

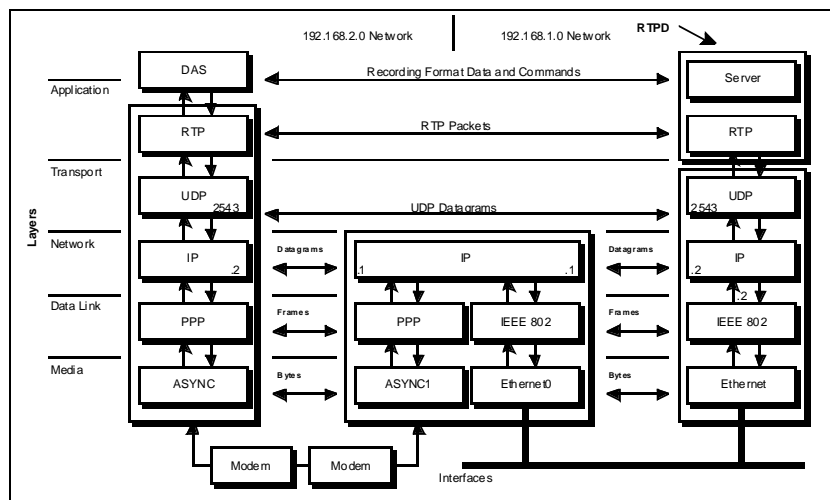


Archive Utilities

Users Guide

Rev 2.1.3

7/21/2008



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This REF TEK manual provides a basic reference for archive utilities to manage REF TEK data archives.

About this manual:

This Reference manual provides a way for the user to create and manage a REF TEK data archive. In normal operation, an archive is created by using Arccreate and filled by RTPD.

It covers the following utilities:

- Arccreate (Archive Create)
- Arcinfo (Archive Information)
- Arcfetch (Archive Fetch)
- Arccopy (Archive Copy)
- Arcwrite (Archive Write)
- Arcrebuild (Archive Rebuild)

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Printed in USA.

Revision History:

Revision	Date	Reason for change	Pages
0.1	01/12/02	Initial release	All
C	10/27/05	Archive Utilities moved from RTU	All
D	07/21/08	Updated to WORD and 2.1.3	All

CF Card Replacement:

Due to the large variability of CF cards available on the world market and the resulting problems with compatibility due to memory layout, signal structuring and power requirements, Refraction Technology cannot guarantee a CF card will work in a REFTEK data recorder unless it is sold through REFTEK itself. REFTEK ensures compatibility through communications with CF manufacturers and rigorous in-house testing. Some CF manufacturers refuse to provide adequate information or factory controls to ensure that the product being sold today is the same as the product sold earlier under the same part number. CF cards not purchased from REFTEK may work at one temperature but not at another, or may fail all together.

Software Version:

Current software and documentation is available on our web site. Some early units may require hardware modifications to use the latest software. Contact REF TEK if you have any queries on the compatibility of your unit(s) and the current software release.

Firmware Update:

To update firmware from the FTP site

1. Login to our FTP site at: <ftp.reftek.com/pub> as:
User name: Anonymous
Password: Your E-mail address
2. Find the 130 firmware at <ftp.reftek.com/pub/130/cpu/prom>.
3. Download the zip file of the most recently released firmware version.

Update firmware:

Updating firmware in a 130 DAS requires the presence of a firmware file on an installed Compact Flash device.

1. On power-up, the 130 checks the Compact Flash for the presence of 'main.s3' in the root directory.
2. If the 'main.s3' file is present on the Compact Flash, the 130:
 - a. Reads the file.
 - b. DELETES the file.
 - c. Re-programs the internal flash memory.

Note: DO NOT DISTURB THE UNIT DURING THIS PROCESS.

Follow these steps to update the firmware of a 130 DAS:

1. Unzip the 'main.s3' file from the downloaded zip file of the most recently released firmware.
2. Copy the desired firmware image to the root of the Compact Flash as 'main.s3' using a PC with a Compact Flash reader or ftp into the 130 DAS, with a Compact Flash installed, in binary mode.
3. With the Compact Flash with the main.s3 image installed in the 130 DAS, issue a reset command.

(a) If you are at the 130 DAS:

1. Issue a Reset command from a PDA running PFC_130 or Physically disconnect and reconnect power to the unit.
2. Observe the LCD for the following messages:

READING DISK DO NOT DISTURB
WRITING FLASH DO NOT DISTURB

3. The 130 DAS resets and returns to normal messaging.

(b) If you are remotely connected to a 130 DAS via telemetry mode:

1. If you are connecting remotely by a TCP connection:
 - a. **First connect**
 - b. **Discover the unit**
 - c. **Acquire status**
2. Issue a reset command from the Status screen.
3. Delete the unit from the Station List screen.
4. Wait at least 5 minutes.
5. At the Connections screen (reconnect id using a TCP connection) issue a Station Discovery again to discover the 130 DAS station.

Note: DO NOT DISTURB THE UNIT until the start-up LCD message reappears.

Notation Conventions

The following notation conventions are used throughout REF TEK documentation:

Notation	Description
ASCII	Indicates the entry conforms to the American Standard Code for Information Interchange definition of character (text) information.
Binary	Indicates the entry is a raw, numeric value.
Hex	Indicates hexadecimal notation. This is used with both ASCII characters (0 – 9, A – F) and numeric values.
BCD	Indicates the entry is a numeric value where each four bits represents a decimal digit.
FPn	Indicates the entry is the ASCII representation of a floating-point number with n places following the decimal point.
<n>	Indicates a single 8-bit byte. When the contents are numeric, it indicates a hexadecimal numeric value; i.e. <84> represents hexadecimal 84 (132 decimal). When the contents are capital letters, it represents a named ASCII control character; i.e. <SP> represents a space character, <CR> represents a carriage return character and <LF> represents a line feed character.
MSB	Most Significant Byte of a multi-byte value.
MSbit	Most Significant Bit of a binary number.
LSB	Least Significant Byte of a multi-byte value.
LSbit	Least Significant Bit (bit 0) of a binary number.
YYYY	Year as a 4-digit number
DDD	Day of year
HH	Hour of day in 24-hour format
MM	Minutes of hour
SS	Seconds of minute
TTT	Thousandths of a second (milliseconds)
IIII	Unit ID number

n, nS	nano, nanoSecond; $10^{-9} = 0.000000001$
u, uS	micro, microSecond; $10^{-6} = 0.000001$
m, mS	milli, milliSecond; $10^{-3} = 0.001$
K, KHz	Kilo, KiloHertz; $10^3 = 1,000$
M, MHz	Mega, MegaHertz; $10^6 = 1,000,000$
G, GHz	Giga, GigaHertz; $10^9 = 1,000,000,000$
Kb, KB	Kilobit, KiloByte; $2^{10} = 1,024$
Mb, MB	Megabit, MegaByte; $2^{20} = 1,048,576$
Gb, GB	Gigabit, GigaByte; $2^{30} = 1,073,741,824$

Related Manuals:

130-01/3 System Documents	Number	PDF file
130-01 System Startup	Doc-130-Ops	130_startup_01.pdf
PFC_130 Users Guide	Doc-130-PFC	130_pfc.pdf
Data Utilities Users Guide	Doc-DataUtils	130_utilities.pdf
Archive Utilities	Doc-ArcUtil	arcutil.pdf
130 Theory of Operations	Doc-130-Theory	130_theory.pdf
130 PFC Release Notes	Doc-130-PFCRel	130_PFCRN.pdf
130 CPU Release Notes	Doc-130-CPURel	130_CPURN.pdf
130 Command Reference	Doc-130-Cmd	130_command.pdf
130 Recording Format	Doc-130-Record	130_record.pdf
130-GPS Manual	Doc-GPS-Ops	130_gps.pdf
130-01 Board Documents	Number	PDF file
RT505 - A/D Board	Doc-130-RT505	RT505r.pdf ¹
RT506 - CPU Board	Doc-130-RT506	RT506r.pdf
RT520 - Lid Interconnect Board	Doc-130-RT520	RT520r.pdf
RT526 - MicroDrive/Flash Board	Doc-130-RT526	RT526rB01.pdf
RT527 - Sensor Control Board (Optional)	Doc-130-RT527	RT527rB01.pdf
RT535 - Mass Memory Board (Optional)	Doc-130-RT535	RT535rB01.pdf
Optional Manuals	Number	PDF file
SNDP Reference Guide	Doc-SNDP-Ref	SNDPRef.pdf
SNDP Installation and Users Guide	Doc-SNDP-	SNDPUser.pdf
RTPD Installation and Users Guide	Doc-RTPD	RTPD.pdf
RTP Protocol	Doc-RTP	RTP.pdf
RT_View Users Guide (Part of Data Utilities) ²	Doc-RTView	RTView.pdf
RTCC Command and Control Users	Doc-RTCC	RTCC.pdf
130 RTCC Release Notes*	Doc-RTCCRel	130_RTCCRN.pdf
RT_Display Users Guide*	Doc-RTDis	RTDisplay.pdf
RTPMonitor Installation and Users Guide	Doc-RTPMon	RTPM.pdf
131A-02/3 3G Triaxial Accelerometer	Doc-131A-02/3	131A023.pdf
131A-02/2 3G Biaxial Accelerometer	Doc-131A-02/2	131A022.pdf
131A-01/3 4G Triaxial Accelerometer	Doc-131A-01/3	131A013.pdf
131B-01/1 4G Unixial Accelerometer	Doc-131B-01/1	131B011.pdf

¹ R = Revision level of 130 Board

² * = Programs are included in the optional REF TEK Command and Control Interface (RTI)

REF TEK Support and update notifications

As a valued user of REF TEK equipment we would like to provide the best support possible by keeping you up to date with our product updates.

If you would like to be notified of any REF TEK product updates please spend a couple of minutes to register with the REF TEK customer support team.

To register, either send an email to updates@reftek.com giving us your name and REF TEK product you currently have or fill out our online registration form at www.reftek.com/registration

Once we register your contact we will only send necessary notifications via email. The same notifications will be shown on our website's www.reftek.com/support page

Thanks,

Your REF TEK support team

Contents

1	Archive Utilities	1
1.1	Overview	1
1.2	Arccreate (Archive Create)	2
1.2.1	Command Line Syntax.....	2
1.2.2	Usage	3
1.2.3	Arguments.....	3
1.2.4	Switches.....	3
1.3	Arcinfo (Archive Information)	4
1.3.1	Command Line Syntax.....	5
1.3.2	Usage	6
1.3.3	Argument	6
1.3.4	Switch.....	6
1.3.5	Search Criteria Specification	6
1.4	Arcfetch (Archive Fetch)	8
1.4.1	Command Line Syntax.....	8
1.4.2	Usage	8
1.4.3	Arguments.....	8
1.4.4	Switches.....	9
1.4.5	Search Criteria Specification	9
1.4.6	Output file names	11
1.5	Arccopy (Archive Copy)	12
1.5.1	Command Line Syntax.....	13
1.5.2	Usage	13
1.5.3	Arguments.....	13
1.5.4	Switches.....	13
1.6	Arcwrite (Archive Write).....	14
1.6.1	Command Line Syntax.....	14
1.6.2	Usage	14
1.6.3	Arguments.....	14
1.6.4	Switches.....	14
1.7	Arcrebuild (Archive Rebuild)	15
1.7.1	Command Line Syntax.....	15
1.7.2	Usage	15
1.7.3	Arguments.....	15
1.7.4	Switches.....	16

Figure 1 Arccreate Display.....	2
Figure 2 Arcinfo Display	4
Figure 3 Arcinfo Display 2	5
Figure 4 Arcinfo Help	5
Figure 5 Arcfetch	8
Figure 6 Arccopy Display	12
Figure 7 Arcwrite Display	14
Figure 8 Arcrebuild Display	15



1 Archive Utilities

1.1 Overview

The archive utilities allow the user to create and manage a REF TEK data archive. In normal operation, an archive is created by using ARCREATE and filled by RTPD.

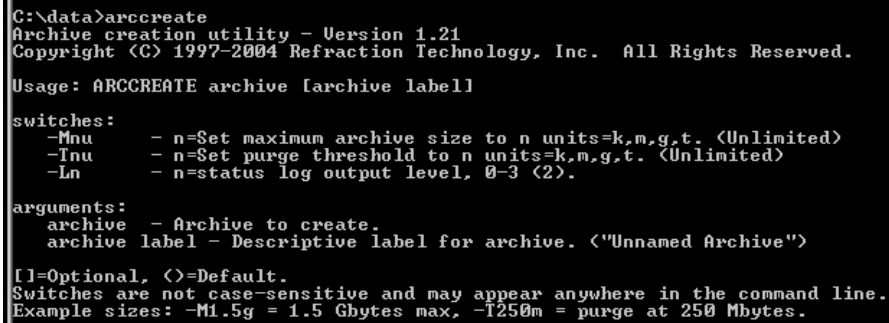
WARNING: This version of the Archive Utilities is **INCOMPATIBLE** with REF TEK data archives created prior to version 2.0.0. The user must run ARCHREBUILD version 2.0.0 or later on older archives before these utilities will run properly. Likewise, archives created and written to with Archive Utilities and RTPD version 2.0.0 or later are **INCOMPATIBLE** with earlier versions. The user must run the earlier version of ARCHREBUILD before using an earlier version of these programs.

1.2 Arccreate (Archive Create)

This utility creates an archive.

1.2.1 Command Line Syntax

The **arccreate** is controlled entirely from the command line (reference Figure 1 Arccreate Display).

A screenshot of a command prompt window showing the help text for the 'arccreate' utility. The text is displayed in a monospaced font on a black background with a white border. The prompt is 'C:\data>arccreate'. The help text includes the version (1.21), copyright (1997-2004 Refraction Technology, Inc.), usage instructions, a list of switches (-Mnu, -Tnu, -Ln) with their functions, arguments (archive, archive label), and example sizes (-M1.5g, -T250m).

```
C:\data>arccreate
Archive creation utility - Version 1.21
Copyright (C) 1997-2004 Refraction Technology, Inc. All Rights Reserved.

Usage: ARCCREATE archive [archive label]

switches:
  -Mnu    - n=Set maximum archive size to n units=k,m,g,t. <Unlimited>
  -Tnu    - n=Set purge threshold to n units=k,m,g,t. <Unlimited>
  -Ln     - n=status log output level, 0-3 <2>.

arguments:
  archive - Archive to create.
  archive label - Descriptive label for archive. <"Unnamed Archive">

[!]=Optional, <>=Default.
Switches are not case-sensitive and may appear anywhere in the command line.
Example sizes: -M1.5g = 1.5 Gbytes max, -T250m = purge at 250 Mbytes.
```

Figure 1 Arccreate Display

1.2.2 Usage

```
c:\reftek>arccreate archive [archive name]
```

1.2.3 Arguments

The program expects two arguments:

1. archive – the path to the archive such as C:\archive
2. archive name – name of archive. Note this is not part of the path

1.2.4 Switches

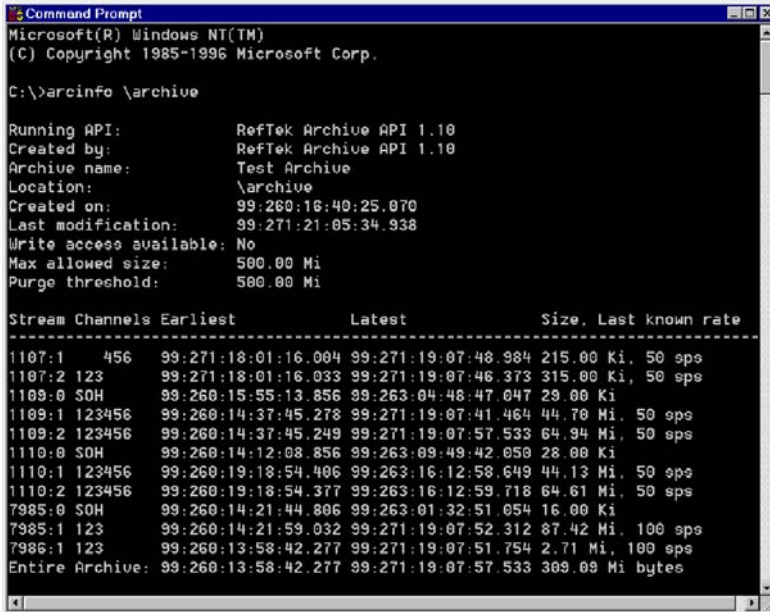
Switches may appear at any point on the command line. These switches are not case sensitive.

Switch	Description
- Mn	- n = maximum archive size in bytes (unlimited)
- Tn	- n = purge threshold in bytes (unlimited)
- Ln	- n = status log output level, 0-3 (2). Note the status log is output to the screen, the levels are: 0 – No Output 1 – Errors Only 2 – Verbose 3 - Everything () = Default [] = Optional

1.3 Arcinfo (Archive Information)

Arcinfo allows the viewing of the current status (size) of the local archive and verify that the archiver is collecting data. The **arcinfo** is controlled entirely from the command line using standard Window operations **OPEN** command prompt.

The **arcinfo** display (refer to Figure 1 - 2) provides information about start/stop of data being archived (earliest/latest) and the amount of data collected (size), which is segregated by record type (SOH or data) and then totals the two for an entire archive size.



```
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>arcinfo \archive

Running API:      RefTek Archive API 1.10
Created by:       RefTek Archive API 1.10
Archive name:     Test Archive
Location:         \archive
Created on:       99:260:16:40:25.070
Last modification: 99:271:21:05:34.938
Write access available: No
Max allowed size: 500.00 Mi
Purge threshold:  500.00 Mi

Stream Channels Earliest      Latest      Size, Last known rate
-----
A. 1107:1 456 99:271:18:01:16.004 99:271:19:07:48.984 215.00 Ki, 50 sps
   1107:2 123 99:271:18:01:16.033 99:271:19:07:46.373 315.00 Ki, 50 sps
B. 1109:0 SOH 99:260:15:55:13.856 99:263:04:48:47.047 29.00 Ki
   1109:1 123456 99:260:14:37:45.278 99:271:19:07:41.464 44.70 Mi, 50 sps
   1109:2 123456 99:260:14:37:45.249 99:271:19:07:57.533 64.94 Mi, 50 sps
   1110:0 SOH 99:260:14:12:08.856 99:263:09:49:42.050 28.00 Ki
   1110:1 123456 99:260:19:18:54.406 99:263:16:12:58.649 44.13 Mi, 50 sps
   1110:2 123456 99:260:19:18:54.377 99:263:16:12:59.718 64.61 Mi, 50 sps
   7985:0 SOH 99:260:14:21:44.806 99:263:01:32:51.054 16.00 Ki
   7985:1 123 99:260:14:21:59.032 99:271:19:07:52.312 87.42 Mi, 100 sps
   7986:1 123 99:260:13:58:42.277 99:271:19:07:51.754 2.71 Mi, 100 sps
C. Entire Archive: 99:260:13:58:42.277 99:271:19:07:57.533 309.09 Mi bytes
```

Figure 2 Arcinfo Display

- Line Item A – Indicates the amount of data records (by size) that have been archived from the earliest (as indicated) to the latest (as indicated).
- Line Item B - Indicates the amount of state-of-health (SOH) records (by size) that have been archived from the earliest (as indicated) to the latest (as indicated).
- Line Item C - Indicates the total amount of data archived (entire archive size) from the earliest (as indicated) to the latest (as indicated).

```
C:\data>arcinfo k:\

Running API:           RefTek Archive API 1.15
Created by:           RefTek Archive API 1.15
Archive name:         Unnamed Archive
Location:             k:\
Created on:            04:183:11:33:25.984
Last modification:    04:217:15:47:24.718
Write access available: Yes
Max allowed size:     Unlimited
Purge threshold:      Unlimited

Stream Channels Earliest Latest Size, Last known rate
-----
9008:0 SOH 00:001:00:00:02.000 04:184:12:22:55.000 68.00 Ki
9008:1 123 04:182:21:23:37.615 04:184:13:43:23.464 117.67 Mi, 125 sps
9029:0 SOH 00:001:00:01:31.000 04:217:19:31:56.000 1.96 Mi
9029:1 123456 04:163:00:49:39.765 04:217:20:50:01.680 4.52 Gi, 125 sps
9029:2 123456 04:197:16:50:00.000 04:211:20:50:09.845 43.85 Mi, 100 sps
903D:0 SOH 00:001:00:00:01.000 10:113:07:43:16.000 1002.00 Ki
903D:1 123 00:001:00:01:25.730 04:190:20:18:14.230 81.37 Mi, 40 sps
9149:0 SOH 00:001:00:00:01.000 04:217:20:24:33.000 2.03 Mi
9149:1 123456 04:163:00:39:00.192 04:217:20:50:02.425 3.14 Gi, 200 sps
9149:2 123 04:195:21:30:00.000 04:217:19:02:00.000 53.74 Mi, 100 sps
9164:0 SOH 04:163:00:41:31.000 04:182:19:47:10.000 657.00 Ki
9164:1 123 04:163:00:41:15.615 04:182:21:06:10.205 536.77 Mi, unknown
9184:0 SOH 04:183:15:33:34.000 04:183:19:12:23.000 39.00 Ki
9184:1 123 04:183:16:33:21.850 04:183:19:17:45.075 9.52 Mi, 200 sps
9184:2 123 04:183:15:14:28.590 04:183:19:07:41.215 7.78 Mi, 200 sps
9274:0 SOH 04:188:16:07:09.000 04:212:19:05:53.000 503.00 Ki
9274:1 123 04:195:20:32:54.090 04:212:21:08:08.445 663.42 Mi, 100 sps
9277:0 SOH 04:205:16:35:16.000 04:212:20:50:47.000 226.00 Ki
9277:1 123 04:205:16:37:58.875 04:212:21:12:33.605 235.66 Mi, 100 sps
9288:0 SOH 00:001:00:00:02.000 04:202:12:35:08.000 607.00 Ki
9288:1 123456 00:001:00:00:04.270 04:202:14:33:21.335 392.47 Mi, 100 sps
9288:2 123456 04:197:21:21:00.265 04:202:14:33:11.065 106.09 Mi, 40 sps
9372:0 SOH 04:168:14:54:21.000 04:169:14:42:47.000 25.00 Ki
9372:1 123 04:168:15:28:51.615 04:169:16:00:55.090 30.03 Mi, unknown
9373:0 SOH 00:001:00:00:02.000 04:168:13:27:48.000 35.00 Ki
9373:1 123 04:167:19:32:18.160 04:168:14:38:29.232 28.30 Mi, unknown
9374:0 SOH 04:166:21:46:54.000 04:168:13:02:19.000 43.00 Ki
9374:1 123 04:166:22:01:13.370 04:168:14:38:35.972 58.98 Mi, unknown
9374:2 123 04:166:22:01:13.370 04:167:00:01:13.370 8.44 Mi, unknown
9375:0 SOH 04:167:16:38:31.000 04:168:13:43:14.000 45.00 Ki
9375:1 123 04:167:14:05:11.560 04:168:14:38:29.728 28.19 Mi, unknown
9376:0 SOH 04:166:21:43:56.000 04:168:13:00:28.000 51.00 Ki
9376:1 123 04:166:22:01:31.615 04:168:14:38:32.115 83.05 Mi, unknown
9376:2 123 04:166:22:01:31.615 04:168:14:38:32.115 83.05 Mi, unknown
```

Figure 3 Arcinfo Display 2

1.3.1 Command Line Syntax

The **arcinfo** is controlled entirely from the command line (reference Figure 4).

```
C:\data>arcinfo
Archive state information dump utility - Version 1.21
Copyright (C) 1997-2004 Refraction Technology, Inc. All Rights Reserved.

Usage: ARCINFO archive [criteria]

switches:
  -D[+|-] - Dump all event filespecs in archive. +=on -=off (-D-)

arguments:
  archive - Archive to view.
  criteria - Analyze specified streams within archive. Gives data lengths
            and data gaps within time specified.

criteria :
unit!*,stream!*,channels!*,yy:ddd:hh:mm:ss.sss!*,yy:ddd:hh:mm:ss.sss!+ss.sss!*

A criteria specification consists of five comma separated fields. These are:
DAS unit ID, stream of DAS, channel(s) of stream, earliest time, and latest
time or length as seconds relative to earliest time. Any field may be
empty or contain a wildcard (*). An empty field is interpreted as a wildcard.
Whitespace characters are not allowed at any point within the specification.
Leading and trailing zeros are insignificant in all fields, including fields
within time fields. The year is specified as two digits within time fields,
the century is assumed to be 2000 for years 0 through 69 and 1900 for 70
through 99. If time fields are empty, year and day-of-year default to today
and hour, minute, and seconds default to zero.

[]=Optional, <>=Default, <>=Switch Options.
Switches may appear anywhere in the command line.
```

Figure 4 Arcinfo Help

1.3.2 Usage

```
c:\reftek>arcinfo archive [criteria]
```

1.3.3 Argument

The program expects at least one argument: the path to the archive such as C:\archive.

1.3.4 Switch

The switch may appear at any point on the command line. This switch is not case sensitive.

Switch	Description
[-D](+ -)	- Dump all event filespecs in archive.
	[] = Optional
	() = Default
	+ = On - = Off

1.3.5 Search Criteria Specification

```
unit*,stream *,channels *,yy:ddd:hh:mm:ss.sss *,yy:ddd:mm:ss.sss  
+ss.sss*
```

A search specification consists of five comma separated fields.

These are:

- DAS unit ID
- Stream of DAS
- Channel(s) of stream
- Earliest time
- Latest time or length as seconds relative to earliest time.

Any field may be empty or contain a wildcard (*). An empty field is interpreted as a wildcard. White space characters are not allowed at any point within the specification. Leading and trailing zeros are insignificant in all fields, including fields within time fields. If the year is specified as two digits within time fields, the century is assumed to be 2000 for year 0 through 69 and 1900 for 70 through 99. If time fields are empty, day-of-year defaults to today and hour, minute, and seconds default to zero.

The following are examples of valid criteria specifications. Each group are equivalent specifications with the last of each group being the most compact possible specification.

```
7377,1,123,1998:202:12:00:00.000,1998:202:12:01:00.000
7377,1,123,1998:202:12,1998:202:12:1
7377,1,123,98:202:12,98:202:12:1
7377,1,123,98:202:12:00:00.000,+60.000
7377,1,123,98:202:12,+60
```

The previous examples get channels 1, 2 and 3 for stream 1 of unit 7377 starting at hour 12 on day 202, 1998 and ending at 12:01.

```
*,1,*,2001:202:12:00:00.000,2001:202:12:01:00.001
*,1,*,01:202:12,01:202:12:01.001
*,1,*,01:202:12,+60.001
,1,,2001:202:12,2001:202:12:01.001
,1,,01:202:12,01:202:12:01.001
,1,,01:202:12,+60.001
```

The previous examples get all stream 1 channels from all units starting at hour 12 on day 202 of 2001 and ending at 12:01.001.

```
7377:1,*,1998:202:00:00:00.000
7377:1,*,1998:202
7377:1,,98
```

The previous examples get all data starting from 0 hours today (assuming that today is day 202) for all channels of stream 1 on unit 7377.

```
*,*,1,*,2004:01:00:00:00.000
*,*,1,*,04:01
,,1,,4:1
```

Note: The previous examples get all data up to midnight on January 1st 2004 for stream 1 for all units in the archive.

1.4 Arcfetch (Archive Fetch)

This utility assembles raw data from the archive to be used for processing. Note that the original archive is never altered. Data input from this program remains in the original REF TEK (PASSCAL) format.

```
C:\data>arcfetch
Archive data extraction utility - Version 1.21
Copyright (C) 1997-2004 Refraction Technology, Inc. All Rights Reserved.

Usage: ARCFETCH archive criteria [outputfile]

switches:
-C[+|-] - Cooked data. +=on or -=off (-C+)
-CN[+|-] - Cooked with no discontinuous data allowed. +=on or -=off (-CN-)
-$[n]!m - Prepend state-of-health for past n hours, cooked mode only. (24)
-Opath - Output path. (<./>)
-Ln - n=status log output level, 0-3 (2).
-Wn - Wait n seconds before processing request (0.0)
-P[+|-] - Precise time alignment for cooked data. +=on or -=off (-P+)

arguments:
archive - Archive to fetch data from.
criteria - Archive search criteria specification.
outputfile - Output filename. (generated filename)

criteria:
unit!*stream!*channel!*yy:ddd:hh:mm:ss.sss!*yy:ddd:hh:mm:ss.sss!*ss.sss!*
A search specification consists of five comma separated fields. These are:
DAS unit ID, stream of DAS, channel(s) of stream, earliest time, and latest
time or length as seconds relative to earliest time. Any field may be
empty or contain a wildcard (*). An empty field is interpreted as a wildcard.
Whitespace characters are not allowed at any point within the specification.
Leading and trailing zeros are insignificant in all fields, including fields
within time fields. If the year is specified as two digits within time fields,
the century is assumed to be 2000 for years 0 through 69 and 1900 for 70
through 99. If time fields are empty, year and day-of-year default to today
and hour, minute, and seconds default to zero.

[!]=Optional, <>=Default, !=Mutually exclusive, <>=Switch Options.
Switches are not case-sensitive and may appear anywhere in the command line.
```

Figure 5 Arcfetch

1.4.1 Command Line Syntax

The **arcfetch** is controlled entirely from the command line (reference Figure 5).

1.4.2 Usage

c:\reftek>arcfetch criteria

Note: see the following criteria search specification

1.4.3 Arguments

The program expects two arguments:

- The path to the archive such as C:\archive
- Archive search criteria string (reference "Search Criteria Specification" on page 9).

1.4.4 Switches

Switches may appear at any point on the command line. These switches are not case sensitive.

Switch	Description
-C(+ -)	- Cooked data, requires unit and stream to be specified.
-CN(+ -)	- Cooked but no discontinuous data is allowed.
-S[n *]	- Prepend state-of-health for past n hours – cooked mode only (24).
-Opath	- Output path of 'fetched' raw REF TEK format data.
-Ln	- n = status log output level, 0-3 (2).
	Note the status log is output to the screen, the levels are:
	0 – No Output
	1 – Errors Only
	2 – Verbose
	3 - Everything
-Wn	- Wait n seconds before processing request (0.0)
-P(+ -)	- Precise time alignment for cooked data
	[] = Optional
	() = Default
	+ = On - = Off

1.4.5 Search Criteria Specification

```
unit|*,stream|*,channels|*,yy:ddd:hh:mm:ss.sss|*,yy:ddd:mm:ss.sss|+ ss.sss|*
```

A search specification consists of five comma separated fields.

These are:

- DAS unit ID
- Stream of DAS
- Channel(s) of stream
- Earliest time
- Latest time or length as seconds relative to earliest time.

Any field may be empty or contain a wildcard (*). An empty field is interpreted as a wildcard. White space characters are not allowed at any point within the specification. Leading and trailing zeros are insignificant in all fields, including fields within time fields. If the year is specified as two digits within time fields, the century is assumed to be 2000 for year 0 through 69 and 1900 for 70 through 99. If time fields are empty, day-of-year defaults to today and hour, minute, and seconds default to zero.

Archive Utilities

The following are examples of valid criteria specifications. Each group are equivalent specifications with the last of each group being the most compact possible specification.

```
7377,1,123,1998:202:12:00:00.000,1998:202:12:01:00.000
7377,1,123,1998:202:12,1998:202:12:1
7377,1,123,98:202:12,98:202:12:1
7377,1,123,98:202:12:00:00.000,+60.000
7377,1,123,98:202:12,+60
```

The previous examples get channels 1, 2 and 3 for stream 1 of unit 7377 starting at hour 12 on day 202, 1998 and ending at 12:01.

```
*,1,*,2001:202:12:00:00.000,2001:202:12:01:00.001
*,1,*,01:202:12,01:202:12:01.001
*,1,*,01:202:12,+60.001
,1,,2001:202:12,2001:202:12:01.001
,1,,01:202:12,01:202:12:01.001
,1,,01:202:12,+60.001
```

The previous examples get all stream 1 channels from all units starting at hour 12 on day 202 of 2001 and ending at 12:01.001.

```
7377:1,*,1998:202:00:00:00.000
7377:1,*,1998:202
7377:1,,98
```

The previous examples get all data starting from 0 hours today (assuming that today is day 202) for all channels of stream 1 on unit 7377.

```
*,*,1,*,2004:01:00:00:00.000
*,*,1,*,04:01
,,1,,4:1
```

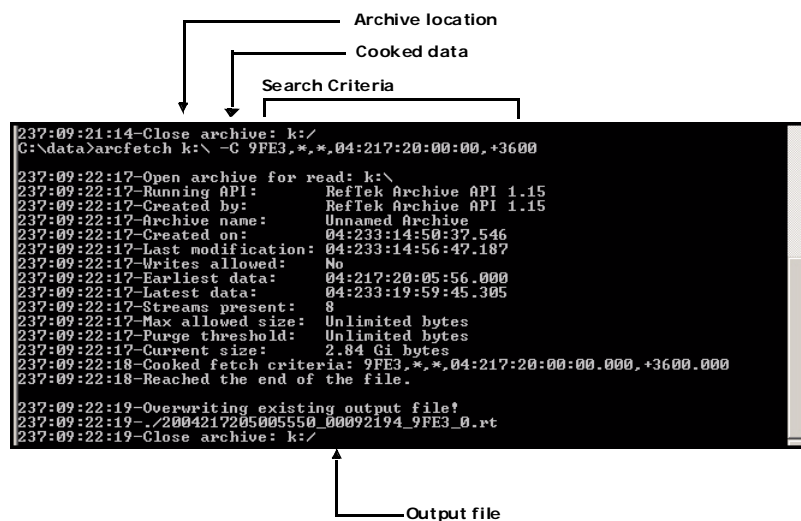
Note: The previous examples get all data up to midnight on January 1st 2004 for stream 1 for all units in the archive.

1.4.6 Output file names

YYYYDDDDHHMMSSSSSS_LLLLLLLLLL_UUUU_S.RT

123 12 1 1 1 1
1234 12 12345 12345678 1234 1 12
123456789a123456789b123456789c12345

YYY	= 4 digit year
DD	= Day-of-year (001-366)
HH	= Hour of day (00-23)
MM	= Minute of hour (00-59)
SSSSS	= Millisecond of minute (00000-59999)
_	= Event length field delimiter (underscore)
LLLLLLLLL	= Event length as 32 bit hex milliseconds (0 to 2 ³² -1)
_	= DAS unit ID field delimiter (underscore)
UUUU	= DAS unit ID (0000-9999) ¹
_	= DAS stream number field delimiter (underscore)
S	= DAS stream number (1 based, 0=SOH, 1-8=data) ²
.RT	= REF TEK recording format data filename extension



¹ With cooked mode, if DAS unit ID is not specified 0's (zero) are assigned.

² With cooked mode, if stream number is not specified 0's (zero) are assigned.

1.5 Arccopy (Archive Copy)

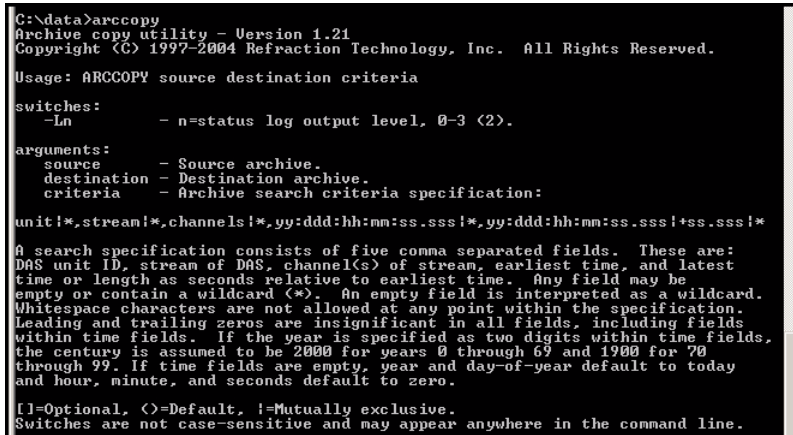
Arccopy allows copying of an archive from one medium to another, such as a hard drive to CD-ROM.

Note: The copied archive is exactly like the original and all archive utilities (tools) listed in this document may be used to access, copy and interpret the copied archive. This utility is not intended to be used to merge archives. Arcwrite should be used for merging event files.

1. To copy the entire archive use a (*) in the criteria.
2. You must create (using arcreate) or already have established the empty archive you are copying to.
3. The arccopy is controlled entirely from the command line using standard Window operations OPEN command prompt.

The following prompt response is used for an example only – this response indicates that the user is copying the local archive (C drive [source]) to the archiver previously created on the D drive (CD-ROM [destination]) named 7837_october_archive and copying data for the entire month of October (1-31).

```
c:\reftek>arccopy archive D:\7837_october_archive
7837,*,*,1998:274:*,1998:304:*
```



```
C:\data>arccopy
Archive copy utility - Version 1.21
Copyright (C) 1997-2004 Refraction Technology, Inc. All Rights Reserved.

Usage: ARCCOPY source destination criteria

switches:
  -Ln          - n=status log output level, 0-3 <2>.

arguments:
  source       - Source archive.
  destination  - Destination archive.
  criteria     - Archive search criteria specification:

unit!*,stream!*,channels!*,yy:ddd:hh:mm:ss.sss!*,yy:ddd:hh:mm:ss.sss!+ss.sss!*

A search specification consists of five comma separated fields. These are:
DAS unit ID, stream of DAS, channel(s) of stream, earliest time, and latest
time or length as seconds relative to earliest time. Any field may be
empty or contain a wildcard (*). An empty field is interpreted as a wildcard.
Whitespace characters are not allowed at any point within the specification.
Leading and trailing zeros are insignificant in all fields, including fields
within time fields. If the year is specified as two digits within time fields,
the century is assumed to be 2000 for years 0 through 69 and 1900 for 70
through 99. If time fields are empty, year and day-of-year default to today
and hour, minute, and seconds default to zero.

[!]=Optional, <>=Default, !=Mutually exclusive.
Switches are not case-sensitive and may appear anywhere in the command line.
```

Figure 6 Arccopy Display

1.5.1 Command Line Syntax

The **arccopy** is controlled entirely from the command line (reference Figure 6).

1.5.2 Usage

```
c:\reftek>arccopy sourceArchive(path) destinationArchive(path)
criteria
```

1.5.3 Arguments

The program expects three arguments:

- SourceArchive – source archive path
- DestinationArchive – destination archive path
- Criteria – archive search criteria string

1.5.4 Switches

Switches may appear at any point on the command line. These switches are not case sensitive.

Switch	Description
-Ln	- n = status log output level, 0-3 (2).
	Note the status log is output to the screen, the levels are:
	0 – No Output
	1 – Errors Only
	2 – Verbose
	3 - Everything
	[] = Optional
	() = Default

1.6 Arcwrite (Archive Write)

This archive tool allows one to archive raw REF TEK data into an existing archive.

```
C:\data>arcwrite
Archive loading utility - Version 1.21
Copyright (C) 1997-2004 Refraction Technology, Inc. All Rights Reserved.
Usage: ARCWRITE archive datafile

switches:
  -Ln      - n=status log output level, 0-3 (2).
  -Pn      - Packet rate as packets/second (infinite).

arguments:
  archive  - Archive to write to.
  datafile - RefTek Recording Format data image file.

[ ]=Optional, ( )=Default.
Switches are not case-sensitive and may appear anywhere in the command line.
```

Figure 7 Arcwrite Display

1.6.1 Command Line Syntax

The **arcwrite** is controlled entirely from the command line (reference Figure 7).

1.6.2 Usage

```
c:\reftek>arcwrite archive raw datafile
```

1.6.3 Arguments

The program expects two arguments:

- Archive – archive to write to
- Raw datafile – raw REF TEK data file

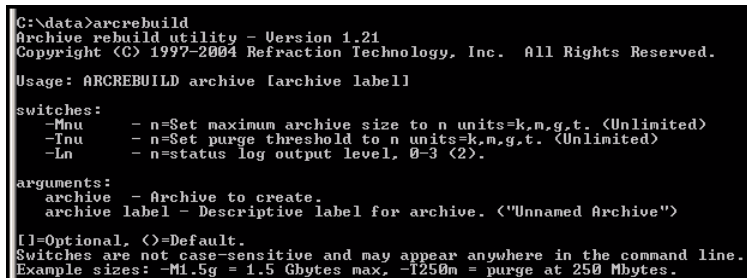
1.6.4 Switches

Switches may appear at any point on the command line. These switches are not case sensitive.

Switch	Description
-Ln	- n = status log output level, 0-3 (2).
	Note the status log is output to the screen, the levels are:
	0 – No Output
	1 – Errors Only
	2 – Verbose
	3 - Everything
	[] = Optional
	() = Default

1.7 Arcrebuild (Archive Rebuild)

This utility rebuilds an archive after the archive contents have been corrupted in any way.



```
C:\data>arcbuild
Archive rebuild utility - Version 1.21
Copyright (C) 1997-2004 Refraction Technology, Inc. All Rights Reserved.

Usage: ARCREBUILD archive [archive label]

switches:
  -Mnu      - n=Set maximum archive size to n units=k,m,g,t. (Unlimited)
  -Inu      - n=Set purge threshold to n units=k,m,g,t. (Unlimited)
  -Ln       - n=status log output level, 0-3 (2).

arguments:
  archive   - Archive to create.
  archive label - Descriptive label for archive. ("Unnamed Archive")

[!]=Optional, <>=Default.
Switches are not case-sensitive and may appear anywhere in the command line.
Example sizes: -M1.5g = 1.5 Gbytes max, -I250m = purge at 250 Mbytes.
```

Figure 8 Arcrebuild Display

WARNING: Version 2.0.0 of the Archive Utilities is **INCOMPATIBLE** with REF TEK data archives created prior to version 2.0.0. The user must run ARCHREBUILD version 2.0.0 or later on older archives before these utilities will run properly. Likewise, archives created and written to with Archive Utilities and RTPD version 2.0.0 or later are **INCOMPATIBLE** with earlier versions. The user must run the earlier version of ARCHREBUILD before using an earlier version of these programs.

1.7.1 Command Line Syntax

The arcbuild is controlled entirely from the command line (reference Figure 8).

1.7.2 Usage

```
c:\reftek>arcbuild archive
```

1.7.3 Arguments

The program expects two arguments:

- Archive – archive to create
- Archive name – name of archive ('unnamed archive')

1.7.4 Switches

Switches may appear at any point on the command line. These switches are not case sensitive.

Switch	Description
-Mn	n = maximum archive size in bytes (unlimited)
-Tn	n = purge threshold in bytes (unlimited)
-Ln	- n = status log output level, 0-3 (2).
	Note the status log is output to the screen, the levels are:
	0 – No Output
	1 – Errors Only
	2 – Verbose
	3 - Everything
	[] = Optional
	() = Default