

1984/82. Printing text files using FORTRAN programs PRINTT and CPRINT

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*Abstract*

PRINTT is a FORTRAN program for printing text files. It provides a number of options not available with the system PRINT utility.

CPRINT is a FORTRAN program used to convert files with short record lengths into a multicolumn format (2 to 5 columns).

PRINTT

INTRODUCTION

PRINTT is an alternative to the system PRINT command or can be used in conjunction with it. Using all the defaults it merely breaks up the input file into 58 lines per page, but using simple commands a number of options can be chosen which include page numbering, headings at the top of each page and the printing of file names and dates. Unlike PRINT, output can be to the console, so that the effect of the various options can be readily seen before the final printing.

PRINTT is able to process a number of commands which may be embedded in the input file and enable or disable various text formatting, titling, and pagination options. Certain of these commands, and some additional commands may also be directly input at run time. Lines with double width and double height characters are accepted, but obviously only half the number of characters can be printed on a double width line.

The call is: PRINTT fd,[dev:] - where fd is the file descriptor and dev: is the list device (the default is PR:). An output file can be used instead of a device, but the file must be allocated before PRINTT is run. The output file should have a record length of 5 more than the record length if set to less than 74 characters, and one more for longer records. The output file is a print image file and can be printed using the system PRINT command with the VFC (vertical forms control) option - e.g. PRINT fd,VFC.

PRINTT.CSS is on group 70 account. If called from another account a file PRINTT.CSS containing the following text must exist on the calling account: PRINTT/G @1,@2: \$EXIT.

Commands consist of three characters, the first of which must be > and which must be the first character on the line, e.g. >TI. Commands must be typed in upper case letters.

| Command | Input | Text | Action  |
|---------|-------|------|---|
| >TI     | *     | *    | Sets title to the text following >TI and enables page numbering.  |
| >TD     | *     |      | Sets title to file descriptor, date and time and enables page numbering.  |
| >ST     | *     | *    | Sets subtitle to text following >ST. There must be a title (even if title is null).   |
| >SD     | *     |      | Sets subtitle to file descriptor, date and time.  |
| >LP     | *     |      | Sets number of lines per page (default = 58). A warning message is displayed if the number input is less than 58 or more than 60. e.g. >LP85. |

- >PN \* \* Sets page number to be printed at the top of the first page (if input) or the page following the command (if in the text). e.g. >PN123.
- >PP \* Selects range of pages to be printed. e.g. >PP10-20.
- >ME \* Prints message following >ME on screen during printout.
- >M \* Suppresses lines having \ in the first column.
- >N} \* Suppresses lines having } in the first column. Note: The N} and N\ commands are used to selectively print lines. If the lines are not suppressed the \ or } character in column one will be replaced by the character in column two.
- >BI \* \* Prints a blank line after each bibliographic reference.
- >BT \* \* Enables bibliographic turnover on last line of page (reduces number of split entries).
- >DS \* Enables double spacing.
- >SS \* Cancels >BI and >DS commands.
- >RL \* \* Sets record length (default = 72). An attempt to print a file with a record length of less than 72 characters without this option will result in an error message. An attempt to print a file of more than 72 characters without this option will result in a truncated print-out. e.g. >RL128.
- >FF \* Form feed.
- >SF \* Suppress any CTRL-L form feeds in text.
- >CP \* Increments number of copies to be printed by one.
- >EN \* Ends command input.

Command input at run time will not override command codes embedded in the text of the input file.

A log of a typical user session is given as Appendix 1 and examples of printed output as Appendix 2.

PRINTT COMMANDS

Title (>TI)

The title command reserves a line at the top of each page on which the title (the text following >TI) will be printed, page numbering is also enabled - the word PAGE followed by a number is printed at the right of the title line. The number of characters should not exceed eight less than the record length of the input file, or the title will be truncated. A maximum of 69 characters may be input at run time, if embedded in the text file the maximum length is three less than the record length. If the title is too long to fit on one line the subtitle line may be used as a continuation line. Double height characters should not be used in titles or subtitles.

If the command is used without following text, page numbering is enabled, but no title is printed.

Format:

>TI

>TILIST OF UNPUBLISHED REPORTS 1984

Example:

LIST OF UNPUBLISHED REPORTS 1984

PAGE 14

Subtitle (>ST)

The subtitle command reserves a line below the title line for a subtitle (the text following >ST). The maximum number of characters in the subtitle is three less than the record length. The subtitle must be enabled by a >TI or >TD command, or it will have no effect.

Any number of subtitles may be embedded in a text file, for example to reflect chapter headings. The last subtitle encountered will be printed as the second line of each new page. Double height characters should not be used.

Format:

>STECONOMIC GEOLOGY

Filename titling (>TD, >SD)

These commands are alternatives to >TI and >ST and are used without following text. They permit the printing of the file descriptor and the date and time of printing. The >SD command will enable page numbering on the title line but if no >TI or >TD command is in effect the word PAGE will be omitted.

Format:

>TD

>SD

Example:

SYSF:UR84.TXT/G 28-NOV-84 15:08:23

These commands may only be entered at run time.

Lines per page (>LP)

The default number of lines per page is 58. This includes any titles or subtitles. The normal range is 58 to 60, and an attempt to enter a value outside this range will result in a warning message, but the value will be accepted. If a printout is to be reduced on the copier it is often useful to specify a greater number of lines per page - i.e. for Reduction 1 use >LP73, and for Reduction 2 use >LP85.

Using values outside the normal range may increase paper usage. To avoid this direct the output to a print image file, use EDIT to change the carriage control codes by the following command - CH/1/1,-/1- and then use PRINT to print the file, using the VFC option.

Format:

>LP85 (set 85 lines/page)

This command may only be entered at run time.

Page number (>PN)

This command sets the number of the next page to be printed. If it is not used and page numbering is enabled, pages will be numbered from 1 onwards. If page numbering is not enabled at the beginning of the file, but is subsequently enabled, the numbering will be related to the number of pages printed or the last >PN command encountered. The >PN command does not serve to enable printing of page numbers, but merely adjusts the page counter. Page numbers must be integers.

Format:

>PN23 (set next page number to 23)

This command may be used at run time to set the first page number of printout, or within the text file (usually associated with a form feed) to set the number of the next page encountered.

Pages printed (>PP)

This command, which can only be used at run time enables selective printing of pages of a file. When specifying page numbers take account of any >PN commands which may be in effect. All >PP commands are related to the page counter.

Format:

>PP6 (print page 6 only)

>PP4-16 (print pages 4 to 16 only)

Remember that all previous pages must be processed by the program in order to determine the page numbers. Allow for a delay if you specify pages towards the end of a long file.

To print from a known page to the end of the file when the last page is unknown enter a high number.

Messages (>ME)

It is sometimes useful to include messages in a file (e.g. update information, queries, etc.) without having them printed out as part of the file. Any text following >ME will be displayed on the terminal during the printing of the file.

Format:

>MEAll < signs should be less than or equal to.

>MESection on drilling results to be inserted here.

*Optional lines (>N\, >N}*)

Text lines in which the left-most character is \ or } are treated in a special way. If the >N\ and >N} commands are not in effect the \ or } is replaced by the following character when the line is printed. A >N\ commands suppresses all \ lines and the >N} suppresses all } lines.

These commands are used in text files intended for typesetting where it is useful to be able to specify the use of bold or italic type, or to indicate superior or inferior figures. These lines must be excluded from the typesetting file. } lines are used for underlining headings, \ lines are used elsewhere.

Example from text file:

The following two lines:

Leaves of Nothofagus are occasionally encountered in these deposits.  
\  
-----

will be printed as

Leaves of Nothofagus are occasionally encountered in these deposits.  
-----

unless the >N\ command is operative, in which case only the first line will be output.

*Bibliographic commands (>BI, >BT)*

These commands are used only with bibliographies. The standard bibliographic format consists of multi-line 72 character/line records. The first line of each record is distinguished by the presence of a non-blank character in the left-most position; continuation lines have a blank (space) in this position.

When a >BI command is operative a blank line is output following each multi-line record. In addition the last line of each page to be output is tested to see if it is the first line of a record. If it is a form feed is executed, thus largely eliminating the splitting of records between pages. The >BT command acts in the same way except that a blank line is not output after each record.

Format:

>BI

>BT

Both commands may be entered at run time or embedded in the input file. These commands are disabled if an >SS command is encountered in the input file.

*Double spacing (>DS)*

Double spacing is enabled by this command which can only be entered at run time. It is disabled if an >SS command is encountered in the input file.

Format:

>DS

*Single spacing (>SS)*

This command can only be embedded in the input file. It disables a previous >BI, >BT or >DS command, until a subsequent >BI or >BT command is encountered.

Format:

>SS

*Record length (>RL)*

The default record length is 72, and this is also suitable for all FORTRAN source files with a record length of 80 characters, providing columns 73-80 are not used for comments.

When printing a file with a shorter record length an >RL command must be entered at run time - failure to do this will result in a read error. If a file has a longer record length and an >RL command is not entered at run time, nor present as the first line of the input file, the output will be truncated to 72 characters/line. Titling commands should take into account record length - long titles will not fit short records.

Record lengths of less than 12 or more than 131 are not permitted. For record lengths of less than 12 use program CPRINT to change to a multi-column format which is compatible with PRINTT.

Format:

>RL120 (record length = 120)

*Form feeds (>FF, >SF)*

The command >FF embedded in the input file enables a skip to the top of the next page (for example to avoid splitting a table, or to start a new chapter at the top of a new page). It can also be used to leave blank pages for the insertion of figures.

CTRL-L codes in the input file will act in a similar way, if you wish to suppress CTRL-L form feeds enter the command >SF at run time.

Format:

>FF

>SF

The >FF command can only be embedded in a text file; the >SF command can only be entered at run time.

*Copies (>CP)*

The default number of copies is 1. This can be increased at run time by entering the command >CP. This increments the copy counter by one, and displays the total number of copies to be printed. The counter will be

incremented each time the >CP command is entered.

Format:

>CP

End command (>EN)

This command, entered only at run times, terminates command entry and starts the processing of the input file.

Format:

>EN

### CPRINT

#### INTRODUCTION

CPRINT is used to convert a normal file into a paged, multicolumn format. Such a format can drastically reduce the time needed, and the paper required, to print long files consisting of short records. The output file has a record length of 128 characters/line, and two to five columns may be selected, depending on the number of characters in the input file.

The output file (CPRINT.TMP) may be printed using PRINTT, however the number of header lines set when running CPRINT must not be changed otherwise the normal sequence of records will be lost. The text of header lines may be changed using EDIT, if required.

The maximum number of characters/line read from the input file is as follows:

| <i>Number of columns</i> | <i>Number of characters/line</i> |
|--------------------------|----------------------------------|
| 2                        | 63                               |
| 3                        | 41                               |
| 4                        | 31                               |
| 5                        | 24                               |

The input file record length need not be the same as the number of characters/line listed in above. If shorter the columns will be padded with blanks; if longer the records will be truncated to the tabulated value. Columns are separated by a single space.

Users are prompted for the number of lines per page required, the number of columns, and whether any header (titling) lines are required.

The call is: CPRINT fd - where fd is the file descriptor of the input file. CPRINT.CSS is on group 70 account. If called from another account a file CPRINT.CSS containing the following text must exist on the calling account: CPRINT/G @1, \$EXIT

To print the output file enter: PRINTT CPRINT.TMP (no options are needed, as the file contains an >RL128 command).

A log of a typical user session is given as Appendix 3 and examples of printed output as Appendix 4.

[4 December 1984]

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### APPENDIX 1

PRINTT: Example of a typical user session -

\*PRINTT STRAHAN.ECN

```
VOLUME= SYS3
FILENAME..... TY DBS/IBS RECL. RECORDS CREATED..... LAST WRITTEN.. KEYS
STRAHAN .ECN/P IN 5/1 72 594 4/12/84 09:11 4/12/84 09:11 0000
```

```
PERKIN-ELMER OS/32 COPY 03-215 R01-00
>TISTRAHAN - ECONOMIC GEOLOGY
>ME! used for degree signi um for micrometres
>MECheck use of - in tables, some should be arrows
ECONOMIC GEOLOGY~
)~~~~~
```

Details of the file to be printed are shown above, Together with a listing of the first five lines as a check for embedded PRINTT control codes.

If command entries required, type >, otherwise press RETURN  
Default record length is 72 (use >RLn to change)

```
>>
Enter command, if finished type >EN
>>SD
>SD
Enter command, if finished type >EN
>>EN
>EN
>TISTRAHAN - ECONOMIC GEOLOGY
! used for degree signi um for micrometres
Check use of - in tables, some should be arrows
STOP OUTPUT COMPLETE
TED -END OF TASK CODE= 0 CPUTIME=33.762/1.732
```

### APPENDIX 2

PRINTT: Example of printed output -

```
STRAHAN - ECONOMIC GEOLOGY PAGE 1
SYS3:STRAHAN.ECN/P 05-DEC-84 16:50:11
```

```
ECONOMIC GEOLOGY~
)~~~~~
```

```
G. R. Green~
-----
C. A. Bacon~
-----
V. M. Threader~
-----
```

Although the first discovery of coal was made in the Strahan Quadrangle in 1815, the region is not as richly endowed in mineral wealth as much of western Tasmania. Minor quantities of coal, silver, lead, zinc and gold have been won, but the activity has been intermittent and apart from road-making materials, no mining is currently being carried out, although mining leases are held for silica and silver-lead-zinc.

```
Metallic minerals~
*****
```

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APPENDIX 3

CPRINT: Example of a typical user session -

```

*CPRINT STEREO.DAT
Number of columns ? (2-5)
>3
If file is to be printed using PRINTT
How many header lines will you use ? (0-2)
>1
Enter header lines
>>TISTEREO.DAT
Default number or lines per page is 58
If you wish to change this (range allowed: 16-85)
then enter value required, otherwise RETURN
>
Lines per page= 58
Record length of input file= 72
Column width= 41
STOP
TED      -END OF TASK CODE=  0      CPUTIME=1.041/0.262
Output file is CPRINT.TMP

```

APPENDIX 4

CPRINT: Example of output printed using PRINTT -

| STEREO.DAT |      |     |  |            |       |       |       |     |       | PAGE 1 |     |
|------------|------|-----|--|------------|-------|-------|-------|-----|-------|--------|-----|
| F          |      |     |  | STEREO.DAT | 76.28 | 7.    | 9     |     | 74.4  | 36.    | 8   |
| T          |      |     |  |            | 76.37 | 8.    | 9     |     | 76.51 | 60.    | 9   |
| X          |      |     |  | SIO2       | 76.45 | 3.    | 9     |     | 76.07 | 65.    | 9   |
| Y          |      |     |  | CAO        | 76.1  | 6.    | 9     |     | 76.28 | 63.    | 9   |
| S60.       | 0.   |     |  |            | M60.  | 500.  | 1     |     | 76.37 | 28.    | 9   |
| S80.       | 7.   |     |  |            | R     |       | 1     |     | 76.45 | 62.    | 9   |
| +S.        | 1.   |     |  |            | Y     |       |       |     | 76.1  | 44.    | 9   |
| NS.        | 2.   | 003 |  |            | S60.  | 0.    |       | RB  | M60.  | 60.    | 1   |
| 77.53      | -21  | 7   |  |            | S80.  | 400.  |       |     | R     |        | 1   |
| 60.77      | 104  | 7   |  |            | +S.   | 100.  |       |     | Y     |        |     |
| 61.88      | 142  | 7   |  |            | NS.   | 200.  |       |     |       |        |     |
| 79.34      | 12   | 7   |  |            |       | 77.53 | 115.  | 002 | S60.  | 0.     |     |
| 60.03      | 54   | 7   |  |            |       | 60.77 | 240.  | 7   | S80.  | 300.   |     |
| 73.57      | 1.47 | 8   |  |            |       | 61.88 | 250.  | 7   | +S.   | 100.   |     |
| 74.48      | 1.51 | 8   |  |            |       | 79.34 | 89.   | 7   | NS.   | 200.   | 002 |
| 74.36      | 1.08 | 8   |  |            |       | 60.03 | 157.7 | 7   | 77.53 | 240.   | 7   |
| 73.3       | 1.59 | 8   |  |            |       | 73.57 | 200.  | 8   | 60.77 | 135.   | 7   |
| 74.65      | 1.65 | 8   |  |            |       | 74.48 | 223.  | 8   | 61.88 | 150.   | 7   |
| 73.14      | 1.48 | 8   |  |            |       | 74.36 | 271.  | 8   | 79.34 | 270.   | 7   |
| 74.88      | .97  | 8   |  |            |       | 73.3  | 321.  | 8   | 60.03 | 133.7  | 7   |
| 74.13      | 1.37 | 8   |  |            |       | 74.65 | 218.  | 8   | 73.57 | 265.   | 8   |
| 76.        | 1.26 | 8   |  |            |       | 73.14 | 228.  | 8   | 74.48 | 257.   | 8   |
| 75.75      | .85  | 8   |  |            |       | 74.88 | 294.  | 8   | 74.36 | 168.   | 8   |
| 74.4       | 1.55 | 8   |  |            |       | 74.13 | 216.  | 8   | 73.3  | 232.   | 8   |
| 76.51      | .37  | 9   |  |            |       | 76.   | 244.  | 8   | 74.65 | 245.   | 8   |
| 76.07      | .42  | 9   |  |            |       | 75.75 | 232.  | 8   | 73.14 | 269.   | 8   |
| 76.28      | .38  | 9   |  |            |       | 74.4  | 225.  | 8   | 74.88 | 178.   | 8   |
| 76.37      | .31  | 9   |  |            |       | 76.07 | 366.  | 9   | 74.13 | 244.   | 8   |
| 76.45      | .33  | 9   |  |            |       | 76.51 | 353.  | 9   | 76.   | 174.   | 8   |
| 76.1       | .35  | 9   |  |            |       | 76.07 | 328.  | 9   | 75.75 | 73.    | 8   |
| M60.       | 7.   | 1   |  |            |       | 76.28 | 353.  | 9   | 74.4  | 207.   | 8   |
| R          |      | 1   |  |            |       | 76.37 | 328.  | 9   | 76.51 | 63.    | 9   |
| Y          |      |     |  |            |       | 76.45 | 353.  | 9   | 76.07 | 68.    | 9   |
| S60.       | 0.   |     |  | SR         | 76.1  | 350.  | 1     |     | 76.28 | 58.    | 9   |
| S80.       | 500. |     |  |            | M60.  | 400.  | 1     |     | 76.37 | 54.    | 9   |
| +S.        | 100. |     |  |            | R     |       |       |     | 76.45 | 55.    | 9   |
| NS.        | 200. | 002 |  |            | Y     |       |       |     | 76.1  | 59.    | 9   |
| 77.53      | 45.  | 7   |  |            | S60.  | 0.    |       | Y   | E     |        |     |
| 60.77      | 33.  | 7   |  |            | S80.  | 60.   |       |     |       |        |     |
| 61.88      | 74.  | 7   |  |            | +S.   | 20.   |       |     |       |        |     |
| 79.34      | 44.  | 7   |  |            | NS.   | 20.   | 002   |     |       |        |     |
| 60.03      | 78.3 | 7   |  |            |       | 77.53 | 21.   | 7   |       |        |     |
| 73.57      | 116. | 8   |  |            |       | 60.77 | 24.   | 7   |       |        |     |
| 74.48      | 103. | 8   |  |            |       | 61.88 | 34.   | 7   |       |        |     |
| 74.36      | 80.  | 8   |  |            |       | 79.34 | 17.   | 7   |       |        |     |
| 73.3       | 101. | 8   |  |            |       | 60.03 | 31.4  | 7   |       |        |     |
| 74.65      | 111. | 8   |  |            |       | 73.57 | 33.   | 8   |       |        |     |
| 73.14      | 103. | 8   |  |            |       | 74.48 | 33.   | 8   |       |        |     |
| 74.88      | 62.  | 8   |  |            |       | 74.36 | 32.   | 8   |       |        |     |
| 74.13      | 95.  | 8   |  |            |       | 73.3  | 34.   | 8   |       |        |     |
| 76.        | 79.  | 8   |  |            |       | 74.65 | 37.   | 8   |       |        |     |
| 75.75      | 62.  | 8   |  |            |       | 73.14 | 34.   | 8   |       |        |     |
| 74.4       | 116. | 8   |  |            |       | 74.08 | 36.   | 8   |       |        |     |
| 76.51      | 7.   | 9   |  |            |       | 74.13 | 31.   | 8   |       |        |     |
| 76.07      | 7.   | 9   |  |            |       | 76.   | 33.   | 8   |       |        |     |
|            |      |     |  |            |       | 75.75 | 44.   | 8   |       |        |     |

aboriginal land rights  
 aboriginals  
 abrasion  
 abrasion (geological)  
 abrasives  
 absolute age  
 absorbers (equipment)  
 absorbers (materials)  
 absorption  
 absorption spectra  
 abstracts  
 abyssal zone  
 accelerated tests  
 accessory minerals  
 accident prevention  
 accidents  
 accounting  
 acetylene  
 acid converters  
 acid igneous rocks  
 acid leaching  
 acid mine waters  
 acid treatment  
 acidification  
 acidity  
 acids  
 acritarchs  
 actinide series  
 actinium  
 actinium isotopes  
 actinolite  
 activated carbon  
 activated clay  
 activated sludge process  
 activating reagents  
 activation  
 adamellite  
 adamellite porphyry  
 additives  
 aegirine  
 aeolian  
 aeolian sands  
 aeolian sediments  
 aeolian soils  
 aeolianite  
 aeration  
 aerial cameras  
 aerial colour photography  
 aerial EM surveys  
 aerial geochemical exploration  
 aerial geophysical surveys  
 aerial gravity surveys  
 aerial magnetic maps  
 aerial magnetic surveys  
 aerial mapping

aerial photographs  
 aerial photography  
 aerial radioactivity surveys  
 aerial ropeways  
 aerial surveys  
 aerobic processes  
 aerosols  
 AFMAG EM survey method  
 aftershock  
 agate  
 age determination methods  
 age of the earth  
 age of the universe  
 agglomeration  
 agglomeration  
 aggregates  
 agitation  
 agricultural engineering  
 agricultural geology  
 agronomy  
 air cleaners  
 air compressors  
 air conditioning  
 air cooling  
 air drilling  
 air entrainment  
 air filtration  
 air gun sound source  
 air lift  
 air pollution  
 air pollution control  
 air quality  
 air sampling (geochemistry)  
 air transportation  
 airborne wastes  
 alaskite  
 albite  
 albitisation  
 albitite  
 alcohol fuels  
 alcohols  
 algae  
 algal limestone  
 algal reefs  
 algal structures  
 aliphatic hydrocarbons  
 alkali basalt  
 alkali feldspars  
 alkali gabbro  
 alkali granite  
 alkali leaching  
 alkali metals  
 alkali olivine basalt  
 alkali syenite  
 alkaline earth metals

aboriginal land rights  
 aboriginals  
 abrasion  
 abrasion (geological)  
 abrasives  
 absolute age  
 absorbers (equipment)  
 absorbers (materials)  
 absorption  
 absorption spectra  
 abstracts  
 abyssal zone  
 accelerated tests  
 accessory minerals  
 accident prevention  
 accidents  
 accounting  
 acetylene  
 acid converters  
 acid igneous rocks  
 acid leaching  
 acid mine waters  
 acid treatment  
 acidification  
 acidity  
 acids  
 acritarchs  
 actinide series  
 actinium  
 actinium isotopes  
 actinolite  
 activated carbon  
 activated clay  
 activated sludge process  
 activating reagents  
 activation  
 adamellite  
 adamellite porphyry  
 additives  
 aegirine  
 aeolian  
 aeolian sands  
 aeolian sediments  
 aeolian soils  
 aeolianite  
 aeration  
 aerial cameras  
 aerial colour photography  
 aerial EM surveys  
 aerial geochemical exploration  
 aerial geophysical surveys  
 aerial gravity surveys  
 aerial magnetic maps  
 aerial magnetic surveys  
 aerial mapping

aerial photographs  
 aerial photography  
 aerial radioactivity surveys  
 aerial ropeways  
 aerial surveys  
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 agitation  
 agricultural engineering  
 agricultural geology  
 agronomy  
 air cleaners  
 air compressors  
 air conditioning  
 air cooling  
 air drilling  
 air entrainment  
 air filtration  
 air gun sound source  
 air lift  
 air pollution  
 air pollution control  
 air quality  
 air sampling (geochemistry)  
 air transportation  
 airborne wastes  
 alaskite  
 albite  
 albitisation  
 albitite  
 alcohol fuels  
 alcohols  
 algae  
 algal limestone  
 algal reefs  
 algal structures  
 aliphatic hydrocarbons  
 alkali basalt  
 alkali feldspars  
 alkali gabbro  
 alkali granite  
 alkali leaching  
 alkali metals  
 alkali olivine basalt  
 alkali syenite  
 alkaline earth metals

alkalinity  
 allanite  
 allochthonous coal  
 allochthonous limestone  
 alloy steels  
 alloys  
 alluvial fans  
 alluvial plains  
 alluvial soils  
 alluvium  
 almandine  
 alpha irradiation  
 alpha radiation  
 altimeters  
 alumina  
 aluminium  
 aluminium deposits  
 aluminium isotopes  
 aluminium minerals  
 aluminium ores  
 aluminium oxides  
 aluminium production  
 aluminium refining  
 aluminium reserves  
 aluminium resources  
 aluminium silicates  
 aluminium smelting  
 aluminium sulphate  
 alums  
 alunite  
 amber  
 ambygonite  
 americium  
 americium isotopes  
 amethyst  
 ammonia  
 ammoniacal leaching  
 ammonium compounds  
 ammonium nitrate  
 ammonium sulphate  
 Ammonoidea  
 Amphibia  
 amphiboles  
 amphibolisation  
 amphibolite  
 amphibolite facies  
 anaerobic processes  
 anaerobic sediments  
 analcime  
 analcime basalt  
 analcime dolerite  
 analcime syenite  
 analcinite  
 analogue computers  
 analogue processing

|                                |                              |                         |                             |
|--------------------------------|------------------------------|-------------------------|-----------------------------|
| aboriginal land rights         | serial photographs           | alkalinity              | analogue simulation         |
| aboriginals                    | serial photography           | allanite                | analysis                    |
| abrasion                       | serial radioactivity surveys | allochthonous coal      | analytical chemistry        |
| abrasion (geological)          | serial ropeways              | allochthonous limestone | analexis                    |
| abrasives                      | serial surveys               | alloy steels            | anchoring systems           |
| absolute age                   | aerobic processes            | alloys                  | andalusite                  |
| absorbers (equipment)          | aerosols                     | alluvial fans           | andalusite schist           |
| absorbers (materials)          | AFMAG EM survey method       | alluvial plains         | andesine                    |
| absorption                     | aftershock                   | alluvial soils          | andesine basalt             |
| absorption spectra             | agate                        | aluvium                 | andesite                    |
| abstracts                      | age determination methods    | almandine               | andradite                   |
| abyssal zone                   | age of the earth             | alpha irradiation       | anemometers                 |
| accelerated tests              | age of the universe          | alpha radiation         | ANFO                        |
| accessory minerals             | agglomerate                  | altimeters              | Angiospermae                |
| accident prevention            | agglomeration                | alumina                 | angle of repose             |
| accidents                      | aggregates                   | aluminium               | anglesite                   |
| accounting                     | agitation                    | aluminium deposits      | anhidrite                   |
| acetylene                      | agricultural engineering     | aluminium isotopes      | anhidrite deposits          |
| acid converters                | agricultural geology         | aluminium minerals      | anions                      |
| acid igneous rocks             | agronomy                     | aluminium ores          | ankerite                    |
| acid leaching                  | air cleaners                 | aluminium oxides        | annabergite                 |
| acid mine waters               | air compressors              | aluminium production    | Annelida                    |
| acid treatment                 | air conditioning             | aluminium refining      | annual reports              |
| acidification                  | air cooling                  | aluminium reserves      | anodic protection           |
| acidity                        | air drilling                 | aluminium resources     | anomalies                   |
| acids                          | air entrainment              | aluminium silicates     | anorthite                   |
| acritarchs                     | air filtration               | aluminium smelting      | anorthoclase                |
| actinide series                | air gun sound source         | aluminium sulphate      | anorthosite                 |
| actinium                       | air lift                     | alums                   | antarctic regions           |
| actinium isotopes              | air pollution                | alunite                 | antecedent streams          |
| actinolite                     | air pollution control        | amber                   | antecedent valleys          |
| activated carbon               | air quality                  | amblygonite             | anthophyllite               |
| activated clay                 | air sampling (geochemistry)  | americium               | anthracite                  |
| activated sludge process       | air sampling (geochemist)    | americium isotopes      | anthracosilicosis           |
| activating reagents            | air transportation           | amethyst                | anthropology                |
| activation                     | airborne wastes              | ammonia                 | anticlines                  |
| adamellite                     | alkasite                     | ammoniacal leaching     | anticlinorium               |
| adamellite porphyry            | albite                       | ammonium compounds      | antimony                    |
| additives                      | albitisation                 | ammonium nitrate        | antimony deposits           |
| aeirine                        | albite                       | ammonium sulphate       | antimony minerals           |
| aeolian                        | alcohol fuels                | Ammonoidea              | apatite                     |
| aeolian sands                  | alcohols                     | Amphibia                | aperture cards              |
| aeolian sediments              | algae                        | amphiboles              | API gravity                 |
| aeolian soils                  | algal limestone              | amphibolisation         | aplite                      |
| aeolianite                     | algal reefs                  | amphibolite             | apparent dip                |
| aeration                       | algal structures             | amphibolite facies      | apparent movement of faults |
| serial cameras                 | aliphatic hydrocarbons       | anaerobic processes     | applications                |
| serial colour photography      | alkali basalt                | anaerobic sediments     | aquamarine                  |
| serial EM surveys              | alkali feldspars             | analcime                | aqueducts                   |
| serial geochemical exploration | alkali gabbro                | analcime basalt         | aquicludes                  |
| serial geophysical surveys     | alkali granite               | analcime dolerite       | aquifer properties          |
| serial gravity surveys         | alkali leaching              | analcime syenite        | aquifer tests               |
| serial magnetic maps           | alkali metals                | analcimite              | aquifers                    |
| serial magnetic surveys        | alkali olivine basalt        | analogue computers      | arable land                 |
| serial mapping                 | alkali syenite               | analogue processing     | aragonite                   |
|                                | alkaline earth metals        |                         |                             |

|                          |                          |                         |                          |                       |
|--------------------------|--------------------------|-------------------------|--------------------------|-----------------------|
| aboriginal land rights   | serial photographs       | alkalinity              | analogue simulation      | arbitration           |
| aboriginals              | serial photography       | allanite                | analysis                 | arch dams             |
| abrasion                 | serial radioactivity sur | allochthonous coal      | analytical chemistry     | arch gravity dams     |
| abrasion (geological)    | serial ropeways          | allochthonous limestone | analexis                 | Archaean              |
| abrasives                | serial surveys           | alloy steels            | anchoring systems        | Archaeocyatha         |
| absolute age             | serial processes         | alloys                  | andalusite               | archaeology           |
| absorbers (equipment)    | aerobic processes        | alluvial fans           | andalusite schist        | archives              |
| absorbers (materials)    | AFMAG EM survey method   | alluvial plains         | andesine                 | arctic regions        |
| absorption               | aftershock               | alluvial soils          | andesine basalt          | arcuate faults        |
| absorption spectra       | agate                    | aluvium                 | andesite                 | arsenaceous rocks     |
| abstracts                | age determination method | almandine               | andradite                | arête                 |
| abyssal zone             | age of the earth         | alpha irradiation       | anemometers              | arvedsonite           |
| accelerated tests        | age of the universe      | alpha radiation         | ANFO                     | argentine             |
| accessory minerals       | agglomerate              | altimeters              | Angiospermae             | argillaceous rocks    |
| accident prevention      | agglomeration            | alumina                 | angle of repose          | argon                 |
| accidents                | aggregates               | aluminium               | anglesite                | argon compounds       |
| accounting               | agitation                | aluminium deposits      | anhidrite                | argon isotopes        |
| acetylene                | agricultural engineering | aluminium isotopes      | anhidrite deposits       | arid environment      |
| acid converters          | agricultural geology     | aluminium minerals      | anions                   | aromatic hydrocarbons |
| acid igneous rocks       | agronomy                 | aluminium ores          | ankerite                 | arrival time          |
| acid leaching            | air cleaners             | aluminium oxides        | annabergite              | arsenic               |
| acid mine waters         | air compressors          | aluminium production    | Annelida                 | arsenic deposits      |
| acid treatment           | air conditioning         | aluminium refining      | annual reports           | arsenic isotopes      |
| acidification            | air cooling              | aluminium reserves      | anodic protection        | arsenic minerals      |
| acidity                  | air drilling             | aluminium resources     | anomalies                | arsenopyrite          |
| acids                    | air entrainment          | aluminium silicates     | anorthite                | artesian aquifers     |
| acritarchs               | air filtration           | aluminium smelting      | anorthoclase             | artesian basins       |
| actinide series          | air gun sound source     | aluminium sulphate      | anorthosite              | artesian discharge    |
| actinium                 | air lift                 | alums                   | antarctic regions        | artesian pressure     |
| actinium isotopes        | air pollution            | alunite                 | antecedent streams       | artesian water        |
| actinolite               | air pollution control    | amber                   | antecedent valleys       |                       |
| activated carbon         | air quality              | amblygonite             | anthophyllite            |                       |
| activated clay           | air sampling (geochemist | americium               | anthracite               |                       |
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| activating reagents      | air transportation       | amethyst                | anthropology             |                       |
| activation               | airborne wastes          | ammonia                 | anticlines               |                       |
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| aeolian                  | alcohol fuels            | Ammonoidea              | apatite                  |                       |
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| aeration                 | algal structures         | amphibolite facies      | apparent movement of fau |                       |
| serial cameras           | aliphatic hydrocarbons   | anaerobic processes     | applications             |                       |
| serial colour photograph | alkali basalt            | anaerobic sediments     | aquamarine               |                       |
| serial EM surveys        | alkali feldspars         | analcime                | aqueducts                |                       |
| serial geochemical explo | alkali gabbro            | analcime basalt         | aquicludes               |                       |
| serial geophysical surve | alkali granite           | analcime dolerite       | aquifer properties       |                       |
| serial gravity surveys   | alkali leaching          | analcime syenite        | aquifer tests            |                       |
| serial magnetic maps     | alkali metals            | analcimite              | aquifers                 |                       |
| serial magnetic surveys  | alkali olivine basalt    | analogue computers      | arable land              |                       |
| serial mapping           | alkali syenite           | analogue processing     | aragonite                |                       |
|                          | alkaline earth metals    |                         |                          |                       |