCC	SF	C	R*4	000920
WFE	F	C	R*4	000230
WGR	SF		R*4	0001FC
WMC	SF	C	R*4	000954
WSC	SF	C	R*4	000984
WVT	SF	C	R*4	000994
XLW		C	R*4	N.R.
ARVT		C	R*4	N.R.
CDHT		C	R*4	N.R.
CKVT		C	R*4	N.R.
DAM4		C	R*4	N.R.
ELDN		C	R*4	N.R.
ELVT		C	R*4	N.R.
FEHI		C	R*4	N.R.
FEWH		C	R*4	N.R.
GAP3		C	R*4	N.R.
GAP7		C	R*4	N.R.
PLIN		C	R*4	N.R.
SHPR		C	R*4	N.R.
SKAR	F	C	R*4	0002B0
SKHL	F	C	R*4	000268
SKPA	F	C	R*4	0002B4
SKTM	F	C	R*4	000254
SK10	F	C	R*4	0002F8

NAME	TAG		TYPE	ADD.
Q		C	R*4	N.R.
W		C	R*4	N.R.
BR		C	R*4	N.R.
CX		C	R*4	N.R.
FM		C	R*4	N.R.
PR	SF		R*4	0001E4
ST		C	R*4	N.R.
VT	F	C	R*4	000148
WS		C	R*4	N.R.
AMU		C	R*4	N.R.
BVT		C	R*4	N.R.
CDV		C	R*4	N.R.
CLW		C	R*4	N.R.
DK4	F	C	R*4	0002E0
ELN		C	R*4	N.R.
FEH		C	R*4	N.R.
FES		C	R*4	N.R.
RMI	F	C	R*4	000290
SA6		C	R*4	N.R.
SFT	F	C	R*4	00089C
SK2	F	C	R*4	0002D8
SK6	F	C	R*4	0002E8
SLM	F	C	R*4	0000D8
TCR	F	C	R*4	0C00DC
TCC		C	R*4	N.R.
VIN		C	R*4	N.R.
WEP	SF	C	R*4	000928
WFR	F	C	R*4	000938
WHL	SF	C	R*4	000948
WPC	SF	C	R*4	00095C
WST	SF	C	R*4	00098C
XC1	SF		R*4	00020C
XMR	F	C	R*4	000140
EHPA		C	R*4	N.R.
CDVT		C	R*4	N.R.
DAM1		C	R*4	N.R.
DAM5		C	R*4	N.R.
ELDT		C	R*4	N.R.
EMLF	F	C	R*4	000044
FEHL		C	R*4	N.R.
FEWI		C	R*4	N.R.
GAP4		C	R*4	N.R.
HFIN		C	R*4	N.R.
RELI		C	R*4	N.R.
SFTE		C	R*4	N.R.
SKCC	F	C	R*4	000244
SKHT	F	C	R*4	000298
SKPH	F	C	R*4	0002A8
SKVT	F	C	R*4	00029C
SK11	F	C	R*4	0002FC

NAME	TAG		TYPE	ADD.
R		C	R*4	N.R.
AF		C	R*4	N.R.
BS	FA	C	R*4	000668
DH	FA	C	R*4	0006C4
FP		C	R*4	N.R.
PX	SF		R*4	0001E8
SW	F	C	R*4	0008C8
WE	SF	C	R*4	000924
WW	SF	C	R*4	000998
BHT		C	R*4	N.R.
CCP		C	R*4	N.R.
CKF		C	R*4	N.R.
CRT		C	R*4	N.R.
DMR	F	C	R*4	000958
ELT		C	R*4	N.R.
FET		C	R*4	N.R.
HOO		C	R*4	N.R.
RMR	SF		R*4	0001F0
SA7		C	R*4	N.R.
SKD	SF		R*4	0001F4
SK3	F	C	R*4	000488
SK7	F	C	R*4	0002EC
STH		C	R*4	N.R.
TCT		C	R*4	N.R.
TVW		C	R*4	N.R.
VMO	F	C	R*4	000040
WES	SF	C	R*4	00092C
WFS	SF	C	R*4	00093C
WHT	SF	C	R*4	00094C
WPH	SF	C	R*4	000968
WTM	SF	C	R*4	000990
XLB		C	R*4	N.R.
ALFR		C	R*4	N.R.
BHPP	F	C	R*4	0009D4
CKFF		C	R*4	N.R.
DAM2		C	R*4	N.R.
DELR		C	R*4	N.R.
ELHT		C	R*4	N.R.
ETAP		C	R*4	N.R.
FEHT		C	R*4	N.R.
GAP1		C	R*4	N.R.
GAP5		C	R*4	N.R.
LTHL		C	I*4	N.R.
RMAX		C	R*4	N.R.
SHTW		C	R*4	N.R.
SKFS	F	C	R*4	0002C8
SKLG	F	C	R*4	000284
SKRC	F	C	R*4	000248
SKWP	F	C	R*4	000294
SK12	F	C	R*4	000300

NAME	TAG		TYPE	ADD.
T		C	R*4	N.R.
AR	FA	C	R*4	0C00C8
CB		C	R*4	N.R.
EN		C	R*4	N.R.
HC		C	R*4	N.R.
RN		C	R*4	N.R.
TR		C	R*4	N.R.
WF		C	R*4	N.R.
WX	SF		R*4	0001EC
BLP		C	R*4	N.R.
CCT		C	R*4	N.R.
CKW		C	R*4	N.R.
CTP		C	R*4	N.R.
ELC		C	R*4	N.R.
ENP	F	C	R*4	000194
FEW		C	R*4	N.R.
OWE	S	C	R*4	00085C
RCO		C	R*4	N.R.
SEE		C	R*4	N.R.
SKT	F	C	R*4	0002C4
SK4	F	C	R*4	0C04BC
SK8	F	C	R*4	0C02F0
SVT	F	C	R*4	0C08BC
TMP		C	R*4	N.R.
ULF	SF	C	R*4	000900
WAC	SF	C	R*4	0C09A0
WFC	SF	C	R*4	000934
WFW	SF	C	R*4	000940
WLG	SF	C	R*4	000950
WRC	SF	C	R*4	0C097C
WVA		C	R*4	N.R.
XLR		C	R*4	N.R.
ARHT		C	R*4	N.R.
BHPR		C	R*4	N.R.
CKHT		C	R*4	N.R.
DAM3		C	R*4	N.R.
DVOL		C	R*4	N.R.
ELCA	F	C	R*4	0006D8
ETAT		C	R*4	N.R.
FEVT		C	R*4	N.R.
GAP2		C	R*4	N.R.
GAP6		C	R*4	N.R.
PEHF		C	R*4	N.R.
SHPA		C	R*4	N.R.
SKAC	F	C	R*4	0C0264
SKFW	F	C	R*4	0C0250
SKMC	F	C	R*4	0C0260
SKSC	F	C	R*4	00024C
SKWW	F	C	R*4	0C0288
SK13	F	C	R*4	000304

SK14	F	C	R*4	0003C8	SK15	F	C	R*4	00030C	SLMH		C	R*4	N.R.	SRMR	SF		R*4	000204
STPW		C	R*4	N.R.	SVTE		C	R*4	N.R.	SVTW		C	R*4	N.R.	SWTT		C	R*4	N.R.
TBH1		C	R*4	N.R.	TBH2		C	R*4	N.R.	TBTO		C	R*4	N.R.	TCHT		C	R*4	N.R.
TCLN		C	R*4	N.R.	TCVT		C	R*4	N.R.	TINY		C	R*4	N.R.	TIN2		C	R*4	N.R.
TIN4		C	R*4	N.R.	TMAX		C	R*4	N.R.	TOVW		C	R*4	N.R.	TRM1	SF		R*4	000208
TRM2	SF		R*4	0002CC	TWTH		C	R*4	N.R.	WBAL	SF	C	R*4	000918	WENV	SF	C	R*4	0009A4
WFUL	F	C	R*4	000234	WGSB	SF	C	R*4	000944	WPDS	SF	C	R*4	000960	WPEI	SF	C	R*4	000964
WPRB	SF	C	R*4	00096C	WPRG	SF	C	R*4	000970	WPRP	SF	C	R*4	000974	WRCA	SF	C	R*4	000980
WSCA	SF	C	R*4	000968	XLBH		C	R*4	N.R.	XLGD		C	R*4	N.R.	XLHL		C	R*4	N.R.
YLS2		C	R*4	N.R.	ALFDL		C	R*4	N.R.	ATMIY		C	R*4	N.R.	CBARF		C	R*4	N.R.
CBARW	F	C	R*4	00067C	CLDES		C	R*4	N.R.	CLEYE		C	R*4	N.R.	CPIND		C	R*4	N.R.
CPNUD		C	R*4	N.R.	CPPAR		C	R*4	N.R.	CPPRO		C	R*4	N.R.	CPTOT		C	R*4	N.R.
DELTA		C	R*4	N.R.	DELTH		C	R*4	N.R.	DELWF		C	R*4	N.R.	DELWP	F	C	R*4	00023C
DSWET		C	R*4	N.R.	ELCOA		C	R*4	N.R.	ENPCR		C	R*4	N.R.	ETAP2		C	R*4	N.R.
ETAP4		C	R*4	N.R.	FETOT		C	R*4	N.R.	GMDD1		C	R*4	N.R.	HMAXD		C	R*4	N.R.
ICRUS		C	I*4	N.R.	NCCPP		C	I*4	N.R.	NOXPJ		C	I*4	N.R.	PFET2		C	R*4	N.R.
REALJ		C	R*4	N.R.	RFFMR		C	R*4	N.R.	SIGMA		C	R*4	N.R.	SIGMR	F	C	R*4	0009CC
SKAMD	F	C	R*4	0002AC	SKBAL	F	C	R*4	000280	SKDRP	SF		R*4	000210	SKG81	F	C	R*4	000274
SKG82	F	C	R*4	000278	SKPOS	F	C	R*4	0002BC	SKPEI	F	C	R*4	0002CC	SKPES	F	C	R*4	0002D0
SKPRB	F	C	R*4	0002A0	SKRBF	F	C	R*4	0002A4	SKRCA	F	C	R*4	000258	SKSCA	F	C	R*4	00025C
SLMVT		C	R*4	N.R.	STMAX		C	R*4	N.R.	SWETH	F	C	R*4	0008CC	SWEXP	F	C	R*4	0008D0
SWWET		C	R*4	N.R.	S2RFC		C	R*4	N.R.	TBCL1		C	R*4	N.R.	TBCRP		C	R*4	N.R.
TBEMS		C	R*4	N.R.	TBPCW		C	R*4	N.R.	TBSFC		C	R*4	N.R.	TCBAR		C	R*4	N.R.
THETA		C	R*4	N.R.	TPRCP		C	R*4	N.R.	TVCMR	F	C	R*4	000144	VBARH		C	R*4	N.R.
VBARV		C	R*4	N.R.	VCIVE	FA	C	R*4	000054	VGASB		C	R*4	N.R.	VGASR		C	R*4	N.R.
WGHTR			R*4	000214	WPAYL	S	C	R*4	000958	WPSTR	SF	C	R*4	000978	XLALB		C	R*4	N.R.
XLBWG	F	C	R*4	000028	XLRLA		C	R*4	N.R.	ALOG10		XF	R*4	000000	SQRT		XF	R*4	000000
FRXPR#		XF	R*4	0000C0	ALFDES		C	R*4	N.R.	BHPSUP		C	R*4	N.R.	CBARHT		C	R*4	N.R.
CBARVT		C	R*4	N.R.	CBYLCA		C	R*4	N.R.	CLALPH	FA	C	R*4	0001C4	CRSIND		C	R*4	N.R.
CTSIGH		C	R*4	N.R.	CYCPRL		C	R*4	N.R.	DELFCR		C	R*4	N.R.	DELRTH		C	R*4	N.R.
DELWFC	F	C	R*4	000238	DELWPL		C	R*4	N.R.	DELWST	F	C	R*4	000240	DLSWSH		C	R*4	N.R.
DLTAFE		C	R*4	N.R.	ELVLHL		C	R*4	N.R.	DRGIND		C	R*4	N.R.	DSPLMT		C	R*4	N.R.
DYLIND		C	R*4	N.R.	ELFLOA		C	R*4	N.R.	ELVLOA		C	R*4	N.R.	ETAIND		C	R*4	N.R.
ETAP4N		C	R*4	N.R.	EXPCRG		C	R*4	N.R.	FECRAG		C	R*4	N.R.	FIXIND		C	R*4	N.R.
GAMD11		C	R*4	N.R.	FULIND		C	R*4	N.R.	INDCRU		C	I*4	N.R.	INCDRG		C	I*4	N.R.
INDDYL		C	I*4	000828	INCETA		C	I*4	N.R.	INDFIX		C	I*4	N.R.	INCHUL		C	I*4	000834
INDOPT		C	I*4	N.R.	INDCSW		C	I*4	N.R.	INDPOW		C	I*4	N.R.	INCPRP		C	I*4	N.R.
INDRDM		C	I*4	N.R.	IPRINT		C	I*4	N.R.	NWGHTR				000027	OPTIND		C	R*4	N.R.
OSWIND		C	R*4	N.R.	PRPIND		C	R*4	N.R.	RDMIND		C	R*4	N.R.	RHCRHO		C	R*4	N.R.
SGTIND		C	R*4	N.R.	SKBLNT	F	C	R*4	00027C	SKENV1	F	C	R*4	00026C	SKENV2	F	C	R*4	000270
SKPDSZ	F	C	R*4	0002C0	SKVTAR	F	C	R*4	0002B8	SSIGMA		C	R*4	N.R.	STHETA		C	R*4	N.R.
TBCDWI		C	R*4	N.R.	TBBAP4		C	R*4	N.R.	THETMR		C	R*4	N.R.	TOLIND		C	R*4	N.R.
VGBOVH		C	R*4	N.R.	WBALNT	SF	C	R*4	00091C	WPAYLO		C	R*4	N.R.	XTGTA2		C	R*4	N.R.
XTGTA4		C	R*4	N.R.															

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * * SIZE OF BLOCK 0009DC HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
OPTIND	R*4	N.R.	FULIND	R*4	N.R.	DYLIND	R*4	N.R.	DRGIND	R*4	N.R.

QSWINC	R*4	N.R.	FIXINC	R*4	N.R.	RDMIND	R*4	N.R.	PRPIND	R*4	N.R.
ETAINC	R*4	N.R.	HC	R*4	000024	XL8WO	R*4	000028	XLRLA	R*4	N.R.
VCBCVH	R*4	N.R.	XLCC	R*4	N.R.	HMAXD	R*4	N.R.	RHCRHO	R*4	N.R.
VNC	R*4	000040	EMLF	R*4	000044	CK1	R*4	N.R.	DELWF	R*4	N.R.
CKFF	R*4	N.R.	VCIVE	R*4	000054	HOO	R*4	N.R.	RCO	R*4	N.R.
TCC	R*4	N.R.	GAP1	R*4	N.R.	SGTIND	R*4	N.R.	ELHLOA	R*4	N.R.
ELVLCA	R*4	N.R.	GAP2	R*4	N.R.	AR	R*4	000008	HS	R*4	N.R.
TCR	R*4	000000	TCT	R*4	N.R.	SLM	R*4	000008	ARHT	R*4	N.R.
TCHT	R*4	N.R.	VBARF	R*4	N.R.	SLMH	R*4	N.R.	ARVT	R*4	N.R.
TCVT	R*4	N.R.	VBARV	R*4	N.R.	SLMVT	R*4	N.R.	ELDN	R*4	N.R.
ELCT	R*4	N.R.	ELCCA	R*4	N.R.	DLSHSH	R*4	N.R.	DSWET	R*4	N.R.
DLVLFL	R*4	N.R.	DVCL	R*4	N.R.	CBYLOA	R*4	N.R.	ENR	R*4	000110
HVA	R*4	N.R.	CAM1	R*4	N.R.	CAM2	R*4	N.R.	BMF	R*4	000120
CAM3	R*4	N.R.	CLEYE	R*4	N.R.	THETMR	R*4	N.R.	XC	R*4	N.R.
XMR	R*4	000140	TVCMR	R*4	000144	VT	R*4	000148	CTSIGH	R*4	N.R.
TVH	R*4	N.R.	FES	R*4	N.R.	TINY	R*4	N.R.	ETAP2	R*4	N.R.
ETAP4N	R*4	N.R.	TBEMS	R*4	N.R.	TB8AP4	R*4	N.R.	GAP3	R*4	N.R.
CAM4	R*4	N.R.	ENF	R*4	000194	ETAT	R*4	N.R.	HC	R*4	N.R.
VC	R*4	N.R.	ATMIY	R*4	N.R.	CDVT	R*4	N.R.	CDHT	R*4	N.R.
CAM5	R*4	N.R.	CLTAFE	R*4	N.R.	FEDRAG	R*4	N.R.	EXPDRG	R*4	N.R.
CCC	R*4	N.R.	CLALPF	R*4	0001C4	CKVT	R*4	N.R.	CKHT	R*4	N.R.
CKF	R*4	N.R.	CKH	R*4	N.R.	RELI	R*4	N.R.	TCLN	R*4	N.R.
TBCLI	R*4	N.R.	TBCDHI	R*4	N.R.	GAP4	R*4	N.R.	HFE	R*4	000230
WFLL	R*4	000234	CELWFC	R*4	000238	DELWP	R*4	00023C	DELHST	R*4	000240
SKCC	R*4	000244	SKRC	R*4	000248	SKSC	R*4	00024C	SKFH	R*4	000250
SKIN	R*4	000254	SKRCA	R*4	000258	SKSCA	R*4	00025C	SKMC	R*4	000260
SKAC	R*4	000264	SKHL	R*4	000268	SKENV1	R*4	00026C	SKENV2	R*4	000270
SKGE1	R*4	000274	SKGB2	R*4	000278	SKBLNT	R*4	00027C	SKBAL	R*4	000280
SKLG	R*4	000284	SKHH	R*4	000288	ELF	R*4	00028C	RMI	R*4	000290
SKVP	R*4	000294	SKHT	R*4	000298	SKVT	R*4	00029C	SKPRB	R*4	0002A0
SKREF	R*4	0002A4	SKPF	R*4	0002A8	SKAMD	R*4	0002AC	SKAR	R*4	0002B0
SKFA	R*4	0002B4	SKVTAF	R*4	0002B8	SKPDS	R*4	0002BC	SKPDSZ	R*4	0002C0
SKT	R*4	0002C4	SKFS	R*4	0002C8	SKPEI	R*4	0002CC	SKPES	R*4	0002D0
SK1	R*4	0002C4	SK2	R*4	0002D8	SK3	R*4	0002DC	SK4	R*4	0002E0
SK5	R*4	0002E4	SK6	R*4	0002E8	SK7	R*4	0002EC	SK8	R*4	0002F0
SK9	R*4	0002F4	SK10	R*4	0002F8	SK11	R*4	0002FC	SK12	R*4	000300
SK13	R*4	000304	SK14	R*4	000308	SK15	R*4	00030C	PLIN	R*4	N.R.
GAP5	R*4	N.R.	TCLINC	R*4	N.R.	XTGTA2	R*4	N.R.	TIN2	R*4	N.R.
THTH	R*4	N.R.	PFET2	R*4	N.R.	DELTH	R*4	N.R.	STH	R*4	N.R.
CRSINC	R*4	N.R.	XTGTA4	R*4	N.R.	TIN4	R*4	N.R.	VIN	R*4	N.R.
CCLR	R*4	N.R.	RMAX	R*4	N.R.	DELFCR	R*4	N.R.	ENPCP	R*4	N.R.
DELWFL	R*4	N.R.	STPH	R*4	N.R.	HFIN	R*4	N.R.	GAP6	R*4	N.R.
CYCPFL	R*4	N.R.	FF	R*4	N.R.	SK3	R*4	0004B8	SK4	R*4	0004BC
TBF1	R*4	N.R.	TBTC	R*4	N.R.	TBH2	R*4	N.R.	TBCRP	R*4	N.R.
TBSFC	R*4	N.R.	TBPOW	R*4	N.R.	GAP7	R*4	N.R.	ALFDES	R*4	N.R.
ALFCL	R*4	N.R.	ALFR	R*4	N.R.	AMU	R*4	N.R.	BHPA	R*4	N.R.
BHFR	R*4	N.R.	BHPSUF	R*4	N.R.	BHT	R*4	N.R.	BLP	R*4	N.R.
ER	R*4	N.R.	BS	R*4	000663	BVT	R*4	N.R.	CBARF	R*4	N.R.
CBARFT	R*4	N.R.	CEARVT	R*4	N.R.	CBARW	R*4	0006F0	CCP	R*4	N.R.
CCT	R*4	N.R.	CCW	R*4	N.R.	CLW	R*4	N.R.	CPIND	R*4	N.R.
CPNUC	R*4	N.R.	CPPAR	R*4	N.R.	CPPRO	R*4	N.R.	CPTOT	R*4	N.R.
CRT	R*4	N.R.	CTF	R*4	N.R.	CV	R*4	N.R.	CX	R*4	N.R.

CLCES	R*4	N.R.	CE	R*4	N.R.	DELRTH	R*4	N.R.	DELTA	R*4	N.R.
DF	R*4	0006C4	DSFLMT	R*4	N.R.	ELC	R*4	N.R.	ELHT	R*4	N.R.
ELM	R*4	N.R.	ELCA	R*4	0C06D8	ELT	R*4	N.R.	ELVT	R*4	N.R.
EM	R*4	N.R.	ETAP	R*4	N.R.	FEH	R*4	N.R.	FEHI	R*4	N.R.
FEHL	R*4	N.R.	FEHT	R*4	N.R.	FET	R*4	N.R.	FETOT	R*4	N.R.
FEVT	R*4	N.R.	FEW	R*4	N.R.	FEWH	R*4	N.R.	FEWI	R*4	N.R.
FM	R*4	N.R.	FP	R*4	N.R.	ETAP4	R*4	N.R.	GAMD11	R*4	N.R.
CLF	R*4	0007D4	GMCDI	R*4	N.R.	H	R*4	N.R.	ICRUS	I*4	N.R.
INDCRL	I*4	N.R.	INDDRC	I*4	N.R.	INDDYL	I*4	000828	INDETA	I*4	N.R.
INDFIX	I*4	N.R.	INDHUL	I*4	000834	INDOPT	I*4	N.R.	INDOSW	I*4	N.R.
INDPCW	I*4	N.R.	INDPRP	I*4	N.R.	INDRDM	I*4	N.R.	IPRINT	I*4	N.R.
LTHL	I*4	N.R.	NOCPP	I*4	N.R.	NOXPJ	I*4	N.R.	CWE	R*4	0C085C
PEHF	R*4	N.R.	PI	R*4	000864	Q	R*4	N.R.	RHO	R*4	N.R.
REALJ	R*4	N.R.	RHPMR	R*4	N.R.	R	R*4	N.R.	RN	R*4	N.R.
SA	R*4	N.R.	SA5	R*4	N.R.	SA6	R*4	N.R.	SA7	R*4	N.R.
SFC	R*4	N.R.	SHPA	R*4	N.R.	SHPR	R*4	N.R.	SHT	R*4	0C089C
SHTE	R*4	N.R.	SHTW	R*4	N.R.	SIGMA	R*4	N.R.	SSIGMA	R*4	N.R.
ST	R*4	N.R.	STHETA	R*4	N.R.	STMAX	R*4	N.R.	SVT	R*4	0C08BC
SVTE	R*4	N.R.	SVTW	R*4	N.R.	SW	R*4	0C08C8	SWETH	R*4	0C08CC
SWEXP	R*4	0008D0	SWTT	R*4	N.R.	SWWET	R*4	N.R.	S2RHO	R*4	N.R.
T	R*4	N.R.	TAF	R*4	N.R.	TCBAR	R*4	N.R.	THETA	R*4	N.R.
TMAX	R*4	N.R.	TMP	R*4	N.R.	TPROP	R*4	N.R.	TR	R*4	N.R.
ULF	R*4	0009C0	VGASB	R*4	N.R.	VGASR	R*4	N.R.	VHL	R*4	N.R.
V	R*4	N.R.	W	R*4	N.R.	WBAL	R*4	000918	WBALNT	R*4	0C091C
WCC	R*4	000920	WE	R*4	0C0924	WEP	R*4	0C0928	WES	R*4	0C092C
WF	R*4	N.R.	WFC	R*4	0C0934	WFR	R*4	0C0938	WFS	R*4	0C093C
WFW	R*4	000940	WGSE	R*4	0C0944	WHL	R*4	0C0948	WHT	R*4	0C094C
WLG	R*4	000950	WMC	R*4	000954	WPAYL	R*4	0C0958	WPC	R*4	0C095C
WPCS	R*4	000960	WPEI	R*4	000964	WPH	R*4	000968	WPRB	R*4	0C096C
WPRG	R*4	000970	WPRF	R*4	0C0974	WPSTR	R*4	000978	WRC	R*4	0C097C
WRCA	R*4	000980	WSC	R*4	0C0984	WSCA	R*4	0C0988	WST	R*4	0C098C
WTM	R*4	000990	WVT	R*4	0C0994	WW	R*4	000998	WPAYLO	R*4	N.R.
WAC	R*4	0009A0	WENW	R*4	0C09A4	XLALB	R*4	N.R.	XLB	R*4	N.R.
XLBF	R*4	N.R.	XLFL	R*4	N.R.	XLR	R*4	N.R.	XLW	R*4	N.R.
YLS2	R*4	N.R.	TOVW	R*4	N.R.	DMR	R*4	0C09C8	SIGMR	R*4	0C09CC
AF	R*4	N.R.	BHPP	R*4	0009D4	SEE	R*4	N.R.			

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
1	0CC52A	2	CCC532	3	C00602	4	00078A
5	CCC8F2	6	CCC928	7	CC0930	9	000A18 NR
10	OCC858	11	CCC864	12	CCCC4C	13	00001C

CPTIONS IN EFFECT NAME= MAIN,CPT=02,LINECNT=54,SIZE=0000K,

CPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 117 ,PROGRAM SIZE = 3542

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 95K BYTES OF CORE NOT USED

STATISTICS NO DIAGNOSTICS THIS STEP

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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002                FUNCTION XLINT(XT,YT,X,NTAB,M)                          00010000
                C**** MEMBER NAME BSIXLINT                                      00020000
ISN 0003                DIMENSION XT( 1), YT( 1)                                00030000
ISN 0004                XSAV=XT(1)                                              00040000
ISN 0005                N=1                                                     00050000
ISN 0006                M=0                                                     00060000
ISN 0007                IF(X-XT(1)) 1,2,3                                       00070000
ISN 0008              1 M=-1                                                    00080000
ISN 0009              2 XLINT= YT(1)                                            00090000
ISN 0010                GO TO 25                                                00100000
ISN 0011              3 IF(X-XT(NTAB)) 4,5,6                                    00110000
ISN 0012              6 M=1                                                     00120000
ISN 0013              5 N=NTAB                                                  00130000
ISN 0014                XSAV= XT(NTAB)                                          00140000
ISN 0015                XLINT= YT(NTAB)                                         00150000
ISN 0016                GO TO 25                                                00160000
ISN 0017              4 IF(X-XSAV) 7,8,9                                        00170000
ISN 0018              8 XLINT= YT(N)                                            00180000
ISN 0019                GO TO 25                                                00190000
ISN 0020              7 I= N-1                                                  00200000
ISN 0021             13 IF(X-XT(I)) 10,11,12                                    00210000
ISN 0022             11 N= I                                                    00220000
ISN 0023                XSAV= XT(I)                                             00230000
ISN 0024                XLINT= YT(I)                                            00240000
ISN 0025                GO TO 25                                                00250000
ISN 0026             10 I = I-1                                                 00260000
ISN 0027                GO TO 13                                                00270000
ISN 0028              9 I = N+1                                                 00280000
ISN 0029             14 IF(X-XT(I)) 15,11,16                                    00290000
ISN 0030             16 I= I+1                                                  00300000
ISN 0031                GO TO 14                                                00310000
ISN 0032             15 I=I-1                                                   00320000
ISN 0033             12 N=I                                                     00330000
ISN 0034                XSAV=XT(I)                                              00340000
ISN 0035                XLINT= YT(I)+(X-XT(I))*(YT(I+1)-YT(I))/(XT(I+1)-XT(I))  00350000
ISN 0036             25 IF(M) 30,31,32                                          00360000
ISN 0037             30 WRITE (6,300)                                           00370000
ISN 0038           300 FORMAT(/9X,97H***ERROR*** THE FOLLOWING VALUES MAY NOT BE ACCURATE00380000
                     1 THE INDEPENDENT VARIABLE WAS OUT OF RANGE OF/9X,81HTHE TABLE.  TH00390000
                     2ESE VALUES WERE CALCULATED USING THE FIRST VALUE GIVEN IN THE TABL00400000
                     3E)                                                        00410000
ISN 0039             31 CONTINUE                                                00420000
ISN 0040                RETURN                                                  00430000
ISN 0041             32 WRITE (6,301)                                           00440000
ISN 0042           301 FORMAT(/9X,97H***ERROR*** THE FOLLOWING VALUES MAY NOT BE ACCURATE00450000
                     1 THE INDEPENDENT VARIABLE WAS OUT OF RANGE OF/9X,81HTHE TABLE.  TH00460000
                     2ESE VALUES WERE CALCULATED USING THE LAST  VALUE GIVEN IN THE TABL00470000
                     3E)                                                        00480000
ISN 0043                GO TO 31                                                00490000
ISN 0044                END                                                     00500000
```

/ XLINT / SIZE OF PROGRAM 000474 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	SF	I*4	0002C0	M	S	I*4	000204	N	SF	I*4	0002C8	X	F	R*4	0C020C
XT	F XR	R*4	0000CC	YT	F XR	R*4	000000	NTAB	F	I*4	000210	XSAV	S	R*4	000214
XLINT	S	R*4	000218	IECOM#	F XF	I*4	0C0000								

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
1	0CC2D4	2	CCC28A	3	CC0296	6	000282
5	0CC2B6	4	CCC2C2	8	CC02D4	7	0002E2
13	CCC304	11	CCC312	1C	CCC32E	9	000338
14	CCC35C	16	CCC36A	15	CCC374	12	000384
25	CCC388	3C	CCC3CA	31	CCC3E0	32	0003E8

CPTIONS IN EFFECT NAME= MAIN,CPT=C2,LINECNT=54,SIZE=0CCCK,

CPTIONS IN EFFECT SOURCE,EBCDIC,NCLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SCURCE STATEMENTS = 43 ,PROGRAM SIZE = 114C

STATISTICS NO DIAGNCSTICS GENERATED

****** END CF COMPILATICN ****** 123K BYTES CF CORE NCT USED

```
      COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=54,SIZE=0000K,
                         SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF
ISN 0002              FUNCTION XLKUP(XARG,YARG,XTAB,NX,YTAB,NY,ZTAB,NXTAB,NYTAB,IX,IY)  00010000
                                                                                        00020000
                    C**** MEMBER NAME B81XLKUP                                          00030000
ISN 0003              DIMENSION  XTAB(1),YTAB(1)                                        00040000
ISN 0004              DIMENSION ZTAB(NXTAB,NYTAB)                                       00050000
                    C                                                                   00060000
                    C     DOUBLE TABLE  PARABOLIC  LOOK-UP        Z = FUNC( X,Y )       00070000
                    C                                                                   00080000
ISN 0005              IERRX = 0                                                         00090000
ISN 0006              IERRY = 0                                                         00100000
                    C                                                                   00110000
                    C     CHECK THE RANGE OF THE VARIABLE TABLES  (NO EXTRAPOLATION)    00120000
                    C                                                                   00130000
ISN 0007           10 IF (XARG - XTAB(1)) 12,13,13                                      00140000
ISN 0008           12 X = XTAB(1)                                                       00150000
ISN 0009              IERRX = -1                                                        00160000
ISN 0010              GO TO 18                                                          00170000
ISN 0011           13 DO 15 I=2,NX                                                      00180000
ISN 0012              IF (XARG - XTAB(I)) 16,16,15                                      00190000
ISN 0013           15 CONTINUE                                                          00200000
ISN 0014              X = XTAB(NX)                                                      00210000
ISN 0015              IERRX = 1                                                         00220000
ISN 0016              GO TO 18                                                          00230000
ISN 0017           16 X = XARG                                                          00240000
ISN 0018           18 IF (YARG - YTAB(1)) 20,21,21                                      00250000
ISN 0019           20 Y    = YTAB(1)                                                    00260000
ISN 0020              IERRY = -1                                                        00270000
ISN 0021              GO TO 26                                                          00280000
ISN 0022           21 DO 23 I=2,NY                                                      00290000
ISN 0023              IF (YARG - YTAB(I)) 24,24,23                                      00300000
ISN 0024           23 CONTINUE                                                          00310000
ISN 0025              Y = YTAB(NY)                                                      00320000
ISN 0026              IERRY = 1                                                         00330000
ISN 0027              GO TO 26                                                          00340000
ISN 0028           24 Y = YARG                                                          00350000
ISN 0029           26 IX =  IERRX                                                       00360000
ISN 0030              IY =  IERRY                                                       00370000
                    C                                                                   00380000
ISN 0031              XLKUP = BIV(X,Y,XTAB,YTAB,ZTAB,NX,NY,NXTAB,NYTAB)                 00390000
                    C                                                                   00400000
                    C                                                                   00410000
                    C     ERROR  RETURNS                                                00420000
                    C                                                                   00430000
ISN 0032              IF (IERRX) 40,45,50                                               00440000
ISN 0033           40 IF (IERRY) 41,42,43                                               00450000
ISN 0034           41 WRITE (6,20000)                                                   00460000
ISN 0035              WRITE (6,20010)                                                   00470000
ISN 0036              GO TO 60                                                          00480000
ISN 0037           42 WRITE (6,21000)                                                   00490000
ISN 0038              WRITE (6,20020)                                                   00500000
ISN 0039              GO TO 60
```

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ISN 0040        43 WRITE (6,20CCC)                                              0051CCCC
ISN 0041           WRITE (6,20C30)                                              0052CCCC
ISN 0042           GC TO 6C                                                     0053CCCC
ISN 0043        45 IF (IERRY) 46,6C,47                                          0054CCCC
ISN 0044        46 WRITE (6,22CCC)                                              0055CCCC
ISN 0045           WRITE (6,20C4C)                                              0056CCCC
ISN 0046           GC TO 6C                                                     0057CCCC
ISN 0047        47 WRITE (6,22CCC)                                              0058CCCC
ISN 0048           WRITE (6,20C5C)                                              0059CCCC
ISN 0049           GC TO 6C                                                     006CCCCC
ISN 0050        50 IF (IERRY) 51,52,53                                          0061CCCC
ISN 0051        51 WRITE (6,20CCC)                                              0062CCCC
ISN 0052           WRITE (6,20C6C)                                              0063CCCC
ISN 0053           GC TO 6C                                                     0064CCCC
ISN 0054        52 WRITE (6,21CCC)                                              0065CCCC
ISN 0055           WRITE (6,20C7C)                                              0066CCCC
ISN 0056           GC TO 6C                                                     0067CCCC
ISN 0057        53 WRITE (6,20CCC)                                              0068CCCC
ISN 0058           WRITE (6,20C8C)                                              0069CCCC
ISN 0059        6C RETURN                                                       007CCCCC
ISN 0060     2CCCC FCRMAT( 9X117H***ERRCR THE FCLLCWING VALUES MAY NCT BE ACCURATE. B0071CCCC
                  1CTH INDEPENDENT VARIABLES (X AND Y) ARE CUT CF RANGE OF THE TABLE)00720000
ISN 0061     21CCC FCRMAT( 9X114H***ERRCR THE FCLLCWING VALUES MAY NCT BE ACCURATE. T0073CCCC
                  1HE FIRST INDEPENDENT VARIABLE (X) IS OUT OF RANGE OF THE TABLE)   C0740CCC
ISN 0062     22CCC FCRMAT( 9X115H***ERRCR THE FCLLCWING VALUES MAY NCT BE ACCURATE. T0075CCCC
                  1HE SECCND INDEPENDENT VARIABLE (Y) IS OUT OF RANGE OF THE TABLE)  C0760CCC
ISN 0063     2CC1C FCRMAT(19X69HTHE PRCGRAM PICKED UP THE FIRST VALUES, X(1) AND Y(1)0077CCCC
                  1, IN BCTH TABLES)                                                 C0780CCC
ISN 0064     2CC3C FCRMAT(19X84HTHE PRCGRAM PICKED UP THE FIRST VALUE, X(1), AND THE C079CCCC
                  1LAST VALLE, Y(N), IN THE TAELES)                                  C08CCCCC
ISN 0065     2CC6C FCRMAT(19X84HTHE PRCGRAM PICKED UP THE LAST VALUE, X(N), AND THE FCC81CCCC
                  1IRST VALLE, Y(1), IN THE TAELES)                                  C082CCCC
ISN 0066     2CC8C FCRMAT(19X88HTHE PRCGRAM PICKED UP THE LAST VALUES, X(N) AND Y(N),C0830CCC
                  1 IN BOTH TABLES)                                                  CC84CCCC
ISN 0067     2CC2C FCRMAT(19X57HTHE PRCGRAM PICKED UP THE FIRST VALUE, X(1), IN THE TC085CCCC
                  1ABLE)                                                             CC86CCCC
ISN 0068     2CC7C FCRMAT(19X56HTHE PRCGRAM PICKED UP THE LAST VALUE, X(N), IN THE TAC087CCCC
                  1BLE)                                                              C088CCCC
ISN 0069     2CC4C FCRMAT(19X57HTHE PRCGRAM PICKED UP THE FIRST VALUE, Y(1), IN THE TC089CCCC
                  1ABLE)                                                             0C9CCCCC
ISN 0070     2CC5C FCRMAT(19X56HTHE PRCGRAM PICKED UP THE LAST VALUE, Y(N), IN THE TAC0910000
                  1BLE)                                                              0092CCCC
ISN 0071           END                                                              C093CCCC
```

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	SF	I*4	000454	X	SFA	R*4	000458	Y	SFA	R*4	00045C	IX	S	I*4	000460
IY	S	I*4	000464	NX	FA	I*4	000468	NY	FA	I*4	00046C	BIV	F XF	R*4	000000
XARG	F	R*4	000470	XTAB	FA XR	R*4	000000	YARG	F	R*4	000474	YTAB	FA XR	R*4	000000
ZTAB	FA XR	R*4	000CC0	IERRX	SF	I*4	000478	IERRY	SF	I*4	00047C	NXTAB	FA	I*4	000480
NYTAB	FA	I*4	000484	XLKUP	S	R*4	000488	IBCOM#	F XF	I*4	000000				

LABEL	ADDR	LABEL	ADDR	LABEL	ADDR	LABEL	ADDR
10.	000478 AR	12	000506	13	000510	15	00052C
16	000538	18	000546	20	000558	21	000562
23	000584	24	00059A	26	0005A2	40	0005CA
41	0005D4	42	0006CC	43	00062C	45	000658
46	000662	47	0006SC	50	0006BC	51	0006C6
52	0006F4	53	000720	60	000748		

OPTIONS IN EFFECT NAME= MAIN,OPT=02,LINECNT=54,SIZE=0000K,

OPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 70 ,PROGRAM SIZE = 2132

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 115K BYTES OF CORE NOT USED

STATISTICS NO DIAGNOSTICS THIS STEP

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