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LSTRAT - A standard output routine for USTRAT file stratigraphic
data in the National Coal Resources Data System (NCRDS)

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LSTRAT was written to produce a listing of stratigraphic data stored in the computerized National Coal Resources Data System's file, USTRAT. It operates in conjunction with the system's data handling program, PACER. This listing is to be used with the original source documents to ensure that the data entered into the USTRAT data base is accurate or simply as a display of all the data in a USTRAT subfile.

It will produce a header record with all the identifying attributes associated with the stratigraphic record, e. g. drill hole, of interest. This information will be displayed in a similar format to the standard NCRDS data entry form for USTRAT. Then it will list the stratigraphic sequences of the stratigraphic record starting from the top and proceeding to the bottom. It is an option to chose if the thickness data should be displayed in feet, feet and inches, or inches.

Included for reference are an example of the LSTRAT printout and the LSTRAT source code.

```

subroutine lstrat
dimension image(500), image2(500), image3(500),
&quad(7), pntid(4), sour(7), geol(7), frmtn(7), state(7),
&county(7), prov(7), regn(7), fiel(7), rank(7), lithm(3),
&icolor(2), igsize(2), igshap(2), mnrl(3), ibdng(2), icomm(10),
&cbcd(7), litho(2), krcra(4), clsa(2), lease(4)
common /strat/ new, idum(4), image2, image3
common /unpkd/ iskip,nelem,llen,ikey,image
common /filnam/ names(200),numf,numi
character*8  pgmname, names
character  star*1, m*12, d*1, icomm2*40, ifile*200
integer pntid,elvp,dscplog,weaq
logical bound_pacer_$known, bad
external acct (descriptors)
external ioa_$nnl (descriptors)
external ioa_$rsnnl (descriptors)
external bound_pacer_$assoc (descriptors)
external bound_pacer_$known (descriptors)
external bound_pacer_$noyes(descriptors)
equivalence (elev,image2(15)),(depth,image2(17)),(thk,image3(6)),
&(iyear,image2(10)),(lat,image2(23)),(long,image2(25)),
&(iunit,image3(2)),(icode,image2(11)),(elvp,image2(16)),
&(locdip,image2(19)),(locang,image2(20)),(dscplog,image2(22)),
&(llpr,image2(27)),(weaq,image2(38)),(iquar1,image(29)),
&(iquar2,image2(30)),(iquar3,image2(31)),(iquar4,image2(32)),
&(isect,image2(33)),(itwns,image2(34)),(tns,image2(35)),
&(irang,image2(36)),(rgew,image2(37)),(icont,image3(16)),
&(ifoss,image3(17)),(ifjc,image3(18)),(locstr,image2(18)),
&(iuntq,image3(3)),(ipmer,image2(28)),(to,image3(5)),
&(from,image3(4))
names(7) = "ustrat"
numi = 7
pgmname = "lstrat"
goto 100
entry lstratus
pgmname = "lstratus"
100 call acct(pgmname)
call bound_pacer_$set(60,7)
e="n"
110 call ioa_$nnl("/Enter strat file name: ")
read 790, ifile
if (.not.bound_pacer_$known(ifile,1)) goto 110
call bound_pacer_$assoc(29,"ksqi")
120 call ioa_$nnl("/Enter output file name: ")
read 790, ifile
if (.not.bound_pacer_$known(ifile,2)) goto 120
call bound_pacer_$assoc(30,"so ")
ifile="usc_dict"
if (.not.bound_pacer_$known(ifile,1)) goto 740
call bound_pacer_$assoc(14,"ksqi")
130 print 920
read 800, d
if(d.ne."n".and.d.ne."y")goto 130
if(e.eq."n") goto 160
140 call ioa_$nnl("/Do you wish to change the thickness value? ")
read 800, e
if(bound_pacer_$noyes(e)) 170,140,150
150 call ioa_$nnl("/Enter new value: ")
read 800, star
goto 170

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160      print 810
      read 800, star
170      ikey = 0
      call bound_pacer_$getput(1,29,iicode)
      if (ikey.eq.99999999) goto 740
      if (iicode.gt.0) goto 740
      if (new.lt.2) goto 400
      do 180 i = 1,4
      pntid(i) = " "
180      continue
      if (image(1).eq." ") goto 200
      ipt = 60+image(1)
      lt = image(ipt)
      if (lt.eq.0) goto 200
      if (lt.gt.4) lt = 4
      do 190 i = 1,lt
      pntid(i) = image(ipt+i)
190      continue
200      call bound_pacer_$scandc(26,image2(2),krcra,lt,$210)
210      call bound_pacer_$scandc(27,image2(3),clsa,lt,$220)
220      call bound_pacer_$scandc(28,image2(4),lease,lt,$230)
230      call bound_pacer_$scandc(1,image2(5),state,lt,$240)
240      call bound_pacer_$scandc(2,image2(6),county,lt,$250)
250      call bound_pacer_$scandc(23,image2(7),geol,lt,$260)
260      call bound_pacer_$scandc(11,image2(8),prov,lt,$270)
270      call bound_pacer_$scandc(12,image2(9),regn,lt,$280)
280      call bound_pacer_$scandc(10,image2(12),quad,lt,$290)
290      call bound_pacer_$scandc(5,image2(13),fiel,lt,$300)
300      call bound_pacer_$scandc(8,image2(14),rank,lt,$310)
310      if(iicode.eq." ")m=" "
      if(iicode.eq."conf")m="CONFIDENTIAL"
      write(30,780)
      if(krcra(1).eq."nde ") krcra(1) = " "
      if(clsa(1).eq."nde ") clsa(1) = " "
      if(lease(1).eq."nde ") lease(1) = " "
      if(fiel(1).eq."nde ") fiel(1) = " "
      write(30,820)(pntid(i),i=1,4),(krcra(i),i=1,4),
&(clsa(i),i=1,2),(lease(i),i=1,4),(state(n),n=1,4),
&(county(n),n=1,6),(geol(i),i=1,5),(prov(n),n=1,4),
&(regn(i),i=1,6),iyear,m,(quad(n),n=1,7),(fiel(n),n=1,4),
&(rank(n),n=1,4)
      ideg = lat/100000000
      iideg = long/100000000
      imin=(lat-ideg*100000000)/1000000
      isec=lat-ideg*100000000-imin*1000000
      isec=isec/10000
      imin=(long-iideg*100000000)/1000000
      isec=long-iideg*100000000-imin*1000000
      isec=iisec/10000
      call bound_pacer_$scandc(25,image2(21),sour,lt,$320)
320      do 330 i = 1,10
      icomm(i) = " "
330      continue
      if (sour(1).eq."nde ") sour(1) = " "
      if (image(39).eq." ") goto 360
      ipt = 60+image(39)
      lt = image(ipt)
      if (lt.eq.0) goto 360
      do 340 i = 1,lt
      icomm(i) = image(ipt+i)

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340      continue
      goto 360
350      call ioa_$nnl("Reenter thickness value:")
      read 800, star
360      if (star.eq."1") goto 370
      if (star.eq."3") goto 380
      if (star.lt."1".or.star.gt."3") goto 350
      depth = depth/12
370      write(30,840)elev,elvp,depth,locstr,locdip,
      &locang,(sour(n),n=1,6),dscplog,ideg,imin,isec,iideg,iimin,
      &iisec,llpr,ipmer,iqvar1,iqvar2,iqvar3,iqvar4,isect,itwns,
      &tns,irang,rgew,weaq,(icomm(n),n=1,10)
      goto 390
380      ifeet = depth/12
      isum = ifeet*12
      inch = depth - isum
      write(30,830)elev,elvp,ifeet,inch,locstr,locdip,
      &locang,(sour(n),n=1,6),dscplog,ideg,imin,isec,iideg,iimin,
      &iisec,llpr,ipmer,iqvar1,iqvar2,iqvar3,iqvar4,isect,itwns,
      &tns,irang,rgew,weaq,(icomm(n),n=1,10)
390      write(30,770)
      write(30,850)
      write(30,770)
400      call bound_pacer_$scandc(6,image3(7),frmtn,lt,$410)
      if (frmtn(1).eq."nde ") frmtn(1) = " "
410      call bound_pacer_$scandc(7,image3(8),cbcd,lt,$420)
      if (cbcd(1).eq."nde ") cbcd(1) = " "
420      do 430 i = 1,2
      litho(i) = " "
430      continue
      if (image(48).eq." ") goto 450
      ipt = 60+image(48)
      lt = image(ipt)
      if (lt.eq.0) goto 450
      if (lt.gt.2) lt = 2
      do 440 i = 1,lt
      litho(i) = image(ipt+i)
440      continue
450      do 460 i = 1,3
      lithm(i) = " "
460      continue
      if (image(49).eq." ") goto 480
      ipt = image(49)+60
      lt = image(ipt)
      if (lt.eq.0) goto 480
      if (lt.gt.3) lt = 3
      do 470 i = 1,lt
      lithm(i) = image(ipt+i)
470      continue
480      do 490 i = 1,2
      icolor(i) = " "
490      continue
      if (image(50).eq." ") goto 510
      ipt = image(50)+60
      lt = image(ipt)
      if (lt.eq.0) goto 510
      if (lt.gt.2) lt = 2
      do 500 i = 1,lt
      icolor(i) = image(ipt+i)
500      continue

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510      do 520 i = 1,2
        igsize(i) = " "
520      continue
        if (image(51).eq." ") goto 540
        ipt = image(51)+60
        lt = image(ipt)
        if (lt.eq.0) goto 540
        if (lt.gt.2) lt = 2
        do 530 i = 1,lt
          igsize(i) = image(ipt+i)
530      continue
540      do 550 i = 1,2
        igshap(i) = " "
550      continue
        if (image(52).eq." ") goto 570
        ipt = 60+image(52)
        lt = image(ipt)
        if (lt.eq.0) goto 570
        if (lt.gt.2) lt = 2
        do 560 i = 1,lt
          igshap(i) = image(ipt+i)
560      continue
570      do 580 i = 1,3
        mnrl(i) = " "
580      continue
        if (image(53).eq." ") goto 600
        ipt = 60+image(53)
        lt = image(ipt)
        if (lt.eq.0) goto 600
        if (lt.gt.3) lt = 3
        do 590 i = 1,lt
          mnrl(i) = image(ipt+i)
590      continue
600      do 610 i = 1,2
        ibdng(i) = " "
610      continue
        if (image(54).eq." ") goto 630
        ipt = image(54)+60
        lt = image(ipt)
        if (lt.eq.0) goto 630
        if (lt.gt.2) lt = 2
        do 620 i = 1,lt
          ibdng(i) = image(ipt+i)
620      continue
630      do 640 i = 1,10
        icomm(i) = " "
640      continue
        if (image(58).eq." ") goto 660
        ipt = image(58)+60
        lt = image(ipt)
        if (lt.eq.0) goto 660
        if (lt.gt.10) lt = 10
        do 650 i = 1,lt
          icomm(i) = image(ipt+i)
650      continue
660      if(d.eq."n") goto 670
        if (elev.eq.0.0) go to 734
        if(to.le.0.0) goto 735
        xfrom = elev-(from/12.)
        xto = elev-(to/12.)

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call ioa_$rsnnl("~6.1f - ~6.1f",icomm2,llen,xfrom,xto)
670 if (star.eq."1") goto 680
    if (star.eq."3") goto 690
    thk = thk/12
680 write(30,880)iunit,iuntq,thk,(frmtn(n),n=1,4),
    &(cbcd(n),n=1,5),(litho(n),n=1,2),(lithm(n),n=1,3),
    &(icolor(n),n=1,2),(igsize(n),n=1,2),(igshap(n),n=1,2),
    &(mnrl(n),n=1,3),(ibdng(n),n=1,2),icont,ifoss,ifjc
    goto 700
690 ifeet = thk/12
    sum = ifeet*12
    sinch = thk - sum
    write(30,890)iunit,iuntq,ifeet,sinch,(frmtn(n),n=1,4),
    &(cbcd(n),n=1,5),(litho(n),n=1,2),(lithm(n),n=1,3),
    &(icolor(n),n=1,2),(igsize(n),n=1,2),(igshap(n),n=1,2),
    &(mnrl(n),n=1,3),(ibdng(n),n=1,2),icont,ifoss,ifjc
700 if (pgmname.eq."lstrat") goto 720
    if(lt.ge.9) go to 720
    if(d.eq."y")goto 710
    write(30,860) (icomm(n),n=1,8),ikey
    goto 170
710 write(30,900)icomm2,ikey
    goto 170
720 if(d.eq."y") goto 730
    write(30,870)(icomm(n),n=1,10)
    goto 170
730 write(30,910)icomm2
    goto 170
734 print 940
    go to 670
735 print 930
740 call bound_pacer_$closer(14)
    call bound_pacer_$closer(29)
    call bound_pacer_$closer(30)
750 call ioa_$nnl("~/Do you wish to list another file? ")
    read 800, e
    if(bound_pacer_$noyes(e)) 760,750,110
760 return
770 format(132("-"))
780 format(/132("*"))
790 format(a200)
800 format(a1)
810 format(/x,"Thickness values can be shown in:"/3x,"1. inches"/3x,
    &"2. decimal feet"/3x,"3. feet and inches"/x,
    &"Enter a '1', '2', or '3' depending upon"/x,
    &"how you want the values to be shown."/)
820 format("DATA POINT ID: ",4a4,19x,"KRCRA: ",4a4,7x,"CLSA: ",2a4,
    &6x,"LEASE NO: ",4a4,8x,"STATE: ",4a4,10x,"COUNTY: ",6a4,
    &7x,"GEOLOGIST: ",5a4,5x,"PROVINCE: ",4a4,10x,"REGION: ",6a4,
    &12x,"DATE: ",i6,10x,a12/"QUAD NAME & SERIES: ",7a4,12x,
    &"COAL FIELD: ",4a4,12x,"ESTRANK: ",4a4)
830 format(" SURFACE ELEVATION: ",f7.1,8x,"ELVPREC: ",i2,6x,
    &"TOTAL DEPTH LOGGED: ",i5,"",x,i2,"",x,5x,
    &"LOCAL STRIKE/DIP/ANGLE: ",i3,2(x,i3),3x,"APP THK"/
    &"SOURCE: ",6a4,7x,"DESCRIPTION LOG: ",i3,8x,"LAT: ",3(i2,x),4x,
    &"LONG: ",i3,2(x,i2),3x,"LLPREC: ",i2/"PRIN. MERIDIAN: ",i2,10x,"QUA
    &"",a2,3(2x,a2),6x,"SECTION: ",f4.1,4x,"TOWNSHIP: ",f6.1,a1,3x,
    &"RANGE: ",f6.1,a1,3x,"WEATHERING: ",i1/"COMMENT1: ",10a4)
840 format(" SURFACE ELEVATION: ",f7.1,8x,"ELVPREC: ",i2,6x,
    &"TOTAL DEPTH LOGGED: ",f8.1,6x,

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&"LOCAL STRIKE/DIP/ANGLE: ",i3,2(x,i3),3x,"APP THK"/
&"SOURCE: ",6a4,7x,"DESCRIPTION LOG: ",i3,8x,"LAT: ",3(i2,x),4x,
&"LONG: ",i3,2(x,i2),3x,"LLPREC: ",i2/"PRIN. MERIDIAN: ",i2,10x,"QUA
&"a2,3(2x,a2),6x,"SECTION: ",f4.1,4x,"TOWNSHIP: ",f6.1,a1,3x,
850 &"RANGE: ",f6.1,a1,3x,"WEATHERING: ",i1/"COMMENT1: ",10a4)
format(6x,"UQ",117x,"C F"/6x,"NU",4x,"T",112x,"O O"/6x,"IA",
&4x,"H",112x,"N S"/"UNIT ", " TL",4x,"K",5x,"FORMATION",7x,
&"BED NAME",12x,"LITHO",4x,"LITHMOD",6x,"COLOR",4x,"GRNSIZE",x,
&"GR SHAPE",x,"MINERALOGY",3x,"BEDDING",3x,"T S FJC")
880 format(i3,x,a4,x,f7.1,2x,11a4,x,3a4,x,3(2a4,x),3a4,2a4,
&2(x,a1),x,3a1)
890 format(i3,x,a4,i4,"",f4.1,"""",x,11a4,x,3a4,x,3(2a4,x),
&3a4,2a4,2(x,a1),3a1)
860 format(78x,"COMMENT2: ",8a4,"KEY:",i8)
870 format(80x,"COMMENT2: ",10a4)
900 format(78x,"COMMENT2: ",a32,"KEY:",i8)
910 format(80x,"COMMENT2: ",a40)
920 format(/"Do you prefer calculated 'from - to' elevations
& printed in the"/"'comment2' field? (If 'yes' the elevations
& will replace the"/"data in the 'comment2' field
& on the printout only.)"/)
930 format(/x,"Program STRATTHK must be run on this file
& before"/" the 'from-to' elevations can be calculated.")
940 format(/"Surface elevation is 0.0, no unit elevations
& can be calculated.")
end
```

DATA POINT ID: sc4
STATE: montana
PROVINCE: n great plains
QUAD NAME & SERIES: stroud creek (7.5')
SURFACE ELEVATION: 3480.0
SOURCE: amax-blm
PRIN. MERIDIAN: 0
COMMENT1: dh 121

COUNTY: rosebud
REGION: powder river
ELVPREC: 0
DESCRIPTION LOG: 216
QUARTERS: ne ne

KRCRA:
CLSA:
GEOLOGIST: crocdp-mapel w j
DATE: 800130
ESTRANK: subbit
LOCAL STRIKE/DIP/ANGLE: 417° 0" 0 180 1 APP THK
LONG: 106 24 28 LLPREC: 0
TOWNSHIP: 7.0s RANGE: 43.0e WEATHERING: 0

UQ		NU		T		IA		H		K		FORMATION		BED NAME		LITHO		LITHMOD		COLOR		GRN SIZE		GR SHAPE		MINERALOGY		BEDDING		T S FJC			
UNIT	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	TL	IL	
1	42'	0.0"															rk																
2	4'	0.0"	fort union											upper otter		coal																	
3	41'	0.0"	fort union													rock																	
4	4'	0.0"	fort union											lower otter		coal																	
5	77'	0.0"	fort union													rk																	
6	4'	0.0"	fort union											wall		coal																	
7	27'	0.0"	fort union													rk																	
8	2'	0.0"	fort union											pawnee		coal																	
9	90'	0.0"	fort union													rk																	
10	3'	0.0"	fort union											poker jim		coal																	
11	37'	0.0"	fort union													rk																	
12	2'	0.0"	fort union											local		coal																	
13	3'	0.0"	fort union													rk																	
14	2'	0.0"	fort union											local		coal																	
15	47'	0.0"	fort union													rock																	
16	11'	0.0"	fort union											brewster-arnold		coal																	
17	21'	0.0"	fort union													rock																	