UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Coaltab: A software program that tabulates coal resource data.

by

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Open-File Report 87-18

INTRODUCTION

In 1983, the U.S. Geological Survey published the "Coal Resource Classification System", Circular 891. At that time some of the geologists in the Branch of Coal Resources, now the Branch of Coal Geology, tabulated their resources calculated by the National Coal Resources Data System (NCRDS) software GARNET, using a software PL/1 program, written by the first author, that was resident for the Multics mainframe computer. In 1984, the Branch of Coal Resources purchased a Prime Mini-computer, and the software that was resident on Multics was transferred and partially re-written for Prime's PL/1 compiler by the first author. Because the prgram needed to be used by more geologists, the Branch decided to upgrade the program COALTAB.

PROCEDURE

Using Circular 891 as a guideline, the output to this program is separated into the following categories.

* state
* county
* township and range or latitude and longitude
* reliability of estimate
* thickness of coal
* depth of overburden
* original resource
* remaining resources
* mined out resources
* burned resources
* restricted resources
* a different type of resource category
* a different type of header information

The user also has the choice to see all of the tonnage numbers as computer calculated to the nearest .01 ton or to round the numbers into millions of short tons with two decimal places which is the general reporting standard for resource estimates. The user also is able to check the data to see if they have been coded correctly by displaying the data in their coded format.

USING COALTAB IN THE PRIME ENVIRONMENT

In order to gain access to the Branch of Coal Geology, National Coal Resources Data System (NCRDS), a potential user should call or write:

U.S. Geological Survey
956 National Center
Reston, VA 22092

Attn: Antoinette Medlin or Kathy Krohn
(703) 648-6403
FTS 8-959-6403

After gaining access, training on system use, data entry, and calculation of tonnages using the NCRDS programs PACER and GARNET, the user is ready to use COALTAB. The tonnage numbers are now stored in a file and are ready for tabulation by COALTAB.

In the following pages the user will find first the dialogue and next the source code of the computer program. All user input is indicated by double parenthesis ((user input)), and is always followed by pressing the carriage return key.

```
OK:  ((COALTAB))              -  ("OK" is the ready message which appears during
                                   this session - a prompt for user input.)


ENTER NAME OF INPUT FILE:  ((coalin))    (file with tonnages numbers previously
                                          calculated by GARNET)
```

Because of extremely long data lines, an option has been added for the user to review these lines, or print them if necessary. Processing done to this point includes dividing the original file into smaller files according to the coal reliability factors used during the Garnet operations. Files created are: ONEFL - TWOFL - THRFL - FOUFL. If this option is selected, each original input line will be divided into two rows, the first row will contain columns 1 - 114, the second row will contain columns 115 to the end; but this row will begin in column (15) of the output file for easier reading.

```
ENTER "Y" TO USE THIS OPTION-
          OR C/R TO CONTINUE:  ((Y))
```

(This option, if needed, is necessary only once for each set of newly used data. It allows the user to see the entire data line in a file without "wrap around" on the screen and may be printed on the line printer without missing data, as before.)

Completed.

Reliability files have been created for review.

(The following is an example of what a newly created reliability file will look like. The original input file is not altered.)

```
FAIRFAX         RIO ARRIBA              NE                            FRUITLAND ZONE            31.00N      2.00W
              3    2    2       0.75     3.00          1800.00        1808.54         8294.70               4.59     14930458.94
FAIRFAX         RIO ARRIBA              NE                            FRUITLAND ZONE            86.00N     52.00W
              2    3    2       0.75     3.00          1800.00         18.27            18.14               0.99          32660.45
FAIRFAX         RIO ARRIBA              NE                            FRUITLAND ZONE            86.00N     52.00W
              3    3    2       0.75     3.00          1800.00        2988.45        17759.10               5.94     31966373.44
FAIRFAX         RIO ARRIBA              NE                            FRUITLAND ZONE            86.00N     52.00W
              4    3    2       0.75     3.00          1800.00        3661.39        30489.88               8.33     54881781.99
FAIRFAX         RIO ARRIBA              NE                            FRUITLAND ZONE            86.00N     52.00W
              2    2    2       0.75     3.00          1800.00         643.61         2000.08               3.11      3600138.65
```

```
OK:  ((COALTAB))


ENTER NAME OF INPUT FILE:  ((coalin))


Because of extremely long data lines, an option has been added for the user
to review these lines, or print them if necessary.  Processing done to this
point includes  dividing the original file into smaller files  according to
tne coal  reliability  factors used during the  Garnet  operations.  Files
created are:  onefl - twofl - thrfl - foufl.  If this option  is selected,
each original input line will be divided into two rows,  the first row will
contain columns 1 - 114,  the second row  will contain columns  115  to the
end;  but this row will begin in column (15)  of the output file for easier
reading.

ENTER "Y" TO USE THIS OPTION-
          OR C/R TO CONTINUE:      (( C/R was pressed ))


ENTER NAME FOR OUTPUT FILE:  ((coalout))


OUTPUT DATA ROUNDED TO MILLIONS OF TONS ?
                      ENTER "Y" OR "N":  ((Y))


TYPES OF IDs:      (type of coal resouces being tabulated)

1 - FOR Original
2 -     Remaining
3 -     Mined Out
4 -     Burned
5 -     Restricted
6 -     New type to be entered
7 -     Insert complete new line into page header

ENTER NO. OF TYPE:  ((1))



Completed.

Print Suggestion:  spool coalout -ftn      (Prime command to print a file)


(When a spool command is requested, the  -ftn  option is needed to
allow the printer to begin a new page when the page header appears
or when a printed page has been filled.)
```

(The following is an example of the output data. [tonnage/1000000])

National Coal Resources Data System

U. S. Geological Survey

Original bituminous coal resources in ((COUNTY)), ((STATE))

Measured
(in millions of short tons)

Township, Range Bed Overburden	14-28"	28-42"	42-84"	84-168"	168" +	TOTAL
82.00(N) 51.00(W)						
FRUITLAND ZONE						
total	---	---	---	---	---	---
82.00(N) 52.00(W)						
FRUITLAND ZONE						
> 3000	.15	.37	9.18	40.36	66.79	116.85
total	.15	.37	9.18	40.36	66.79	116.85
86.00(N) 53.00(W)						
FRUITLAND ZONE						
> 3000	---	---	---	---	971.86	971.86
total	---	---	---	---	971.86	971.86
84.00(N) 51.00(W)						
FRUITLAND ZONE						
500-1000	.24	---	---	---	---	.24
1000-2000	.63	.73	---	---	---	1.36
2000-3000	.22	.88	.13	---	---	1.23
> 3000	.67	.95	1.01	---	---	2.63
total	1.76	2.56	1.14	---	---	5.46

(The above is a small example of output - when a county is complete, a "COUNTY TOTAL" of all columns will appear.)

```
OK:  ((COALTAB))


ENTER NAME OF INPUT FILE:  ((coalin))


Because of extremely long data lines, an option has been added for the user
to review these lines, or print them if necessary.  Processing done to this
point includes  dividing the original file into smaller files  according to
the coal  reliability  factors used during the  Garnet  operations.  Files
created are:  onefl - twofl - thrfl - foufl.  If this option  is selected,
each original input line will be divided into two rows,  the first row will
contain columns 1 - 114,  the second row  will contain columns  115  to the
end;  but this row will begin in column (15)  of the output file for easier
reading.

ENTER "Y" TO USE THIS OPTION-
          OR C/R TO CONTINUE:


ENTER NAME FOR OUTPUT FILE:  ((coalout))


OUTPUT DATA ROUNDED TO MILLIONS OF TONS ?
                      ENTER "Y" OR "N":  ((N))


TYPES OF IDs:

1 - FOR Original
2 -     Remaining
3 -     Mined Out
4 -     Burned
5 -     Restricted
6 -     New type to be entered
7 -     Insert complete new line into page header

ENTER NO. OF TYPE:  ((1))


Completed.

Print Suggestion:  spool coalout -ftn
```

(The following is an example of the output data. [tonnage not divided by 1000000])

National Coal Resources Data System

U. S. Geological Survey

Original bituminous coal resources in ((COUNTY)), ((STATE))

Measured
(short tons)

Township, Range Bed Overburden	14-28"	28-42"	42-84"	84-168"	168" +	TOTAL
86.00(N) 50.00(W) FRUITLAND ZONE						
total	---	---	---	---	---	---
86.00(N) 52.00(W) FRUITLAND ZONE						
> 3000	149,306.56	373,562.63	9,179,561.03	40,359,286.54	66,791,309.70	116,853,026.46
total	149,306.56	373,562.63	9,179,561.03	40,359,286.54	66,791,309.70	116,853,026.46
86.00(N) 53.00(W) FRUITLAND ZONE						
> 3000	---	---	---	---	971,863,453.54	971,863,453.54
total	---	---	---	---	971,863,453.54	971,863,453.54
83.00(N) 51.00(W) FRUITLAND ZONE						
500-1000	241,404.90	---	---	---	---	241,404.90
1000-2000	628,132.47	731,695.95	---	---	---	1,359,828.42
2000-3000	224,965.44	875,949.15	127,609.89	---	---	1,228,524.48
> 3000	667,073.00	946,836.82	1,005,817.82	---	---	2,619,727.64
total	1,761,575.81	2,554,481.92	1,133,427.71	---	---	5,449,485.44

(The ending of an output file will appear as follows,
with a "GRAND TOTAL" at the end:)

Township, Range Bed Overburden	14-28"	28-42"	42-84"	84-168"	168" +	TOTAL
68.00(N) 53.00(W)						
FRUITLAND ZONE						
1000-2000	---	---	---	16,314,520.51	---	16,314,520.51
2000-3000	---	---	---	4,132,161.59	51,207,215.90	55,339,377.49
> 3000	---	---	---	---	195,533,911.39	195,533,911.39
total	---	---	---	20,446,682.10	246,741,127.29	267,187,809.39
87.00(N) 52.00(W)						
FRUITLAND ZONE						
500-1000	256,207.02	496,265.89	1,191,457.77	---	---	1,943,930.68
1000-2000	---	---	759,554.11	1,331,329.36	---	2,090,883.47
total	256,207.02	496,265.89	1,951,011.88	1,331,329.36	---	4,034,814.15
87.00(N) 53.00(W)						
FRUITLAND ZONE						
1000-2000	---	---	---	35,696.01	---	35,696.01
2000-3000	---	---	---	---	6,462,688.72	6,462,688.72
total	---	---	---	35,696.01	6,462,688.72	6,498,384.73
COUNTY TOTAL	8,836,780.34	12,528,591.32	65,513,872.30	240,646,253.32	388,009,368.86	715,534,866.14
GRAND TOTAL	27,102,130.14	40,156,115.30	246,391,341.31	945,508,864.07	6,096,762,188.87	7,355,920,639.69

(This report may be copied to your work area by entering:)

COPY <NCRDS2>GUESTS>BSCOTT>COALTAB>CTMANUAL

```
coaltab:
     proc;
/*

         ***** coaltab program for nancy gardner's large tonnage data *****

*/
     dcl (ifile,onefl,twofl,thrfl,foufl,table,idta2) file;
     dcl (idt2a,ssone,sstwo,ssthr,ssfou) char (128) varying;
     ssone = 'onefl';
     sstwo = 'twofl';
     ssthr = 'thrfl';
     ssfou = 'foufl';
     on  endfile (ifile) go to endrds;
     dcl round builtin;
     dcl cnam$1 entry (char(16), fixed bin(15), char(16), fixed bin(15), fixed bin(15));
     dcl subsrt entry (char(128), fixed bin, char(128), fixed bin, fixed bin, fixed bin, fixed bin,
     fixed bin, fixed bin(31));
     dcl fil$dl entry (char(128)var, fixed bin);
     dcl (npass,nitem) fixed bin;
     idt2a = 'idta2';
     dcl divide builtin;
     dcl relif char (8) varying;
     dcl ncrds char (40) varying;
     dcl dash char (120)  varying;
     dcl typnum char (2) varying;
     dcl typeid char (132) varying;
     dcl ftton char (6) varying;
     dcl pad char (30) varying;
     dcl (ns,ew) char (4) varying;
     dcl (over,oversv,newo,newosv,relido,relidsv) char (12) varying;
     dcl (miih,overa,overa2,seeopt,tonopt) char (16) varying;
     dcl (iname,oname,bedsv,usgs,tr,trsv,thk,thksv) char (24) varying;
     dcl (trdo,trdsv,overdo,overdsv,countdo,countdsv) char (24) varying;
     dcl (state,county,quad,bed,towns,range,countys,short,area) char (36) varying;
     dcl (new1,new2,new3,tnew1,tnew2,tnew3,nrtton) char (36) varying;
     dcl (nwacre,new4,new5,new6,tfield,tnew4,tnew5,tnew6) char (36) varying;
     dcl (bfield,trsave) char (60) varying;
     dcl (tsub,tsub2,thkhdr) char (160) varying;
     dcl (qcsline,ident,ident1,ident2,idsub,anums,ahead,totdash) char (164) varying;
     dcl (inrec,subir,subir2,avgline,newprnt) char (240) varying;
     dcl blk23 char (23);
     dcl blk28 char (28);
     dcl blk24 char (24);
     dcl blk14 char (14);
     dcl blk12 char (12);
     dcl dash12 char (12);
     dcl dash14 char (14);
     dcl blk8 char (8);
     dcl blk15 char (15);
     dcl blk26 char (26);
     dcl blk16 char (16);
     dcl blk17 char (17);
     dcl blk9 char (9);
     dcl blk1  char (1);
     dcl blk2 char (2);
     dcl blk3 char (3);
     dcl blk4 char (4);
     dcl blk5 char (5);
```

```
dcl blk6 char (6);
dcl blk7 char (7);
dcl blk13 char (13);
dcl (ct1bton,ct2bton,ct3bton,ct4bton,ct5bton,mt6ton) char (36) varying;
ct1bton='';ct2bton='';ct3bton='';ct4bton='';ct5bton='';nrtton='';
dcl rtacre fixed dec (14,2);
dcl tonflfd fixed dec (14,2);
tonflfd = 0;
dcl (xblk,dif,nmove,linect,filenum,openf,zflag,space,code,zflag2,loopf,errorf,loopf2,thkb) fixed bin(15);
dcl (dashf,blkc) fixed bin (30);
dcl (acre,avtk,rtton,nwavtk,rtavtk,tonfl) fixed dec (14,2);
dcl (one,two,three,four,ontw,thfo,ottf,tottot) fixed dec (14,2);
dcl (trt1ton,trt2ton,trt3ton) fixed dec (14,2);
dcl (ct1ton,ct2ton,ct3ton,t1ton,t2ton,t3ton) fixed dec (14,2);
dcl (trt4acre,trt4avtk,trt4ton,trt5acre,trt5avtk,trt5ton,trt6acre,trt6avtk,trt6ton) fixed dec (14,2);
dcl (ct4acre,ct4avtk,ct4ton,ct5acre,ct5avtk,ct5ton,ct6acre,ct6avtk,ct6ton,t4ton,t5ton,t6ton) fixed dec (14,2);
dcl (acre4,acre5,acre6,avtk4,avtk5,avtk6,rtavts) float dec;
acre4=0;acre5=0;acreo=0;avtk4=0;avtk5=0;avtk6=0;rtavtk=0;rtavts=0;
one=0;two=0;three=0;four=0;ontw=0;thfo=0;ottf=0;tottot=0;loopf2=0;thkb=0;
rtacre=0;rtavtk=0;dashf=0;blkc=0;xblk=0;dif=0;nmove=0;linect=0;filenum=0;openf=0;zflag=0;rtton=0;space=0;errorf=0;
trt4acre=0;trt4avtk=0;trt4ton=0;trt5acre=0;trt5avtk=0;trt5ton=0;trt6acre=0;trt6avtk=0;trt6ton=0;
trt1ton=0;trt2ton=0;trt3ton=0;ct1ton=0;ct2ton=0;ct3ton=0;
t1ton=0;t2ton=0;t3ton=0;
ct4acre=0;ct4avtk=0;ct4ton=0;ct5acre=0;ct5avtk=0;ct5ton=0;ct6acre=0;ct6avtk=0;ct6ton=0;nwavtk=0;
t4ton=0;t5ton=0;t6ton=0;zflag=0;loopf=0;
dcl rptptr ptr;
dcl rptptr2 ptr;
dcl pacre pic 'zz,zzz';
dcl pavtk pic 'zzzv.z';
dcl pton pic 'z,zzz,zzz,zzzv.zz';
dcl prtacre pic 'zz,zzz';
dcl prtavtk pic 'z,zzzv.z';
dcl prtton pic 'z,zzz,zzz,zzzv.zz';
dcl pct1ton pic 'z,zzz,zzz,zzzv.zz';  dcl pct1bton pic 'z,zzz,zzz,zzzv.zz';  dcl p1gton pic 'zz,zzz,zzz,zzzv.zz';
dcl pct2ton pic 'z,zzz,zzz,zzzv.zz';  dcl pct2bton pic 'z,zzz,zzz,zzzv.zz';  dcl p2gton pic 'zz,zzz,zzz,zzzv.zz';
dcl pct3ton pic 'z,zzz,zzz,zzzv.zz';  dcl pct3bton pic 'z,zzz,zzz,zzzv.zz';  dcl p3gton pic 'zz,zzz,zzz,zzzv.zz';
dcl pct4ton pic 'z,zzz,zzz,zzzv.zz';  dcl pct4bton pic 'z,zzz,zzz,zzzv.zz';  dcl p4gton pic 'zz,zzz,zzz,zzzv.zz';
dcl pct5ton pic 'z,zzz,zzz,zzzv.zz';  dcl pct5bton pic 'z,zzz,zzz,zzzv.zz';  dcl p5gton pic 'zz,zzz,zzz,zzzv.zz';
dcl pct6atk pic 'zzzv.z';
dcl pct6ton pic 'z,zzz,zzz,zzzv.zz';
dcl pt6ton pic 'zz,zzz,zzz,zzzv.zz';
dcl ptottot pic 'zz,zzz,zzz,zzzv.zz';
dcl pgrandt pic 'zzz,zzz,zzz,zzzv.zz';
anums = '     2.5-5.0                    5.0-10.0                   10.0-20.0                    total';
ahead = '                Acres thk Tonnage          Acres thk Tonnage          Acres thk Tonnage          Acres thk To
avgline = '                       Avg                        Avg                        Avg                        Avg'
dash =   '-------------------------------------------------------------------------------------------------------------
dash = ' ' || (substr(dash,1,105));
totdash = '---                    ---                ---                ---                ---';
dcl equal char (80) varying;
equal =  '================================================================================';
iname='';oname='';relif='';inrec='';state='';county='';quad='';bed='';towns='';range='';ns='';ew='';
qcsline='';ident1='';ident='';idsub='';pad='';tsub='';tsub2='';overa='';overa2='';
tnew1='';tnew2='';tnew3='';mt6ton='';
countdo='';countdsv='';trdo='';trdsv='';overdo='';overdsv='';relido='';relidsv='';tnew4='';tnew5='';tnew6='';
typnum='';typeid='';ftton='';area='';nwacre='';tr='';trsv='';thk='';thksv='';bedsv='';
subir=' ';subir2='';newo='';newosv=''; dash12 = '   99999    ';dash14 = '    99999     ';
new1='';new2='';new3='';
tfield='';over='';oversv='';countys='';new4='';new5='';new6='';trsave='';newprnt='';tonopt='';seeopt='';
bfield = '                                                                               ';
```

```
     blk23 = (substr(bfield,1,23));
     blk24 = (substr(bfield,1,24));
     blk12 = (substr(bfield,1,12));
     blk14 = (substr(bfield,1,14));
     blk15 = (substr(bfield,1,15));
     blk26 = (substr(bfield,1,26));
     blk16 = (substr(bfield,1,16));
     blk28 = (substr(bfield,1,28));
     blk17 = (substr(bfield,1,17));
     blk9  = (substr(bfield,1,9));
     blk8  = (substr(bfield,1,8));
     blk1  = (substr(bfield,1,1));
     blk2  = (substr(bfield,1,2));
     blk3 = (substr(bfield,1,3));
     blk4 = (substr(bfield,1,4));
     blk5 = (substr(bfield,1,5));
     blk6 = (substr(bfield,1,6));
     blk7 = (substr(bfield,1,7));
     blk13 = (substr(bfield,1,13));
     thkhdr = blk7 || '14-28"' || blk13 || '28-42"' || blk13 ||
              '42-84"' || blk13 || '84-168"' || blk12 || '168" + ' || blk12 || 'TOTAL';
     ncrds = 'National Coal Resources Data System';
     usgs = 'U. S. Geological Survey';
     short = '(in millions of short tons)';
innam:
     put skip (2) edit ('ENTER NAME OF INPUT FILE:    ') (a);
     get list (iname);
     if iname = '' then go to innam;
     open file (ifile) title (iname) stream input;
     put skip (2) edit (' Because of extremely long data lines, an option has been added for the user') (a);
     put skip (1) edit (' to review these lines, or print them if necessary.  Processing done to this') (a);
     put skip (1) edit (' point includes  dividing the original file into smaller files  according to') (a);
     put skip (1) edit (' the coal  reliability  factors used during the  Garnet  operations.   Files') (a);
     put skip (1) edit (' created are:  onefl - twofl - thrfl - foufl.   If this option  is selected,') (a);
     put skip (1) edit (' each original input line will be divided into two rows,  the first row will') (a);
     put skip (1) edit (' contain columns 1 - 114,  the second row  will contain columns  115  to the') (a);
     put skip (1) edit (' end;  but this row will begin in column (15)  of the output file for easier') (a);
     put skip (1) edit (' reading.') (a);
     put skip (2) edit ('ENTER "Y" TO USE THIS OPTION-  ') (a);
     put skip (1) edit ('          OR C/R TO CONTINUE:  ') (a);
     get list (seeopt);
     if (seeopt = 'Y' | seeopt = 'y') then go to typset;
outnam:
     put skip (2) edit ('ENTER NAME FOR OUTPUT FILE:  ') (a);
     get list (oname);
     if oname = '' then go to outnam;
tontype:
     put skip (2) edit ('OUTPUT DATA ROUNDED TO MILLIONS OF TONS ?') (a);
     put skip (1) edit ('                        ENTER "Y" OR "N":  ')(a);
     get list (tonopt);
     if (tonopt ^= 'Y' & tonopt ^= 'y' & tonopt ^= 'N' & tonopt ^= 'n') then go to tontype;
     if tonopt = 'y' then tonopt = 'Y';
idchoice:
     put skip (2) edit ('TYPES OF IDs:') (a);
     put skip (2) edit ('1 - FOR Original') (a);
     put skip (1) edit ('2 -     Remaining') (a);
     put skip (1) edit ('3 -     Mined Out') (a);
     put skip (1) edit ('4 -     Burned') (a);
     put skip (1) edit ('5 -     Restricted') (a);
     put skip (1) edit ('6 -     New type to be entered') (a);
```

```
     put skip (1) edit ('7 -     Insert complete new line into page header') (a);
tchoice:
     put skip (2) edit ('ENTER NO. OF TYPE:  ') (a);
     get list (typnum);
     if (typnum = '' | typnum = '0' | typnum > '7') then go to tchoice;
     if typnum < '6' then go to gdtype;
     if typnum = '6' then go to enternw;
allnew:
     put skip (2) edit ('ENTER NEW LINE, (program will add county, state) < 70 CHARS: ') (a);
     put skip (2) edit ('-> ') (a);
     get edit (typeid) (a);
     if typeid = '' then go to allnew;
     else go to typset;
enternw:
     put skip (2) edit ('ENTER NEW TYPE < 20 CHARS: ') (a);
     get edit (typeid) (a);
     if typnum = '' then go to enternw;
     go to typset;
gdtype:
     if typnum = '1' then typeid = 'Original';
     if typnum = '2' then typeid = 'Remaining';
     if typnum = '3' then typeid = 'Mined Out';
     if typnum = '4' then typeid = 'Burned';
     if typnum = '5' then typeid = 'Restricted';
typset:
     open file (onefl) stream output linesize(240);
     open file (twofl) stream output linesize(240);
     open file (thrfl) stream output linesize(240);
     open file (foufl) stream output linesize(240);
readin:
     read file (ifile) into (inrec);
     if inrec = '' then go to readin;
     relif = (substr(inrec,124,2));
     if (seeopt = 'Y' | seeopt = 'y') then go to splitr;
     if relif = ' 1' then put file (onefl) skip (1) edit (inrec) (a);
     if relif = ' 2' then put file (twofl) skip (1) edit (inrec) (a);
     if relif = ' 3' then put file (thrfl) skip (1) edit (inrec) (a);
     if relif = ' 4' then put file (foufl) skip (1) edit (inrec) (a);
     go to readin;
splitr:
     if relif = ' 1' then put file (onefl) skip (1) edit (substr(inrec,1,114)) (a);
     if relif = ' 1' then put file (onefl) skip (1) edit (substr(inrec,115)) (col(15),a);
     if relif = ' 2' then put file (twofl) skip (1) edit (substr(inrec,1,114)) (a);
     if relif = ' 2' then put file (twofl) skip (1) edit (substr(inrec,115)) (col(15),a);
     if relif = ' 3' then put file (thrfl) skip (1) edit (substr(inrec,1,114)) (a);
     if relif = ' 3' then put file (thrfl) skip (1) edit (substr(inrec,115)) (col(15),a);
     if relif = ' 4' then put file (foufl) skip (1) edit (substr(inrec,1,114)) (a);
     if relif = ' 4' then put file (foufl) skip (1) edit (substr(inrec,115)) (col(15),a);
     go to readin;
endrds:
     put file (onefl) skip (1) edit ('') (a);
     put file (twofl) skip (1) edit ('') (a);
     put file (thrfl) skip (1) edit ('') (a);
     put file (foufl) skip (1) edit ('') (a);
     close file (onefl);
     close file (twofl);
     close file (thrfl);
     close file (foufl);
     if (seeopt = 'Y' | seeopt = 'y') then go to tend;
     call sorts;
```

```
sorts:
     proc;
     dcl (sdata) file;
     dcl ssfil char(128) varying;
     dcl npass fixed bin;
     dcl nitem fixed bin;
     ssfil='sdata';
     dcl bcolm (4) fixed bin(15) static init (17,93,69,111);
     dcl ecolm (4) fixed bin(15) static init (40,110,88,121);
     dcl subsrt entry (char(128),fixed bin,char(128),fixed bin,fixed bin,
         fixed bin,fixed bin,fixed bin,fixed bin,fixed bin,fixed bin,
         fixed bin,fixed bin(31));
     call subsrt ((ssone),5,(ssone),5,3,17,40,69,88,69,88,npass,(nitem));
     call subsrt ((sstwo),5,(sstwo),5,3,17,40,69,88,69,88,npass,(nitem));
     call subsrt ((ssthr),5,(ssthr),5,3,17,40,69,88,69,88,npass,(nitem));
     call subsrt ((ssfou),5,(ssfou),5,3,17,40,69,88,69,88,npass,(nitem));
     call subsrt ((ssone),5,(ssone),5,3,90,112,117,118,128,129,npass,(nitem));
     call subsrt ((sstwo),5,(sstwo),5,3,90,112,117,118,128,129,npass,(nitem));
     call subsrt ((ssthr),5,(ssthr),5,3,90,112,117,118,128,129,npass,(nitem));
     call subsrt ((ssfou),5,(ssfou),5,3,90,112,117,118,128,129,npass,(nitem));
     end sorts;
skipss:
     if relif = '99' then go to readin;
     call pct2;
pct2:
     proc;
     on endfile (onefl) go to new2addr;
     open file (onefl) stream input;
     open file (table) title (oname) stream output linesize(240);
     open file (idta2) stream output print;
     pacre='';pavtk='';pton='';prtacre='';prtavtk='';prtton='';
     pct1ton='';pct2ton='';pct3ton='';
     pct1bton='';pct2bton='';pct3bton='';pct4bton='';pct5bton='';
     pct4ton='';pct5ton='';pct6atk='';pct6ton=''; pt6ton='';ptottot='';
     p1gton='';p2gton='';p3gton='';p4gton='';p5gton='';pgrandt='';
     ct1ton=0;ct2ton=0;ct3ton=0;
     ct4ton=0;ct5ton=0;ct6ton=0;
     openf = 1;
     filenum = 1;
read1:
     read file (onefl) into (inrec);
     if inrec = '' then go to read1;
     countdo = (substr(inrec,17,10));
     trdo = (substr(inrec,93,18));
     overdo = (substr(inrec,119,2));
     relido = (substr(inrec,124,2));
     dif = 1;
/*     if (countdo = countdsv & trdo = trdsv & overdo = overdsv & relido = relidsv) then go to duperec;*/
dup1:
     countdsv = countdo;
     trdsv = trdo;
     overdsv = overdo;
     relidsv = relido;
     state = (substr(inrec,1,16));
     call lrtrim (state);
     county = (substr(inrec,17,24));
     call lrtrim (county);
     county = translate (county,'0',' ');
     countys = county;
     county = county || ' county';
```

```
     quad = (substr(inrec,41,28));
     call lrtrim (quad);
     ftton = (substr(inrec,154,4));
     if ftton = '1750' then area = 'lignite resources in ';
     if ftton = '1770' then area = 'subbituminous coal resources in ';
     if ftton = '1800' then area = 'bituminous coal resources in ';
     if ftton = '2000' then area = 'anthracite resources in ';
     if typnum = '7' then qcsline = typeid || 'Z';
     else qcsline = typeid || ' '  ||  area  || county || ', ' || state || 'Z';
     ident = qcsline;
     idsub = 'identified subbituminous coal resources in feet ' || qcsline || 'Z';
     if typnum = '7' then idsub = qcsline || 'Z';
     xblk = index (substr(ident,1), 'Z');
     ident = (substr(ident,1,xblk-1));
     dif = (131-xblk);
     nmove = 0;
     nmove=divide(dif,2,2);
     bed = (substr(inrec,69,20));
     bedsv = bed;
     towns = (substr(inrec,89,10));
     call lrtrim (towns);
     range = (substr(inrec,100,10));
     call lrtrim (range);
     ns = (substr(inrec,99,1));
     ew = (substr(inrec,110,1));
     over = (substr(inrec,116,5));
     oversv = over;
     call numlet (over);
     miih = (substr(inrec,123,3));
     if miih = '  1' then miih = '    Measured';
     if miih = '  2' then miih = '   Indicated';
     if miih = '  3' then miih = '    Inferred';
     if miih = '  4' then miih = ' Hypothetical';
     put file (table) skip (1) edit ('1') (a);
     put file (table) edit (ncrds) (col(48),a);
     put file (table) skip (2) edit (usgs) (col(54),a);
     tfield=(substr(bfield,1,nmove));
     ident=(tfield || ident);
     xblk = 0;
     xblk = index (substr(ident,1), 'Q');
     if xblk <5 then go to notrans1;
     newprnt = translate (ident,' ','Q');
notrans1:
     if xblk <5 then newprnt = ident;
     put file (table) skip (3) edit (newprnt) (a);
     put file (table) skip (2) edit (miih) (col(57),a);
     if tonopt ^= 'Y' then put file (table) skip (1) edit ('(short tons)')(col(59),a);
     else put file (table) skip (1) edit (short) (col(52),a);
     put file (table) skip (2) edit ('Township, Range') (col(6),a);
/*     put file (table) edit ('Total') (col(55),a);*/
     put file (table) skip (1) edit ('Bed') (col(6),a);
/*     put file (table) edit ('Acres   Average  Tonnage') (col(46),a);*/
     put file (table) skip (1) edit (' Overburden ') (col(6),a);
/*     put file (table) edit ('Thickness') (col(53),a);*/
     put file (table) edit (thkhdr) (col(20),a);
/*     put file (table) skip (1) edit (dash) (col(15),a);*/
     dashf = 1;
     put file (table) skip (2) edit ('     ',towns,'(',ns,') ',range,'(',ew,')') (a);
     trsave = towns || '(' || ns || ') ' || range || '(' || ew || ')';
     put file (table) skip (1) edit (bed) (col(6),a);
```

```
      over=(substr(over,1,1)) || over;
      put file (idta2) skip (1) edit (over) (a);
      over=(substr(over,2));
      linect = 15;
      dashf=0;dif=0;
      trsv = (substr(inrec,93,18));
      thksv = (substr(inrec,115,1));
      acre = (substr(inrec,161,15));
      acre = round (acre,0);
      nwacre=acre;
      call lrtrim (nwacre);
      if thksv = '4' then ct4acre = ct4acre + nwacre;
      if thksv = '5' then ct5acre = ct5acre + nwacre;
      if thksv = '6' then ct6acre = ct6acre + nwacre;
      rtacre = rtacre + nwacre;
      if thksv = '4' then trt4acre = trt4acre + nwacre;
      if thksv = '5' then trt5acre = trt5acre + nwacre;
      if thksv = '6' then trt6acre = trt6acre + nwacre;
      one = nwacre;
      pacre = one;
xdota1:
      nwavtk = (substr(inrec,191,15));
      nwavtk = round (nwavtk,1);
      tfield = nwavtk;
      call lrtrim (tfield);
      nwavtk = tfield;
      if thksv = '4' then ct4avtk = ct4avtk + nwavtk;
      if thksv = '5' then ct5avtk = ct5avtk + nwavtk;
      if thksv = '6' then ct6avtk = ct6avtk + nwavtk;
      rtavtk = rtavtk + nwavtk;
      if thksv = '4' then trt4avtk = trt4avtk + nwavtk;
      if thksv = '5' then trt5avtk = trt5avtk + nwavtk;
      if thksv = '6' then trt6avtk = trt6avtk + nwavtk;
      two = nwavtk;
      ottf = (one*two);
      pavtk = nwavtk;
xdota2:
      tonfl = (substr(inrec,206,15));
      if tonopt ^= 'Y' then go to nodiv1;
      tonflfd = tonfl;
      tonfl = round (tonflfd,-4);
      tonfl = (tonfl/1000000);
nodiv1:
      tfield = tonfl;
      call lrtrim (tfield);
      tonfl = tfield;
      rtton = rtton + tonfl;
      if thksv = '1' then trt1ton = trt1ton + tonfl;
      if thksv = '2' then trt2ton = trt2ton + tonfl;
      if thksv = '3' then trt3ton = trt3ton + tonfl;
      if thksv = '4' then trt4ton = trt4ton + tonfl;
      if thksv = '5' then trt5ton = trt5ton + tonfl;
      if thksv = '6' then trt6ton = trt6ton + tonfl;
      pton = tonfl;
xdota3:
      if (pacre = '' & pavtk = '' & pton = '') then go to nodata;
      newprnt = pton || blk2;
/*      if thksv = '1' then put file (idta2) edit (newprnt) (col(11),a);*/
      if loopf2 = 0 then go to xfirst;
      thkb = thk;
```

```
     thk = thksv;
xfirst:
     if thk = '1' then put file (idta2) edit (newprnt) (col(21),a);
     if thk = '2' then put file (idta2) edit (newprnt) (col(41),a);
     if thk = '3' then put file (idta2) edit (newprnt) (col(61),a);
     if thk = '4' then put file (idta2) edit (newprnt) (col(81),a);
     if thk = '5' then put file (idta2) edit (newprnt) (col(101),a);
     if loopf2 = 1 then thk = thkb;
     loopf2 = 0;
nodata:
     dif = 99;
     if dif = 99 then go to nxtr;
sec1:
     ontw = thfo;
     trsv = tr;
     thksv = thk;
     bedsv = bed;
     oversv = over;
nxtr:
     read file (onefl) into (inrec);
     if inrec = '' then go to sec1;
     countdo = (substr(inrec,17,10));
     trdo = (substr(inrec,93,18));
     overdo = (substr(inrec,119,2));
     relido = (substr(inrec,124,2));
     dif = 2;
/*     if (countdo = countdsv & trdo = trdsv & overdo = overdsv & relido = relidsv) then go to duperec;*/
dup2:
     countdsv = countdo;
     trdsv = trdo;
     overdsv = overdo;
     relidsv = relido;
     tr = (substr(inrec,93,18));
     thk =  (substr(inrec,115,1));
     over = (substr(inrec,116,5));
     county = (substr(inrec,17,24));
     call lrtrim (county);
     county = translate (county,'Q',' ');
     bed = (suostr(inrec,69,20));
     dif=0;
     if countys ^= county then go to prtot;
scounty:
     if (tr = trsv & over = oversv & bed = bedsv) then go to sametr;
     prtacre = rtacre;
     rtavtk = ottf;
     prtavtk = rtavtk;
     prtton = rtton;
     if dashf = 1 then go to skprint;
     one=0;two=0;three=0;four=0;ontw=0;thfo=0;ottf=0;
skprint:
     rtacre=0;rtavtk=0;rtton=0;
     bed = (substr(inrec,69,20));
     call lrtrim (bed);
     towns = (substr(inrec,89,10));
     call lrtrim (range);
     range = (substr(inrec,100,10));
     call lrtrim (range);
     ns = (substr(inrec,99,1));
     ew = (substr(inrec,110,1));
     over = (substr(inrec,115,5));
```

```
     oversv = over;
     call numlet (over);
sametr:
     ns = (substr(inrec,99,1));
     ew = (substr(inrec,110,1));
     over = (substr(inrec,116,5));
     oversv = over;
     call numlet (over);
     bed = (substr(inrec,69,20));
     acre = (substr(inrec,161,15));
     acre = round (acre,0);
     nwacre=acre;
     call lrtrim (nwacre);
     if thk = '4' then ct4acre = ct4acre + nwacre;
     if thk = '5' then ct5acre = ct5acre + nwacre;
     if thk = '6' then ct6acre = ct6acre + nwacre;
     rtacre = rtacre + nwacre;
     if thk = '4' then trt4acre = trt4acre + nwacre;
     if thk = '5' then trt5acre = trt5acre + nwacre;
     if thk = '6' then trt6acre = trt6acre + nwacre;
     tnree = nwacre;
     pacre = three;
xdotb1:
     nwavtk = (substr(inrec,191,15));
     nwavtk = round (nwavtk,1);
     tfield = nwavtk;
     call lrtrim (tfield);
     nwavtk = tfield;
     if thk = '4' then ct4avtk = ct4avtk + nwavtk;
     if thk = '5' then ct5avtk = ct5avtk + nwavtk;
     if thk = '6' then ct6avtk = ct6avtk + nwavtk;
     rtavtk = rtavtk + nwavtk;
     if thk = '4' then trt4avtk = trt4avtk + nwavtk;
     if thk = '5' then trt5avtk = trt5avtk + nwavtk;
     if thk = '6' then trt6avtk = trt6avtk + nwavtk;
     four = nwavtk;
     thfo = (three*four);
     ottf = (ottf + thfo);
     pavtk = nwavtk;
xdotb2:
     tonfl = (substr(inrec,206,15));
     if tonopt ^= 'Y' then go to nodiv2;
     tonflfd = tonfl;
     tonfl = round (tonflfd,-4);
     tonfl = (tonfl/1000000);
nodiv2:
     tfield = tonfl;
     call lrtrim (tfield);
     tonfl = tfield;
     rtton = rtton + tonfl;
     if thk = '1' then trt1ton = trt1ton + tonfl;
     if thk = '2' then trt2ton = trt2ton + tonfl;
     if thk = '3' then trt3ton = trt3ton + tonfl;
     if thk = '4' then trt4ton = trt4ton + tonfl;
     if thk = '5' then trt5ton = trt5ton + tonfl;
     if thk = '6' then trt6ton = trt6ton + tonfl;
     pton = tonfl;
xdotb3:
     if (pacre = '' & pavtk = '' & pton = '') then go to nxtr;
     if (trsv = tr & oversv = over) then go to nohead;
```

```
      if (trsv = tr | dashf = 1) then go to xhead;
      put file (idta2) skip (1) edit ('zz') (a);
      put file (idta2) skip (1) edit ('') (a);
      close file (idta2);
      call subsrt ((idt2a),5,(idt2a),5,1,1,1,npass,(nitem));
      openf=0;
      open file (idta2) stream input;
      new1=bfield;new2=bfield;new3=bfield;
      new4=bfield;new5=bfield;new6=bfield;
read2:
      read file (idta2) into (subir);
      if subir = '' then go to read2;
      if subir = 'zz' then go to end2;
      subir = ' ' || (substr(subir,2)) || 'Z';
      newosv = (substr(subir,1,10));
      zflag = index(substr(subir,1),'Z');
      if zflag < 39  then go to read2;
      if zflag = 39  then new1 = (substr(subir,23,14));
      if zflag = 59  then new2 = (substr(subir,43,14));
      if zflag = 79  then new3 = (substr(subir,63,14));
      if zflag = 99  then new4 = (substr(subir,83,14));
      if zflag = 119 then new5 = (substr(subir,103,14));
      if zflag = 999 then new6 = (substr(subir,104,12));
read2b:
      read file (idta2) into (subir2);
      if subir2 = 'zz' then go to difovr;
      subir2 = ' ' || (substr(subir2,2)) || 'Z';
      if (subir2 = subir | subir2 = '') then go to read2b;
      newo = (substr(subir2,1,10));
      if newo ^= newosv then go to difovr;
nxtov:
      zflag = index(substr(subir2,1),'Z');
      if zflag < 39  then go to read2b;
      if zflag = 39  then new1 = (substr(subir2,23,14));
      if zflag = 59  then new2 = (substr(subir2,43,14));
      if zflag = 79  then new3 = (substr(subir2,63,14));
      if zflag = 99  then new4 = (substr(subir2,83,14));
      if zflag = 119 then new5 = (substr(subir2,103,14));
      if zflag = 999 then new6 = (substr(subir2,102,14));
      newosv = newo;
      subir = subir2;
      go to read2b;
difovr:
      tnew1 = (substr(new1,1,14));
      tnew2 = (substr(new2,1,14));
      tnew3 = (substr(new3,1,14));
      tnew4 = (substr(new4,1,14));
      tnew5 = (substr(new5,1,14));
      tnew6 = (substr(new6,1,12));
      if (substr(new1,1,14)) = blk14 then tnew1 = dash14;
      if (substr(new2,1,14)) = blk14 then tnew2 = dash14;
      if (substr(new3,1,14)) = blk14 then tnew3 = dash14;
      if (substr(new4,1,14)) = blk14 then tnew4 = dash14;
      if (substr(new5,1,14)) = blk14 then tnew5 = dash14;
      if (substr(new6,1,12)) = blk12 then tnew6 = (substr(newo,1,12));
      if tonopt ^= 'Y' then go to noshort1;
      if tnew1 ^= dash14 then tnew1 = (substr(tnew1,5)) || blk4;
      if tnew2 ^= dash14 then tnew2 = (substr(tnew2,5)) || blk4;
      if tnew3 ^= dash14 then tnew3 = (substr(tnew3,5)) || blk4;
      if tnew4 ^= dash14 then tnew4 = (substr(tnew4,5)) || blk4;
```

```
     if tnew5 ^= dash14 then tnew5 = (substr(tnew5,5)) || blk4;
noshort1:
     call letnum (newosv);
     subir = newosv || blk6 || tnew1 || blk5 || tnew2 || blk5 || tnew3 ||
             blk5 || tnew4 || blk5 || tnew5  || ' ' || 'Z';
     zflag = index (substr(subir,1),'Z');
     subir = (substr(subir,1,zflag-1));
     call dashit (subir);
     put file (table) skip(1) edit (subir) (col(6),a);
     linact = linact + 1;
     call xcomma (new1);
     call xcomma (new2);
     call xcomma (new3);
     call xcomma (new4);
     call xcomma (new5);
     call xcomma (new6);
     dcl (rtton1,rtton2,rtton3) fixed dec (14,2);
     dcl (rtton4,rtton5,rtton6) fixed dec (14,2);
     rtton1=0;rtton2=0;rtton3=0;
     rtton4=0;rtton5=0;rtton6=0;
     rtton1 = new1;
     rtton2 = new2;
     rtton3 = new3;
     rtton4 = new4;
     rtton5 = new5;
     prtton = (rtton1 + rtton2 + rtton3 + rtton4 + rtton5);
     if tonopt ^= 'Y' then go to xmill1;
     nrtton = (substr(prtton,5));
     put file (table) edit (nrtton) (col(115),a);
     go to skpxm1;
xmill1:
     put file (table) edit (prtton) (col(115),a);
skpxm1:
     if new1 = blk14 then new1 = blk14;
     if new2 = blk14 then new2 = blk14;
     if new3 = blk14 then new3 = blk14;
     if new4 = blk14 then new4 = blk14;
     if new5 = blk14 then new5 = blk14;
     if new6 = (substr(bfield,1,36)) then newo = blk12;
     rtton1=0;rtton2=0;rtton3=0;
     rtton4=0;rtton5=0;rtton6=0;
     prtacre = (( substr(new4,3,8)) + (substr(new5,3,8)) + (substr(new6,3,8)));
     rtton=0;
     prtton='';
     acre4=0;acre5=0;acre6=0;avtk4=0;avtk5=0;avtk6=0;rtavts=0;
     acre4=(substr(new4,3,8));
     avtk4=(substr(new4,11,8));
     rtavts=(acre4 * avtk4);
     avtk4=rtavts;
     acre5=(substr(new5,3,8));
     avtk5=(substr(new5,11,8));
     rtavts=(acre5 * avtk5);
     avtk5=rtavts;
     acre6=(substr(new6,3,8));
     avtk6=(substr(new6,11,8));
     rtavts=(acre6 * avtk6);
     avtk6=rtavts;
     rtavts = (avtk4 + avtk5 + avtk6);
     if rtavts ^= 0.00 then rtavts = (rtavts/prtacre);
     prtavtk=rtavts;
```

```
     rtton1 = (substr(new1,1));
     rtton2 = (substr(new2,1));
     rtton3 = (substr(new3,1));
     rtton4 = (substr(new4,1));
     rtton5 = (substr(new5,1));
     rtton6 = (substr(new6,1));
     prtton = (rtton1+rtton2+rtton3+rtton4+rtton5);
     if (new4 ^= blk28 & new5 ^= blk28 & new6 ^= blk28)
     then newprnt = '         ' || prtacre || blk1 || prtavtk || blk1 || prtton || blk1;
     else newprnt =  prtacre || blk1 || prtavtk || blk1 || prtton || blk1;
     /*put file (table) edit (newprnt) (a);*/
     newosv=newo;
     subir = subir2;
     new1=bfield;new2=bfield;new3=bfield;
     new4=bfield;new5=bfield;new6=bfield;
     if subir2 = 'zz' then go to end2;
     go to nxtov;
end2:
     close file (idta2);
     put file (table) skip (2) edit ('total') (col(6),a);
     linect = linect + 2;
dofull:
     pct1ton='';pct2ton='';pct3ton='';pct1bton='';pct2bton='';pct3bton='';
     pct4ton='';pct5ton='';pct6ton='';pct4bton='';pct5bton='';
     new1='';new2='';new3='';
     tsub='';tsub2='';overa='';overa2='';new4='';new5='';new6='';
     trt1ton=0;trt2ton=0;trt3ton=0;
     trt4ton=0;trt5ton=0;trt6ton=0;zflag=0;zflag2=0;loopf=0;
     open file (idta2) stream input;
readts:
     read file (idta2) into (tsub);
     if tsub = '' then go to readts;
     if tsub = 'zz' then go to hvall;
     tsub=tsub || 'Z';
     zflag = index (substr(tsub,1),'Z');
     if (tsub = tsub2 | zflag < 35) then go to readts;
     overa = (substr(tsub,1,10));
     if (zflag = zflag2 & overa = overa2) then go to samtr2;
     if (overa ^= overa2 & loopf =1) then go to hvall;
     loopf = 1;
samtr2:
     if zflag = 39  then new1 = (substr(tsub,23,14));
     if zflag = 59  then new2 = (substr(tsub,43,14));
     if zflag = 79  then new3 = (substr(tsub,63,14));
     if zflag = 99  then new4 = (substr(tsub,83,14));
     if zflag = 119 then new5 = (substr(tsub,103,14));
     if zflag = 999 then new6 = (substr(tsub,104,12));
     call xcomma(new1);
     call xcomma(new2);
     call xcomma(new3);
     call xcomma(new4);
     call xcomma(new5);
     call xcomma(new6);
     go to svall;
svall:
     tsub2 = tsub;
     overa2 = overa;
     zflag2 = zflag;
     go to readts;
hvall:
```

```
     trt1ton=new1;trt2ton=new2;trt3ton=new3;
     trt4ton=new4; trt5ton=new5; trt6ton=new6;
     pct1ton = pct1ton + trt1ton;
     pct2ton = pct2ton + trt2ton;
     pct3ton = pct3ton + trt3ton;
     pct4ton = pct4ton + trt4ton;
     pct5ton = pct5ton + trt5ton;
     pct6ton = pct6ton + trt6ton;
     if tsub = 'zz' then go to tzz;
     if overa = overa2 then go to noclear;
     new1='';new2='';new3='';
     new4='';new5='';new6='';
noclear:
     if zflag = 39  then new1 = (substr(tsub,23,14));
     if zflag = 59  then new2 = (substr(tsub,43,14));
     if zflag = 79  then new3 = (substr(tsub,63,14));
     if zflag = 99  then new4 = (substr(tsub,83,14));
     if zflag = 119 then new5 = (substr(tsub,103,14));
     if zflag = 999 then new6 = (substr(tsub,104,12));
     call xcomma(new1);
     call xcomma(new2);
     call xcomma(new3);
     call xcomma(new4);
     call xcomma(new5);
     call xcomma(new6);
     go to svall;
tzz:
     close file (idta2);
     if pct1ton = 0.00 then pct1ton = blk14;
     if pct2ton = 0.00 then pct2ton = blk14;
     if pct3ton = 0.00 then pct3ton = blk14;
     if pct4ton = 0.00 then pct4ton = blk14;
     if pct5ton = 0.00 then pct5ton = blk14;
     if pct6ton = 0.00 then pct6ton = (substr(bfield,1,10));
skpfull:
     pt6ton= (pct1ton+pct2ton+pct3ton+pct4ton+pct5ton);
     if pct1ton = blk14 then pct1bton = dash14;  if pct1ton ^= blk14 then pct1bton=pct1ton;
     if pct2ton = blk14 then pct2bton = dash14;  if pct2ton ^= blk14 then pct2bton=pct2ton;
     if pct3ton = blk14 then pct3bton = dash14;  if pct3ton ^= blk14 then pct3bton=pct3ton;
     if pct4ton = blk14 then pct4bton = dash14;  if pct4ton ^= blk14 then pct4bton=pct4ton;
     if pct5ton = blk14 then pct5bton = dash14;  if pct5ton ^= blk14 then pct5bton=pct5ton;
     if pct6ton = 0.00 then pct6ton = (substr(bfield,1,10));
     if tonopt ^= 'Y' then go to noshort2;
     ct1bton = pct1bton;
     call xcomma (ct1bton);
     if ct1bton ^= '       99999.00' then ct1bton = (substr(pct1bton,5)) || blk4;
     else ct1bton = pct1bton;
     ct2bton = pct2bton;
     call xcomma (ct2bton);
     if ct2bton ^= '       99999.00' then ct2bton = (substr(pct2bton,5)) || blk4;
     else ct2bton = pct2bton;
     ct3bton = pct3bton;
     call xcomma (ct3bton);
     if ct3bton ^= '       99999.00' then ct3bton = (substr(pct3bton,5)) || blk4;
     else ct3bton = pct3bton;
     ct4bton = pct4bton;
     call xcomma (ct4bton);
     if ct4bton ^= '       99999.00' then ct4bton = (substr(pct4bton,5)) || blk4;
     else ct4bton = pct4bton;
     ct5bton = pct5bton;
```

```
     call xcomma (ct5bton);
     if ct5bton ^= '       99999.00' then ct5bton = (substr(pct5bton,5)) || blk4;
     else ct5bton = pct5bton;
     mt6ton = (substr(pt6ton,5));
noshort2:
     trsave = 'NO DATA AVAILABLE FOR ' || trsave;
     if pt6ton = 0 then put file (table) edit (totdash) (col(28),a);
     if pt6ton = 0 then go to skip5;
     if tonopt = 'Y' then newprnt =
     blk5 || ct1bton || blk3 || ct2bton || blk3 || ct3bton || blk3 || ct4bton || blk3 || ct5bton || blk2 || mt6ton;
     else newprnt =
     blk5 || pct1bton || blk3 || pct2bton || blk3 || pct3bton || blk3 || pct4bton || blk3 || pct5bton || blk2 || pt6ton;
     call dashit (newprnt);
     put file (table) edit (newprnt) (col(15),a);
skip5:
     trsave = '';
     put file (table) skip (1) edit ('') (a);
     linect = linect + 1;
     call fil$dl ('idta2', code);
     ct1ton=ct1ton+pct1ton;     pct1bton = '';
     ct2ton=ct2ton+pct2ton;     pct2bton = '';
     ct3ton=ct3ton+pct3ton;     pct3bton = '';
     ct4ton=ct4ton+pct4ton;     pct4bton = '';
     ct5ton=ct5ton+pct5ton;     pct5bton = '';
     ct6ton=ct6ton+pct6ton;
     trt1ton=0;trt2ton=0;trt3ton=0;
     trt4ton=0;trt5ton=0;trt6ton=0;
     pct1ton='';pct2ton='';pct3ton='';
     pct4ton='';pct5ton='';pct6ton='';pt6ton='';
xhead:
     if (trsv ^= tr & linect > 42) then put file (table) skip (1) edit ('1') (a);
     if (trsv ^= tr & linect > 42) then put file (table) edit ('Township, Range') (col(6),a);
/*     if (trsv ^= tr & linect > 42) then put file (table) edit ('Total') (col(55),a);*/
     if (trsv ^= tr & linect > 42) then put file (table) skip (1) edit ('Bed') (col(6),a);
/*     if (trsv ^= tr & linect > 42) then put file (table) edit ('Acres   Average  Tonnage') (col(46),a);*/
     if (trsv ^= tr & linect > 42) then put file (table) skip (1) edit (' Overburden  ') (col(6),a);
/*     if (trsv ^= tr & linect > 42) then put file (table) edit ('Thickness') (col(53),a);*/
     if (trsv ^= tr & linect > 42) then put file (table) edit (thkhdr) (col(20),a);
     if (trsv ^= tr & linect > 42) then put file (table) skip (2) edit ('     ',(substr(towns,6)),'(',ns,') ',range,'(',ew,')') (
     else if trsv ^= tr then put file (table) skip (2) edit ('     ',(substr(towns,6)),'(',ns,') ',range,'(',ew,')') (a);
     if (trsv ^= tr & linect > 42) then linect=0;
     if (trsv ^= tr | bedsv ^= bed) then put file (table) skip (1) edit (bed) (col(6),a);
     if oversv ^= over then over = (substr(over,1,1)) || over;
     if oversv ^= over then put file (idta2) skip (1) edit (over) (a);
     if oversv ^= over then over = (substr(over,2));
     if (trsv ^= tr & linect > 42) then linect = linect + 6;
     if oversv ^= over then linect = linect + 1;
     dashf=0;
nohead:
     if openf = 1 then go to isopen;
     open file (idta2) stream output print;
     openf = 1;
isopen:
     newprnt = pton || blk2;
/*     if thksv = '1' then put file (idta2) edit (newprnt) (col(14),a);*/
     if thk = '1' then put file (idta2) edit (newprnt) (col(21),a);
     if thk = '2' then put file (idta2) edit (newprnt) (col(41),a);
     if thk = '3' then put file (idta2) edit (newprnt) (col(61),a);
     if thk = '4' then put file (idta2) edit (newprnt) (col(81),a);
     if thk = '5' then put file (idta2) edit (newprnt) (col(101),a);
```

```
pline:
     go to sec1;
prtot:
     prtacre = rtacre;
     rtavtk = ottf;
     prtavtk = rtavtk;
     prtton = rtton;
     one=0;two=0;three=0;four=0;ontw=0;thfo=0;ottf=0;
     rtacre=0;rtavtk=0;rtton=0;
     put file (idta2) skip (1) edit ('zz') (a);
     put file (idta2) skip (1) edit ('') (a);
     close file (idta2);
     call subsrt ((idt2a),5,(idt2a),5,1,1,1,npass,(nitem));
     openf=0;
     open file (idta2) stream input;
     new1=bfield;new2=bfield;new3=bfield;
     new4=bfield;new5=bfield;new6=bfield;
read22:
     read file (idta2) into (subir);
     if subir = '' then go to read22;
     if subir = 'zz' then go to end22;
     subir = ' ' || (substr(subir,2)) || 'Z';
     newosv = (substr(subir,1,10));
     zflag = index(substr(subir,1),'Z');
     if zflag < 39  then go to read22;
     if zflag = 39  then new1 = (substr(subir,23,14));
     if zflag = 59  then new2 = (substr(subir,43,14));
     if zflag = 79  then new3 = (substr(subir,63,14));
     if zflag = 99  then new4 = (substr(subir,83,14));
     if zflag = 119 then new5 = (substr(subir,103,14));
     if zflag = 999 then new6 = (substr(subir,104,12));
read22b:
     read file (idta2) into (subir2);
     if subir2 = '' then go to read22b;
     if subir2 = 'zz' then go to difovr2;
     subir2 = ' ' || (substr(subir2,2)) || 'Z';
     if (subir2 = subir | subir2 = '') then go to read22b;
     newo = (substr(subir2,1,10));
     if newo ^= newosv then go to difovr2;
nxtov2:
     zflag = index(substr(subir2,1),'Z');
     if zflag < 39  then go to read22b;
     if zflag = 39  then new1 = (substr(subir2,23,14));
     if zflag = 59  then new2 = (substr(subir2,43,14));
     if zflag = 79  then new3 = (substr(subir2,63,14));
     if zflag = 99  then new4 = (substr(subir2,83,14));
     if zflag = 119 then new5 = (substr(subir2,103,14));
     if zflag = 999 then new6 = (substr(subir2,104,12));
     newosv = newo;
     subir = subir2;
     go to read22b;
difovr2:
     tnew1 = (substr(new1,1,14));
     tnew2 = (substr(new2,1,14));
     tnew3 = (substr(new3,1,14));
     tnew4 = (substr(new4,1,14));
     tnew5 = (substr(new5,1,14));
     tnew6 = (substr(new6,1,12));
     if (substr(new1,1,14)) = blk14 then tnew1 = dash14;
     if (substr(new2,1,14)) = blk14 then tnew2 = dash14;
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      if (substr(new3,1,14)) = blk14 then new3 = dash14;
      if (substr(new4,1,14)) = blk14 then new4 = dash14;
      if (substr(new5,1,14)) = blk14 then new5 = dash14;
      if (substr(new6,1,12)) = blk12 then new6 = (substr(new6,1,12));
      if tonopt ^= 'Y' then go to noshort3;
      if new1 ^= dash14 then new1 = (substr(new1,5)) || blk4;
      if new2 ^= dash14 then new2 = (substr(new2,5)) || blk4;
      if new3 ^= dash14 then new3 = (substr(new3,5)) || blk4;
      if new4 ^= dash14 then new4 = (substr(new4,5)) || blk4;
      if new5 ^= dash14 then new5 = (substr(new5,5)) || blk4;
nosnort3:
      call letnum (newosv);
      subir = newosv || blk6 || new1 || blk5 || new2 || blk5 || new3 ||
              blk5 || new4 || blk5 || new5  || ' ' || 'Z';
      zflag = index (substr(subir,1),'Z');
      subir = (substr(subir,1,zflag-1));
      call dashit (subir);
      put file (table) skip(1) edit (subir) (col(6),a);
      linect = linect +1;
      call xcomma (new1);
      call xcomma (new2);
      call xcomma (new3);
      call xcomma (new4);
      call xcomma (new5);
      call xcomma (new6);
      rtton1=0;rtton2=0;rtton3=0;
      rtton4=0;rtton5=0;rtton6=0;
      rtton1 = new1;
      rtton2 = new2;
      rtton3 = new3;
      rtton4 = new4;
      rtton5 = new5;
      prtton = (rtton1 + rtton2 + rtton3 + rtton4 + rtton5);
      if tonopt ^= 'Y' then go to xmill2;
      nrtton = (substr(prtton,5));
      put file (table) edit (nrtton) (col(115),a);
      go to skpxm2;
xmill2:
      put file (table) edit (prtton) (col(115),a);
skpxm2:
      rtton1=0;rtton2=0;rtton3=0;rtton4=0;rtton5=0;rtton=0;prtton='';
      rtacre = (( substr(new4,3,8)) + (substr(new5,3,8)) + (substr(new6,3,8)));
      prtacre=rtacre;
      acre4=0;acre5=0;acre6=0;avtk4=0;avtk5=0;avtk6=0;rtavts=0;
      acre4=(substr(new4,3,8));
      avtk4=(substr(new4,11,8));
      rtavts=(acre4 * avtk4);
      avtk4=rtavts;
      acre5=(substr(new5,3,8));
      avtk5=(substr(new5,11,8));
      rtavts=(acre5 * avtk5);
      avtk5=rtavts;
      acre6=(substr(new6,3,8));
      avtk6=(substr(new6,11,6));
      rtavts=(acre6 * avtk6);
      avtk6=rtavts;
      rtavts = (avtk4 + avtk5 + avtk6);
      if rtavts ^= 0.00 then rtavts =  (rtavts/rtacre);
      prtavtk=rtavts;
      rtton1 = (substr (new1,1));
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     rtton2 = (substr (new2,1));
     rtton3 = (substr (new3,1));
     rtton4 = (substr(new4,1));
     rtton5 = (substr(new5,1));
     rtton6 = (substr(new6,21));
     prtton = (rtton1+rtton2+rtton3+rtton4+rtton5);
     if (new1 ^= blk28 & new2 ^= blk28 & new3 ^= blk28 &
         new4 ^= blk28 & new5 ^= blk28 & new6 ^= blk28)
     then newprnt = '          ' || prtacre || blk1 || prtavtk || blk1 || prtton || blk1;
     else newprnt =  prtacre || blk1 || prtavtk || blk1 || prtton || blk1;
     /*put file (table) edit (newprnt) (a);*/
     newosv=newo;
     subir = subir2;
     new1=bfield;new2=bfield;new3=bfield;
     new4=bfield;new5=bfield;new6=bfield;
     if subir2 = 'zz' then go to end22;
     go to nxtov2;
end22:
     close file (idta2);
     put file (table) skip (2) edit ('total') (col(6),a);
     linect = linect + 2;
dofullb:
     pct1ton='';pct2ton='';pct3ton='';
     pct4ton=''; pct5ton= ''; pct6ton='';
     new1='';new2='';new3='';
     tsub='';tsub2='';overa='';overa2='';new4='';new5='';new6='';
     trt1ton=0;trt2ton=0;trt3ton=0;
     trt4ton=0;trt5ton=0;trt6ton=0;zflag=0;zflag2=0;loopf=0;
     open file (idta2) stream input;
readtsb:
     read file (idta2) into (tsub);
     if tsub = '' then go to readtsb;
     if tsub = 'zz' then go to hvallb;
     tsub=tsub || 'Z';
     zflag = index (substr(tsub,1),'Z');
     if (tsub = tsub2 | zflag < 35) then go to readtsb;
     overa = (substr(tsub,1,10));
     if (zflag = zflag2 & overa = overa2) then go to samtr2b;
     if (overa ^= overa2 & loopf =1) then go to hvallb;
     loopf = 1;
samtr2b:
     if zflag = 39  then new1 = (substr(tsub,23,14));
     if zflag = 59  then new2 = (substr(tsub,43,14));
     if zflag = 79  then new3 = (substr(tsub,63,14));
     if zflag = 99  then new4 = (substr(tsub,83,14));
     if zflag = 119 then new5 = (substr(tsub,103,14));
     if zflag = 999 then new6 = (substr(tsub,104,12));
     call xcomma(new1);
     call xcomma(new2);
     call xcomma(new3);
     call xcomma(new4);
     call xcomma(new5);
     call xcomma(new6);
     go to svallb;
svallb:
     tsub2 = tsub;
     overa2 = overa;
     zflag2 = zflag;
     go to readtsb;
hvallb:
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```
     trt1ton=new1;trt2ton=new2;trt3ton=new3;
     trt4ton=new4;trt5ton=new5;trt6ton=new6;
     pct1ton = pct1ton + trt1ton;
     pct2ton = pct2ton + trt2ton;
     pct3ton = pct3ton + trt3ton;
     pct4ton = pct4ton + trt4ton;
     pct5ton = pct5ton + trt5ton;
     pct6ton = pct6ton + trt6ton;
     if tsub = 'zz' then go to tzzb;
     if overa = overa2 then go to noclearb;
     new1='';new2='';new3='';
     new4='';new5='';new6='';
noclearb:
     if zflag = 39  then new1 = (substr(tsub,23,14));
     if zflag = 59  then new2 = (substr(tsub,43,14));
     if zflag = 79  then new3 = (substr(tsub,63,14));
     if zflag = 99  then new4 = (substr(tsub,83,14));
     if zflag = 119 then new5 = (substr(tsub,103,14));
     if zflag = 999 then new6 = (substr(tsub,85,13));
     go to svallb;
tzzb:
     close file (idta2);
     if pct1ton = 0.00 then pct1ton = blk14;
     if pct2ton = 0.00 then pct2ton = blk14;
     if pct3ton = 0.00 then pct3ton = blk14;
     if pct4ton = 0.00 then pct4ton = blk14;
     if pct5ton = 0.00 then pct5ton = blk14;
     if pct6ton = 0.00 then pct6ton = (substr(bfield,1,10));
     ptoton = (pct1ton+pct2ton+pct3ton+pct4ton+pct5ton);
     if pct1ton = blk14 then pct1bton = dash14;  if pct1ton ^= blk14 then pct1bton = pct1ton;
     if pct2ton = blk14 then pct2bton = dash14;  if pct2ton ^= blk14 then pct2bton = pct2ton;
     if pct3ton = blk14 then pct3bton = dash14;  if pct3ton ^= blk14 then pct3bton = pct3ton;
     if pct4ton = blk14 then pct4bton = dash14;  if pct4ton ^= blk14 then pct4bton = pct4ton;
     if pct5ton = blk14 then pct5bton = dash14;  if pct5ton ^= blk14 then pct5bton = pct5ton;
     if pct6ton = 0.00 then pct6ton = (substr(bfield,1,10));
     if tonopt ^= 'Y' then go to noshort4;
     ct1bton = pct1bton;
     call xcomma (ct1bton);
     if ct1bton ^= '       99999.00' then ct1bton = (substr(pct1bton,5)) || blk4;
     else ct1bton = pct1bton;
     ct2bton = pct2bton;
     call xcomma (ct2bton);
     if ct2bton ^= '       99999.00' then ct2bton = (substr(pct2bton,5)) || blk4;
     else ct2bton = pct2bton;
     ct3bton = pct3bton;
     call xcomma (ct3bton);
     if ct3bton ^= '       99999.00' then ct3bton = (substr(pct3bton,5)) || blk4;
     else ct3bton = pct3bton;
     ct4bton = pct4bton;
     call xcomma (ct4bton);
     if ct4bton ^= '       99999.00' then ct4bton = (substr(pct4bton,5)) || blk4;
     else ct4bton = pct4bton;
     ct5bton = pct5bton;
     call xcomma (ct5bton);
     if ct5bton ^= '       99999.00' then ct5bton = (substr(pct5bton,5)) || blk4;
     else ct5bton = pct5bton;
     mt6ton = (substr(pt6ton,5));
noshort4:
     trsave = 'NO DATA AVAILABLE FOR ' || trsave;
     if pt6ton = 0 then put file (table) edit (totdash) (col(23),a);
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     if pt6ton = 0 then go to skip6;
     if tonopt = 'Y' then newprnt =
     ct1bton || blk3 || ct2bton || blk3 || ct3bton || blk3 || ct4bton || blk3 || ct5bton || blk2 || mt6ton;
     else newprnt =
     pct1bton || blk3 || pct2bton || blk3 || pct3bton || blk3 || pct4bton || blk3 || pct5bton || blk2 || pt6ton;
     call dashit (newprnt);
     put file (table) edit (newprnt) (col(15),a);
skip6:
     trsave = '';
     put file (table) skip (1) edit ('') (a);
     call fil$dl ('idta2', code);
     ct1ton=ct1ton+pct1ton;     pct1bton = '';
     ct2ton=ct2ton+pct2ton;     pct2bton = '';
     ct3ton=ct3ton+pct3ton;     pct3bton = '';
     ct4ton=ct4ton+pct4ton;     pct4bton = '';
     ct5ton=ct5ton+pct5ton;     pct5bton = '';
     ct6ton=ct6ton+pct6ton;
     trt1ton=0;trt2ton=0;trt3ton=0;
     trt4ton=0;trt5ton=0;trt6ton=0;
     pct1ton='';pct2ton='';pct3ton='';
     pct4ton='';pct5ton='';pct6ton='';pt6ton='';
     put file (table) skip (2) edit ('COUNTY TOTAL') (col(6),a);
     pct1ton = ct1ton;
     pct2ton = ct2ton;
     pct3ton = ct3ton;
     pct4ton = ct4ton;
     pct5ton = ct5ton;
     pct6ton = ct6ton;
     if pct1ton = 0.00 then pct1ton = blk14;  p1gton = p1gton + pct1ton;
     if pct2ton = 0.00 then pct2ton = blk14;  p2gton = p2gton + pct2ton;
     if pct3ton = 0.00 then pct3ton = blk14;  p3gton = p3gton + pct3ton;
     if pct4ton = 0.00 then pct4ton = blk14;  p4gton = p4gton + pct4ton;
     if pct5ton = 0.00 then pct5ton = blk14;  p5gton = p5gton + pct5ton;
     ptottot = (pct1ton+pct2ton+pct3ton+pct4ton+pct5ton);
     pgrandt = (pgrandt + ptottot);
     if pct1ton = blk14 then pct1bton = dash14;  if pct1ton ^= blk14 then pct1bton = pct1ton;
     if pct2ton = blk14 then pct2bton = dash14;  if pct2ton ^= blk14 then pct2bton = pct2ton;
     if pct3ton = blk14 then pct3bton = dash14;  if pct3ton ^= blk14 then pct3bton = pct3ton;
     if pct4ton = blk14 then pct4bton = dash14;  if pct4ton ^= blk14 then pct4bton = pct4ton;
     if pct5ton = blk14 then pct5bton = dash14;  if pct5ton ^= blk14 then pct5bton = pct5ton;
     if tonopt ^= 'Y' then go to noshort5;
     ct1bton = pct1bton;
     call xcomma (ct1bton);
     if ct1bton ^= '       99999.00' then ct1bton = (substr(pct1bton,5)) || blk4;
     else ct1bton = pct1bton;
     ct2bton = pct2bton;
     call xcomma (ct2bton);
     if ct2bton ^= '       99999.00' then ct2bton = (substr(pct2bton,5)) || blk4;
     else ct2bton = pct2bton;
     ct3bton = pct3bton;
     call xcomma (ct3bton);
     if ct3bton ^= '       99999.00' then ct3bton = (substr(pct3bton,5)) || blk4;
     else ct3bton = pct3bton;
     ct4bton = pct4bton;
     call xcomma (ct4bton);
     if ct4bton ^= '       99999.00' then ct4bton = (substr(pct4bton,5)) || blk4;
     else ct4bton = pct4bton;
     ct5bton = pct5bton;
     call xcomma (ct5bton);
     if ct5bton ^= '       99999.00' then ct5bton = (substr(pct5bton,5)) || blk4;
```

```
     else ct5bton = pct5bton;
noshort5:
     if tonopt = 'Y' then newprnt =
     ' ' || ct1bton || blk3 || ct2bton || blk3 || ct3bton || blk3 || ct4bton || blk3 || ct5bton || blk2 || pt6ton;
     else newprnt =
     blk5 || pct1bton || blk3 || pct2bton || blk3 || pct3bton || blk3 || pct4bton || blk3 || pct5bton || blk2 || pt6ton;
     call dashit (newprnt);
     put file (table) edit (newprnt) (col(16),a);
     ct1ton=0;ct2ton=0;ct3ton=0;
     ct4acre='';ct4avtk='';ct4ton=0;ct5acre='';ct5avtk='';ct5ton=0;ct6acre='';ct6avtk='';ct6ton=0;
     t1ton=0;t2ton=0;t3ton=0;
     linect=0;t4ton=0;t5ton=0;t6ton=0;
     pct1ton='';pct2ton='';pct3ton='';trt1ton=0;trt2ton=0;trt3ton=0;
     pct4ton='';pct5ton='';pct6ton='';ptoton='';ptottot='';trt4ton=0;trt5ton=0;trt6ton=0;
     put file (table) skip (1) edit ('1') (a);
     put file (table) edit (ncrds) (col(43),a);
     put file (table) skip (2) edit (usgs) (col(54),a);
     if typnum = '7' then go to skpnum;
     dif = index (ident,countys);
     xblk = index (substr(ident,dif),' ');
     ident = (substr(ident,1,dif-1)) || (county) || (substr(ident,dif+xblk-1)) || 'Z';
skpnum:
     if typnum = '7' then ident = qcsline || 'Z';
     xblk = index (substr(ident,1), 'Z');
     ident = (substr(ident,1,xblk-1));
     dif = (131-xblk);
     nmove=divide(dif,2,2);
     linect=0;
     xblk = 0;
     xblk = index (substr(ident,1), 'Q');
     if xblk <5 then go to notrans2;
     newprnt = translate (ident,' ','Q');
notrans2:
     if xblk <5 then newprnt = ident;
     put file (table) skip (3) edit (newprnt) (a);
     put file (table) skip (2) edit (miin) (col(57),a);
     if tonopt ^= 'Y' then put file (table) skip (1) edit ('(short tons)')(col(59),a);
     else put file (table) skip (1) edit (short) (col(52),a);
     put file (table) skip (2) edit ('Township, Range') (col(6),a);
/*     put file (table) edit ('Total') (col(55),a);*/
     put file (table) skip (1) edit ('Bed') (col(6),a);
/*     put file (table) edit ('Acres   Average  Tonnage') (col(46),a);*/
     put file (table) skip (1) edit (' Overburden  ') (col(6),a);
/*     put file (table) edit ('Thickness') (col(53),a);*/
     put file (table) edit (thkhdr) (col(20),a);
     /*put file (table) skip (1) edit (dash) (col(15),a);*/
     linect = linect + 12;
     dashf = 1;
     countys = county;
xcounty:
     if dif ^= 99 then go to scounty;
     go to sec1;
new2addr:
     put file (idta2) skip (1) edit ('zz') (a);
     put file (idta2) skip (1) edit ('') (a);
     close file (idta2);
     call subsrt ((idt2a),5,(idt2a),5,1,1,1,npass,(nitem));
     openf=0;
     open file (idta2) stream input;
     new1=bfield;new2=bfield;new3=bfield;
```

```
     new4=bfield;new5=bfield;new6=bfield;
read2e:
     read file (idta2) into (subir);
     if subir = '' then go to read2e;
     if subir = 'zz' then go to end2e;
     subir = ' ' || (substr(subir,2)) || 'Z';
     newosv = (substr(subir,1,10));
     zflag = index(substr(subir,1),'Z');
     if zflag < 39  then go to read2e;
     if zflag = 39  then new1 = (substr(subir,23,14));
     if zflag = 59  then new2 = (substr(subir,43,14));
     if zflag = 79  then new3 = (substr(subir,63,14));
     if zflag = 99  then new4 = (substr(subir,83,14));
     if zflag = 119 then new5 = (substr(subir,103,14));
     if zflag = 999 then new6 = (substr(subir,104,12));
read2be:
     read file (idta2) into (subir2);
     if subir2 = '' then go to read2be;
     if subir2 = 'zz' then go to difovre;
     subir2 = ' ' || (substr(subir2,2)) || 'Z';
     if (subir2 = subir | subir2 = '') then go to read2be;
     newo = (substr(subir2,1,10));
     if newo ^= newosv then go to difovre;
nxtove:
     zflag = index(substr(subir2,1),'Z');
     if zflag < 39  then go to read2be;
     if zflag = 39  then new1 = (substr(subir2,23,14));
     if zflag = 59  then new2 = (substr(subir2,43,14));
     if zflag = 79  then new3 = (substr(subir2,63,14));
     if zflag = 99  then new4 = (substr(subir2,83,14));
     if zflag = 119 then new5 = (substr(subir2,103,14));
     if zflag = 999 then new6 = (substr(subir2,104,12));
     newosv = newo;
     subir = subir2;
     go to read2be;
difovre:
     tnew1 = (substr(new1,1,14));
     tnew2 = (substr(new2,1,14));
     tnew3 = (substr(new3,1,14));
     tnew4 = (substr(new4,1,14));
     tnew5 = (substr(new5,1,14));
     tnew6 = (substr(new6,1,12));
     if (substr(new1,1,14)) = blk14 then tnew1 = dash14;
     if (substr(new2,1,14)) = blk14 then tnew2 = dash14;
     if (substr(new3,1,14)) = blk14 then tnew3 = dash14;
     if (substr(new4,1,14)) = blk14 then tnew4 = dash14;
     if (substr(new5,1,14)) = blk14 then tnew5 = dash14;
     if (substr(new6,1,12)) = (substr(bfield,1,12)) then tnew6 = (substr(new6,1,12));
     if tonopt ^= 'Y' then go to noshort6;
     if tnew1 ^= dash14 then tnew1 = (substr(tnew1,5)) || blk4;
     if tnew2 ^= dash14 then tnew2 = (substr(tnew2,5)) || blk4;
     if tnew3 ^= dash14 then tnew3 = (substr(tnew3,5)) || blk4;
     if tnew4 ^= dash14 then tnew4 = (substr(tnew4,5)) || blk4;
     if tnew5 ^= dash14 then tnew5 = (substr(tnew5,5)) || blk4;
noshort6:
     call letnum (newosv);
     subir = newosv || blk6 || tnew1 || blk5 || tnew2 || blk5 || tnew3 ||
             blk5 || tnew4 || blk5 || tnew5  || ' ' || 'Z';
     zflag = index (substr(subir,1),'Z');
     subir = (substr(subir,1,zflag-1));
```

```
     call dashit (subir);
     put file (table) skip(1) edit (subir) (col(6),a);
     linect = linect + 1;
     call xcomma (new1);
     call xcomma (new2);
     call xcomma (new3);
     call xcomma (new4);
     call xcomma (new5);
     call xcomma (new6);
     rtton1=0;rtton2=0;rtton3=0;
     rtton4=0;rtton5=0;rtton6=0;
     rtton1 = new1;
     rtton2 = new2;
     rtton3 = new3;
     rtton4 = new4;
     rtton5 = new5;
     prtton = (rtton1 + rtton2 + rtton3 + rtton4 + rtton5);
     if tonopt ^= 'Y' then go to xmill3;
     nrtton = (substr(prtton,5));
     put file (table) edit (nrtton) (col(115),a);
     go to skpxm3;
xmill3:
     put file (table) edit (prtton) (col(115),a);
skpxm3:
     rtton1=0;rtton2=0;rtton3=0;rtton=0;
     rtton4=0;rtton5=0;rttono=0;prtton='';
     prtacre = (( substr(new4,3,8)) + (substr(new5,3,8)) + (substr(new6,3,8)));
     acre4=0;acre5=0;acre6=0;avtk4=0;avtk5=0;avtk6=0;rtavts=0;
     acre4=(substr(new4,3,8));
     avtk4=(substr(new4,11,8));
     rtavts=(acre4 * avtk4);
     avtk4=rtavts;
     acre5=(substr(new5,3,8));
     avtk5=(substr(new5,11,8));
     rtavts=(acre5 * avtk5);
     avtk5=rtavts;
     acre6=(substr(new6,3,8));
     avtk6=(substr(new6,11,6));
     rtavts=(acre6 * avtk6);
     avtk6=rtavts;
     rtavts = (avtk4 + avtk5 + avtk6);
     if rtavts ^= 0.00 then rtavts = (rtavts/prtacre);
     prtavtk=rtavts;
     rtton1 = (substr(new1,1));
     rtton2 = (substr(new2,1));
     rtton3 = (substr (new3, 1));
     rtton4 = (substr (new4, 1));
     rtton5 = (substr (new5, 1));
     rtton6 = (substr (new6, 1));
     prtton = (rtton1+rtton2+rtton3+rtton4+rtton5);
     if (new4 ^= blk28 & new5 ^= blk28 & new6 ^= blk28)
     then newprnt = '          ' || prtacre || blk1 || prtavtk || blk1 || prtton || blk1;
     else newprnt =  prtacre || blk1 || prtavtk || blk1 || prtton || blk1;
     /*put file (table) edit (newprnt) (a);*/
     newosv=newo;
     subir = subir2;
     new1=bfield;new2=bfield;new3=bfield;
     new4=bfield;new5=bfield;newo=bfield;
     if subir2 = 'zz' then go to end2e;
     go to nxtove;
```

```
end2e:
     close file (idta2);
     put file (table) skip (2) edit ('total') (col(6),a);
     linect = linect + 2;
dofullc:
     pct1ton='';pct2ton='';pct3ton='';
     pct4ton=''; pct5ton= ''; pct6ton='';
     tsub='';tsub2='';overa='';overa2='';new4='';new5='';new6='';
     new1='';new2='';new3='';
     trt4ton=0;trt5ton=0;trt6ton=0;zflag=0;zflag2=0;loopf=0;
     trt1ton=0;trt2ton=0;trt3ton=0;
     open file (idta2) stream input;
readtsc:
     read file (idta2) into (tsub);
     if tsub = '' then go to readtsc;
     if tsub = 'zz' then go to hvallc;
     tsub=tsub || 'Z';
     zflag = index (substr(tsub,1),'Z');
     if (tsub = tsub2 | zflag < 35) then go to readtsc;
     overa = (substr(tsub,1,10));
     if (zflag = zflag2 & overa = overa2) then go to samtr2c;
     if (overa ^= overa2 & loopf =1) then go to hvallc;
     loopf = 1;
samtr2c:
     if zflag = 39  then new1 = (substr(tsub,23,14));
     if zflag = 59  then new2 = (substr(tsub,43,14));
     if zflag = 79  then new3 = (substr(tsub,63,14));
     if zflag = 99  then new4 = (substr(tsub,83,14));
     if zflag = 119 then new5 = (substr(tsub,103,14));
     if zflag = 999 then new6 = (substr(tsub,104,12));
     call xcomma(new1);
     call xcomma(new2);
     call xcomma(new3);
     call xcomma(new4);
     call xcomma(new5);
     call xcomma(new6);
     go to svallc;
svallc:
     tsub2 = tsub;
     overa2 = overa;
     zflag2 = zflag;
     go to readtsc;
hvallc:
     trt1ton=new1;trt2ton=new2;trt3ton=new3;
     trt4ton=new4;trt5ton=new5;trt6ton=new6;
     pct1ton = pct1ton + trt1ton;
     pct2ton = pct2ton + trt2ton;
     pct3ton = pct3ton + trt3ton;
     pct4ton = pct4ton + trt4ton;
     pct5ton = pct5ton + trt5ton;
     pct6ton = pct6ton + trt6ton;
     if tsub = 'zz' then go to tzzc;
     if overa = overa2 then go to noclearc;
     new1='';new2='';new3='';
     new4='';new5='';new6='';
noclearc:
     if zflag = 39  then new1 = (substr(tsub,23,14));
     if zflag = 59  then new2 = (substr(tsub,43,14));
     if zflag = 79  then new3 = (substr(tsub,63,14));
     if zflag = 99  then new4 = (substr(tsub,83,14));
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     if zflag = 119 then new5 = (substr(tsub,103,14));
     if zflag = 999 then new6 = (substr(tsub,104,12));
     call xcomma(new1);
     call xcomma(new2);
     call xcomma(new3);
     call xcomma(new4);
     call xcomma(new5);
     call xcomma(new6);
     go to svallc;
tzzc:
     close file (idta2);
     if pct1ton = 0.00 then pct1ton = blk14;
     if pct2ton = 0.00 then pct2ton = blk14;
     if pct3ton = 0.00 then pct3ton = blk14;
     if pct4ton = 0.00 then pct4ton = blk14;
     if pct5ton = 0.00 then pct5ton = blk14;
     if pct6ton = 0.00 then pct6ton = (substr(bfield,1,10));
     pt6ton = (pct1ton+pct2ton+pct3ton+pct4ton+pct5ton);
     if pct1ton = blk14 then pct1bton = dash14;  if pct1ton ^= blk14 then pct1bton = pct1ton;
     if pct2ton = blk14 then pct2bton = dash14;  if pct2ton ^= blk14 then pct2bton = pct2ton;
     if pct3ton = blk14 then pct3bton = dash14;  if pct3ton ^= blk14 then pct3bton = pct3ton;
     if pct4ton = blk14 then pct4bton = dash14;  if pct4ton ^= blk14 then pct4bton = pct4ton;
     if pct5ton = blk14 then pct5bton = dash14;  if pct5ton ^= blk14 then pct5bton = pct5ton;
     if pct6ton = 0.00 then pct6ton = (substr(bfield,1,10));
     trsave = 'NO DATA AVAILABLE FOR ' || trsave;
     if pt6ton = 0 then put file (table) edit (totdash) (col(28),a);
     if pt6ton = 0 then go to skip7;
     if tonopt ^= 'Y' then go to noshort7;
     ct1bton = pct1bton;
     call xcomma (ct1bton);
     if ct1bton ^= '       99999.00' then ct1bton = (substr(pct1bton,5)) || blk4;
     else ct1bton = pct1bton;
     ct2bton = pct2bton;
     call xcomma (ct2bton);
     if ct2bton ^= '       99999.00' then ct2bton = (substr(pct2bton,5)) || blk4;
     else ct2bton = pct2bton;
     ct3bton = pct3bton;
     call xcomma (ct3bton);
     if ct3bton ^= '       99999.00' then ct3bton = (substr(pct3bton,5)) || blk4;
     else ct3bton = pct3bton;
     ct4bton = pct4bton;
     call xcomma (ct4bton);
     if ct4bton ^= '       99999.00' then ct4bton = (substr(pct4bton,5)) || blk4;
     else ct4bton = pct4bton;
     ct5bton = pct5bton;
     call xcomma (ct5bton);
     if ct5bton ^= '       99999.00' then ct5bton = (substr(pct5bton,5)) || blk4;
     else ct5bton = pct5bton;
     mt6ton = (substr(pt6ton,5));
noshort7:
     if tonopt = 'Y' then newprnt =
  blk5 || ct1bton || blk3 || ct2bton || blk3 || ct3bton || blk3 || ct4bton || blk3 || ct5bton || blk2 || mt6ton;
     else newprnt =
  blk5 || pct1bton || blk3 || pct2bton || blk3 || pct3bton || blk3 || pct4bton || blk3 || pct5bton || blk2 || pt6ton;
     call dashit (newprnt);
     put file (table) edit (newprnt) (col(15),a);
skip7:
     trsave = '';
     put file (table) skip (1) edit ('') (a);
     call fil3dl ('idta2', code);
```

```
     ct1ton=ct1ton+pct1ton;      pct1bton = '';
     ct2ton=ct2ton+pct2ton;      pct2bton = '';
     ct3ton=ct3ton+pct3ton;      pct3bton = '';
     ct4ton=ct4ton+pct4ton;      pct4bton = '';
     ct5ton=ct5ton+pct5ton;      pct5bton = '';
     ct6ton=ct6ton+pct6ton;
     trt1ton=0;trt2ton=0;trt3ton=0;
     trt4ton=0;trt5ton=0;trt6ton=0;
     pct1ton='';pct2ton='';pct3ton='';
     pct4ton='';pct5ton='';pct6ton='';pt6ton='';
     put file (table) skip (2) edit ('COUNTY TOTAL') (col(6),a);
     pct1ton = ct1ton;
     pct2ton = ct2ton;
     pct3ton = ct3ton;
     pct4ton = ct4ton;
     pct5ton = ct5ton;
     pct6ton = ct6ton;
     if pct1ton = 0.00 then pct1ton = blk14;  p1gton = p1gton + pct1ton;
     if pct2ton = 0.00 then pct2ton = blk14;  p2gton = p2gton + pct2ton;
     if pct3ton = 0.00 then pct3ton = blk14;  p3gton = p3gton + pct3ton;
     if pct4ton = 0.00 then pct4ton = blk14;  p4gton = p4gton + pct4ton;
     if pct5ton = 0.00 then pct5ton = blk14;  p5gton = p5gton + pct5ton;
     ptottot = (pct1ton+pct2ton+pct3ton+pct4ton+pct5ton);
     pgrandt = (pgrandt + ptottot);
     if pct1ton = blk14 then pct1bton = dash14;  if pct1ton ^= blk14 then pct1bton = pct1ton;
     if pct2ton = blk14 then pct2bton = dash14;  if pct2ton ^= blk14 then pct2bton = pct2ton;
     if pct3ton = blk14 then pct3bton = dash14;  if pct3ton ^= blk14 then pct3bton = pct3ton;
     if pct4ton = blk14 then pct4bton = dash14;  if pct4ton ^= blk14 then pct4bton = pct4ton;
     if pct5ton = blk14 then pct5bton = dash14;  if pct5ton ^= blk14 then pct5bton = pct5ton;
  newprnt = pct1bton || blk3 || pct2bton || blk3 || pct3bton || blk3 || pct4bton || blk3 || pct5bton || blk2 || ptottot;
     call dashit (newprnt);
     if tonopt = 'Y' then put file (table) edit (substr(newprnt,3)) (col(18),a);
     else put file (table) edit (newprnt) (col(20),a);
     put file (table) skip (1) edit ('') (a);
     loopf2=1;          ct1ton=0;ct2ton=0;ct3ton=0;
     ct4acre='';ct4avtk='';ct4ton=0;ct5acre='';ct5avtk='';ct5ton=0;ct6acre='';ct6avtk='';ct6ton=0;
     pct1ton='';pct2ton='';pct3ton='';trt1ton=0;trt2ton=0;trt3ton=0;
     pct4ton='';pct5ton='';pct6ton='';linect=0; pt6ton='';ptottot='';trt4ton=0;trt5ton=0;trt6ton=0;
     close file (onefl);
     call fil$dl ('onefl', code);
     filenum = filenum + 1;
     if filenum ^= 2 then go to file3;
     call cnam$$ ((sstwo),5,(ssone),5,code);
     open file (onefl) stream input;
     go to read1;
file3:
     if filenum ^= 3 then go to file4;
     call cnam$$ ((ssthr),5,(ssone),5,code);
     open file (onefl) stream input;
     go to read1;
file4:
     if filenum ^= 4 then go to endit;
     call cnam$$ ((ssfou),5,(ssone),5,code);
     open file (onefl) stream input;
     go to read1;
duperec:
/*     put list ('Seems to be duplicate data:') skip (3);
     put list ('(1)=County ',countdsv,'T/R',trdsv,' Overb. ',overdsv,' Relib.',relidsv) skip (2);
     put list ('(2)=County',countdo,'T/R',trdo,' Overb.',overdo,' Relib.',relido) skip(1); */
     errorf = 1;
```

```
     if dif = 1 then go to dup1;
     if dif = 2 then go to dup2;
endit:
     if linect >42 then put file (table) skip (1) edit ('1') (a);
     newprnt = '';
     if tonopt = 'Y' then newprnt = 'GRAND TOTAL' ||
     (substr(p1gton,3)) || blk2 || p2gton || blk2 || p3gton || blk2 || p4gton || blk2 || p5gton || blk1 || pgrandt;
     else newprnt = 'GRAND TOTAL' ||
     blk2 || p1gton || blk2 || p2gton || blk2 || p3gton || blk2 || p4gton || blk2 || p5gton || blk1 || pgrandt;
     put file (table) skip (3) edit (newprnt) (col(6),a);
     put file (table) skip (1) edit ('1') (a);
     put file (table) skip (1) edit ('1') (a);
     close file (table);
nodel:
     call fil$dl ('ifile', code);
     put list ('') skip;
     end pct2;
lrtrim:
     proc (blankf);
     dcl blankf char (36) varying;
     dcl goodf char (36) varying;
     dcl (xblk,nxtc) fixed bin(15);
     goodf = '';
     xblk=0;nxtc=0;
nchar:
     nxtc=nxtc+1;
     if (substr(blankf,nxtc,1)) = ' ' then go to nchar;
     if nxtc ^= 1 then blankf = (substr(blankf,nxtc));
     blankf = blankf || ' Z';
     xblk = index (substr(blankf,1), 'Z');
xchar:
     xblk = xblk-1;
     if (substr(blankf,xblk,1)) = ' ' then go to xchar;
     goodf = (substr(blankf,1,xblk));
     blankf = goodf;
     end;
numlet:
     proc (ntol);
     dcl ntol char (12) varying;
     if ntol = '    1' then ntol = 'AAAAAAAAA';
     if ntol = '    2' then ntol = 'BBBBBBBBB';
     if ntol = '    3' then ntol = 'CCCCCCCCC';
     if ntol = '    4' then ntol = 'DDDDDDDDD';
     if ntol = '    5' then ntol = 'EEEEEEEEE';
     if ntol = '    9' then ntol = 'LT 14    ';
     if ntol = '   10' then ntol = '0-100    ';
     if ntol = '   11' then ntol = '100-200  ';
     if ntol = '   12' then ntol = '200-500  ';
     if ntol = '   13' then ntol = '500-1000 ';
     end;
letnum:
     proc (lton);
     dcl lton char (12) varying;
     if newosv = ' AAAAAAAAA' then newosv = '    0- 500';
     if newosv = ' BBBBBBBBB' then newosv = '  500-1000';
     if newosv = ' CCCCCCCCC' then newosv = ' 1000-2000';
     if newosv = ' DDDDDDDDD' then newosv = ' 2000-3000';
     if newosv = ' EEEEEEEEE' then newosv = '   > 3000';
     end;
xcomma:
```

```
     proc (blankf);
     dcl blankf char (36) varying;
     dcl goodf char (36) varying;
     dcl (dif,space) fixed bin(15);
     goodf = '';
     dif=0;space=0;
scom2:
     dif = index (substr(blankf,1),',');
     if dif = 0 then go to nocom;
     blankf = (substr(blankf,1,dif-1)) || (substr(blankf,dif+1));
/*     space = index (substr(blankf,dif),' ');
     blankf=(substr(blankf,1,space+dif)) || ' ' || (substr(blankf,space+dif+1));*/
     go to scom2;
nocom:
     end;
dashit:
     proc (nprint);
     dcl (nprint) char (240) varying;
     dcl (nines) fixed bin (15);
     nines = 0;
findn:
     nines = index(substr(nprint,1),'99999');
     if nines = 0 then go to nonine;
     nprint = (substr(nprint,1,nines-1)) || '  ---' || (substr(nprint,nines+5));
     go to findn;
nonine:
     nines = index (substr(nprint,1),'99,999.00');
     if nines = 0 then go to notnine;
     nprint = (substr(nprint,1,nines-1)) || ' ---     ' ||
     (substr(nprint,nines+9));
     go to nonine;
notnine:
     end;
nwnine:
     proc (tprint);
     dcl (tprint) char (36) varying;
     dcl (tnines) fixed bin (15);
     tnines = 0;
findt:
     tnines = index (substr(tprint,1),'       99,999.00');
     if tnines ^=0 then go to tnonine;
     tprint = (substr(tprint,5)) || blk4;
tnonine:
     end;
tend:
     put skip (2) edit ('Completed.') (a);
/*     if errorf = 1 then put list ('Processed record(s) of duplication, edit input file & rerun if needed.') skip (2);   */
     if (seeopt ^= 'Y' | seeopt ^= 'y') then newprnt = 'Print Suggestion:  spool ' || oname  || ' -ftn';
     if (seeopt = 'Y' | seeopt = 'y') then newprnt = 'Reliability files have been created for review.';
     put skip (2) edit (newprnt) (a);
     put skip (2) edit ('') (a);
     end coaltab;
```