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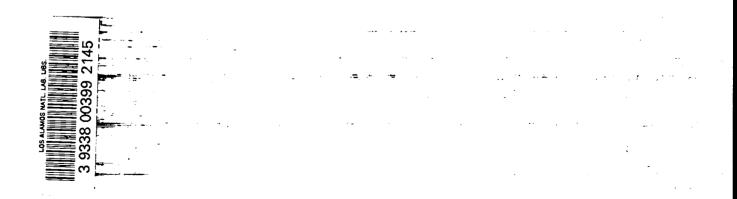
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FUELPIN: A Data Retrieval System for Nuclear Fuel Pin Information

by

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FUELPIN: A DATA RETRIEVAL SYSTEM

FOR NUCLEAR FUEL PIN INFORMATION

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ABSTRACT

The Fortran IV computer code FUELPIN was developed to assist in the surveillance of large numbers of nuclear fuel pins. Using sixteen levels of sorting and thirty-one key pin characteristics, the computer code sorts through large blocks of pin data to determine those pins having the desired characteristics. Allowance is also made for miscellaneous information on (1) fuel type, (2) clad material, (3) bond data, and (4) general pin information.

Upon execution the blocks of fuel pin information are inspected to insure that the data are credible, i.e., between experimentor specified limits. Octal stops are provided, numbered, and discussed in the codes comment section so as to block all paths of code execution known to indicate operational error. All parameter sort information is also inspected for potential input error with some minor correctional measures accomplished upon detection of an error condition.

Though limited to blocks of two hundred and fifty pins per run, large numbers of pins may be efficiently examined through problem stacking and proper use of a built in computer time economizing scheme.

I. INTRODUCTION

Surveillance of a large number of nuclear fuel pins requires some type of data retrieval system. For this task the computer code FUELPIN was developed. FUELPIN was designed to handle in excess of thirty parameters for each of two hundred and fifty pins as well as descriptive information on (1) fuel type, (2) clad material, (3) bond data, and (4) general pin information. Software extension to handle larger numbers of pins was not thought advisable because of the available computer space limitations but an unlimited number of pins could be examined in two hundred and fifty pin blocks.

FUELPIN and the fuel pin data on which it operated, i.e., its data base, were designed to (1) provide complete information on all pins in house, (2) allow selection of those pins having specific physical characteristics, (3) provide maximum software protection of the data base, and (4) provide code execution output in essentially final report form. When coding effort terminated, items one through three were virtually completed and item four unstarted.

II. CONSTRUCTION OF DATA BASE

In order to provide detailed information on the major aspects of the potentially large number of fuel pins involved, an extended list of the needed fuel pin data was compiled. In addition to indicating the specific data involved, Table I also contains the name used by the code during input, the array name in which

all data of the same type is stored, and the name of the relevant sort parameter. Details of input formats and variable designations can be found in the initial comment section of the computer listing.

Additional information is required for program execution as shown in Table II. Originally these variables, like those in Table I, were to be used in parameter sorting, but termination of coding effort occurred before this could be implemented. The parameters in Table II differ from those in Table I, however, in one major way - most of the input is conditional and depends on exactly how the Table I values were specified.

Another critical point on data base construction is the handling of the fuel, clad, bond, and general pin information comment statements. These conditional comment cards are read only if the respective integer input flags (C, C1, C2, and C3) are in the range of one through five. Blank or negative values are reset to zero and values larger than five cause code execution to stop. Since the maximum possible number of computer words needed to store this data is as indicated below, it would be impractical to use dimensioned arrays.

Words Needed

to avoid improper sorting. Input data checking, including this type of cross-checking, is extensively performed during execution as discussed in the software protection section.

III. PARAMETER SORTING

(250 pins)

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Sixteen levels of parameter sorting are possible using any of the twenty-three sort parameters specified in Table I. As explained under the listing comment section entitled "Specification of Sorts Desired, " SOR-TYPE value numbers are used to flag those parameters over which sorts are to be performed. Clear desoription of the required input formats is given in the comment section of the listing. For the three SORTYPE values where no sort was desired, the octal stop numbers which will be encountered if such a sort is attempted are shown (Table I).

Basically only three types of sort parameter input are required. Alpha-numeric or straight alphabetic input are accomplished through the use of A10 or 15, A5 formats.^{*} The only critical software consideration was the matching of all variable names to avoid

40,000 words (116,100 octal)

(1)

For Comment Cards = $\left(5 \frac{\text{cards}}{\text{comments}}\right) \left(4 \frac{\text{comments}}{\text{pin}}\right) \left(8 \frac{\text{words}}{\text{card}}\right)$ Instead, after the initial echo check, the comment card images are written serially onto temporary disk files thus requiring no dimension statements or dedicated computer word space. To use this scheme effectively, however, requires that these files be rewound to the proper starting words before any additional output of this information can be performed. This rewind sequence has not been written and is not included in the attached listing.

Finally, since a major effort was expended to use variable names which were easily associated with the actual parameter designation, extensive use of INTE-GER and REAL declaration statements was necessary. It was imperative that all such statements logically match one another so that no subtle changes would occur in data manipulation or storage. Similar care was exercised in matching the sort parameter names with those used for the input variable and array names, in order data conversions within the computer and the systematic right or left justification of any data using an A type input format. This justification is crucial since any difference in data location will result in differences in the representation of the data as stored in the computer and thus eliminate the possibility of locating the information when attempting a sort.

Numerical data, representing a potential range of real number values over which sorts are to be performed, \neq invariably require 5X, 2F10.0 input formats. As all of these input sequences are virtually identical, the one for fuel center line temperature will be examined in detail.

SORTYPE = 1, 3, 12, and 19. [≠] SORTYPE = 5-7, 10, 11, 13-15, 20-22.

CHECKING FOR DUPLICATE SORT ICLTMAX = ICLTMAX + 1 IF(ICLTMAX.GT. 1) STOP 206 CHECKING FOR END OF FILE MARK IF(EOF, 1) 2360, 2380 2360 STOP 207 2380 CONTINUE CONSTRUCTING MINIMUM RANGE SORT IF (CLTMAX, NE. CLTMIN) GO TO 2370 CLTMAX = CLTMAX + 0.0001 CLTMIN = CLTMIN - 0.0001CORRECTING FOR INPUT DATA INVERSION 2370 IF (CLTMIN . LT. CLTMAX) GO TO 2375 CLTHD = CLTMAX CLTMAX = CLTMIN CLTMIN = CLTHD CHECKING FOR SORT PARAMETER CREDIBILITY 2375 CONTINUE IF (CLTMAX . LT. 0.00 .OR. CLTMAX .GT. 2000.0) STOP 210

IF (CLTMIN . LT. 0.00 . OR. CLTMIN . GT. 2000.0) STOP 211 CHECKING INPUT DATA

WRITE (2.360) I, CLTMAX, CLTMIN

As can be seen from this example, five types of data input checking are performed on each such data input. First a flag is incremented and checked to ensure that a duplicate sort has not been requested. Since this type of sort request could only occur if potentially mutually exclusive sorts are requested or if an input error is made, code termination occurs if this condition is detected. Similarly, if an $E \varnothing F$ (end of file) is detected during data input, an octal stop is encountered. Sort parameter credibility is also checked at the end of each input sequence giving the experimentor an opportunity to set up realistic limiting values for the sort parameters involved. All three of these checks can result in code termination and are designed as part of the software protection to be discussed in the following section.

The remaining two types of data checking, namely data inversion and setting up minimum range sorts, are not part of the software protection sequences and hence no octal stop statements are involved. The data inversion statements merely allow the code operator to input the two respective sort limits in any sequence he chooses and upon execution the necessary ordering is automatically performed. Minimum range sorts are necessary since the actual sorting sequences expect a range of values over which parameter sorting is to be performed If one wants all the fuel pins with a center line temperature of exactly 1000° , for instance, both CLTMAX and CLTMIN are given values of 1000 and the "software" automatically sets up a sorting range of 999.9999 to 1000.0001, or a differential of 2.0E-04. This should be more than adequate resolution and this difference is used in all similar sorts.

Coded data as well as integer input^{\neq} use primarily 5X, 15 formats. For coded data, the particular coded representations of alpha-numeric input are discussed in the initial comment section of the code. Software checks are performed during execution to ensure that no coded values used either in constructing the data base or in setting up sort parameters are undefined.

Once all SORTYPE values and their corresponding limiting values have been read in and checked, subroutine SORTASK is used to perform the actual eliminations. As with the types of sort parameter inputs required, only three main types of logic checks are necessary. For a A formatted elimination, such as CLADUAL (SORTYPE value = 12), the test is for an <u>exact</u> match. Thus for the KKth pin examined, in order to detect a specific cladding type, both the computer array element, denoted CLADS(kk), and the input value CLADUAL must be exactly alike. The specific FORTRAN statement used is as indicated below and analogous tests are performed in all similar cases. Integer tests are also performed in this manner.

IF(CLADS(kk) . NE. CLADUAL) GO TO 55

The section of subroutine SORTASK entitled "SET-TING UP MASTER STORAGE LOGIC FOR MULTIPLE ELIMINATIONS" is used to keep track of those fuel pins meeting the sort parameters specified.

^{*}SORTYPE = 4, 16, 17, 23. \neq SORTYPE = 2.

Once it is determined that a particular pin meets whatever criterion is being used, the sequential position of that set of data in the data base is saved in the array named ISAVE. At the end of the first and all subsequent sorts, this array is printed out. Only the first sort, however, examines all the pins present in the data base because later sorts are only done on those pins whose sequential position is still contained in ISAVE. Obviously, the most economical way to run the routine is to specify the less likely pin parameters first so that later sorts have fewer pins to consider.

For numeric, real data used to sort for pins having a specified range of values, statements like the one for fuel center line temperature shown below are used.

IF(FUELS(kk) . GE. CLTMIN . AND. FUELCLS (kk) . LE. CLTMAX) GØ TØ 35

Note: Exactly the same value could have been specified for CLTMIN and CLTMAX without resorting to setting up minimum range values but since computer representation of numbers can vary slightly from those specified on the input cards, this tack was avoided.

IV. SOFTWARE PROTECTION

As can be seen from Table III, 166 out of the 213 octal stops present in the code, i.e.,

85%, arise from the five causes noted. The EØF tests are done simply as good programming practice but all the remaining octal stops are designed to block paths known a priori to be logically in error.

Checking for duplicate sort, as discussed in the previous section, is used to detect an operator error. Only one sort on any given parameter was deemed desirable per problem execution.

Data base and sort parameter out of range error flags arise mainly from input credibility checks. All input data used either in the data base or in setting up the requested sorts are tested to ensure that the numbers are either within the expected experimental limits or are previously defined coded input. These stop statements are extremely important because through them the experimentor can check range of the data being manipulated.

Sort parameter conflicts arise from only two sources. If the input variable SØRTYPE is set equal to eight, nine, eighteen, or greater than twenty-three, execution ceases because no sorting was to be done on the parameters indicated by these SORTYPE values. The remainder of the octal stops involved ensures that a SØRTYPE value is not encountered in a part of the code where it logically does not belong.

Normal code termination is done at octal stop number 777. If any other value is listed, the exact nature of the error and its location in the code can be determined from the appropriate comment section at the front of Appendix A. For instance, if octal stop number fourteen is encountered the error is shown to be in the main program under the comment section heading "READING DATA ENTRY" and caused by an improper exit from the comment reading loop involved.

v. OUTPUT

As illustrated in the three sample listings in Appendix B, the first set of output is an echo check of the pins in the data base in the order that they were encountered. This echo-checking is obtained through the input parameter PAR which can be used to (1) provide an echo check of all pins involved, (2) suppress completely the echo check, or (3) pass control of the echo-checking to the individual pins as defined in the DUMP parameter on the first card in each data set.

After the echo-checking, the sequential order, the type of sort requested, and the particular sort parameters involved are listed. The type of sort requested is obtained by storing descriptive names in Hollerith fields in the array named KEY and having the SORTYPE value used trigger the appropriate response. The sort parameters printout is taken directly from the input values.

Finally the ISAVE vector is printed out after each completed sort with a special heading being attached to the final values. It should be noted that the numbers indicated are the sequential positions of individual data blocks in the data base, exactly the numbers printed out when using the PAR parameter to obtain a complete echo check.

VI. UNCOMPLETED WORK

Two major coding efforts remain uncompleted. First, none of the parameters listed in Table II have been incorporated in any of the sorting sequences. These variables require nothing really new as far as software logic is concerned, but since the data depend in many cases on previously defined parameters, more than normal care must be used in setting up these sorts. Second, the output is highly limited and contains one known formatting error. To expand the output will require the writing of the necessary output statements in addition to providing the logic necessary to rewind the temporary disk file storage of the comment card images.

 			TABLE I		
		Fuel Pin Data	Input Variable <u>Name</u>	Array Name	Sort Parameter Name
1.	Source	Element	SOURCE	SOURCE(250)	ISOURCE
2.	Task	I.D.	TASK	TASKS (250)	ITASK
3.	Number)		NUMBER ID	NUMBERS(250) IDS(250)	INUMBER ID
4.	Fuel Ty	ре	FUEL	FUELS(250)	IFUEL
5.	Uranium	Composition	UCOMP	UCOMPS(250)	UCMAX, UCMIN
6.	U ²³⁵ En	richment	RICH235	RICH35S(250)	MAX235,MIN235
7.	U ²³³ En	richment	RICH233	RICH33S(250)	RMAX233,RMIN233
8.	Plutoni	um Composition	PUCOMP	Not Stored	No sort desired
9.	Pu ²³⁹ F	Enrichment	RICH239	Not Stored	No sort desired
10.	Fuel De	ensity	RHO	RHOS(250)	RHOMAX, RHOMIN

	Fuel Pin Data	Input Variable <u>Name</u>	Array <u>Name</u>	Sort Parameter <u>Name</u>
11.	Smear Density	SMEAR	SMEARS(250)	SMEARMX, SMEARMI
12.	Cladding Type	CLAD	CLADS(250)	CLADUAL
13.	Coldwork (%)	COLDWRK	COLDWRS(250)	COLDMAX,COLDMIN
14.	Cladding O.D.	CLADOD	CLADODS(250)	CLADMAX,CLADMIN
15.	Wall Thickness	WALLTK	WALLTKS(250)	WALLMAX,WALLMIN
16.	Bond Type	BOND	BONDS(250)	IBOND
17.	Encapsulation	ENCAP	ENCAPS(250)	IENCAPS
18.	Shroud	SHROUD	Not stored	No sort desired
19.	Subassembly Type	SUBASSM	SUBASSS(250)	SUBVAL
20.	Lincar Power	LINPOW	LINPOWS(250)	RLINMAX, RLINMIN
21.	Clad Temperature	CLADTMP	CLADTMS(250)	CLADT!X, CLADTMI
22.	Fuel Center Line Temperature	FUELCLT	FUELCLS(250)	CLTMAX,CLTMIN
23.	Status	STATUS	STATUSS(250)	STATVAL

TABLE II

	Fuel Pin Data	Input Variable Name	Array Name
24.	Pin Location	LOCAT	LOCATS(250)
25.	Pin Disposition	DISP	DISP(250)
26.	Report Status	IREPORT	Not stored
27.	Subassembly Number	SANO	SANOS(250)
28.	Current Burnup	CURBU	CURBUS(250)
29.	Goal Burnup	GOALBU	GOALBUS(250)
30.	Report Number	REPORT	REPORTS(250)
31.	Treat Test Number	TESTNO	TESTNOS(250)

TABLE III

Type of Fatal Error	Number of Such Tests Performed	Possible Octal Stops Encountered
Unexpected EØF	32(40)	1-3, 24-26, 34, 44-46,
		51, 61-70, 100, 101, 104
		111, 112, 115, 117, 121, 123,
		137, 203, 207, 213
Attempting Second Sort	21(25)	43, 55-57, 73-76, 102, 103
		105, 106, 110, 114, 116, 120
		122, 127, 202, 206, 212
Data Base Parameter	25(31)	4-13, 15-23, 27-33, 35, 36,
out of Range		47, 50, 124
Sort Parameter Out	27(33)	107, 113, 140-164, 204
of Range		205, 210, 211
Sort Parameter	13(15)	52-54, 60, 125, 126,
Conflict		130, 133, 134, 136, 165
		166, 201

161 GREEN

DUHP PANAHETER OVENHIDE.

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CARO FIVE+ CUNUITIONALS

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CARO SEVEN:

CARO ONE+

CARO THO.

CARD FOUR

APPENDIX A

LP-0248

FORMAT

A10

5X+15

54+15

54.15.45

5X.2F10.0 5X.2F10.0

5x,2F10.0

5x.2F10.0

5x,2F10.0

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A10

SPECIFICATION

COMPUTER LISTING FOR FUELPIN

CARD TEN: CUNDITIONAL.

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SANO, CURBU, GUALBU, FURMAT (A10,215%,F5.01) READ IF LOCAL EQUALS 2.

CARD ELEVENS CUNDITIONALS C REPONTS FURNATIALDIS C READ IF INSPORT SUVALS . PAR. FURMATISA.111. PAR = I FON LUMPLIE ELMO CMECK OF ALL PINS. 2 FUR LUMPLEE JUPPRESSION OF ELMO LMECK. 3 FON USE UF JUMP PARAMETER AS STATED BELOM. CARO THELVES CONDITIONALS TESTNO. FURHAT (ALOI. READ IF LUCAT EQUALS 5. NOTE THIS IS ONLY ONE LAND PLACED IN FRUNT OF THE DATA DECK. SPECIFILATION OF SOUTS DESIRED. DATA ENTRIES. FUR SEITING UP ORIGINAL DATA DECK. CARO GNE NNC. Sonttpeili,i≢I,id. Fühmatil6151. Tenninäieu by blañk entmy or full cand. Nornal Luue Laii When euf encountereo ñere. с SOUNCE, TASK, NUNDER, TU, OUMP. FORMATIALO,215X,151.45,151. OUMP & LESS IMAN ONE LO TERMINATE FUEL PIN DATA READ. BLANK CARD =ONKS. I fun compleie pin by pin data printoit. MNY OIMEN FIVE UIGIT INTEGEN FUR SUBPRESSION OF DATA DUMP. c CARO TWO TITLE(11+1=1+8. FUMHAT(8410). c. IF THE HUMBER VALUE TO BE ENTERED IS ALPHANUMERIC. USE THE AS FILLO FOR THE ALPHADETIC PART. SPECIFICATION OF SUNT PARAMETERS: FUEL, ULOMP, AIGH235, AIGH233, PUCOMP, HIGH239, RMO, C. Formatiax,11,0FI4.0044,121. ASSOCIATEU VARIABLES SORTYPE č HEUUIMEU AS INPUT VALUE C **TSOURLE** C C CARD THREES LONDIIIONALS. C CONHENTIJIJJIJE BOG FOHMATIBAIDIS FUEL INFURMATION. C REAUSIUP IU SUUM LAMIS OFPENDING ON IME VALUE OF C. C BE MIEFS. CUMMENIS CUSI MEAL MONEYS TTASK c 101 INUNBER 3 IFUEL ٠ UCHIN MIN235 UCHĂX C CL2XAH RM1N233 HMAX2J3 ERMUN RESULTING IN OCTAL STUP 71. SHEAH, LLAU, CULUENK. CLADOD, BALLIK, BOND. ENCAP, SHROUD, CI. CZ Ĉ ERHUH RESULTING IN OCTAL STUP 72. 10 C SKRUUD = I FOR YES. RHOMIN RHŮHAA ç 2 FOR NO. 2 FOR NO. SHLAHMA SHEARHI 11 CLAUUAI 12 C COLOHAX COLUMIN łł COMMILIJI-JIIBA FUMMATIBAIOI, CLAUDING INFORMATION. Reads up iu > Sulų šanis Depending on ime value of CI. BE BHIER, Cummenis Cusi meal Money. C CLAUMAX. 15 WALLHAX 16 IJUNU 17 ILNUAPS c īè COMMZIJI,JEI,84 FUMMATIBAIGI, BONO INFOMMATION, READS UP ID 3 SULM LANNS DEPENDING ON THE VALUE OF C2. BE BHIEF. COMMENTS CUST MEAL MOMEY. 19 c 20 21 RLINHAX c CLAUTHE CLIHAX. 22 STATVAL 23 SUBASSHA LINPONA CLAOTHMA FUELCLTA STATUSA C3. FORMAT (AIU+3+ 10+++2 (44+11)). DEFINITION OF FSLI USESS I INPUT.

NO.

STATUS = I FUH IN PHULESS. 2 FOR IN SIOMAUE. CARO EIGHT. CONUITIONAL. C Commiguit.Jai.es fürmatibaigi, Genemal Information. C Reads up 10 - Sulm Gamis Depending on The Value of G3. C BE BMIEF. CUMMENIS CUSI MEAL HONEY. CARO NINE. LOCAL UISPA IREPONIS FORMAT (3(33+121). c LOCAI = UNE (IN PHOLESS) 01SP = 1 - AHCHIVE. Th0 THREE FOUR (TPEAT) (EBH-11) HOT CELLI 1 - PRE-IHRAU, I - NUT. 1 - TEST 2 - DESIGN 2 - DESINUCTIVE. 2 - INTEMIN. 3 - FABHILATION. 4 - NUT. IREPUNT = - COMPLETE ALTH REPORT NO. SPELIFIED BELOW. 2 = IN PROCESS. 3 = FOR ANY UTHER VALUE ENTERED = A NO-OP. С С

PRUGHAN FULLPIN (INP+FSEII=INP,OUT+FSEI2=OUT+FSET3+FSET4+FSET5+FSET

5X 2F10.0 5X 2F10.0 CLAUMIN 5x.2F10.0 WALLHIN 51.15 51.15 ERNUR RESULTING IN OCTAL STUP 77. AIO 5X+2F10+0 RIINMIN CLAOTHI 5x.2F10.0 CLTHIN 94.11 _____ 2 UUIPOI. 3 FUEL INFOMMAIIU. 4 LLAUDING INFUMMATION. 5 BOND INFORMATION. 6 BENEHAL INFORMATION.

STRUCTUME OF CODES

C C PROGMAM FULLYINI CUNIAINS ALL READS FROM INPUI DECK+ CHECKS ALL DATA And Lemu-Checks if Teuussied.

SUBRUU	TINE SURTASK. PEH	FURMS REQUESTED F	IMINATIONS ON MASTER DATA	
ELIMIN	ALIUNS.	AF MHOZE EFEMĒNĪ2	ARE THOSE LEFT AFTER	
SUBRUU AS SPE	TINE SIACK. USES I Cified by Appropris	LIBRARY SUBROUTIN AȚĘ INPUȚ.	S TO STRUCTURE ELEMENTS OF ISA	VE
	TINE TEXTPIS PHIN	TṢ OUT IN REPUŖŢ P	ORM THE STRUCTURED DATA	
	*************			••
	AL STOPS:	*		
	•			
		UNEXPECTED EUP IN	ORGER AND T ^y pes of Sonis Title Read.	
4 5	IFUEL ULMĂX	UCMIN	5X+15	
67	CLSAAM	#1N235	5X+2F10+0 5x+2F10-0 5x+2F10-0	
8	RHMAZJ3 Ermun resul	RMIN233 LIING IN OCTAL STU	P /1	
10	ERHUH HESUL	LING IN OCTAL STU RHUMIN	P 72.	
11	SHEAHMX	SHEARHI	5x,2F10.0 5x,2F10.0	
· 12 13	ČLAUUAL ČOLOMAX	COLOHIN	A10	
13 14 15	CLAUMAX	CLAUHIN	54 * 2F10+0 5x + 2F10-0	
16	ÉALLNAX Ibunu	WALLHIN	5x, 2F10.0	
17 18	IENGARS	*****	5x,15	
19	SUBVAL	ŢING IN OCTAL ȘTU	P 77 <u>•</u>	
20 21	HLINHAX CLAUIHX	RLINHIN	5x • 2F 10 • 0 5x • 2F 10 • 0	
22	ČL 1 HĀX	CLAOTHI CLTHIN	5x+2F10+0 5x+2F10+0	
23	STŘÍVAL		9A+11	
3 4 5	UUIPOI. FUEL INFOMMAIIU LLAUDING INFUMMAII BONU INFOMMAIIU. YEMEMAL INFUMMATIO	-		
		•		•
STRUCIU	HE OF COOLS			
	CONCRECTED IN GEROES	ieo.	INPUT DECK. CHECKS ALL DATA	
SUBRUUT SET. S ELIMINA	FIS OF AFFIOR TOWA	URMS REQUESTLO EL E WMOSE ELEMENIS (IMINATIONS ON MASTER DATA Are <u>T</u> moșe Left After	
SUBROUT		IBHARY SUBROUTINE	O STRUCTURE ELEMENTS OF ISAV	E
รบชหบบุฐ			DRM IME STRUÇIUREO UAIA	
		•••••••	*****************************	•
	• • • • • •	•		•
INTEMNA	F \$10425			
INTEMNA Stop I	F \$10425	IN. DETERMINING	ROER AND TYPES OF SORIS	
•	L STOPS: PROGMAN EUELP REQUESTED: UI PROGMAN FUILP UNEXPECTEU EDI	F IN SOURCE MEAD.		
STOP 1	L STOPS: PROGMAM EVELP HEQUESTED: PROGMAM FUILP UNEXPECIEU EOI PHOUMAN FUELP	IN. READING DATA F IN SOURCE MEAD. IN. REAUING DATA	ENTRY.	
STOP I STOP 2	L STOPS: PROGMAM EVELP HEQUESTEDS UNEAFECIEVED UNEAFECIEVED UNEAFECIEVED UNEAFECIEVED PHOUMAN FVELP UNEAFECIEVED	IN. HEADING DATA F in Source Mead. IN. Reauing dată F in Fuel Head. IN. Heading dăta	ENTRY. ENTRY.	
STOP 1 Stop 2 Stop 3	L STOPS: PROGMAM EUELP HEQUESTED: UNEXTED: PHOGMAN FULP UNEXTED: HOUMAN FUELP UNEXTEL: PHOGMAN FUELP ENHOM IN FUEL PHOGMAN FUELT	IN. HEADING DATA F IN SOURCE MEAD. IN. REAUING DATĂ F IN FUEL HEAD. IN. HEADING DĂTA Părameter. IN. Feading data	ENTRY. ENTRY. Entry. Entry.	
STOP 1 STOP 2 STOP 3 STOP 4	L STOPS: PROGMAM EUELP HEQUESTED: UNEXTED: PHOGMAN FULP UNEXTED: HOUMAN FUELP UNEXTEL: PHOGMAN FUELP ENHOM IN FUEL PHOGMAN FUELT	IN. HEADING DATA F in Source Mead. IN. Reauing dată F in Fuel Head. IN. Heading dăta	ENTRY. ENTRY. Entry. Entry.	

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STOP	?	•	PHOGHAH FUELPIN. HEADING DATA ENTHY.
STOP	10		EHHOM IN MILH233 PARAMETEN. Phogman füllping. Reading data Entmy. Ennom in Pulump Parameten. Phogman fülling. Meading data Entry. Errum in Milm239 Panameten.
STOP	11	•	LANDA IN PULUAP PARAMETEN. Phogman Fuluing. Meading data entry. Landa in Milin239 parameten.
STUP	12		
STOP	13		LKKUM IN MMU PARAMETER.
STOP	1+		ERRUM IN C PANAMETER.
STOP	•		IMPRUPEM EALL FROM CUMMENT READING LOOP. Phogmam Fuflying Reading Data Entry
STOP			LHRON IN SYLAH PARANETER. Phugman Fullpin. Heading data enthy.
STOP			ERNUM IN CHLOWRK PARAMETEN.
STOP	•		ERION IN GLAQUU PARAMETEM.
STOP	•		ERHOM IN LLADUU PANAMÉTEN. Phugman Fuelpin. Neadinu Qata Entry. Erhum in Balltk Parameten. Phogmam Fuelpin. Neadinu Qata Entry. Erhom in Bonu Parameter.
STOP		-	ERHON IN BUNU PARAMETER. Phugham Fuelping Reading Data Entry.
STOP		-	stands to subschedule to service the
STOP	•	-	ERRON IN SHNOUD PARAHETER.
STOP	•		PHOGHAN FULLPIN, HEADING DATA ENTRY, Phoghan Fullpin, Heading data Entry, Ehrom in Samoud Pakameter, Program Fullpin, Heading data Entry, Uneapecieù Eof in comui mead. Prògham Fullpin, Heading data Entry.
			UNEXPECIEU LOF IN COMME HEAD.
STOP	•	-	PHOGHAM FYELFIN. READING DATA ENTRY. UNEAPELIEU FOF IN SHRUUD READ.
STOP			UNEAPLILU LOI IN SHUUD KEAO. HHOGAAR FUELDIN, HEADING DATA ENTRY, ERNUH IN LINUUW PARAHETEN, HHUGHAM FUELDIN, HEADING DATA ENTRY, HHUGHAM FUELDIN, HEADING DATA ENTRY,
STOP	•	•	CROOM IN CLAUCHP PARAMETER.
STOP		=	PHOGMAM FÜELPIN. KEAQING DATA ENTRY. ERMOM IN FUELTMP PARAMETEM.
STUP		=	ERHOM IN FUELTING READING DATA ENTRY. Erhom in Fuelting Parameten. Phogmam Fuelting, reading data Entry. Enhom in Status Parameten.
STOP			ERNOM IN SHEAR READING DATA ENTRY.
STOP		•	PROGNAM FULLPIN. READING LOCATION ENTRIES.
STOP	35	•	UNEAPECIEÙ EOF IN LOCAT MEAD. Phouman fuecping. Reading Locațion Entries. Emnum în Lolat Parameten.
STOP	36	=	PROGMAM FUELPIN. READING LOCATION ENTHIES.
STUP3	7- 4 2	22	ERNOM IN UISP PARAMETER. Prognam Fullpin. Reading Location Entries.
STOP	43		INPHUPEN LOLA(+ OISP PARAMETEN SET. PHOGHAM FUELPIN. SUNTYPEIII+1=4+10.
STOP	44		ATTEMPILU SECONO FUEL SUNI. PROGNAN FUELP(N. READING COCATION ENTHIES:
STOP	45	=	PRUGNAR FUELPIN. READING LOCATION ENTHIES.
STUP	46	•	UNEXPECTED LOF IN HEPORT HEAD. PRUGNAM FUELPIN. READING LOCATION ENTRIES.
STOP	•7	=	UNEAPECIEU EUF IN TESTNO MEAD. PROGNĂM FUELPIN. HEADING DATĂ ENTRY.
STOP	5 0	•	ERHOM IN LI PARAMETER. Phugham Fullping heading data entry.
STOP :	51	=	ERNÔM IN ÉZ PARÂMETÊN. Progmam Füelpin. Heading data entry. Uneapelieu edr in coma head.
STOPS	2-94		PROGNAM FUELPING OFTERMINING OPDER AND TYPES OF SOUTH
STOP S	55		PRUGNAM FUELPINA SONTYPEIJIAI=IA3.
STOP :	66	=	ATTEMPTED SECUND SOUNCE SUNT.
STOP :	57	-	PRUGNAN FULLEINA SANTYPETTALINA.
STOP (=	ATTEMPILU SECUNO NUMBER SORT. PRUGNAM FUELPIN, SORTYPEIII, 1=1,3
STUP 6		=	LOGIL ENNUM IN ABOVE TIMEL CUMBINATIONS. PRUGMAN FUELPIN. SONTYPEII.1=4+16
STOP 6	•	=	UNEXPECTED COF IN IFUEL MEAD. MHUSHAM FUELPIN: SUNTYPEIII.I=1.3.
STOP 6			UNEAPECIEU EUF ÎN ISUGUREE MEAU. PRÔGMÂM FUEEPIN, SOMTYPEIII-1=1-3.
STOP 6	•		UNEAPECIEU LUP IN ITASK HEAD.
0.00 Q			PHŪGMĀM FŪELPIN. SOMTYPEIIĪ,I01+3. Uneapeciev eof III Inumber neau.

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	- c	STOP65-/0=	PHOGHAN FUELPIN. SONTYPE(11+1=4+10.	с 5 с	TOP	145	•	PHOG UCMA
•	ç	STOP71=72=	UNEAPECIES EOF ÎN ELIMINATION MAX, MIN VALUES. PROGRAM FUELPIN. SONTYPETIT.TE4.10.	c s c	TOP	14 3	=	PHUG
	c	STOPINEICE	ATTERPILING UNALLOBED SONT.		TOP 1	144		HAX2 PHUG
	Č	STOP 73 =	PRÔGMAÑ FULLPIN. SÔNTYPEIII,134,10. Atiêndieo secuno elimination un u235 Enricmment.	C		-		HINZ
	č	STOP 74 =	PROGRAM FUFLPIN. SOMTYPE(I)+1=4+10+		TOP	142		PHOG
	С	STOP 75 #	ATTEMPILU SECUNU ELIMINATION UN UNAÑIUM COMPUSITION. Phògman fuelpin. Suntypeilisia=4,10.	с 5 С	TOP 1	140	•	PHUS
	c		ATTEMPTEU SECOND ELIMINATION UN U233 ENNICHMENT.	с с 5	TOP	147		PHOG
	с с	STOP 76 =	PHÔĞMAÑ FUELPIN. SOMTYPL(II+I++IV. Atienpio secund elimination un fuel densițy.	С				HH0H
	ĉ	STOP 77 .	PROGMAM FUELPIN. SUHTYPEIII+I=II+20.	с 5 С	TUP	154	*	PHUG
	с с	STOP 100 -	ATTEMPTLD UNALLOWED SHROUD SUNT. Prùùmam Fullpin. Somtyptiii.1=11.20.	C 5	TOP	151	=	PROG
	С		UNEAPELLEV EOF IN SHEARHAD SHEARHI HEAD.	с с s	TOP	154	=	SHEA PHÙG
	с с	STOP IOI =	PRŮGŘÁM FULLPIN. SORTYPE(II.I=II.20. ÚNEXPLCIEV LOF IN CLAOVAL READ.	č	-			SHEA PRÔG
	С	STOP 102 -	PHŪGŅĀR FŲELPIN. SONTYPE (1) • 1=11 • 20 •	С	TOP	-		COLU
	ç	STOP 103 .	ATTEMPILU SECUND SHEAR SUMT. Phōgmām fullpin. Soktype(II,1=11,20.	C S	TOP	15+		COLD
	ç		ATTEMPILO SECUNO CLAU SONT	с с 5	TOP	155		PROG
	ç	STOP INT =	PRŪGMAM FUELPIN. SUNTYPEIĪI,I=II,20. Unēxpēlīed eof in Columax Head.	c S	TOP	155	-	PROG
	Č.	STOP IÇƏ #	PHOGHAM"FUELPIN. SORTYPEIII,II=II,20,	Ĉ		-		CLAJ
	с. с	STUP IDo =	ATTÉMPIED SECUND COLOWRK SORT. Phôgnam Fullpin, Schtypeiii,Ì=II,20,	с S С	TOP	15!	•	PHOG
	C C		ATTEMP(EO SECONO BONU SONT.	Č S	TOP	162	•	PHOG
	C C	STOP IU! .	PRÔGHAÑ FUELPING - SORTYPEÍÍIDI=110200 Ermón in Inunu Parameteng	ç,	TOP	161		WALL
	c c	STUP II⊻ =	PHUGHAH FULLPIN. SONTYPEIII.I.	C		-		
	c c	STOP 111 =	ATTEMPILO SECUND ENCAP SURT. Prògnam Fuelping - Suntype(II,1=11,20,	c s c	STOP	162	*	PHUG
	С		UNEAPECIEÙ EUF IN IBONO MEAD.	c 5	TOP	161	3	PHOG
	с с	STOP 112 =	PHÒGHÀN FÙELFIN. SONTYPLITI·I=II·20. Un <u>ërpl</u> ejeu çof in iencap meau <u>:</u>	с с s	TOP	164		PHUG
	č	5TOP 114 =	PHOGHAH FUELPIN, SUHTYPEIII,I=11,20. Ennum in Iencap Pahameten.	č		-		HLIN
		STOP II+ =	PHOGMAM FUELPIN. SONTYPE(11.1=11.20.	c s	510P	192	=	PROG
	ç	STOP II5 =	ATTEMPIED SECUNÚ CLAUDO SURT. Phògnam fuelpin. Sontypei11,1=11,20.	c 5	STOP	165	=	РНU 10 М
	C C	•	UNEXPECIEU EOF IN GLADMAX REAU.	c c 1	67 -	176	5=	PH09
	C C	STOP IIù =	PHÔGHĂH『FUELPIN』 SŨRTYPEIII:IOII:20. Attempted Second Walltk Sort.	С	177 -	230		PHÔG
	ç	STOP 117 =	PHOGMAN FUELPIN. SUNTYPEIII:1=4.10.	č		-		ATTE
	ç	STOP 12 -	UNEXPECIED ED IN WALLMAX READ. Phognam Fuelpin. Suktypeiii,1=4,10.	C 5	STUP	201		PŘÖĞ IST
	ç	-	ATTEMPILO SECONÓ SUBASSM SORT.	с с s	STUP	202	=	PHÔ
	c c	STOP 121 =	PRŮÚMAŇ FUEĽPIN. SORTYPEľI),ľ≈4,10. Unežpelieů LOF in Submaž meao:	С	STOP	20.4		PROG
	č	STOP 122 =	PRÒGMĂM"FULLPIN, ŚORTYPEIli,I=4.10,			• -		UNE
	c c	STOP 123 -	ÁTTÉMPILO SECUNÖ LINPO= SURT. Phügnam fyelpin. Soktypeili (1=4+10.	с ¹ с	STOP	204		PHÔC CLÂC
	č	-	UNEXPECTED FOF IN HLINMAX HEAU.	č š	STOP	SÖP	*	PHOO
	c c	STOP 12:	ENRUH IN C3 PARARETER.	c s	STUP	200		PROC
	C C	510P 125 =	PROGMAM FÜELPIN. SORTYPE(1)+1=4+10. IST Value Tu Lange. Logic Bhrakoown.	с ⁴	STOP	201		ATT: PHÙ
	C C	STOP 126 =	PROGRAM FUELPIN. SORTYPLIII.ITII.	č		••		UNE
	с с	STOP 12/ =	IST VALUE TU LARGE. LOGIC RHLAKOONN. Progman Eurlping Oetermining Order and types of Sorts	c s	STOP	21 2	=	PHŪL
	ç	•	OUPLICATE SUNT RECUESTED.	c :	STOP	211	=	PRO
	c c	STOP 13	ISUNIER VALUE TO LARGE. LOGIC BREAKODEN.	с : с :	STOP	214		UDH9
	с	STOP 131 "	SUBMUUTINE SURTASK+ FUEL+ UCUMP+ THRU MHO ELIMINATIUMS+	č				ATT
	C C	STOP 132	ATTEMPIEN UNALLOWED SORT. Suumuutine Suntask. fuel. ucump. Imru rmo eliminatiums.	с : с	STUP	213	•	UNE
	ç	STUP 134	ATTEMPTEO UNALLORED SURT	С				-
	c c		ISONILA VALUE TO LARGE. LOGIC BREAKOOBN.	C*****	10000			
	с	STOP 13	I SUBROUTINE SUMTASK. BONU THRU LINPOW ELIMINATIONS. Isomier Value to Large. Logic Breakdown.	C	DEF 1/	aī Ēņ	ON	OF 1
	c c	STOP 135	SUBRUUTINE SURTASK. BOND THRU LINPOR ELIRIMATIONS		IPHI			
	с	e Ton 134	ATTEMPTED UNALLONED SORT.	с	ISAVI ISOR	ξÜ,		
	Ę	STOP 136	ILANIPA NALIP TA LADGE, LUGIN DELAKUDENA	С	THA			
	Ċ	STOP 131	INFAPECIAL EDE IN PAN HEAU.	с	PINS	UN		
	С	STOP 14-	PROGRAM FUELPIN. SORITPLIIIII-	ç		•		
	ç	STOP 141	IFUEL PARAMETER OUT OF RANGE.	с с•••••		••••		
	с с	9196 - 7* ·	UCHIN PARTEILE OUT OF RANGE.	•				

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STOP IAC =	PROGHAM FUELPIN. SONTYPE(1),1=4,10.
ETOD 14.1 -	UCMAX PARMALIER OUT UF HANGE. Phugham Fullen, Sontypeilistes, 10.
STOP 143 =	MAX245 MANANEIER OUT OF MANGE.
5TOP 144 =	GNDGRAM EŬFLALDA - SONTYPE(I]+I⊒4+IQ+
STOP 145 =	NIN233 FANAMEIEH OUT OF NANGE. Phogman füelpin, Sumtyplii.1=4.10.
2104 142 -	HMAXCJ3 PAHAMETER OUT OF MANGLA
STOP 140 =	PHUGHAM FUELPIN. SONTYPEIII+I=4+10. MMIN233 PAWAMETER OUT OF MANGE.
STOP 14/ =	PROGRAM FULLPTH. SONTYPE111+1=4+10+
	HHOHAX PANAMETER OUT OF HANGE.
STOP I5y =	PRUGMAN FULLPIN. SONTYPEIII.I 4 44 10.
STOP 151 =	MNUMÎN FAMANETER OUT OF MANGE. PRUUMAM FÜELPIN. SONTYPEIII.I=II.20.
STOP 154 #	SHEANHA PANAHETER OUT OF MANGE. PROGRAM FUELPIN. SONTYPEIII.IFII.00.
	SPEANNI PARAMETER OUT OF HANGL.
STOP 154 =	PROUMAN FULLPIN. SUNTYPEIII.II. Columax parameter out of mange.
STOP IS+ =	
STOP 155 =	COLDAIN PAJARTER OUI OF HANGL PROGMAN FULLPIN. SONTYPLIIIIIIIII.
5109 159 -	CIAUMAX DAVAMETER OUT UP MANUE.
STOP 150 =	PROGMAN FUELPIN. SONTYPEIII.III.20, Claumin Pratheter Out uf Mange.
STOP 15/ =	PROGRAM FUELPIN. SONTYPEIII:1 = 11 = 20.
	BALLMAX PARAMETER OUT OF HANGLA
STOP Iou •	PROGNAM FUELDIN. SONTYPE(11,I=11+20, Wallmin Pamameter uui of mange.
STOP 161 =	•
STOP 162 =	PRUGMAN FUELPIN. SONTYPE(11,1=21,23.
	STATYAL PARAHLTER OUT OF HANGL.
STOP IOJ #	HE LNMAX PARAMETER OUT OF MANGES
STOP 164 =	PRUGNAM FUELPIN. SORTYPEIII:14141424.
510P 165 =	HLINHIN PANAMETER UUT OF MANGE. Phogmam Fuelpin. Deiermining urger and types of Suris.
	PROGNAM FULLPIN. OFTERMINING ORDER AND TYPES OF SURTS. Sortypeit, Mange Ernor. Phugman Fullpin. Ofternining orden and types of Sunts.
510P 165 =	10 MANY SURIS REQUESTED.
167 - 176=	PROGNAM FUFÉPIN. SETTING UP PERMANENT STOMAGE.
177 - 230-	ATTEMPLING TO WRITE DUT TU HUCH INFORMATION. Phốgmam Fufiping Reading data Entry.
-	AILEMPILNG IG WAILE OOT IG OATA ENTRY. Angram Fuelpin. Reading gata Entry. Aitempilng ig overstore gimensioned Comment variagle. Phôgnam Fuelpin. Sontype (11.1=21.23.
\$TUP 201 #	PŘÔGMÁŘ FÜEĽPIN. SONTYPE(11+1=21+23. IST HANUE EMMUR.
STUP 202 #	HUNDERAN FULLOIN, SONTYPE (11+1=21+23+
STOP 204 -	ATTENTED SECURE CLAUTAP SONT ATTENTED SECURE CLAUTAP SONT PROGNAM FULLPIN, SONTYPE(1:1=21+23+ District Secure 1:1 Conduct PEAN
• =	UNEAPEULED EUR IN CLEVIER READS
STOP 204 #	PRÒGRÀN FUELPIN. SURTYPE(1)+1=21+23+ Glauinx prucheter qut GF Mange.
STOP 205 =	DROGNAM FUELPIN, SOMITPEILIPIESPER
STUP 200 =	CLAUINI PAJANLIER OUT OF MANGE. PROGNAM FULLEIN. SONTYPEIII.121,23.
5100 200	ATTEMPTED SECUND CLTMAX SUNT.
STOP 20! =	UNFRHECIFU ENF IN CLIMAR MEAD.
5TOP 21 . =	PHULHAN SULLPIN. SONTYPE (1)+1=21+23.
STOP 211 =	LINAX FAN-HEIER OUT OF HNAGE. Prognam füllpin. Sontypeili,i=21,23.
510P 211 -	CLIMIN MANAHEIER OUT OF HNAGE
STOP 212 =	PHUGHAM FUELPIN. SONTYPEIII.I = 21.23.
STUP 214 =	ATTEMPILO SECUNO STATVAL SORT. PROGMAN PURLPIN. SONTYPEIII, 121,23.
	DREXMEGIEU EUR IN STATVAC READS
DEETATION	OF INPUNLANT PARAMETENS.
-	
IPHINT ISAVE(II	 UNUSED PARAMETER SE(BY NEGATIVE VALUE OF PARA ELEMENTS OF ALLAS MATRIX BEING RETAINED.
ISOR	. JUNER OF SURTS REQUESTED. NUMBER OF SONT PHOBLEM BEING DONE. USED PHIMARILY
ITHACK	E NUMBER OF SOME MOULEM BEING DUNC. USED FRIMATER
PINSUN	FUN DOING APPROVALATE BETHER HUN INITIALIZATIONS. = NUMBER OF FUEL PIN DATA SLIS ENCOUNTERED.
	EUUIVALENT OT FINAL VALUE OF K PARAMETER
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OIMENSIUN TILLE (8) . COMMENTIADI . COMMI (40) . COMM2 (40) . COMM3 (40) .
        1 KEY(30)
          COMMUN 1012501+
                                        IL1 (250)+
                                                            10212501+
                                                                               103(250),
                     ISAVE (25u) .
                                       SUUMCES12501 + TASKS12501 + NUMBERS12501 +
ULOMPS12501 + HICH33512501 + RICH33512501 +
                     FUELS (253) .
                    HUSI251+ STERNS(250)+ CLADS1250)+ CULOWRS(250)+
CLADUOS(450)+ AALLTXS(250)+ CULOWRS(250)+ EACAP5(250)+
SUGASSS(250)+ CLADTAS(250)+ FUELCLS(250)+
        - 3
        5
                    SUGASSILSUI LINUCATSIZSUI, CLEVINSILSUI, SANOSIZSUI,
STATUSSICSUI, UCATSIZSUI, DISPSIZSUI, SANOSIZSUI,
CUMUNIZSUI, GUALBUSIZSUI, MEPORIS(2501, TESTNOS(2501,
                     105 (250)
          INTEGER SUNTYPE (161 .
                    TASK.
                             FUEL+
                                             C.
                                                         ci,
                                                                                   BONG.
                    ENCAP - SHIQUO STATUS, C3, PINSUH, SORT,
DISP, UNHP, PAR, SOURCE, STATVAL, SUBASS,
                                                                      C2.
                    TASKS. FUELS.
                                             BONDS.
                                                         ENLAPS. STATUSS. SUBASSH.
        S
                    SOUNCES. SUBVAL
         REAL HAAZIS, HINZIS, LINPOW, LINPOWS
          K = 0
         TPRINT # 0
         ITHACK 5 0
 Ĉ
         OUMP PAMAMETER OVENHIUE.
 C
         REA011+<3001 PAH
  IF (EUF. 112305,2310
2305 STOP 137
  2310 CONTINUE
         IF (PAR +LT+ 1) IPRINT # 1
        PAR = 1405(PAR)
IF(PAR :LE: 1) PAH = 1
IF(PAR :GI: 3) PAH = 3
 c
 с
         INITIALIZATIONS.
         KEY(1) = 7HSUUNCE & KEY1111 = 7HSHEAH & KEY(21) = 7HCLAOIMP
        KEY(2) = 7HTASK > KEY112) = 7HCLAO S REY(22) = 7HFUELCLT
KEY(3) = 7HNUHBEH > KEY13) = 7HCULOHHKS KEY(23) = 7HSTATUS
        REVIAI = HFUEL & REVIIAI = TACLADUD & REVIZAI = TALUCAT
REVISI = HHUEDHP & REVIIAI = THAALLTK & REVIZAI = THUAT
        KEY(0) = 7H<sup>A</sup>LCH2353 KEY1161 = 7H60N0 S KEY(261 = 7H5A<sub>N</sub>()
KEY171 = 7HN1CH233<sup>3</sup> KEY1171 = 7HENCAP S KEY(271 - 7HCU48U
KEY(8) = 7HENNUM S KEY1181 = 7HEKNUR S KEY1281 = 7HGUALBU
        KEY (41 . THENHOM & KEY (14) = THSUBASSHE NEY 1291 = THREPORT
        KEY (1 1 = 7HHHO & KEY 12CI = 7HLINPO & KEY (301 = 7HTESTNO
         KEY (311= 7HIU
   300 CONTINUE
         КөК
        IF (ITHAUK .GT. 11 GU TU 275
        IC(1) = 0
         ICI111 = 0
        102(1) = 0
        1C3(1) = 0
        ISAVE [1] = 0
   345 CONTINUE
        00 2J20 I = 1,250
        LOCAISII = 0
                       a Ó
        015P5(1)
        SAN05(11 = 10H
        CUMBUSIII = 0
        GOALBUS(11 = 0
        REPONTS(1) = 10H
        TESTNOS111 = 10H
 2320 CONTINUL
  275 CONTINUE
        00 345 1 = 1.40
        COMMENT(1) = 10H
        CONH1 (1) = 10H
        CONH (1) = IVH
        COMM3111 = 10M
  335 CONTINUE
        00 325 I = 1+16
        SONTYPEIII = 0
  325 CONTINUE
        00 315 1 = 1+8
        TITLE(1) = IWH
  315 CONTINUE
        10 = 10
        READING DATA ENTHY:
C
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C READ(1.10251 SOUNCE. TASK, NUMBER. 10. OUNP 1F (EUF+1170+80 TO CONTINUE STUP 2 BO CONTINUE IF (OUNP .LT. 11 60 10 265 PRECEDINU TEST LAN CAUSE EXIT FROM PIN DATA READ CYCLE. с IF (PAR .E4. 31 GU 10 2245 OURP = PAR IOUNH . OUMP 2205 CONTINUE IF (1044 .NE. 11 60 10 245 IF (11444 .GT. 11 60 10 185 RITE (2.1150) 185 CONTINUL WRITEIZ-IOBUI K. SOURCE. TASK. NUMBER. IO 245 CONTINUE READ(1.16JOIFUEL. ULOMP. HICH235. RICH233. PUCOMP. RICH239. HHO. C. 1F (EUF+1190+100 90 CONTINUE 100 CONTINUE D CONTINUE IF (FUEL .LI. 0 UN. FUEL .GT. 21 STOP 4 IF (UDAW LI. 0 UN. FUEL .GT. 21 STOP 4 IF (UDAW LI. 0 UN. FUEL .GT. 21 STOP 5 IF (RICH23 LI 0 UN. FUEL .GT. 2000) STOP 5 IF (RICH23 LI 0 UN. FUEL235 .GT. 1000) STOP 6 IF (RICH23 LI 0 UN. FUEL235 .GT. 1000) STOP 10 IF (RICH23 LI 0 UN. FUEL239 .GT. 1000) STOP 11 IF (RICH239 LI 0 UN. FUEL239 .GT. 1000) STOP 11 IF (RICH LI 0 T C = 0 IF (C LI 0 T C = 0 IF (C LI 0 T C = 0 IF (C LI 0 T C = 0 IF (FUEL .LU 1 MMIE(2) ISS1 IF (FUEL .LU 1 MMIE(2) ISS1 IF (FUEL .LU 2) MMIE(2) ISS0 IF (FUEL .LU 2) MMIE(2) ISS0 WRITE (2, 1145) UC0MP, MICM235, RICH233, PUCOMP, RICH239, RM WRITE 12, 11451 UCOMP .HICH235, RICH233, PUCOMP .RICH239, RHO 235 CONTINUL IF (C .EV. 01 GO 10 1405 ISTANT = -7 & ISTOP = 0 00 110 1 = 1.C ISTANT = ISTANT + 0 S ISTOP = ISTOP + 8 IF(ISTOP .GT. +01 SIOP 177 READ(1.1005) (COMMENT(J),J=ISTART+ISTOP) . 1F(EUF+11121+110 ISI CONTINUE STOP 14 110 CONTINUE 1405 CONTINUE REAUII. 10 JSISHEAM. LLAU. COLOWRK. CLAUDO, WALLIK, BOND. ENCAP. I Shruud. CI, C2 . 1F(EUF+11130+140 130 CONTINUE STUP 33 140 CONTINUE WRITE(2,225T SMCAH . IFIENCAP .EU. II WRITEI2.11201 IF(ENCAP .EU. II ANITE12.11151 WRITE12.1135T CLAO, CULUMMK, CLAODO, #ALLIK IF (BUND . E4. 1) ANIIE (2.1130) IF 180NO . E4. 21 ANIIE 12.11251 IF (SHROUD .EU. 1/ ##ITE12.1110) IF (SHROUD .EU. 21 ##ITE12.1105) 175 CONTINUE IF(CI .EU. 01 GO TU 1410 ISTANT -7 + ISLUP - 0 ISTANI -7 - 1-10-00 150 1 = 1-C1 ISTANI = ISTANI + 8 S ISTOP = ISTOP + 8 IF (1510P . 47. 401 STOP 200 READ 1.10051 (COMMITUL. JEISTART. 1510P) IF (EUF+1) 100+150

H

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STOP 24
  150 CONTINUE
1410 CONTINUE
        IF (C2 . E0. 01 60 TU 1415
15TAHT = -7 $ 1510P = 0
        00 170 1 = 1.02
         ISTAR = ISTART + & S TOTOP = ISTOP . 8
        IF (15100 .61. 401 5100 201
READ (1.1055 100HH2(J).JEISTART.ISTOP1
IF 160F.1 140.170
  180 CONTINUE
        STOP 25
 170 CONTINUE
1415 CONTINUE
        READII-IO401 SUBASSMA LANYON. CLAOTHP. FUELCLT. STATUS. C3
        1F(EUF.1)190,200
 190 CONTINUE
        STOP 26
IF (STATHS .EU. 11 ##11212.10951
IF (STATUS .EU. 21 ##112(2.1090)
 165 CONTINUL
       ISTART - ISTART + 8 $ 15TOP = ISTOP + 8
        ISTART = 131441 + 5 100 - 1010
IF(15104 .61 - 101 510P 602
READ(1+1005; (CUMH3)1, 315TART+15104)
        IFIEUF+11 295+285
 295 CONTINUE
STOP 51
 285 CONTINUL
 305 CONTINUE
1420 CONTINUE
        READING LOCATION ENTRIES.
        READ(1,1045) LOCAL. OISP. IREPORT
        IF (EUF+11210+220
 210 CONTINUE
        STUP 34
STUP 34

220 CONTINUE

IF(LUCAT .LI. I .OM. LOUAT .GT. 51 STUP 35

IF(LUCAT .LI. I .SUP 37

IF(LUCAT .EU. 31 00 10 155

IF(LUCAT .EU. I .ANU. 015P .GT. 41 STUP 37

IF(LUCAT .EU. 2 .ANU. 015P .GT. 21 STUP 40

IF(LUCAT .EU. 2 .ANU. 015P .GT. 21 STUP 41

IF(LUCAT .EU. 3 .ANU. 015P .GT. 21 STUP 41

IF(LUCAT .EU. 1 .ANU. 015P .GT. 21 STUP 41

IF(LUCAT .EU. 3 .ANU. 015P .GT. 21 STUP 41

IF(LUCAT .EU. 3 .ANU. 015P .GT. 21 INLPORT = 3

IF(00MP .NE. 1. 00 10 155

G0 TU(1160.IS5.II/1.155).LOCAT
1166 CONTINUL
        GO TU (111+105+95+91++015P
  111 WRITE (2+8=) $ 60 10 455
  105 WHITE (2.75) $ 60 10 155
   95 WRITE (2.65) $ 60 10 155
91 WRITE (2.55) $ 60 10 155
 145 CONTINUE
   60 TU (45+351+015P
45 WRITE (2+251 $ GU TO 155
   35 #RITE(2+1=) $ 60 10 1=5
1171 CONTINUE
60 TU (5-11601-015P
     5 WRITE (2+11651 $ 60 10 155
1160 WRITE (2,1170) $ 00 10 105
  135 HITE12+10701 5 00 10 1=5
 155 CONTINUE
155 CONTINUE
156 LUCAI .EU. 21 GO TO 230
156 LUCAI .EU. 21 GO TO 230
156 LUCAI .EU. 21 GU 14 250
  GO TU 268
        READ(1.10501 SANU, LUNHU, GOALBU
         1F(EUF+1)270+131
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278 CONTINUE STOP 44 131 CONTINUE IF (0000 .NE. 11 60 10 200 WRITE (2.140) SANU, LUMMU, GOALBU 60 TU 240 250 CONTINUE READIL. 10551 TESINO IF (EUF. 11290, 125 290 CONTINUE STOP 46 125 CONTINUL IF (0040 .NE. 11 00 10 260 RITL (2,10651 TESINU 260 CONTINUE IF (IMEPURT .NE. 11 40 TU 240 READ(1.10551 HEPUHT IF(EUF+1) 280+24 280 CONTINUE 310F 93 240 CONTINUE IF (DUMP .NE. 1) 60 10 1450 IF (14ΕΡΟΝΙ 250 1) «ΝΙΤΕΙ4,1255) REPUNŢ IF (14ΕΡΟΝΙ 250 2) πμιτει2,1256) 1250 CONTINUE STOP 45 Č. SETTING UP PERMANENT STURAGE. CHECK THIS -HULE SECTION FOM LOGIC ERHOR. BONDSIKI SUND CLAUUU CLA0005 (K1 = CLAU CLAOS(K) CLADINSIKI . LAUINP COLOSRSINI . COLUERK CUKOU UISP CURBUS (K) = = 10H = 10H 01 SPS (K) ENCAPS (R) ENLAP FUELCLSIKI = FUELS (R) FUE . GOALBUSIKI = 10H GUALBU 105 (K) . 10 LINPUWS(K) = LINPOW LOCAISTAL = 10H LOLAT NUMBERSIKI # NUHBEH REPONTS(K) = 10H REPURT RHOSIKI . HH O RICHJ351KI = HICH233 RICH355(K1 # SAN05(K) = 10H SANU SHEANS (K) . SHEAM SOURCESIKI . SOUNCE STAIUS STATUSSIKI = วับปีคริริท SUBASSSINI = TASKS (K) = TASK TESINU UÇ OKP TESTNUSIKI = 10H UCUMPS(K) = HALLIKSIKI = ISTANT = 1 5 ISTUP ALLTK * 6 DO 310 1 = 1.C IF (15100 . 41. 401 5100 167 HITE (3.1005) (CUMMENIU) JEISTART (15100) ISTANT = ISTART + 8 S ISTUP = ISTOP + 8 JIO CONTINUE ISTANT . I S ISTUP . . 10 320 1 ± 1,51 17 (15100 .01. 401 5100 170 mH1TE14+10055 (CumH1J1)+J≖ISTART+ISTOPI 151ART = 151ART + 8 \$ 1510P = 1510P + 8 320 CONTINUE 15TANT = 1 \$ 15TUP = 0 DO 330 1 = 1.6C 1F115TOP .6T. 00 \$10P 171 WRITE (5:10051 (CUMP2LJ): J=15TART.15TOP1 ISTANT = ISTART + 8 & ISTUP = ISTOP + 8 330 CONTINUE ISTANT # 1 \$ ISTOP # # ISTANT = ISTART + & S ISTUP = ISTOP + 8 195 CONTINUE ICIKI = C \$ ICIIKI = CI IC2IKI = C2 \$ IC2IKI = L3

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160 CONTINUE

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IF (OUMP .NE. 11 00 10 1205 WRITE (2+1210)
                       ISTANT # 1 & ISTUP # 0
                        00 1215 1 = 1.C
                       00 1215 1 4 1.0

IF(1510 - 61 - 601 5100 173

WHITE(2:10051 (CUMMENI)) J=1START-1510P1

ISTART = 15TART - 8 5 1510P = 15T0P + 8
ISTART = 121AR1 + 0 3 10107 - 1000

WRITE(2+1220)

ISTART = 1 $ ISTUP = 8

OO 1255 1 = 1,60

IF(15TOP + 01 * 40) $100 174

WRITE(2+10051 (CUMHI(1)+)=ISTART+ISTOP1

ISTART = ISTART + 8 $ ISTUP = ISTOP + 8

+225 CONTINUE
                      WRITE12+12301
ISTART = 1 $ ISTUP = 8
                     1235 CONTINUE
                   CONTINUE

HITEI2512401

ISTAT = I S ISTUP = 0

0 1265 I = (c3

IFIISTAT .GI. 4.1 STUP 176

HRITEI210951 (COMMA(U).J=ISTART.ISTUP)

HRITEI210951 (COMMA(U).J=ISTART.ISTUP)

HRITEI2.000 (COMMA(U).J)

HRITEI2.0000 (COMMA(U).J)

HRITEI2.000 (COMMA(U).J)

HR
                       ISTANT = ISTANT + & S ISTUP = ISTOP + B
     1245 CONTINUE
    1205 CONTINUE
                     IF100MP .NE. 11 00 10 300
WRITE12+2151
                     GO TU 3.0
С
                     DETENHINING URDEN AND TYPES OF SORTS HEQUESTED:
ċ
С
    205 CONTINUE
PINSUM = K
                      150RT . 0
                      00 2315 1 = 1,16
                       SONTYPEIII = 0
SORTTPEIL - -
2315 CONTINUE
ITHACK • I THACK • I
READIL-0001 ISUMTYPE(11,1 =1,16)
IF(EUF,1)10,40
                     STUP 777
         20 CONTINUE
00 34 1 = 1+16
                   IF (SUNTYPE(II .LE. U) GU TO 40
IF (SUNTYPE(II .EU. 0) SUP 52
IF (SUNTYPE(II .EU. 0) SUP 53
IF (SUNTYPE(II .EU. 10) SUP 54
                    IFISORTTPE(11 .GI JIL STOP 165
                     IF(ISOR! GT. 161 SIOP 166
         30 CONTINUE
         40 CONTINUE
                   IFIISONT .EO. 11 GU TU JS0
00 255 T = T.ISONT
00 255 K = T.ISONT
                   IF (I .EW. K) GO (Ö 455
IF (SURTYPE (I) 4E44 90MTYPE (K)) GO TO 265
     255 CONTINUE
                    GO TU 350
     265 CONTINUE
                   WRITE12+3551 SORIYPE111+ SORTYPE(K)
   350 CONTINUE
READIT:10051 (TITLE:1::..=1.8)
IF (EUF.1:30,60
50 CONTINUE
                   STUP 1
        60 CONTINUE
                   WRITE(2.1010) (TITLE(1).1=1.8)
WRITE(2.1015)
                   WRITE (2,1105) $ WRITE (2,1195)
                   00 1100 1 = 1.15001
SONT = SONTYPE11)
WRITE(2-12001 1. KET(SUNT)
1180 CONTINUE
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С ISUNV = 0 IFU = 1HICH35 = ICU = 1HICH33 = 18H0 = 0 ILINPON # 15H # ICLAO # ICOLO # 18 # IENCAP # ICLAOUD # IWALLIK # I ISUBASS = 0 IS = IT = IN = 0 ICLA!MX = ICLTMAX = IS!AVAL = 0 WHITE (2*2215) STARIINU MAIN SOMI MAMAMETER READ LOUP. 00 1260 1 = 1.150HT с IF (SURTYPEILI .01. 41 60 10 1290 С SORTYPE(11+1=1+3+ С IST = SURIYPEIII GO TU 11263+1270+12841+15T 1265 CONTINUE REA011.10551 1500HCL IF (EUF+111350+1355 1350 CONTINUE STOP 62 1355 CONTINUE 15 = 15 + 1 15 - 15 - 11 STUP 35 WRITE 12-22201 1. ISUUNCE GO TO 1275 1270 CONTINUE REAUI 1. 12651 ITASK IF (EUF . 11 1360 . 1365 1360 CONTINUE STOP 63 1365 CONTINUL IT = II + I IF(II + UT. I) STUP 36 BRITE(2:2225) I, ITASK GO TU I 75 1280 CONTINUE HEAD(1+22101 INUMBER, 101 IF(EUF+111370+13/5 1370 CONTINUE STOP 64 1375 CONTINUE IN = IN • 1 IF(IN ±UT± I) STUP 57 WRIT:12,22301 I, INVHUEM, IOI 1275 CONTINUE 1TOTAL = 15 + 1T + IN IFILIUIAL .01. 31 510P 00 60 TU 1260 С SORTYPE111+1=4+1.4 č С 1300 CUNTINUE REA0(1+1205) IFULL IF1EUF+111340+1345 1340 CONTINUE 1345 CONTINUE IFIIFUEL LT. I LUMA IFUEL AGT. 91 STUP 140 IFU = IFU • I IF (IFU .GT. 1) STUP 43 RITE (2.2225) I. IFUEL GO TU I.35 1305 CONTINUE READII.13801 ULMAA. UCMIN IFIEUF.111385.139 STUP 65 1390 CONTINUE CUNING ICU = ICU • I IFIILM GI. II SIOP 74 IFIULMIN «CI. 0.00 ±04. UCMIN «GI. 100.01 STOP 141 IFIULMIN «CI. 0.00 ±04. UCMIN «GI. 100.01 STOP 142 IFIULMAN LUI ±050 ±04. UCMIN «GI. 100.01 STOP 142 IFIULMAN LUI ±00 ±04. UCMIN IFIULMAN LUI ±04. IFIULMAN LUI ±04. UCHAX = UCHIN UCHIN = UCL GO TO 1395

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READING IN SUNT PAMAMETERS:

1310 CONTINUL READ(1+13601MAX235+MIN235 IF1EUF+111425+1430 1425 CONTINUE STOP 66 1430 CONTINUE CON 1075 IRICA35 = IHICA35 • 1 IF(INICA35 • 61, 1)5100 /3 IF(MAX235 • 61, 0)70 1435 MAX235 = MAX235 • 0,00 MIN235 = MIN235 - 0.0001 1435 CUNTINUE IFIHIN235 .LT. HAX2,51 60 TO 1448 RMAX35 = HAX235 HAX2J5 = MIN235 HIN235 . HMAX35 1440 CONTINUE LIF(MAZZJS .LI: 0:00 ;UK: MAX235 .GT. 100.01 STOP 143 IF(MAZJS .LI: 0:00 ;UK: MAX235 .GT. 100.01 STOP 144 #RITE:2*300! I: MAX239. MIN235 GO TU 139 1315 CONTINUL READ (1.13001 HHAX2 JJ.RHIN233 1F (EUF .1) 1445,1450 1445 CONTINUE STOP 67 5100 67 1450 CONTINUL IMICH33 = 1MICH33 + 1 IF(1MICH33 + 64 1500 /5 IF(1MICH33 + 64 1500 /5 IF(1MAX433 + 64 44 45 45 46 60 40 10 1455 RMAX433 + MMAX434 + 60 001 RHIN233 = HHIN233 - 0.0001 HTINESS CONTINUE I455 CONTINUE IF(HMIN233 .LI. HMAAZJ31 GO TO 1460 R233 • HMIN233 RMAXZJ3 • HMIN23J RMIN233 = H233 GO TU 1 35 1320 CUNTINUE STOP 71 1325 CONTINUE STOP 72 1330 CONTINUE READ (1, 13001 HHOHAX, HHUHIN IF (EUF, 1) 1463, 14/0 1465 CONTINUE STOP 76 1470 CONTINUE 1RH0 = 1RH0 • 1 IF(IMO - GT. 1] 5100 76 IF(IMO - GT. 1] 5100 76 IF(RHOHA, Λ. . HŪŪHĪN(GU TO 1475 RHOHIN = HHŪHĪN - 020001 1475 CONTINUL IF (RHOMIN .L(. HHUHAX) GO TO 1480 RHAX = HHUHAX RHOMAX . HHUMIN RHOMIN . HMAX 1480 CONTINUE 1480 CONTINUE 17 (HHOMAA :L], 0.00 :0H, HHOMAA :GT, 100.01 STOP 147 17 (RHOMIN :L], 020 :0H, HHOMIN :GT, 100.01 STOP 150 WRITE (2-360) 1. MHUMAA, HHOMIN HITE (22500) 16 HHUHAA GO TU I 35 1400 CONTINUE UCHAX = UCHAX • 20001 UCHIN = UUHIN - 20001 1395 CONTINUL HITE (2+3601 I+ UCHAX+ UCHIN 1335 CONTINUE С SORT YPE (11+1=11+201 С c C 1295 CONTINUE 1F(SUHITPL(1) = 0[= <0] =0 ΤΟ 2000 15T = Sürtype(1) - 10 1F(15T = 1] = 10 TU 1200 1F(15T = 14] S(U TU 120 GO TU(2 #3;201,2215,20205,2030,2035,2040,2045,20501,15T GO TU(2 #3;201,2215,2020,2025,2030,2035,2040,2045,20501,15T

2040 CONTINUE STOP 77 2005 CONTINUE READ (1+1300) SHEANHA + SHEARHI 1F (EUF .112055.2060 2055 CONTINUL STOP 103 2060 CONTINUE ISH = ISH + I IF(ISH .GT. 1) SIOP 102 SMAX = SHEARHX \$ SHIN = SHEARHI IF(SMAX .NL. SMINI GO TU 2065 SMAX = JMAX • 0 01 SMIN = JMIN = 0.JUUI 2065 CONTINUL IF(SMIN LI. SMAXI 90 TU 2070 SSMAX = SMAX SMAX = SHIN SHIN = SSHAX SMIN = 35000 2070 CONTINUE IF(SMAX .LT. 0.00 .UR. SMAX .GT. 100.01 S10P 151 IF(SMIN .LT. 0.00 .UR. SMIN .GT. 100.01 S10P 152 WHITE(2+3601 I. SMAX. SMIN 60 TU 1995 2010 READIT, 10551 CLAUUAL 1F1E0F.112075,200 2075 STOP ILL S IFIICLAD .GT. II STOP 103 2080 ICLAU # ICLAO + 1 WRITE (2.10751 1. CLAOUAL GO TU 1-95 2015 READII+13001 COLOHAX+CULUHIN \$ IFILUF, 112085, 2090 2085 STOP 1:4 2005 100 - 100L0 + 1 5 15(100L0 + 1 5 15(100L0 + 1 5 100 105 2009 100L0 + 100L0 + 1 5 2025 COLOMAX + 60 LULUMINIGU 10 2025 COLOMAX = COLOMAX + 0:0001 2005 15100L0010 + 1 - 000MAAIGO TO 2100 2005 15100L0010 + 1 - 000MAAIGO TO 2100 S IF(ICOLO .GT. 11 STOP 105 S COLDMAX = COLDMIN COLO . LOLOHAN COLOHIN = LOLO 2100 CONTINUE IF (CULUARA LI: JOU OME COLOMAX GT. 100.01 STOP 153 IF (CULUARA LI: JOU OME COLOMIN GT. 100.01 STOP 154 WRITE(2,300) I: LULUMAX COLOMIN 00 TU 1995 5 IF(18 .6T. 1) STOP 106 2030 IB = 18 + 1 \$ IFILOF, 112105+2110 READ (1+12851 180NU 2105 STUP 111 2110 IF1100NU LT. 1 .UN. INUNU .GT. 21 STOP 107 #KITL(2,22251 1. (80NU GO TU 1995 2035 IENCAP = LENCAP + 1 \$ IF(IENCAP .GT. I) STOP IIO REAUII+12051 IENCAPS IF (LUP + 1 | 2113 + 212 2120 IF (LENCAPE .LT. I .UR: LENCAPS .GT. 21 STOP 113 WRITE(2.22251 I. LENCAPE 60 TU 1995 S IF (ICLAUGO .GT. 1) STUP 114 2020 ICLAUDU = ICLAODU + I READII+13001LLAUHAX+CLAUHIN 1 1FILOF+112125+2130 CI20 STUP 113 2130 IFICLADMAA .NL. LLAUMIVIGU TO 213S CLADMAA • CLAUMAX • 0.0001 S CLAOMIN = CLAOMIN - 0.0001 2135 IF(CLAOMIN • LLAUMMAIGU TO 2100 CLAOM = CLAUMAX S CLAOMAX = CLADMIN CLAOMIN = CLAOM 2140 CONTINUL 2025 I=ALLTK = I=ALLTK + I READII+13401+ALLMAX+PALLMIN 2145 STOP 117 5 IFILWALLTK .GT. 11 510P 116 5 IF(LOF,112145,2150 2145 STOP 117 2150 IFI=HLLMAA •NE• HALCHIVIGU TO 2155 HALLMAX # MALLMAA • G.COI S MALLMIN # WALLMIN - Q.0001 2155 IFI=HLMIN ±LT• HALLMAXIUU TO 2100 WALLM # WALLMAX S WALLMAX # WALLMIN BALLHIN & BALLH 2160 CONTINUE IFIWALLMAA SLIS SED SON SONS BALLMAX SUIS 100-01 STOP 157 IFIWALLMIN SLIS SED SONS BALLMIN SUIS 100-01 STOP 160 WRITE(2,3001 1. MALLMAA, WALLHIN

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60 TU 1995

REAU(1.10351 SUBVAL IF (EUF, 112163,2110 2165 STOP 121 2170 CONTINUE WRITE(2:22201 1. SUBVAL 60 TU 1-95 2050 ILINPOW = ILINPOW + I S IF (ILINPON .GT. II STOP 122 READII+13801NLINHAX+HLINHIN \$ IFILOF+112185+2190 2105 STOP 123 2190 IF (RLINMAX INE: MLINHINIGO TO 2195 RLINHAA B HLINHAA O GCOOL SR 2195 IF(RLINHIN LI HLINHAXIGU TO 22 0 RLINH = RLINHAX SR S RLINMIN = RLINMIN - 0.0001 \$ RLINMAX = RLINNIN RLINMIN = HLINM 2200 CONTINUE IFIRLINHAN LT. 2:00 10H. RLINHAN .GT. 100.01 STOP 163 IF (RLINMIN .LT. 0.00 .OM. RLINMIN .GT. 100.01 STOP 164 60 TO 1495 1995 CONTINUE С SONTIPE 111+1=21+234 2008 CONTINUE IF(ILLATHA GT. ISIOP 202 READILISUDICLAUIMX.CLAUIMI IFIEUF.112300.2305 2340 STOP 203 2345 CONTINUE 1FICLADINA .NE. CLAUTNII 40 TO 2350 CLADINA - CLAUTNI - 0.0001 CLAUINI - CLAUTNI - 0.0001 2350 IFICLADINI LT. LLAUTMAI GO TO 2355 CLADTH = CLAUTMA CLADTHA - CLAOTHI CLADIHI = CLADIH 2355 CONTINUE IFICLADINA LIS 3.00 .04. CLAOTMA .GI. 2000.01 STOP 204 IFICLADINI LIS CLOU SUN, CLAOTMI .GI. 2000.01 STOP 205 WRITEL2-3601 1. LLAUTMA: CLAOTMI 60 TU 3.00 2330 CONTINUE ICLTMAX = ICLTMAX = I IF(ICLTMAX = ICLTMAX = I IF(ICLTMAX = UT, ISIOP 200 READ]3.3300JCLTMAX.CLTMAN IFICOF.1(250.230) 2300 500P 237 2368 CONTINUE CLTHAR - NE. CLIMINIGU 10 2370 CLTHAR = CLTHAR - 0.0 01 CLTHIN = CLTHAR - 0.0 01 2370 IFICLTHIN .LL. CLIMAXIOU TO 2375 CLTHU - CLIMAX CLTHAX . CLTHIN CLIMIN = CLIMU 2375 CONTINUE CONINUE IFICIMAĂ :LÎ: 0:00 :07: CLTMAĂ :07: 2000:01 5IOP 210 IFICITMIN .ÎI. 0:00 :UR. CLTMIN :07: 2000:01 SIOP 211 URITEÎ2:300 : LIMĂA. CLIMIN 60 TO 3,60 2335 CONTINUE ISTAVAL = ISTAVAL • 1 IFIISTAVAL • T• IISTOP 212 NEAD11-23995514TV4L IFIEUF+112305+2390 2385 STUP 213 2398 CONTINUE IF STATTAL LET I LURE STATVAL OTE SI STUP 162 WRITE12.22251 1. STATVAL 3000 CONTINUE 1268 CONT 1NUC

S IF (ISUBASS .GT. 1) STOP I20

2045 ISUBASS # ISUBASS . 1

CALL SOMTASK (SORITPL+ISUMT+KOUNT+ISOURCE+ITASK+INUMBER+101+IFUEL+ IUCMAX.UCHIN.MAX235.MIN235.RHAX233.KHIN233.RHOHAX.RHUHIN.SHEAMMX. 25HEAMMI+CLADUAL+LOLUMAX+CULOHIN+CLAOMAX+CLAOMIN+WALLMAX+WALLHIN+ 318UNU. ILNCAPS. SUGVAL, CLIMIN, RLINMAX, HLINMIN, CLAOTHI, CLAUIMA, CLIMAX 4.STAIVAL1 WALL STACK (ICOUNI .KUUNT' ISORT . SORTYPE) CALL TEATPT GO TU 205 TEMP. С IS FORMAT(5% EUM-11: INTERIM EXAMINATION:) 25 FORMAT(5% EUM-11: PRE-IMRADIATION:) 55 FORMAT(5% IN PHUČE55: NUN-DESTHUCTIVE TEST:) 55 FORMAT(5% IN PHUČE55: FABRICATION:) 75 FORMAT(5% IN PHUČE55: OESTGA:) 85 FORMAT(5% IN PHUČE55: AKCHVE.) 120 FORMAT(5% SUBASSENDLY NUMBER =010 1 = CUMRENT QUMBER =010 - CURRENT DURNUP ##F5.2.5x 225 FORMAT (SXª SHEAN UENSITT #*F8.4+2X/1 355 FONHAT 152 - SUNT YPE 111 - 415 . SA - SOR TYPE 1KI - 151 360 FORMAT (52 - 15 - FC0 - 10 - 102 - FC0 - 101 1000 FORMAT (1615) 1005 FORMATIMAIOI 1010 FORMAT 11H17/3X8A101 1015 FORMATI//3X* OHULA AND TYPES OF SORTS REQUESTED.*//1 1020 FORMAT(//) 1025 FORMATIATO.215x,15).45.151 1030 FORMATIATO.11.6F10.0.37.121 1035 FORMATIF10.0.414.3F10.0.5(4%.111) 1040 FORMATIAIU. 3F10. J. 2(48.11) 1045 FORMATI3(38.12) 1050 FORMATIALU.2(5X.F5.U1) 1055 FORMAT (ALU) 1060 FORMAT (IA.) 3, 1X010ENTIFIEN 1065 FORMATIIN-90XALUI #*A19.215.A51 1070 FORMATTINOTAN THEAT TEST NUMBEROS 1075 FORMATISASISSIATOT 1090 FORMATIIN+70X+ SIATUS+15X+ IN STORAGL+1 1095 FORMATIIN+70X+ SIATUS+15X+ IN PHOCESS+1 100 FORM 113x SUASSEADLY 174 100 FORM 113x SUASSEADLY 174 2 CLAC 164 FRA 104E 3 /9x FUEL GENIEMLINE THP =*FI0.4 ##F10.4 =*F10.41 1105 FORMATISX" NU SHHQUU+//1 1110 FORMATISX* SHROUU+7/) 1115 FORMATISX NUT ENCARSULATEO J 1120 FORMATISX ENLARQULATEU 1125 FORMATIIN+ TUA SUUIUM HUNU+1 1130 FORMATIIN-76X- HLLIUN GUNDOJ 1135 FORMATIIN-37X • CLAD (YPL • CULUHUHA /5X• CLADUING 0.0. =+A10 =+F0.4.2x) . UZ33 ENHICHHENT =+F8.4.2x APT AN COMMONITION ==F8.4,2X PU239 ENAILAMENT
 FUEL UENSITY ==F8.4.2X =+F8.4+2x1 1150 FORMAT 1/3X LCHO LHELKING ALL INPUT DATA . . 1155 FORMATIAN TAN CANDIG FULLAI 1155 FORMATIAN TAN CANDIG FULLAI 1165 FORMATIAN HUT-CELL. HUN-DESTRUCTIVE TESI...I 1170 FORMATIAN HUT-CELL. OLSIRUCTIVE TESI...I 1175 FORMATIDA: MUTGELL: 053HUGTIVE IE 1105 FORMATICA: NUMBEM TYPE OF01 1195 FORMATICA: UF 50HT SURT REQUEST 1206 FORMATILA: ADA.AF1 1210 FORMATILA: ADA.AF1 1220 FORMATI/SA: FUEL INFORMATION.*1 1230 FORMATI/SA: GLOUING INFORMATION.*1 1240 FORMATICS: GROUING.*1 1255 FORMATICS: REPORT NUMBER = GALO; TYPE OF ... 1255 FORMATI A. REPONI NUNDEN BOATOI 1256 FORMATISA REPORT IN PRUCESS. 1 1245 FORMATISA 15! 1300 FORMAT 15x.2FI0.01 2210 FORMAT (5%, 15.45)

2215 FORMAT 1////. "X" SONI PANAMETERS. "//)

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2228 FORMAT (5X+15+A181
   2225 FORMAT (5X+15+5X+15)
   2230 FONMATISX+15+5415+A51
   2308 FORMAT (9x+11)
   2365 FORHAT (IH1.///)
SUBRUUTINE SUNTASKISONTTPE.ISONT.KOUNI.ISUURCE.ITASK.INUNDER.IDI.
        IIFUEL .ULMAX .UCMIN . MAX235 . MIN235 . RMAX233 . HHIN233 . RHOMAK . RHOMIN .
        ZŚMEANMA SHEANMI . LLAUUAL . CULOMAX . COLOMIN, CLAOMAX . CLAUMIN. WALLMAX .
BWALLMIN . I BUNU . LENEAY S SUBVAL . CLTHIN . KLINMAX . ALINMIN . CLAUIMI . CLAUIMI
        4X.CL (MAA.STATVALL
  С
         PURPLE
  с
  č
         EXTREME CARE MUSI BE USED IN SETTING UP HAJOR IF TESTSE
  С
         COMMON
                   1012501.
                                     141 (250) .
                                                      102(250).
                                                                        103(250).
                    15AVE (2501 +
                                     SUUNCES12501 . TASK512501
                                                                        NUMBERS (2501
                    FÜELS(2501.
                                     ULUMPS(2501+ HICH355(2501+ RICH33512501+
SMEARS12501+ CLAOS12501+ CULOEH512501+
                    RHUS 12501 .
                                                                        CULO=H512501+
                    CLAQUOS (2001 . WALL TKS (2501 . BUNOS 12501 .
                                                                        ENCAP512501+
                   SUBASSS (2501 + LINFOWS (2501 + CLAUTHS (2501 + FUELCLS (2501 + SIATUSS (2501 + LUCATS (2501 + OISPS (2501 + SANOS (2501 +
                    CUNBUS (250) . GUALBUS (250) . REPORTS (250) . TESTNOS (250) .
         INTEGER SURTYPE (161+
                    TASK.
                              FULL
                                                     cI+
                                                                 c2.
                                                                            80ND+
                    FNCAP.
                              SHHOUU+ STATUS+ C3+
OUMP+ PAR+ SOU
                                                                PINSUN+ SURT+
STATVAL+ SUBASSS+
                    DISPA
                                                     SOURCE .
                    TASKS.
                              FULLS.
                                          BONDS.
                                                   ENCAPS.
                                                                STATUSS. SUBASSH.
         5 SUURČES SUBVAL
REAL MAA235 MIN45 LINPOW, LINPOWS
          ITHALK = 1
  č
         SETTING UP SUNT LOOP.
  C
         DO 105 I . 1+150H;
          IFLAG = 0
         IFII .L. II GO 10 199
KCOUNT = 1COUNT
          60 TU 245
    190 CONTINUE
KCOUNT # 250
    205 CONTINUE
          100 19 K = 1+KCOUNT
1711 -EW, 11 KK = K
17(1 -RE, 15 KK = 15AVE1K)
          1SORTER . SONTYPL (1)
          IF (150H1EH . 61. 31 00 TU 195
  C
         SOURCE. TASK. NUMBER ELIMINATION:
          60 TU12-+25+301+1500TEH
     28 CONTINUE
          IF (1500ACE .NE. SUUNCESIKK) 1 60 TO 55
          60 TO 35
     25 CONTINUE
1F (11ASR INEL TASKSIKKII 60 TO 55
          GO TO 35
      38 CONTINUE
          IF (INCHNEH .NE. NUMBERSIKK) 60 TO 55
IF (IUI .NE. 105 (KKII GU TO 55
          SETTING UP MASTER STORAGE LOGIC FOR HULTIPLE ELIMINATIONS:
  ē
  с
      35 CONTINUE
ICOUNT = ICOUNT + I
          ISAVEIICOUNTI = KK
      55 CONTINUE
          IFIIFLAG .EQ. II GO TO 10
IF (SURTYPEIII .LI. 1 GO TO IO
          FUEL. ULONP. HICH235. HICH233. AND RHO ELIMINATIONS.
  Ċ
   С
     195 CONTINUE
          IFISURTTPE(11 .G1. IC) WO TO 60
          IFLAG "1
      ISONIEM - SONTYPE'(1) - J
IFONIEM -LI, I .UH: ISONTEM .GT. 7) STUP 130
00 TU 165.70.75.40,00.40.951.150NTEM
85 STOP 131
      98 STUP 132
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65 CONTINUE
       IFIIFUEL INE FUELSIKKI GO TO 55
       80 TO 35
   TE CONTINUE
       IFIUCONSSINK 1642 UCHIN AND. UCOMPSINK LE. UCHAR 60 TO 35
       60 TŪ S5
   75 CONTINUE
IFIRICHIJSSIKKI 1944 MINCAS 1000 RICHIJSSIKKI 164 MAX2351 60 10 35
   00 TO 55
60 CONTINUE
IFINICHIJSSIKKI 198 RMINZIJ +AND: RICHIJSSIKKI 168 MMARZIJ 601035
    95 CONTINUE
       IFIRHOSTIKK) SEE HINHTH SAND MHOS (KK) SLE MHOMAN OD TO 35
       60 TU 55
C
č
      SHEAK. GLAD. COLUMNA, CLADOD. AND WALLTE ELIMINATIONS.
C
   60 CONTINUE
                                              IFISORTYPE(1).LT:11)60 TO 18
      IFISONTYPEIII .GI. 15160 TO 108
ISONTER = SONTYPEII: - 10
IFLAG = 1
      IFI13041EH .LT. 1 .URT ISORTER .GT. 5) STUP 133
GO TUIIUS.IIO.IIS.ICO.ICS.ISORTER
  105 CONTINUE
      IFISHEARSIKKI 1941 PHEARMI LAND. SHEARSIKKI TEEL SHEARMAI GO TO 35
  110 CONTINUE
IFICLAUSIKKI INE: ELAQUALI 60 TO 55
  115 CONTINUE
     IFICULDHHA (KK) 145 CULDHIN .AND. COLDHRSIKK) LE. COLDHAX) 60 TO
      80 TO 55
  120 CONTINUE
      IFICLADUOSIKKI .DE. CLAUMIN .AND. CLAUODSIKKI .LE. CLADMARIGOTOJS
       60 TU 55
      IFIWALLTKS(KKI _ be WALLHIN .AND WALLTKSIKK) LE WALLMAX) GO(035
  125 CONTINUE
C
     BOND. ENGAP. SUBASSH. AND LINPOW ELIMINATIONS.
                                              IFISONTYPEID LT. 16760 TO 10
  100 CONTINUE
      IF (SURTWPEIL .GI. 401GU TO 130
       145 STUP 135
  135 CONTINUE
IFIIBONU 1NEL BONDSIKKII GO TO 55
       60 TU 35
  148 CONTINUE
       IFIIENCAPS .NE. ENCAPSINKI BO TO 55
       BO TU 35
  158 CONTINUE
       IFISUNASSEIKKI .NE. SUNVALI GO TO 55
       60 TU 35
  155 CONTINUE
       IFILINPU-SIKKI.GLAHLINHINANDALINPONSALEAHLINHAN) 60 TO 35
       60 TU 55
С
       CLADING. FUELCLI. AND STATUS ELIMINATIONS:
С
С
  130 CONTINUE
IFISUATYPE(1) .L1. 211 40 TO 10
IFISUATYPE(1) .G1. 433 40 TO 160
IFLAN # 1
       ISONIER - SUNTYPEII + 40
ISONIER - LT. 3 - 44 ISONTER - 47. 31 STUP 136
O TUISS.179.479 - ISONIEN
  165 CONTINUE
IFICLAUJHSIKKI GE_CLAUTHI AND CLADTHS (KK) LE CLADTHX) 60 TO 35
  178 CONTINUE
       IFIFUELCLEIKK) .... CLTHIN AND. FUELCLEIKK) .LE. CLTHAXI GOTO 35
       60 TU 55
  175 CONTINUE
       IFISTATVAL ANE: STATUSSUKKI) OO TO 55
       60 TŪ 35
   168 CONTINUE
CAUTION HUST BE USED ON LUCAT. DISP SORT BECAUSE OF INTERACTION.
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C ISAVE VECTOR AND C ISAVE VECTOR AND C •10 CONTINUE IF(I .E4. ISURTI GO TU 185 IF(I .E4. IN WRITE(2.45) IF(I E4. ISURTI GO IU 185 I . . ELEMENIE OF ISAVE ATTER ELIMINATIONS: c С 601 605 614 622 623 623 623 627 630 630 WRI1L(2+2251 WRITE (2.40) IFILCOUNT 4L14 II GU IU 210 GO TU 215 60 10 235 210 CONTINUE MRILLIZ 2201 RETURN 215 CONTINUE WRITEIZ 551 (ISAVE(1)+)=1+ICOUNTI MRITEIZ 551 (ISAVE(1)+)=1+ICOUNTI C 40 FOHMATISX*(SAVEII) VALUES AFTER ELIM(NATIUNS COMPLETED.*/1 45 FOHMAT(20.2015) 50 FOHMAT(1.7/1/1) 180 FORMAT(1.7/1/5X*15AVE(1) VALUES AFTER MART(AL ELIMINATIONS.*/1 180 FOHMATISX*KEIUMNING TO MAIN PROGRAM *IIM ICOUNI .LT. 1*) 225 FOHMATISX*KEIUMNING TO MAIN PROGRAM *IIM ICOUNI .LT. 1*) 225 FOHMATISX*KEIUMNING TO MAIN PROGRAM *IIM ICOUNI .LT. 1*) 225 FOHMATISX*KEIUMNING TO MAIN PROGRAM *IIM ICOUNI .LT. 1*) 226 FOHMATISX*KEIUMNING TO MAIN PROGRAM *IIM ICOUNI .LT. 1*) 227 FOHMATISX*KEIUMNING TO MAIN PROGRAM *IIM ICOUNI .LT. 1*) 228 FOHMATISX*KEIUMNING TO MAIN PROGRAM *IIM ICOUNI .LT. 1*) 643

• -SUBROUTINE TEXTPI PURPLE С .

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SUBRUUTINE SLACK (LEUGAT + KUUNT + ISURT + SURTYPE)

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APPENDIX B

SAMPLE OUTPUT

ECHO CHECKING ALL INPUT DATA. CARBIOE FUEL 1 IDENTIFIER T 428 ĸ ı UHANIUM COMPOSITION = 70.0000 DU COMPOSITION = 90.0300 U233 ENRICHMENT = 90.0200 U235 ENRICHMENT = 91.0000 = 90.0500 = 90.0400 FUEL VENSITY PU239 ENRICHMENT SMEAR DENSITY = 90,0000 = 1.0000 31755 COLOWORK ENCAPSULATED CLAO TYPE .0IUD HELTOM BONU CLADDING 0.0. WALL THICKNESS . .3000 SHROUD 30.0000 CLAD TEMPERATURE = 675.000U SUBASSEMBLY TYPE A-19 LINEAR POWER = = = IN PROCESS FUEL CENTERLINE THP = 1050+0000 STATUS IN PROCESS. NON-DESTRUCTIVE TEST. . FUEL INFORMATION. FUEL INFORMATION ON FIRST TEST PRORLEM INSERTED HERE. CLADDING INFORMATION. CLAD INFORMATION ON FIRST TEST PROBLEM INSERTED HERE. RUND INFORMATION. BUND INFORMATION ON FIRST TEST PROBLEM INSERTED HERE. GENERAL INFORMATION. GENERAL INFORMATION ON TEST PROBLEM NUMBER ONE. ECHO CHECKING ALL INPUT DATA. 2 IOENTIFIER CARBIDE FUEL ĸ 2 422 * URANIUM COMPOSITION = 80.0000 U235 ENRICHMENT = 92.0000 U233 ENRICHMENT = 90.0200 PU COMPOSITION PU239 ENRICHMENT = 90,0400 = 90,0300 FUEL DENSITY = 90,0500 SHEAR DENSITY = 90,0000 NOT ENCAPSULATED CLAU TYPE 316SS COLOWORK = 2.0000 . CLADDING 0.0. 2 .4500 WALL THICKNESS .0IOO RELIUM BONU SHRDUO SURASSEMBLY TYPE A-19 LINEAH POWER = 30.0000 CLAD TEMPERATURE = 675.0000 FUEL CENTERLINE THP = 1050.0000 STATUS = IN PHOCESS IN PROCESS. NON-DESTRUCTIVE TEST. FUEL INFORMATION. CLADOING INFORMATION. BOND INFORMATION. BENERAL INFORMATION. GENERAL INFO FOR TEST PR. 2. THENTICAL TO PR. I EXCEPT FOR TASK AND NUMBER. NO FUEL. CLAD. OR HOND COMMENTS.

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3 IOFNTIFIER 1 420 CARBIOE FUEL -L URANIHM COMPOSITION = 90.0000 PU COMPOSITION = 90.0300 U235 ENRICHMENT = 90.0I00 U233 ENRICHMENT = 90.0200 PU239 ENRICHMENT **90,0400** FUEL DENSITY = 90,0500 SMEAR DENSITY = 90,0000 CLAU TYPE NUT ENCAPSULATED 316SS COLOWORK = 3.0000 WALL THICKNESS CLADDING D.O. . +3000 .0IOO HELIUM BONU SHROUD SUPASSEMBLY TYPE A-19 LINEAR POWER 30.0000 CLAO TEMPERATURE = 675.0000 ₽ . = IN PROCESS FUEL CENTERLINE THP = 1050.0000 STATUS IN PROCESS. MON-DESTRUCTIVE TEST. FUEL INFORMATION. CLADDING INFORMATION. HUND INFORMATION. GENFRAL INFORMATION. GENFRAL INFO. FOR TEST PR. 3. THENTICAL TO PR. I EXCEPT FOR SOURCE. NU FUEL. CLAD. OR BOND COMMENTS. ECHO CHECKING ALL INPUT OATA. CARRIOE FUEL **4 TOENTIFIER** = L 2 422 ± 90.0200 URANIUM COMPOSITION = 90.0000 U235 ENRICHMENT = 90.0I00 U233 ENRICHMENT PU COMPOSITION FUEL DENSITY = 90.0500 = 90.0300 PU239 ENRICHMENT = 90+0400 SMFAR DENSITY = 90.000 ENCAPSULATEO CLAO TYPE 316SS COLOWORK = 4.0000 CLADDING 0.D. . .3000 WALL THICKNESS HELIUM BONU .0200 SHROUD SUBASSEMBLY TYPE 3 A-19 LINEAH POWER 30.0000 CLAO TEMPENATURE ≠ 675.0000 FUEL CENTERLINE THP = 1050.0000 = IN PROCESS STATUS IN PROCESS. NON-DESTRUCTIVE TEST. FUEL INFORMATION. CLADDING INFORMATION. BUND INFORMATION. GENERAL INFORMATION. GENFRAL INFO. FUR TEST PR. 4. VIRTUALLY IDENTICAL TO PR. 2 EXCEPT FOR SOURCE.

IDENTIFIER		ĸ	2	42B				NITRIO		
UHANIUM COMPOSITION PU COMPOSITION SMEAR OENSITY	= 50.0 = 90.0 = 90.0	0300	U2J5 PU239	ENRICHMENT ENRICHMENT		0000 0400	U233 ENRICHMENT Fuel Olnsity		90.0200	
ENCAPSULATED CLANDING 0.D. SHROUD	= .	3001	CLAU WALL	I YPE THICKNESS		31655 0100	COLOWORK Sooium Bonu	3	5.0000	
SURASSEMRLY TYPE FUEL CENTERLINE THP	= 105	6.0000	LINE	H POWER	= 3	0.0000	CLAD TEHPERATURE STATUS		675.0000 In Siorage	
EBR-II. INTERIM EXA SURASSEMBLY NUMMER REPORT NUMBER = LA-	=	0N. KlwI23	СЛКНЕ	NT BURNUP	= .0		GOAL BURNUP	*	<u>.</u> 05	
FUEL INFORMATION. FUEL INFORMATION IOE	NTICAL	TO PR	UBLEM	UNE.						
CLADDING INFORMATION CLADDING 0.D. 0.0001	LARGE	R THAN	рноы	EM ONE.				•.		
HUND INFORMATION.		TO PR	UBLEM	UNE.						
RONG INFORMATION IVE										
GENFRAL INFORMATION. Status, claoning 0.0 All Oiffer from PAG	LOC	NE VAL	UES .							
GENFRAL INFORMATION. STATUS, CLADNING 0.0 All Differ from PAC	D.• LOC DRLEM D	NE VAL	UES .							
GENFRAL INFORMATION. STATUS: CLAONING 0.0 All OIFFER FROM PHO CHECKING ALL INPUT	D.• LOC DRLEM D	NE VAL	UES •						OË FUEL	
GENFRAL INFORMATION. STATUS: CLAONING 0.0 All OIFFER FROM PHO CHECKING ALL INPUT	LOC DRLEM 0 	NE VAL	UES.		= 90	•0100 •0400	U233 ENRICHMENT Fuel Oensity	NITRI =	DĒ FUEL 90.0200 90.0600	
GENFRAL INFORMATION. STATUS, CLAODING O.O ALL OIFFER FROM PAG CHO CHECKING ALL INPUT 10ENTIFIER URANIUM COMPOSITION PU COMPOSITION		NE VAL	UES. 2 U2J5 PU23 CLAU	428 ENRICHMENT	= 90 = 90 =	•0I00 •0400	U233 ENRICHMENT Fuel Densiïy 6 Colnwork	NITRI =	DĘ FUEL 90.0200	
GENFRAL INFORMATION. STATUS, CLADDING 0.0 ALL DIFFER FROM PRO CHECKING ALL INPUT IDENTIFIER URANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATED CLADDING 0.0.	= 90 = 90 = 90 = 10	NE VAL	U235 PU23 CLAU WALL	428 ENRICHMENT 9 ENRICHMENT	= 90 = 90 = =	•0100 •0•00 31655 •0100	U233 ENRICHMENT Fuel Densiïy 6 Colnwork	NITRI 	DĒ FUEL 90.0200 90.0600	
GENFRAL INFORMATION. STATUS, CLAODING O.O ALL OIFFER FROM PAG CHO CHECKING ALL INPUT IOENTIFIER URANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATEO CLADDING 0.0. SMROND SURASSEMBLY TYPE FUEL CENTERLINE TMP	= 90 = 90 = 90 = 10	NE VAL	U235 PU23 CLAU WALL	428 ENRICHMENT 9 ENRICHMENT TYPE IMICKNESS	= 90 = 90 = =	•0100 •0•00 31655 •0100	U233 ENRICHMENT FUEL DENSITY G COLNWORK HELIUM RONU D CLAN TEMPENATURI	NITRI 	DE FUEL 90.0200 90.0600 0.0000	
GENFRAL INFORMATION. STATUS, CLAODING O.O ALL OIFFER FROM PAG CHO CHECKING ALL INPUT IOENTIFIER URANIUM COMPOSITION PU COMPOSITION SMEAR OENSITY ENCAPSULATEO CLADDING O.O. SMROHO SURASSEMBLY TYPE FUEL CENTERLINE TMP HEPORT NUMBER = 1A	= 90 = 90 = 90 = 90 = 10 2R3C40	NE VAL	U235 PU23 CLAU WALL	428 ENRICHMENT 9 ENRICHMENT TYPE IMICKNESS	= 90 = 90 = =	•0100 •0•00 31655 •0100	U233 ENRICHMENT FUEL DENSITY G COLNWORK HELIUM RONU D CLAN TEMPENATURI	NITRI 	DE FUEL 90.0200 90.0600 0.0000	

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GENFRAL INFOPMATION. DIFFERS FROM PRECEDING PROBLEMS ONLY IN COMMENT CAROS AND LOCAT PARAMEYER.

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UNANIUM COMPOSITION = 90.0000 U235 ENRICHMENT = 90.0I00 U233 ENRICHMENT = 90.0500 PU COMPOSITION = 90.0300 PU239 ENRICHMENT = 90,0400 FUEL DENSITY = 90.0600 SMEAR DENSITY = 90.0000 ENCAPSULATED CLAU TYPE 316SS COLOWORK = 0.0000 CLADDING 0.0. = .300I WALL THICKNESS .0IOU HELIUM BONU -SHROUD SURASSEMBLY TYPE = A-19 FUEL CENTEPLINE TMP = I050+0000 30.0000 CLAN TEMPERATURE A-19 LINEAR POWER = = 675.0000 STATUS HA TOZAIORAGE HEPORT NUMBER = 1A283C40 FUEL INFORMATION. CLADDING INFORMATION. POND INFORMATION. GENERAL INFORMATION. DIFFERS FROM PRECEDING PROMLEM UNLY IN VALUE ASSIGNED TO NHO PARAMETER. ECHO CHECKING ALL INPUT DATA. 8 IDENTIFIER CARBIDE FUEL = L 1 42C URANIUM COMPOSITION = 90.0000 U235 ENRICHMENT PU²³⁹ ENRICHMENT = 90.0300 U233 ENRICHMENT = 90.0200 ± 90,0400 FUEL DENSITY # 90,0500 SMEAR DENSITY = 91,0000 ENCAPSULATEO CLAU IYPE 3I6SS COLOWORK = 0.0000 CLADDING 0.0. = .3000 WALL THICKNESS .0100 HELIUM BONU SHROUD SURASSEMALY TYPE A-19 LINEAR POWER 30.0000 CLAD TEMPERATURE 3 = 675.0000 FUEL CENTEPLINE THP = 1050.0000 STATUS = IN PROCESS IN PROCESS. NON-DESTRUCTIVE TEST. FUEL INFORMATION. CLADDING INFORMATION. HOND INFORMATION. GENERAL INFORMATION. GENFRAL INFO. FOR TEST PR. 3. THENTICAL TO PR. I EXCEPT FOR SOURCE. NO FUEL. CLAD. OR BOND COPMENTS.

CARBIOE FUEL

ECHO CHECKING ALL INPUT DATA.

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2 42B

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7 IDENTIFIER

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NITRIOE FUEL 9 IDENTIFIER к 2 428 . UMANIUM COMPOSITION = 90.0000 U235 ENRICHMENT = 94.0000 U233 ENRICHMENT = 90,0200 = 90.0600 PU COMPOSITION # 90.0300 PU239 ENRICHMENT = 90.0400 FUEL DENSITY SMFAR DENSITY = 90,0000 = 0.0000 NIIT ENCAPSULATED CLAU TYPE 3I6SS COLOWORK = = .3001 .0100 HELIUM BONU CLADOING 0.0. WALL THICKNESS . SHROUO 30.0000 CLAD TEMPERATURE = 675.0000 SURASSENBLY TYPE A-19 LINEAR POWER = FUEL CENTERLINE THP = 1050.0000 STATUS HAT#ZXIBRAGE HEPORT NUMBER = IA283C40 FUEL INFORMATION. CLADDING INFORMATION. BUND INFORMATION. GENERAL INFORMATION. DIFFERS FROM PRECEEDING PROBLEMS ONLY IN COMMENT CAROS AND LOCAT PARAMETER. -----ECHO CHECKING ALL INPUT DATA. CARRIDE FUEL 10 IDENTIFIER = L 1 420 = 90.0100 U233 ENRICHMENT = 90.0200 URANTUM COMPOSITION = 90.0000 U235 ENRICHMENT = 90,0500 **≈**. 90+n3n0 PU239 ENRICHMENT = 90+0400 FUEL DENSITY PU COMPOSITION SMFAR DENSITY = 90,0000 = 3,0000 CLAU TYPE 316SS COLOWORK . ENCAPSULATEO WALL THICKNESS CLANDING 0.0. .0100 HELIUM BONU .3000 3 SHROUO 30.0000 CLAO TEMPERATURE = 675.0000 SURASSEMALY TYPE = A-19 LINEAR POWER . = IN STORAGE FUEL CENTERLINE THP = 1050+0000 STATUS IN PROCESS. NON-DESTRUCTIVE TEST. FUEL INFORMATION. CLADDING INFORMATION. BOND INFORMATION. . GENERAL INFORMATION.

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PHANTUM CONPOSITION PU CUMPOSITION SMFAR DENSITY	= 90.0000 = 90.0300 = 90.0000	U235 ENRICHMENT PU239 ENRICHMENT	= 90.0100 = 90.0400	U233 ENRICHMENT FUEL DENSITY	= 90.0200 = 90 <u>.</u> 0500
NCAPSULATED CLADDING 0.0. Shroud	= . 3000	CLAO TYPE WALL THICKNESS	= 316SS = .0100	COLOWORK Helium Bonų	= 3.0000
SURASSEMBLY TYPE FUEL CENTERLINE TMP IN PROCESS. NON-DES	= I050+0000		= 25.0000	CLAO TEMPĘ ratur ę Status	= 675.0000 = IN PHOCESS
FUEL INFORMATION.					
CLADDING INFORMATION	•				
NOND INFORMATION.					
GENERAL INFORMATION					
N CHECKING ALL INPU				CARBIDE FUEL	
	TOATA. ■ L		= 90.0100		= 90.0200 = 90.0500
N CHECKING ALL INPU NENTIFIER UKANIUM COMPOSITION PU COMPOSITION	■ L ■ L ■ 90.0000 ■ 90.0300	1 42C	= 90.0100 = 90.0400 = 31655	CARBIDE FUEL U233 Enrichment	= 90.0200
D CHECKING ALL INPU DENTIFIER UHANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATED CLADDING 0.0.	T OATA. ■ L = 90.0000 = 90.0000 = 90.0000 = 3000 = 0.0000 = 0.000	1 42C U235 ENRICHMENT PU239 ENRICHMENT CLAD TYPE WALL THICKNESS 9 LINEAR POWER 0	= 90.0100 = 90.0400 = 31655 = 0100	CARBIDE FUEL U233 ENRICHMENT FUEL DENSIIY 5 COLDWORK	= 90.0200 = 90.0500
O CHECKING ALL INPU DENTIFIER UHANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATED CLADDING 0.0. SHROUD SURASSEMRLY TYPE FUEL CENTERLINE TMP IN PROCESS. NON-DE	T OATA. ■ L = 90.0000 = 90.0000 = 90.0000 = 3000 = 0.0000 = 0.000	1 42C U235 ENRICHMENT PU239 ENRICHMENT CLAD TYPE WALL THICKNESS 9 LINEAR POWER 0	= 90.0100 = 90.0400 = 31655 = 0100	CARBIDE FUEL U233 ENRICHMENT FUEL DENSIIY G COLDWORK HELIUM BONU	= 90.0200 = 90.0500 = 3.0000 = 675.0000
O CHECKING ALL INPU DENTIFIER UNANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATED CLADDING 0.0. SMROUD SURASSEMBLY TYPE FUEL CENTERLINE TMP	= L = 90.0000 = 90.0300 = 90.0000 = 30.0000 = A−11 = 950.000 STRUCTIVE TE:	1 42C U235 ENRICHMENT PU239 ENRICHMENT CLAD TYPE WALL THICKNESS 9 LINEAR POWER 0	= 90.0100 = 90.0400 = 31655 = 0100	CARBIDE FUEL U233 ENRICHMENT FUEL DENSIIY G COLDWORK HELIUM BONU	= 90.0200 = 90.0500 = 3.0000 = 675.0000
O CHECKING ALL INPU DENTIFIER UNANIUM COMPOSITION SMEAR DENSITY ENCAPSULATED CLADDING 0.0. SHROUD SURASSEMRLY TYPE FUEL CENTERLINE TMP IN PROCESS. NON-DE FUEL INFORMATION.	= L = 90.0000 = 90.0300 = 90.0000 = 30.0000 = A−11 = 950.000 STRUCTIVE TE:	1 42C U235 ENRICHMENT PU239 ENRICHMENT CLAD TYPE WALL THICKNESS 9 LINEAR POWER 0	= 90.0100 = 90.0400 = 31655 = 0100	CARBIDE FUEL U233 ENRICHMENT FUEL DENSIIY G COLDWORK HELIUM BONU	= 90.0200 = 90.0500 = 3.0000 = 675.0000

L 1 42C

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= 90.0200 = 90.0500

CARRIOE FUEL

= 90.0100 U233 ENRICHMENT = 90.0400 FUEL DENSITY

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ECHO CHECKING ALL INPUT DATA.

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11 IDENTIFIER

CARBIOE FUEL L I 42C 13 IDENTIFIER = = 90.0200 U233 ENRICHMENT U235 ENRICHMENT = 90.0100 UHANIUM COMPOSITION = 90.0000 = 90.0500 FUEL DENSITY = 90.0400 PU COMPOSITION # 90.0300 PU239 ENRICHMENT SMEAR DENSITY ± 90.0000 = 3.0000 316SS COLOWORK ENCAPSULATED CLAO TYPE -.0100 HELTUH BONU WALL THICKNESS . CLADDING 0.0. .3000 SHROUD 30.0000 CLAO TEMPERATURE = 500.0000 SURASSEMRLY TYPE = A-19 FUEL CENTERLINE THP = 1050+0000 A-19 LINEAH POWER . IN PROCESS STATUS IN PROCESS. NON-DESTRUCTIVE TEST. FUEL INFORMATION. CLADDING INFORMATION. HUND INFORMATION. GENERAL INFORMATION. ECHO CHECKING ALL INPUT DATA. • CARBINE FUEL I4 IDENTIFIER . L 1 420 UHANIUM COMPOSITION = 90.0000 DU COMPOSITION = 90.0300 DU COMPOSITION = 90.0300 U233 ENRICHMENT = 90.0200 U235 ENRICHMENT = 90.0100 **90**0500 PU239 ENRICHMENT ± 90,0400 FUEL DENSITY = 90,0000 SHEAR DENSITY = 3.0000 CLAO TYPE 316SS COLOWORK ENCAPSULATEO .0100 HELTUM BOND WALL THICKNESS CLADOING 0.0. = .3000 SHROUD = 675.0000 A-18 LINEAR POWER 30.0000 CLAO TEMPERATURE SUPASSEMBLY TYPE = -STATUS = IN PROCESS FUEL CENTERLINE THP = 1050.0000 IN PROCESS. NON-DESTRUCTIVE TESI. FUEL INFORMATION. CLADOING INFOPMATION. BOND INFORMATION. GENERAL INFORMATION.

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	ECHO CHECKING ALL INPU	T DATA.									
· .	15 IOFNTIFIER	2	к	Ì	42B			CARRIOE FUEL			
	UHANIUM COMPOSITION PU COMPOSITION SMEAR GENSITY	• = 70.00 = 90.03 = 90.00	00 P	1235 10239	ENRICHMENI ENRICHMENT		91.00J0 90.0400	U233 ENRICHMENT Fuel density		= 90.0200 = 90.0500	
	FNCAPSHLATED CLANNING 0.0. SHROUD	≖ . 3)		ALL	TYPE THICKNESS	•	31755 •0100	COLOWORK Helium Bonu		= I.0000	
	SURASSEMRLY TYPE FUEL CENTEPLINE THP IN PROCESS. NON-DES	I 050+	0000		R POWER	=	30.0000	CLAO TEMPERATURE Status		= 675.0000 = IN PHOCESS	
	FUEL INFORMATION. FUEL INFORMATION ON	FIRST TE	ST PHO	RLEM	INSERTED HERE.						
	CLADOING INFORMATION CLAD INFORMATION ON	1.									
	HOND INFORMATION. Bond Information on										
	GENFRAL INFORMATION. Genfral Information										
	ECHO CHECKING ALL INPUT	OATA.									
I	6 TILENTIPTER	3	ĸ	2 4	22			CARHIDE FUEL			
	NHANIUM COMPOSITION PO COMPOSITION SMEAR DENSITY	= 80.000 = 90.030 = 90.000	10 PI	235 E 1239	NRICHNENT ENRICHMENT			U233 ENRICHMENT FUEL DENSITY		90.0200 90.0500	
	NOT ENCAPSULAYEO Cladning 0.0. Shhquo	≖ .450		LAO T ALL T	YPE HICKNESS	=		COLNWORK Helium Bonu	=	2.0000	
	SURASSEMBLY TYPE FUEI CENTEPLINE TMP IN PROCESS. NON-OES	= 1050.0	000	INEAR	POWER	=		CLAO TEMPERATURE Status		675.0000 In Process	
	FUEL INFORMATION.										
•	CLADD:NG INFORMATION	•									
	HONO INFORMATION.										
	GENFRAL INFOPMATION. General Info for test Infotical to pr. I et Nit fuel, clan, or bo	CEPT FOR	TASK TS.	ANO I	NUMBER,						

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ECHO CHECKING ALL INPUT DATA. CARBIOE FUEL **17 IDENTIFIER** . L I 42C U233 ENRICHMENT = 90.0200 UHANIUM COMPOSITION = 90.0000 PU COMPOSITION = 90.0300 SHFAR DENSITY = 90.0000 U235 ENRICHMENT = 90.0100 **=** 90,0500 = 90,0400 FUEL DENSITY PU239 ENRICHMENT = 3.0000 316SS COLOWORK CLAO TYPE ENCAPSULATEO WALL THICKNESS .0100 HELIUM BONU .3000 CLANDING 0.0. . SHROUD = 675.0000 30.0000 CLAD TEMPERATURE A-19 LINEAR POWER SURASSEMRLY TYPE = A-19 FUEL CENTERLINE THP = 105J.0000 = IN PROCESS STATUS IN PROCESS. NON-DESTRUCTIVE TEST. FUEL INFORMATION. CLADDING INFORMATION. HOND INFORMATION. GENERAL INFORMATION. GENERAL INFO. FOR TEST PR. 3. TUFNTICAL TO PR. 1 EXCEPT FOR SOURCE. • · ND FUEL+ CLAD+ OR BOND COMMENTS+ ECHO CHECKING ALL INPUT DATA. CARRIOE FUEL 2 422 L **18 IDENTIFIER** . -= 90.0200 U233 ENRICHMENT = 90.0100 URANIUM COMPOSITION = 90.0000 U235 ENRICHMENT = 90.0500 FUEL DENSITY PU239 ENRICHMENT = 90.0400 = 90.0300 PU COMPOSITION SHEAR DENSITY = 90.0000 = 4.0000 CLAO IYPE 316SS COLOWORK ENCAPSULATED .0200 HELIUM BONU = .3000 WALL IHICKNESS = CLADOING 0.0. SHROUD A-19 LINEAR POWER 30.0000 CLAO TEMPERATURE = 675.0000 SURASSEMPLY TYPE = = IN PROCESS FUEL CENTERLINE THP = 1050+0000 STATUS IN PROCESS. NON-DESTRUCTIVE TEST. FUEL INFORMATION. CLADDING INFORMATION. RUND INFORMATION.

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GENFRAL INFORMATION. Genfral info. For test pr. 4. Virtually idfntical to pr. 2 except for source.

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P IOFNTIFIER	= к	2 428			NITRIDE FUEL	
URANIUM COMPOSITION PU Composition Smear density	= 50.0000 = 90.0300 = 90.0000	U235 ENRICHMENT PU ²³⁹ Enrichment	= 93.0000 = 90.0400	U233 ENPICHMENT Fuel Oensity	= 90.0200 = 90.0200	
ENCAPSULATEO CLAONING 0.0. Shrouo	≖ ,300I	CLRD TYPE WALL <u>I</u> HICKNESS	= 316SS = .0100	COLOWORK SDDIUM BONU	= 5.0000	
SURASSEMRLY TYPE Fuel centertime tmp EHR-11. Interin ex Subasseno. Manual				CLAO TEMPEHATURE Status	= 675.0000 = IN STORAGE	
SURASSEMBLY NUMBER REPORT NUMBER = LA		3 CURRENT BURNUP	= , 05	GOAL BURNUP	= <u>•</u> 05	
FUEL INFORMATION. Fuel information iu	ENTICAL TO PR	NUBLEM UNE.				
CLANDING INFORMATION Clanning 0.0. 0.ñoo	Na				· .	
ROND INFORMATION. Rond information io						
GENERAL INFORMATION.						
STATUS+ CLADDING 0+(ALI, DIFFER FROM PK(DHLEM ONE VAL	SP+ ANU IREPORT UES:				
STATUS. CLADDING D.	DHLEM ONE VAL	UES			NITRIDE FUEL	
STATUS+ CLADDING 0+(ALI_ DIFFER FROM PKC	DMLEM ONE VAL	UES.	 - 90.0100 - 90.0400	U233 ENRICHVENT FUEL DENSITY	NITRID <u>E</u> FUEL = 90.0200 = 90.0600	
STATUS+ CLADDING 0.(ALI, DIFFER FROM PKC CHO CHECKING ALL INPUT IDENTIFIER UMANIUM COMPOSITION PU COMPOSITION	DRLEM ONE VAL 	UES: 2 428 U235 ENRICHMENT	= 90,0400 = 316SS	U233 ENRICHMENT	· · -	
STATUS+ CLADDING 0.0 ALI, DIFFER FROM PRO CHO CHECKING ALL INPUT IDENTIFIER UMANIUM COMPOSITION PU COMPOSITION PU COMPOSITION SMEAR DENSITY FNCAPSULATED CLADDING 0.0.	DRLEM ONE VAL 	2 428 U235 ENRICHMENT PU239 ENRICHMENT CLAU TYPE	= 90,0400 = 31655 = .0100	U233 ENRICHMENT FUEL DENSITY COLOWORK	= 90.0200 = 90.0200	
STATUS+ CLADDING 0.(ALI, DIFFER FROM PHO CHO CHECKING ALL INPUT IDENTIFIER UMANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY FNCAPSULATED CLAPDING 0.0. SHROUD SURASSEMBLY TYPE FUEL CENTEPLINE TMP	DRLEM ONE VAL 	2 428 U245 ENRICHMENT PU239 ENRICHMENT CLAU TYPE WALL THICKNESS	= 90,0400 = 31655 = .0100	U233 ENFICHMENT FUEL DENSITY COLOWORK HELIUM BONU CLAO TEMPERATURE	= 90.0200 = 90.0600 = 0.0000	
STATUS. CLANDING 0.0 ALI. DIFFER FROM PRO CHO CHECKING ALL INPUT IDENTIFIER UHANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY FNCAPSULATED CLANDING 0.0. SHROUD SURASSEMBLY TYPE FUEL CENTEPLINE TMP HEPORT NUMBEP = IA2	PHLEM ONE VAL ■ 90.0000 # 90.1300 = 90.0000 = .3001 = .3001 = .1050*0000 R3C40	2 428 U245 ENRICHMENT PU239 ENRICHMENT CLAU TYPE WALL THICKNESS	= 90,0400 = 31655 = .0100	U233 ENFICHMENT FUEL DENSITY COLOWORK HELIUM BONU CLAO TEMPERATURE	= 90.0200 = 90.0600 = 0.0000	
STATUS. CLADDING 0.0 ALI. DIFFER FROM PRO CHO CHECKING ALL INPUT IDENTIFIER UHANIUM COMPOSITION PU COMPOSITION PU COMPOSITION SMEAR DENSITY FNCAPSULATED CLAPDING 0.0. SHROUD SURASSEMBLY TYPE FUEL CENTEPLINE TMP HEPORT NUMBER = IA2 FUEL INFORMATION.	PHLEM ONE VAL ■ 90.0000 # 90.1300 = 90.0000 = .3001 = .3001 = .1050*0000 R3C40	2 428 U245 ENRICHMENT PU239 ENRICHMENT CLAU TYPE WALL THICKNESS	= 90,0400 = 31655 = .0100	U233 ENFICHMENT FUEL DENSITY COLOWORK HELIUM BONU CLAO TEMPERATURE	= 90.0200 = 90.0600 = 0.0000	

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CARBIOE FUEL 21 TOFNTIFIER к 2 428 F U233 ENRICHMENT = 90.0500 = 90.0100 URANIUM COMPOSITION = 90.0000 U235 ENRICHMENT FUEL DENSITY = 90.0600 PU COMPOSITION PUZJ9 ENRICHMENT = 90.0400 = 90,0300 SHFAR DENSITY = 90.0000 = '0.0000 316SS COLOWORK ENCAPSULATED CLAO TYPE -WALL THICKNESS .0100 HELIUM BONU CLADDING 0.0. .3001 . E. SHROUD 30.0000 CLAD TEMPERATURE = 675.0000 WATWZWIWRAGE SURASSEMBLY TYPE = A-19 FUEL CENTERLINE THP = 1050+0000 A-19 LINEAR POWER STATUS REPORT NUMBER = 1A283C4D FUEL INFORMATION. CLADDING INFORMATION. BUNG INFORMATION. GENERAL INFORMATION. DIFFERS FROM PHECEEDING PROBLEM UNLY IN VALUE ASSIGNED TO RHO PARAMETER. ECHO CHECKING ALL INPUT DATA. CARBIOE FUEL I 42C 22 IOFNTIFIER -L . = 90.0200 = 90.0500 UHANIUM COMPOSITION = 90.6000 PU COMPOSITION = 90.3300 U233 ENRICHMENT U235 ENRICHMENT = 90.0300 PU239 ENRICHMENT = 90_0400 FUEL DENSITY SMEAR DENSITY = 91.0000 = 0.0000 CLAD TYPE 316SS COLDWORK FNCAPSULATEO . .0100 HELIUM BOND CLANDING 0.0. WALL THICKNESS ≠ **"**3000 SHROUD 30.0000 CLAD TEMPERATURE = 675.0000 A-I9 LINEAR POWER SURASSEMBLY TYPE . = IN PROCESS STATUS FUEL CENTERLINE THP # 1050+0000 IN PROCESS. NON-DESTRUCTIVE TEST. FUEL INFORMATION. CLAODING INFORMATION. BOND INFORMATION. GENERAL INFORMATION. GENFRAL INFO. FOR TEST PR. 3. TUENTICAL TO PR. I EXCEPT FOR SOURCE. NO FUEL . CLAD. OR HONO COMMENTS.

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23 IUFMTIFIER	= к	2	428			NITRIOE FUEL
HHANTHM COMPOSITION Pu composition Smear density	≭ 90.0000 ≖ 90.0300 ≖ 90.0000	U235 PU230	ENRICHMENT 9 ENRICHMENT	= 94.0000 = 90.0400	U233 ENRICHMENT Fuel Density	± 90.0200 ≖ 99.0600
NUT ENCAPSULATED Clanding 0.0. Shroud	= .3001		IYPE THICKNESS	= 316SS = ,0I00	COLOWORK Melium Bonų	≭ 0.0000
SURASSEMBLY TYPE Fuel centerling thp Heport numrep = 143	= I050,0000		AH POWER	= 30.0000	CLAD TEMPERATURE Status	= 675•0000 ₩A∓₩Z¥IÛRAGE
FUEL INFORMATION.						
CLANDING INFOPMATIO	۷.					
BUND INFORMATION.						•
DIFFERS FROM PRECEED						
LOCAT PARAMFTER.					CARPIDE FUEL	
LOCAT PARAMFTER.	CATA.					
LOCAT PARAMFTER.	r oata. ≖ L	 I - U2J <u>5</u>		= 90.0100 = 90.0400		=•90•0200 = 90 <u>•</u> 0500
LOCAT PARAMFTER. ECMO CHECKING ALL INPUT 24 IOFNTIFIER UMANIUM COMPOSITION PU COMPOSITION	T DATA.	1 - - PU235 PU239 CLAU	◆2C ENRICHMENT ENRICHMENT	= 90.0100 = 90.0400 = 31655	CARRIDE FUEL U233 ENRICHMENT	≈•90•0200
LOCAT PARAMFTER. ECHO CHECKING ALL INPUT 24 IDFNTIFTER UMANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATED CLADDING 0.0.	T DATA. = L = 90.0300 = 90.0300 a 90.0000 = .3000 = .3000 = .3000	I U2J5 PU2J5 CLAU WALL LINEA	◆2C ENRICHMENT ENRICHMENT TYPE	= 90.0I00 = 90.0400 = 3I6SS = .0100	CARRIUE FUEL U233 ENRICHMENT FUEL DENSITY COLNWORK	=•90•0200 ≖ 90 <u>•</u> 0500
LOCAT PARAMFTER. ECHD CHECKING ALL INPUT 24 IDENTIFIER UMANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATED CLADDING 0.0. SHPASSEMBLY TYPE FUEL CENTERLY TYPE	T DATA. = L = 90.0300 = 90.0300 a 90.0000 = .3000 = .3000 = .3000	I U2J5 PU2J5 CLAU WALL LINEA	42C ENRICHMENT ENRICHMENT TYPE THICKNESS	= 90.0I00 = 90.0400 = 3I6SS = .0100	CARPIUE FUEL U233 ENRICHMENT FUEL OENSITY COLOWORK HELIUM BONU CLAD TEMPERATURE	=.90.0200 = 90.0500 = 3.0000 = 675.0000
LOCAT PARAMFTER. ECHO CHECKING ALL INPUT 24 IDENTIFIER UMANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATEO CLADDING 0.0. SMPASSEMBLY TYPE FUEL CENTENTIF THP IN PROCESS. NON-UES	<pre> OATA. E</pre>	I U2J5 PU2J5 CLAU WALL LINEA	42C ENRICHMENT ENRICHMENT TYPE THICKNESS	= 90.0I00 = 90.0400 = 3I6SS = .0100	CARPIUE FUEL U233 ENRICHMENT FUEL OENSITY COLOWORK HELIUM BONU CLAD TEMPERATURE	=.90.0200 = 90.0500 = 3.0000 = 675.0000
LOCAT PARAMFTER, ECHO CHECKING ALL INPUT 24 IOFNTIFIER UMANIUM COMPOSITION PU COMPOSITION SMEAR DENSITY ENCAPSULATEO CLADDING 0.0. SMPASSEMBLY TYPE FUEL CENTERLINE THP IN PROCESS. MON-HES FUEL INFORMATION.	<pre> OATA. E</pre>	I U2J5 PU2J5 CLAU WALL LINEA	42C ENRICHMENT ENRICHMENT TYPE THICKNESS	= 90.0I00 = 90.0400 = 3I6SS = .0100	CARPIUE FUEL U233 ENRICHMENT FUEL OENSITY COLOWORK HELIUM BONU CLAD TEMPERATURE	=.90.0200 = 90.0500 = 3.0000 = 675.0000

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ECHN CHECKING ALL INPUT DATA. 25 Inentifier = L 1 42C

UHANIUM COMPOSITION = 90.0000 PU COMPOSITION = 90.1300 = 9.0.0200 = 90.0100 U233 ENRICHMENT U235 ENRICHMENT = 90,0500 FUEL DENSITY PU COMPOSITION = 90,0400 PU239 ENRICHMENT = 90,0000 = 3.0000 316SS COLOWORK CLAD TYPE = FNCAPSULATED .0100 HELIUM RONU = ,3000 WALL THICKNESS . CLADDING 0.0. SHPOUD = 25.0000 CLAO TEMPEHATURE STATUS = 675.0000 = 1N PROCESS SUPASSEMBLY TYPE = A-19 L1 +VEL CENTERLINE TMP = 1050.0000 IN PROCESS. NON-DESTRUCTIVE TEST. A-19 LINEAR POWER FUEL INFORMATION. CLADDING INFORMATION. RUND INFORMATION. GENERAL INFORMATION.

CARBIOE FUEL

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ISAVE(I) VALUES AFTER ELIMINATIONS COMPLETED

3 3 3	4 4	6 6	777	8 8	9 10	10 13) 1 12	12 13	13 14	14 17	17 18	18 20	20 21	21 22	22 24	23 25	24	25
3	•	.	6	10	10	12	1.3	14	17	18	20	22	24	25				
3	•	0	•	10	* *	**		••	• •									

ISAVF(I)	VALUES	AFTER	PARTIAL	ELIMINATIONS.

1	91.0000000000	89.000000000
2	9n+030000000	90,0000000000
3	000000000000000	90:010000000
4	7	

SURT PARAMETERS.

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1	UCOMP
2	R1CH235
3	RICH233
4	ENCAP

NUMRER OF SORT TYPE OF SORT REQUESTED

OKOFR AND TYPES OF SORTS REQUESTED.

EXTENDED FLOATING POINT MIXED SORI.

6 9 20 23

ISAVE(I) VALUES AFTER ELIMINATIONS CUMPLETED.

1	2	5	6	7	9	15	16	19	20	21	23
						19		21	23		
5	6	7	9	19	20	21	23				
5	6	9	19	20	23						

ISAVE(I) VALUES AFTER PARTIAL ELIMINATIONS.

1234 к 2 428 2 5 1

SURT PARAMETERS.

NUMRER	TYPE OF
Of Sort	Sort Hequested
1	SOURCE
2	T _A SK
3	N ^{UMBER}
4	FUEL
5	BOND

ONDER AND TYPES OF SORTS REQUESTED.

EXTENDED MULTIPLE SORT (INTEGER TYPE)

SECOND EXTENDED FLOATING POINT AND A FIELD SORT.

ONOER AND TYPES OF SORTS REQUESTED.

NUMBER	TYPE OF
OF SDRT	Sort Requested
1	RHQ
2	SMEAR
3	COLDWRK
4	CLADDO
5	WALLTK
6	CLAD
7	LINPOW
8	CLADTMP
9	FUELCLT
10	STATUS
11	SURASSM

SORT PARAMETERS.

1	90.060000000	90.040000000
2	90.000000000	89.000000000
3	4.00000000	1.000000000
4	.350000000	.250000000
5	.0150000000	•005000000
6	316SS	• •
7	30.000000000	29.000000000
A	675.000100000	674-9999000000
9	1050-0001000000	1049-9999000000
10	1	
11	8-18	

ISAVE(I) VALUES AFTER PARTIAL ELIMINATIONS.

1	Z	3	4	5	8	10	11	12	13	14	15	16	17	18	19	22	24	25	
1	2	3	4	5	10	11	12	13	14	15	16	17	18	19	24	25			
1	Z	3	4	10	11	12		14	15	16	17	18	24	25					
1	3	4	10	11	12	13	14	15	17	18	24	25							
ĩ	3		11		13		15	17	24	25									
3	10	11	12		14	17	24	25											
3	10	12	13	14	17	24													
3	10	12	14	17	24														
3	10	14	17	24															
3	14	17																	

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ISAVE(I) VALUES AFTER ELIMINATIONS CUMPLETED.