

ADAS Subroutine e5data

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SUBROUTINE E5DATA( IUNIT , DSNAME ,  
&                 NSTORE , NTRDIM , NTDDIM ,  
&                 NBSEL  , ISELA  ,  
&                 IRZ0   , IRZ1   , IDZ0   ,  
&                 LEQUA  ,  
&                 CDONOR , CRECVR , CFSTAT ,  
&                 AMSRA  , AMSDA  ,  
&                 ITRA   , ITDA   ,  
&                 TFRA   , TFDA   ,  
&                 QFTEQA , QFTCXA  
&                 )
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C-----  
C  
C ***** FORTRAN77 SUBROUTINE: E5DATA *****  
C  
C PURPOSE: TO FETCH DATA FROM INPUT THERMAL TOTAL CHARGER TRANSFER  
C          RATE COEFFICIENT FILE FOR GIVN RECEIVER ION ELEMENT.  
C          (MEMBER STORED IN IONATOM.DATA - MEMBER PREFIX 'TCX#').  
C  
C CALLING PROGRAM: ADAS505/SQTCX  
C  
C DATA:  
C  
C          UP TO 'NSTORE' SETS (DATA-BLOCKS) OF DATA MAY BE READ FROM  
C          THE FILE - EACH BLOCK FORMING A COMPLETE SET OF RATE-  
C          COEFFICIENTS FOR A GIVEN RECEIVER/DONOR COMBINATION. EACH  
C          DATA-BLOCK IS ANALYSED INDEPENDENTLY OF ANY OTHER DATA-  
C          BLOCK.  
C  
C          THE UNITS USED IN THE DATA FILE ARE TAKEN AS FOLLOWS:  
C  
C          TEMPERATURES           : EV  
C          RATE COEFFICIENTS      : CM**3 SEC-1  
C  
C SUBROUTINE:  
C  
C INPUT : (I*4)  IUNIT      = UNIT TO WHICH INPUT FILE IS ALLOCATED.  
C INPUT : (C*44) DSNAME     = MVS DATA SET NAME OF DATA SET BEING READ  
C  
C INPUT : (I*4)  NSTORE     = MAXIMUM NUMBER OF INPUT DATA-BLOCKS THAT  
C                   CAN BE STORED.  
C INPUT : (I*4)  NTRDIM     = MAX NUMBER OF RECEIVER TEMPERATURES ALLOWED  
C INPUT : (I*4)  NTDDIM     = MAX NUMBER OF DONOR TEMPERATURES ALLOWED  
C  
C OUTPUT: (I*4)  NBSEL      = NUMBER OF DATA-BLOCKS ACCEPTED & READ IN.  
C OUTPUT: (I*4)  ISELA()    = READ - DATA-SET DATA-BLOCK ENTRY INDICES  
C                   DIMENSION: DATA-BLOCK INDEX  
C  
C OUTPUT: (I*4)  IRZ0()     = NUCLEAR CHARGE OF RECEIVING IMPURITY ION -  
C                   READ FROM SELECTED DATA-BLOCK.  
C                   DIMENSION: DATA-BLOCK INDEX.  
C OUTPUT: (I*4)  IRZ1()     = INITIAL CHARGE OF RECEIVER -
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C          READ FROM SELECTED DATA-BLOCK.
C          DIMENSION: DATA-BLOCK INDEX.
C OUTPUT: (I*4)  IDZ0 ()  = NUCLEAR CHARGE OF NEUTRAL DONOR -
C          READ FROM SELECTED DATA-BLOCK.
C          DIMENSION: DATA-BLOCK INDEX.
C
C OUTPUT: (L*4)  LEQUA () = READ - DATA SET ENTRY FORMAT
C          .TRUE.  => DATA SET CONTAINS EQUAL
C          TEMPERATURE COEFFICIENT.
C          .FALSE. => DATA SET DOES NOT CONTAIN
C          EQUAL TEMPERATURE COEFFT.
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (C*9)  CDONOR () = READ - DONOR ION IDENTIFICATION
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (C*9)  CRECVR () = READ - RECEIVER ION IDENTIFICATION
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (C*10) CFSTAT () = READ - FINAL STATE SPECIFICATION
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (R*8)  AMSRA () = READ - RECEIVER ATOMIC MASS
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (R*8)  AMSDA () = READ - DONOR ATOMIC MASS
C          DIMENSION: DATA-BLOCK INDEX
C
C OUTPUT: (I*4)  ITRA ()  = READ - NUMBER OF RECEIVER TEMPERATURES
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (I*4)  ITDA ()  = READ - NUMBER OF DONOR TEMPERATURES
C          DIMENSION: DATA-BLOCK INDEX
C
C OUTPUT: (R*8)  TFRA (,) = READ - RECEIVER TEMPERATURES (UNITS: EV)
C          1ST DIMENSION: RECEIVER TEMPERATURE INDEX
C          2ND DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (R*8)  TFDA (,) = READ - DONOR TEMPERATURES (UNITS: EV)
C          1ST DIMENSION: DONOR TEMPERATURE INDEX
C          2ND DIMENSION: DATA-BLOCK INDEX
C
C OUTPUT: (R*8)  QFTEQA (,) = READ - EQUAL TEMPERATURE RATE-COEFFICIENTS
C          (UNITS: CM**3 SEC-1)
C          1ST DIMENSION: RECEIVER TEMPERATURE INDEX
C          2ND DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (R*8)  QFTCXA (,,) = READ - FULL SET OF RATE-COEFFICIENTS
C          (UNITS: CM**3 SEC-1)
C          1ST DIMENSION: DONOR TEMPERATURE INDEX
C          2ND DIMENSION: RECEIVER TEMPERATURE INDEX
C          3RD DIMENSION: DATA-BLOCK INDEX
C
C          (C*2)  CEQUAL  = PARAMETER = 'EQ'
C
C          (I*4)  I4EIZ0  = FUNCTION - (SEE ROUTINES SECTION BELOW)
C          (I*4)  I4FCTN  = FUNCTION - (SEE ROUTINES SECTION BELOW)
C          (I*4)  I4UNIT  = FUNCTION - (SEE ROUTINE SECTION BELOW)
C          (I*4)  IBLK    = ARRAY INDEX: DATA-BLOCK INDEX
C          (I*4)  ITR     = ARRAY INDEX: RECEIVER TEMPERATURE INDEX
C          (I*4)  ITD     = ARRAY INDEX: DONOR TEMPERATURE INDEX

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C (I*4) NTRNUM = NUMBER OF RECEIVER TEMPERATURES FOR CURRENT
 C DATA-BLOCK
 C (I*4) NTDNUM = NUMBER OF DONOR TEMPERATURES FOR CURRENT
 C DATA-BLOCK
 C (I*7) N7 = MIN(7,NTDNUM) REQUIRED TO HANDLE > 7 DONOR TEMPS
 C (I*4) IABT = RETURN CODE FROM 'I4FCTN'
 C
 C (L*4) LBEND = IDENTIFIES WHETHER THE LAST OF THE INPUT
 C DATA SUB-BLOCKS HAS BEEN LOCATED.
 C (.TRUE. => END OF SUB-BLOCKS REACHED)
 C
 C (C*10) IONNAM = READ - DONOR/RECEIVER DESIGNATION STRING
 C
 C (C*1) CSLASH = '/' - DELIMITER FOR 'XXHKEY'
 C (C*2) C2 = GENERAL USE TWO BYTE CHARACTER STRING
 C (C*3) CKEY1 = 'AMD' - INPUT BLOCK HEADER KEY
 C (C*3) CKEY2 = 'AMR' - INPUT BLOCK HEADER KEY
 C (C*3) CKEY3 = 'FST' - INPUT BLOCK HEADER KEY
 C (C*4) CKEY4 = 'ISEL' - INPUT BLOCK HEADER KEY
 C (C*80) C80 = GENERAL USE 80 BYTE CHARACTER STRING FOR
 C THE INPUT OF DATA-SET RECORDS.
 C (C*80) C80 = GENERAL USE 80 BYTE CHARACTER STRING FOR
 C THE INPUT OF DATA-SET RECORDS.

C ROUTINES:

ROUTINE	SOURCE	BRIEF DESCRIPTION
XXHKEY	ADAS	OBTAIN KEY/RESPONSE STRINGS FROM TEXT
I4EIZ0	ADAS	INTEGER*4 FUNCTION - RETURNS Z0 FOR GIVEN ELEMENT SYMBOL
I4FCTN	ADAS	INTEGER*4 FUNCTION - CONVERT CHARACTER STRING TO INTEGER
R8FCTN	ADAS	REAL*8 FUNCTION - CONVERT CHARACTER STRING TO REAL
I4UNIT	ADAS	INTEGER*4 FUNCTION - FETCH UNIT NUMBER FOR OUTPUT OF MESSAGES

C AUTHOR: PAUL E. BRIDEN (TESSELLA SUPPORT SERVICES PLC)
 C K1/0/81
 C JET EXT. 4569

C DATE: 20/02/91

C UPDATE: 23/04/93 - PE BRIDEN - ADAS91: ADDED I4UNIT FUNCTION TO WRITE
 C STATEMENTS FOR SCREEN MESSAGES

C UPDATE: 24/05/93 - PE BRIDEN - ADAS91: CHANGED I4UNIT(0)-> I4UNIT(-1)

C UPDATE: 15/12/95 - HP SUMMERS- ADAS91: MODIFIED INFOMATION STRING USE

C UNIX-IDL PORT:

C AUTHOR: WILLIAM OSBORN (TESSELLA SUPPORT SERVICES PLC)

C NO CHANGES FROM IBM VERSION

C

C DATE: 20TH MARCH 1996

C

C VERSION: 1.1 DATE: 20-03-96

C MODIFIED: WILLIAM OSBORN

C - FIRST VERSION

C

C VERSION: 1.2 DATE: 10-04-96

C MODIFIED: WILLIAM OSBORN

C - REMOVED REDUNDANT VARIABLE

C

C VERSION: 1.3 DATE: 19-09-97

C MODIFIED: MARTIN O'MULLANE

C - MODIFIED TO ALLOW DATASETS WITH GREATER THAN 7 DONOR

C TEMPERATURES TO BE USED.

C

C

CHARACTER*9	CDONOR (NSTORE)	
CHARACTER*10	CFSTAT (NSTORE)	
CHARACTER*9	CRECVR (NSTORE)	
CHARACTER*44	DSNAME	
INTEGER	IDZ0 (NSTORE) ,	IRZ0 (NSTORE)
INTEGER	IRZ1 (NSTORE) ,	I SELA (NSTORE)
INTEGER	ITDA (NSTORE) ,	ITRA (NSTORE)
INTEGER	IUNIT, NBSEL,	NSTORE, NTDDIM
INTEGER	NTRDIM	
LOGICAL	LEQUA (NSTORE)	
REAL*8	AMSDA (NSTORE) ,	AMSRA (NSTORE)
REAL*8	QFTCXA (NTDDIM, NTRDIM, NSTORE)	
REAL*8	QFTEQA (NTRDIM, NSTORE) ,	TFDA (NTDDIM, NSTORE)
REAL*8	TFRA (NTRDIM, NSTORE)	