

AppleCORE

Version 9

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Appendix

to the
User Guide

ASCII File

Record Formats and Codes

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ASCII FILE RECORDS

Introduction

The AppleCORE ASCII file is a text file written in a relatively simple format. Each line, terminated by a carriage return, represents a record of some element of data. (A few record types require two lines.) There are at present 69 record types. The record type is indicated by a 3 character upper case alpha string at the beginning of each record. The 69 alpha codes are listed below:

The following records provide information regarding the core location, date, elevations, etc. and should only appear once. All are optional and do not need to be in any particular order.

WNM	- Well name
TWP	- Well location record (Township Range System)
LOC	- Well location record (other system)
LAT	- Well location record (Lat - Long)
ELV	- Elevations record (KB and ground)
UNT	- Units record (feet or metres)
DAT	- Date record
LGR	- Logger record
RMK	- Header remarks record
TOP	- Box top position record
COL	- Box columns record

The following records represent the logged data, and can appear as often as required. All are optional and do not need to be in any particular order.

BOX	- Box record
NDR	- Empty box space record (previously "Not Drilled")
LTH	- Lithology record
PHY	- Physical structure record
ACC	- Lithologic accessory record
ICH	- Trace fossil (ichnofossil) record
FOS	- Fossil record
PTP	- Pore type record
HYD	- Hydrocarbon indicator record
FRA	- Fracture record
DIA	- Diagenesis record

CLR	- Colour record
GRS	- Grain size record
TXR	- Texture record
STN	- Staining record
POR	- Porosity record
BIO	- Bioturbation relative abundance record
ICF	- Ichnofacies record
SRT	- Sorting record
RND	- Roundness record
FAC	- Facies record
FAS	- Facies association record
DEP	- Depositional environment record
DCP	- Depositional complex record
FMN	- Formation record
GRP	- Group record
AGE	- Age record
PER	- Period record
CLY	- Clay percent record
CON	- Consolidation record
FIS	- Fissility record
DRB	- Core Condition record
TXT	- Remarks record
PHT	- Photo record
SMP	- Sample record
LBL	- Label record
MKR	- Depth marker record

In addition, there are 22 record types that are used exclusively for Hard Rock and Thin Section descriptive data. These records can appear as often as required. However, because AppleCORE stores them in a relational hierarchy, some are considered “parent” records and others are “child” records. They are therefore required to appear in a particular order. (See the section “Hard Rock Record Formats”.)

HRK	- Hard Rock Lithology Record
MIN	- Mineral Record
GRM	- Groundmass Mineral Record
ALM	- Alteration Mineral Record
VOI	- Voids Record
HRT	- Hard Rock Texture Record

ALT - Alteration Record
OGM - Overgrowth Mineral Record
IGM - Intergrowth Mineral Record
ICM - Inclusion Mineral Record
VFM - Void Filling Mineral Record
CRM - Corona Mineral Record
CIM - Corona Intergrowth Mineral Record
RRM - Reaction Rim Mineral Record
RIM - Reaction Rim Intergrowth Mineral Record
THS - Thin Section Record
TMN - Thin Section Mineral Record
TGM - Thin Section Groundmass Mineral Record
TAM - Thin Section Alteration Mineral Record
TST - Thin Section Texture Record
RBM - Ribbon Grain Mineral Record
COM - Crystal Preferred Orientation Mineral Record



Record Formats

The formats of the ASCII files are described here in FORTRAN format notation. Each line of the ASCII file represents a new record except for text and remarks records which consist of 2 lines. Depths may be recorded in feet or meters as selected by the user when creating the ASCII file.

NOTE: An asterisk indicates a null field set up for future use but not presently implemented. 999 or 998 is used in the data files to indicate a null field.

NOTE also that there is an option available when exporting to an ASCII file that will write the core and box numbers for each record. If “**Include Core and Box No.s**” is turned on from the export dialog, two additional fields are written to each record. These two fields directly follow the 3 character record type mnemonic and are in the FORTRAN format: I4, I4. They contain the core number and box number respectively. AppleCORE will import records in either format. Note also that BOX and NDR records always have core and box fields in their records.

Following are each of the record formats in FORTRAN notation followed by an explanation of each field:

Well Name Record: (A3, 1X, followed by variable length character string ending in carriage return; maximum string length: 255 characters)

A3 'WNM'

Well Location Record (Twp Rng system): (A3, 1X, I4, I4, I4, I4, I4)

A3 'TWP'
I4 Legal subdivision
I4 Section
I4 Township
I4 Range
I4 Meridian

Well Location Record (other): (A3, 1X, followed by variable length character string ending in carriage return; maximum string length: 255 characters)

A3 'LOC'

Well Location Record (Lat - Long): (A3, I4, F10.4, I4, F10.4)

A3 'LAT'
I4 Latitude Degrees
F10.4 Latitude Minutes
I4 Longitude Degrees
F10.4 Longitude Minutes

Elevations Record: (A3, F10.2, F10.2)

A3 'ELV'
F10.2 Ground Elevation
F10.2 KB Elevation

Units Record: (A3, I2)

A3 'UNT'
I2 Feet = 1, Meters = 2;

Date Record: (A3, 1X, followed by variable length character string ending in carriage return; maximum string length: 50 characters)

A3 'DAT'

Logger Record: (A3, 1X, followed by variable length character string ending in carriage return; maximum string length: 255 characters)

A3 'LGR'

Header Remarks Record: consists of 2 lines in the ASCII file. The first line indicates the number of characters in the text. The second line is the variable length text string. The text may contain any character including carriage returns.

First Line: (A3, I5)

A3 'RMK'
I5 Number of characters of text to follow in line 2

Second line: variable number of characters

Box Top Orientation Record: (A3, I2)

A3 'TOP'
I2 Upper Left = 0; Upper Right = 1

Box Columns Record: (A3, I2)

A3 'COL'
I2 Columns of core per box (1 or 2 only, at present)

Box Record: (A3, I4, I4, F10.2, F10.2)

A3	'BOX'
I4	Core number
I4	Box number
F10.2	Depth of box top
F10.2	Depth of box base

Empty Box Space Record: (A3, I4, I4, F10.2, F10.2)

A3	'NDR'
I4	Core number
I4	Box number
F10.2	Core depth at break
F10.2	Interval length of box space (in units of meters or feet)

Lithology Record: (A3, F10.2, F10.2, I5, I4, I4, I5, I4, I4)

A3	'LTH'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I5	Major lithology code
I4	Major lithology bedding thickness code
I4	% minor lithology
I5	Minor lithology code
I4	% Third lithology
I5	Third lithology code
I4	Contact code

Physical Structure Record: (A3, F10.2, F10.2, I4, I2, I5)

A3	'PHY'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I4	Abundance code (pervasive = 9 ... 1 = rare)
I2	Major / subordinate code (major = 0; subordinate = 1)
I5	Icon code

Lithologic Accessory Record: (A3, F10.2, F10.2, I4, I2, I5)

A3 'ACC'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Abundance code (pervasive = 9 ... 1 = rare)
I2 Major / subordinate code (major = 0; subordinate = 1)
I5 Icon code

Ichnofossil Record: (A3, F10.2, F10.2, I4, I2, I5)

A3 'ICH'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Abundance code (pervasive = 9 ... 1 = rare)
I2 Major / subordinate code (major = 0; subordinate = 1)
I5 Icon code

Fossil Record: (A3, F10.2, F10.2, I4, I2, I5)

A3 'FOS'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Abundance code (pervasive = 9 ... 1 = rare)
I2 Major / subordinate code (major = 0; subordinate = 1)
I5 Icon code

Fractures Record: (A3, F10.2, F10.2, I4, I2, I5)

A3 'FRA'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Abundance code (pervasive = 9 ... 1 = rare)
I2 Major / subordinate code (major = 0; subordinate = 1)
I5 Icon code

Diagenesis Record: (A3, F10.2, F10.2, I4, I2, I5)

A3 'DIA'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Abundance code (pervasive = 9 ... 1 = rare)
I2 Major / subordinate code (major = 0; subordinate = 1)
I5 Icon code

Pore Type Record: (A3, F10.2, F10.2, I4, I2, I5)

A3	'PTP'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I4	Abundance code (pervasive = 9 ... 1 = rare)
I2	Major / subordinate code (not used; recorded as 0)
I5	Icon code

Hydrocarbon Indicator Record: (A3, F10.2, F10.2, I4, I2, I5)

A3	'HYD'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I4	Abundance code (pervasive = 9 ... 1 = rare)
I2	Major / subordinate code (not used; recorded as 0)
I5	Icon code

Grain Size Record: (A3, F10.2, F10.2, I4, I4)

A3	'GRS'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I4	Major grain size code
I4	Maximum major grain size *(not used, enter as 999)
I4	Minimum major grain size *(not used, enter as 999)
I4	Minor grain size code *(not used, enter as 999)
I4	Maximum minor grain size *(not used, enter as 999)
I4	Minimum minor grain size *(not used, enter as 999)

Texture Record: (A3, F10.2, F10.2, I4)

A3	'TXR'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I4	Texture code

Staining Record: (A3, F10.2, F10.2, I4)

A3	'STN'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I4	Staining code

Porosity Record: (A3, F10.2, F10.2, I4, I4)

A3 'POR'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Porosity code (qualitative)
I4 Porosity percent (quantitative)

Relative Bioturbation Abundance Record: (A3, F10.2, F10.2, I4)

A3 'BIO'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Abundance code

Sorting Record: (A3, F10.2, F10.2, I4)

A3 'SRT'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Sorting code

Roundness Record: (A3, F10.2, F10.2, I4)

A3 'RND'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Roundness code

Clay Percent Record: (A3, F10.2, F10.2, I4)

A3 'CLY'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Clay percent (integer value: no decimals)

Consolidation Record: (A3, F10.2, F10.2, I4)

A3 'CON'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Consolidation code

Fissility Record: (A3, F10.2, F10.2, I4)

A3 'FIS'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Fissility code

Core Condition Record: (A3, F10.2, F10.2, I4, I2, I5)

A3 'DRB'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Intensity code (extreme= 9 ... 5 = slight; 3 = not recorded)
I2 Major / subordinate code (not used; recorded as 0)
I5 Icon code

Colour Record: (A3, F10.2, F10.2, I4, I4, I4, I4, I4, I4)

A3 'CLR'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
I4 Major intensity code
I4 Major modifier code
I4 Major hue code
I4 Minor intensity code
I4 Minor modifier code
I4 Minor hue code

Depth Marker Record: (A3, F10.2, F10.2)

A3 'MKR'
F10.2 Depth (in Core)
F10.2 Depth Corrected

Facies/Interpretation Records: (A3, F10.2, F10.2, 1X, followed by variable length character string ending in carriage return; maximum string length: 31 characters).

Facies interpretation records include 'FAC' (Facies), 'FAS' (Facies Association) 'DEP' (Depositional Environment) and 'DCP' (Depositional Complex)

A3 'FAC' or 'FAS' or 'DEP' or 'DCP'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
+ 1 space + up to 31 characters ending in carriage return

Stratigraphy Records: (A3, F10.2, F10.2, 1X, followed by variable length character string ending in carriage return; maximum string length: 31 characters). Stratigraphy records include 'FMN' (Formation), 'GRP' (Group) 'AGE' (AGE) and 'PER' (Period)

A3 'FMN' or 'GRP' or 'AGE' or 'PER'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
+ 1 space + up to 31 characters ending in carriage return

Ichnofacies Records: (A3, F10.2, F10.2, 1X, followed by variable length character string ending in carriage return; maximum string length: 31 characters).

A3 'ICF'
F10.2 Depth at top of interval
F10.2 Depth at base of interval
+ 1 space + up to 31 characters ending in carriage return

Text (Remarks, Photos, Labels) Records consist of 2 lines in the ASCII file. The first line contains descriptive information, including the number of characters in the text, and the second line is of variable length and contains the text itself. Text records include 'TXT' (general remarks), 'PHT' (Photo remarks), 'LBL' (Labels) and 'SMP' (Sample remarks). However the SMP record contains an extra field and is described separately.

First Line: (A3, F10.2, I5)
A3 'TXT' or 'PHT' or 'LBL'
F10.2 Depth
I5 Number of characters of text to follow in line 2
Second line: variable number of characters

Sample Records are similar to text records described above but the first line has an extra field: a variable length character string ending in carriage return; (maximum string length: 31 characters). The first 3 characters of the string contain the 3 character mnemonic that is used to plot the sample type on the strip log. This is followed by a space character and then up to 27 characters for the sample type menu caption. The second line of the record contains the remarks as described above.

First Line: (A3, F10.2, I5, A3+)
A3 'SMP'
F10.2 Depth
I5 Number of characters of text to follow in line 2
A3+ 3 character sample type mnemonic + 1 space + up to maximum 27 characters sample type description ending in a carriage return
Second line: variable number of characters

Hard Rock Record Formats - Introduction

There are 15 record types used to describe Hard Rock data:

HRK	- Hard Rock Lithology Record
MIN	- Mineral Record
GRM	- Groundmass Mineral Record
ALM	- Alteration Mineral Record
VOI	- Voids Record
HRT	- Hard Rock Texture Record
ALT	- Alteration Record
OGM	- Overgrowth Mineral Record
IGM	- Intergrowth Mineral Record
ICM	- Inclusion Mineral Record
VFM	- Void Filling Mineral Record
CRM	- Corona Mineral Record
CIM	- Corona Intergrowth Mineral Record
RRM	- Reaction Rim Mineral Record
RIM	- Reaction Rim Intergrowth Mineral Record

The Hard Rock Lithology Record is the top level record or “parent record”. All of the other records are optional “child records” and must be associated with a parent record. The child records need not be in any order except that all child records must follow the parent record.

Each Hard Rock Lithology Record can have only one Voids Record, Alteration Record, and Hard Rock Texture Record. But it can have multiple Mineral Records, Groundmass Mineral Records, and Alteration Mineral Records. All of these child records may have optional child records of their own. The number of associated child records of each type is always indicated in a field of the parent record.

Following is AppleCORE’s write order for the ASCII file, indented to show the parent/child hierarchy of records.

HRK	- Hard Rock Lithology (Top Level Parent record)
MIN	- Mineral
OGM	- Overgrowth Mineral
IGM	- Intergrowth Mineral
ICM	- Inclusion Mineral
GRM	- Groundmass Mineral
OGM	- Overgrowth Mineral
IGM	- Intergrowth Mineral
ICM	- Inclusion Mineral
ALM	- Alteration Mineral
OGM	- Overgrowth Mineral
IGM	- Intergrowth Mineral
ICM	- Inclusion Mineral
VOI	- Voids Record
VFM	- Void Filling Mineral
HRT	- Hard Rock Texture
CRM	- Corona Mineral
CIM	- Corona Intergrowth Mineral
RRM	- Reaction Rim Mineral
RIM	- Reaction Rim Intergrowth Mineral
ALT	- Alteration
CRM	- Corona Mineral
CIM	- Corona Intergrowth Mineral
RRM	- Reaction Rim Mineral
RIM	- Reaction Rim Intergrowth Mineral

Many records include a remarks text field. There are two types of text fields: a “Long Text Item” and a “Short Text Item”.

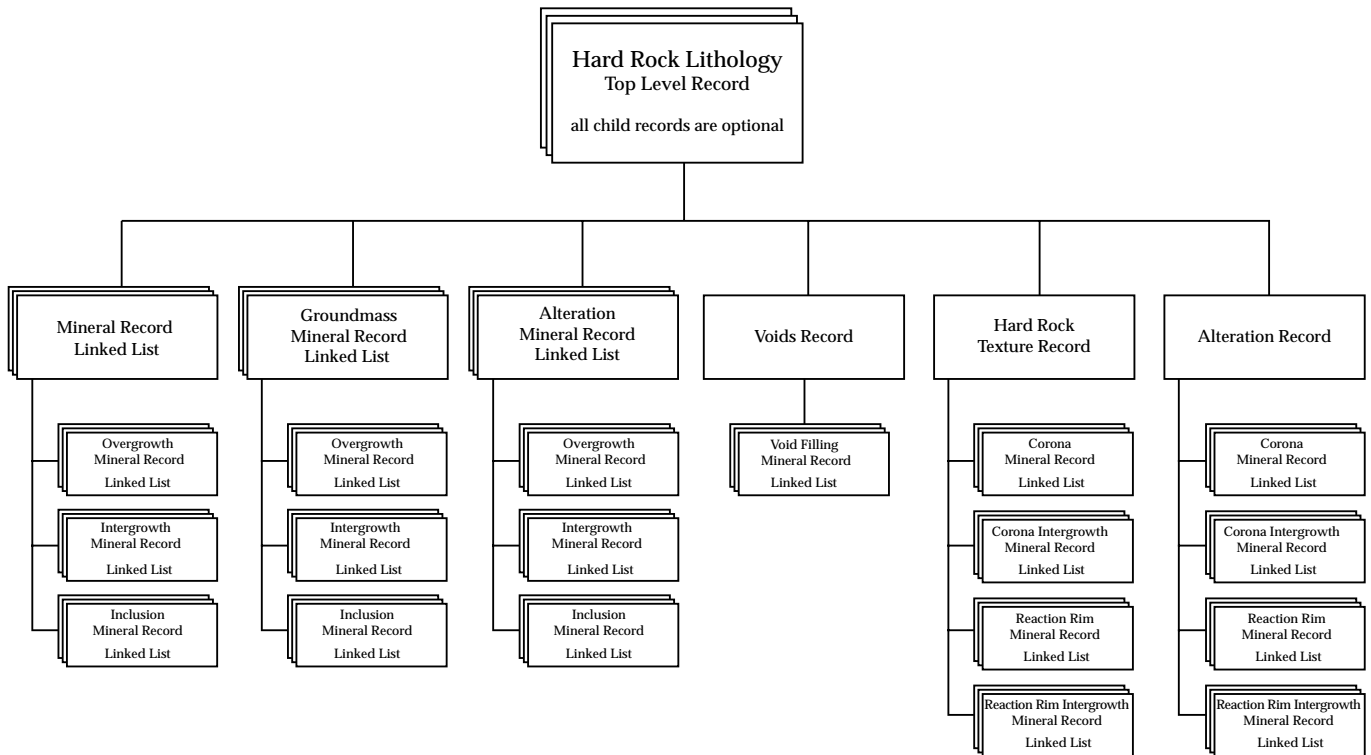
- A Long Text Item can be any length (but 32K characters max) and can contain any character including carriage returns. A field in the record gives the number of characters in the Long Text Item and then the text follows on the next line (i.e. after a carriage return). The text ends in a carriage return which is not included in the character count.

- A Short Text Item can have a maximum length of 255 characters and cannot contain carriage returns (AppleCORE will prevent carriage return input). In the ASCII file, a carriage return delimits the end of the Short Text. The carriage return character is the Macintosh carriage return (ASCII Hex 0D)

If the user can make multiple selections from a set of choices, then the field is an array of Booleans (16 or 32) , represented by 1’s and 0’s. See the Hard Rock Code Key for more information.

NOTE also that there is an option available when exporting to an ASCII file that will write the core and box numbers for each record. If “**Include Core and Box No.s**” is turned on from the export dialog, two additional fields are written to the top level HRK record. These two fields directly follow the 3 character record type mnemonic and are in the FORTRAN format: I4, I4. They contain the Core number and Box number respectively. AppleCORE will import records in either format. None of the child records will contain the extra Core and Box fields.

AppleCORE ASCII File Hard Rock Lithology Record Structure



Hard Rock Record Formats - Description

The bracketed bold numbers in the field descriptions are the cross-reference to a table number in the Hard Rock Code Key. The tables describe the possible choices.

Hard Rock Lithology Record

A3	'HRK'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I6	Major lithology code (44)
I4	Contact code
I3	Rock Type (1)
I3	Crystallinity (2)
I3	Number of child Mineral Records (0 = none)
I3	Number of child Groundmass Mineral Records (0 = none)
I3	Number of child Alteration Mineralogy Records (0 = none)
I2	Voids child Record present? (0 = no, 1 = yes)
I2	Texture child Record present? (0 = no, 1 = yes)
I2	Alteration child Record present? (0 = no, 1 = yes)
I5	Number of characters in Lithology Comments LONG TEXT ITEM on following line.

Following line: Lithology Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (User's Lithology Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Assigned Lithology Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Mineral Record

Groundmass Mineral Record

Alteration Mineral Record

These three records are used to describe the major rock-forming mineral in a hard rock lithology. All have the same format.

- Mineral Record type is 'MIN'
- Groundmass Mineral Record type is 'GRM'
- Altered Mineral Record type is 'ALM'

A3	'MIN' or 'GRM' or 'ALM'
I6	Mineral Code (45)
F7.2	Abundance % (not recorded= 0)
F7.2	Abundance % -upper range (not recorded= 0)
F7.2	Abundance % -lower range (not recorded= 0)
F8.3	Average Mineral Size (mm) (not recorded = 0.0)
F8.3	Maximum Mineral Size (mm) (not recorded = 0.0)
F8.3	Minimum Mineral Size (mm) (not recorded = 0.0)
I3	Crystal Faces (3)
1X	Space
16I1	Grain Habit Category (7) array [1..16] of Boolean
1X	Space
32I1	Grain Habit (8) array [1..32] of Boolean
I3	Distribution (4)
I3	Number of child Overgrowth Mineral Records (0 = none)
I3	Number of child Intergrowth Mineral Records (0 = none)
I3	Number of child Inclusion Mineral Records (0 = none)
I3	Zoning (5)
I3	Twinning (6)
1X	Space
16I1	Occurrence (9) array [1..16] of Boolean
1X	Space
16I1	Secondary Occurrence (10) array [1..16] of Boolean
I5	Number of characters in Mineral Comments LONG TEXT ITEM on following line.

Following line: Mineral Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Crystal Face) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Grain Habit) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Distribution) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Cleavage Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Twinning Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Occurrence) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Secondary Occurrence) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Mineral Color) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Voids Record

A3	'VOI'
I3	Voids Type (11)
F8.3	Average Void Size (mm) (not recorded = 0.0)
F8.3	Maximum Void Size (mm) (not recorded = 0.0)
F8.3	Minimum Void Size (mm) (not recorded = 0.0)
F7.2	% Voids (not recorded= 0)
F7.2	% Voids -upper range (not recorded= 0)
F7.2	% Voids -lower range (not recorded= 0)
I3	Number of child Void Filling Mineral Records (0 = none)

Following Line: SHORT TEXT ITEM (Other Void Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Void Shape) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Hard Rock Texture Record

A3	'HRT'
I2	Altered? (0 = no, 1 = yes)
I2	Fragmented? (0 = no, 1 = yes)
I3	Granularity (12)
I3	Cumulate (13)
F8.3	Average Fragment Size (mm) (not recorded = 0.0)
F8.3	Maximum Fragment Size (mm) (not recorded = 0.0)
F8.3	Minimum Fragment Size (mm) (not recorded = 0.0)
I4	% Fragments (not recorded= 0)
I4	% Fragments -upper range (not recorded= 0)
I4	% Fragments -lower range (not recorded= 0)
I3	Fragment Shape (14)
1X	Space
16I1	Fragment Composition (20) array [1..16] of Boolean
1X	Space
32I1	Random Orientation (21) array [1..32] of Boolean
1X	Space
16I1	Preferred Orientation (22) array [1..16] of Boolean
I3	Relict Texture (15)
I3	Foliated (16)
I3	Number of child Corona Mineral Records (0 = none)
I3	Number of child Corona Intergrowth Mineral Records (0 = none)
I3	Corona Texture (17)
I3	Number of child Reaction Rim Mineral Records (0 = none)
I3	Number of child Reaction Rim Intergrowth Mineral Records (0 = none)
I3	Reaction Rim Texture (18)
I3	Sulfide Primary Texture (19)
1X	Space
16I1	Sulfide Secondary Texture (23) array [1..16] of Boolean
I5	Number of characters in Texture Comments LONG TEXT ITEM on following line

Following line: Texture Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Random) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Preferred) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Corona Zonation) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Reaction Rim Zonation) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Sulfide Primary Texture) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Sulfide Replacement Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Sulfide Cooling Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Sulfide Deformation Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Sulfide Annealing Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Sulfide Other Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Alteration Record

A3	'ALT'
I3	Alteration Intensity (24)
F7.2	Total Alteration (%) (not recorded: assume 0)
F7.2	Olivine to Talc (%) (not recorded: assume 0)
F7.2	Olivine to Magnetite (%) (not recorded: assume 0)
F7.2	Olivine to Amphibole (%) (not recorded: assume 0)
F7.2	Olivine to Chlorite (%) (not recorded: assume 0)
F7.2	Olivine to Smectite (%) (not recorded: assume 0)
F7.2	Olivine to Hematite (%) (not recorded: assume 0)
F7.2	Olivine to Calcite (%) (not recorded: assume 0)
F7.2	Olivine to Pyrite (%) (not recorded: assume 0)
F7.2	Olivine to other (%) (not recorded: assume 0)
F7.2	Total Alteration of Olivine (%) (not recorded: assume 0)
F7.2	Clinopyroxene to Hornblende (%) (not recorded: assume 0)
F7.2	Clinopyroxene to Actinolite (%) (not recorded: assume 0)
F7.2	Clinopyroxene to Chlorite/Smectite (%) (not recorded: assume 0)
F7.2	Clinopyroxene to Oxide (%) (not recorded: assume 0)
F7.2	Clinopyroxene to other (%) (not recorded: assume 0)
F7.2	Total Alteration of Clinopyroxene (%) (not recorded: assume 0)
F7.2	Orthopyroxene to Talc (%) (not recorded: assume 0)
F7.2	Orthopyroxene to Cummingtonite (%) (not recorded: assume 0)
F7.2	Orthopyroxene to Chlorite/Smectite (%) (not recorded: assume 0)
F7.2	Orthopyroxene to Oxide (%) (not recorded: assume 0)
F7.2	Orthopyroxene to other (%) (not recorded: assume 0)
F7.2	Total Alteration of Orthopyroxene (%) (not recorded: assume 0)
F7.2	Plagioclase to Secondary Plagioclase (%) (not recorded: assume 0)
F7.2	Plagioclase to Epidote (%) (not recorded: assume 0)
F7.2	Plagioclase to Prehnite (%) (not recorded: assume 0)
F7.2	Plagioclase to Chlorite/Smectite (%) (not recorded: assume 0)
F7.2	Plagioclase to Actinolite (%) (not recorded: assume 0)
F7.2	Plagioclase to other (%) (not recorded: assume 0)
F7.2	Total Alteration of Plagioclase (%) (not recorded: assume 0)
1X	Space
32I1	Random Orientation (21) array [1..32] of Boolean
1X	Space
16I1	Preferred Orientation (22) array [1..16] of Boolean
I3	Relict Texture (15)
I3	Foliated (16)

- I3 Number of child Secondary Corona Mineral Records (0 = none)
- I3 Number of child Secondary Corona Intergrowth Mineral Records (0 = none)
- I3 Secondary Corona Texture (25)
- I3 Number of child Secondary Reaction Rim Mineral Records (0 = none)
- I3 Number of child Secondary Reaction Rim Intergrowth Mineral Records (0 = none)
- I3 Secondary Reaction Rim Texture (26)
- I5 Number of characters in Alteration Comments LONG TEXT ITEM on following line

Following line: Alteration Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Random) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Preferred) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Olivine-to-other Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Clinopyroxene-to-other Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Orthopyroxene-to-other Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Plagioclase-to-other Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Secondary Corona Zonation) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Secondary Reaction Rim Zonation) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).



Short Mineral Records

The “Short” Mineral Records are used to list various auxiliary components of the lithology (as opposed to the major rock-forming minerals)

Corona Mineral Record

Corona Intergrowth Mineral Record

Reaction Rim Mineral Record

Reaction Rim Intergrowth Mineral Record

All four of these records have the same format.

- Corona Mineral Record type is ‘CRM’
- Corona Intergrowth Mineral Record type is ‘CIM’
- Reaction Rim Mineral Record type is ‘RRM’
- Reaction Rim Intergrowth Mineral Record type is ‘RIM’

A3 ‘CRM’ or ‘CIM’ or ‘RRM’ or ‘RIM’

I5 Mineral Code (45)

Void Filling Mineral Record

A3 ‘VFL’

I5 Mineral Code (45)

F7.2 Mineral Proportion (%) (not recorded = 0)

Overgrowth Mineral Record

A3 ‘OGR’

I5 Mineral Code (45)

I3 Overgrowth Habit (27)

1X Space

SHORT TEXT ITEM (Other Overgrowth Habit) up to 255 characters ending in carriage return (if no text: carriage return only).

Intergrowth Mineral Record

A3 'IGR'
I5 Mineral Code (45)
I3 Intergrowth Habit (28)
1X Space

SHORT TEXT ITEM (Other Intergrowth Habit) up to 255 characters ending in carriage return (if no text: carriage return only).

Inclusion Mineral Record

A3 'INC'
I5 Mineral Code (45)
1X Space
16I1 Grain Habit Category (29) array [1..16] of Boolean
1X Space
32I1 Grain Habit (30) array [1..32] of Boolean
1X Space

SHORT TEXT ITEM (Other Grain Habit) up to 255 characters ending in carriage return (if no text: carriage return only).

Thin Section Record Formats - Introduction

The Thin Section ASCII Record Format uses an hierarchy of the following 17 record types:

THS	- Thin Section Record
TMN	- Thin Section Mineral Record
TGM	- Thin Section Groundmass Mineral Record
TAM	- Thin Section Alteration Mineral Record
VOI	- Voids Record
TST	- Thin Section Texture Record
ALT	- Alteration Record
OGM	- Overgrowth Mineral Record
IGM	- Intergrowth Mineral Record
ICM	- Inclusion Mineral Record
VFM	- Void Filling Mineral Record
CRM	- Corona Mineral Record
CIM	- Corona Intergrowth Mineral Record
RRM	- Reaction Rim Mineral Record
RIM	- Reaction Rim Intergrowth Mineral Record
RBM	- Ribbon Grain Mineral Record
COM	- Crystal Preferred Orientation Mineral Record

Many of these records are also used in the Hard Rock Lithology Record. Only the additional records unique to thin sections are described here (THS, TMN, TGM, TST, TAM, RBM, COM). See the Hard Rock Record Format Description for information on the others.

The top level Thin Section Record is similar to the top level Hard Rock Lithology Record except that it contains no “contact” field. There is also a field for a sample ID, and for the name of the individual who described the thin section.

The Thin Section Mineral Records (TMN, TGM and TAM) are similar to the Hard Rock Mineral Record (MIN), except that there are some additional fields to describe optical features.

The Thin Section Texture Record (TST) is similar to the Hard Rock Texture Record, except that inappropriate references to Sulfides have been removed. There are also several additional fields to describe microscopic structures.

The Thin Section Record is the top level record or “parent record”. All of the other records are optional “child records” and must be associated with a parent record. The child records need not be in any order except that all child records must follow the parent record.

Each Thin Section Record can have only one Voids Record, Alteration Record and Thin Section Texture Record. But it can have multiple Thin Section Mineral Records, Thin Section Groundmass Mineral Records, and Thin Section Alteration Mineral Records. All of these child records may have optional child records of their own. The number of associated child records of each type is always indicated in a field of the parent record.

Following is AppleCORE’s write order for the ASCII file, indented to show the parent/child hierarchy of records.

- THS - Thin Section (Top Level Parent record)
- TMN - Thin Section Mineral
 - OGM - Overgrowth Mineral
 - IGM - Intergrowth Mineral
 - ICM - Inclusion Mineral
- TGM - Thin Section Groundmass Mineral
 - OGM - Overgrowth Mineral
 - IGM - Intergrowth Mineral
 - ICM - Inclusion Mineral
- TAM - Alteration Mineral
 - OGM - Overgrowth Mineral
 - IGM - Intergrowth Mineral
 - ICM - Inclusion Mineral
- VOI - Voids Record
 - VFM - Void Filling Mineral
- TST - Thin Section Texture
 - CRM - Corona Mineral
 - CIM - Corona Intergrowth Mineral
 - RRM - Reaction Rim Mineral
 - RIM - Reaction Rim Intergrowth Mineral
 - RBM - Ribbon Grain Mineral
 - COM - Crystal Preferred Orientation Mineral
- ALT - Alteration
 - CRM - Corona Mineral
 - CIM - Corona Intergrowth Mineral
 - RRM - Reaction Rim Mineral
 - RIM - Reaction Rim Intergrowth Mineral

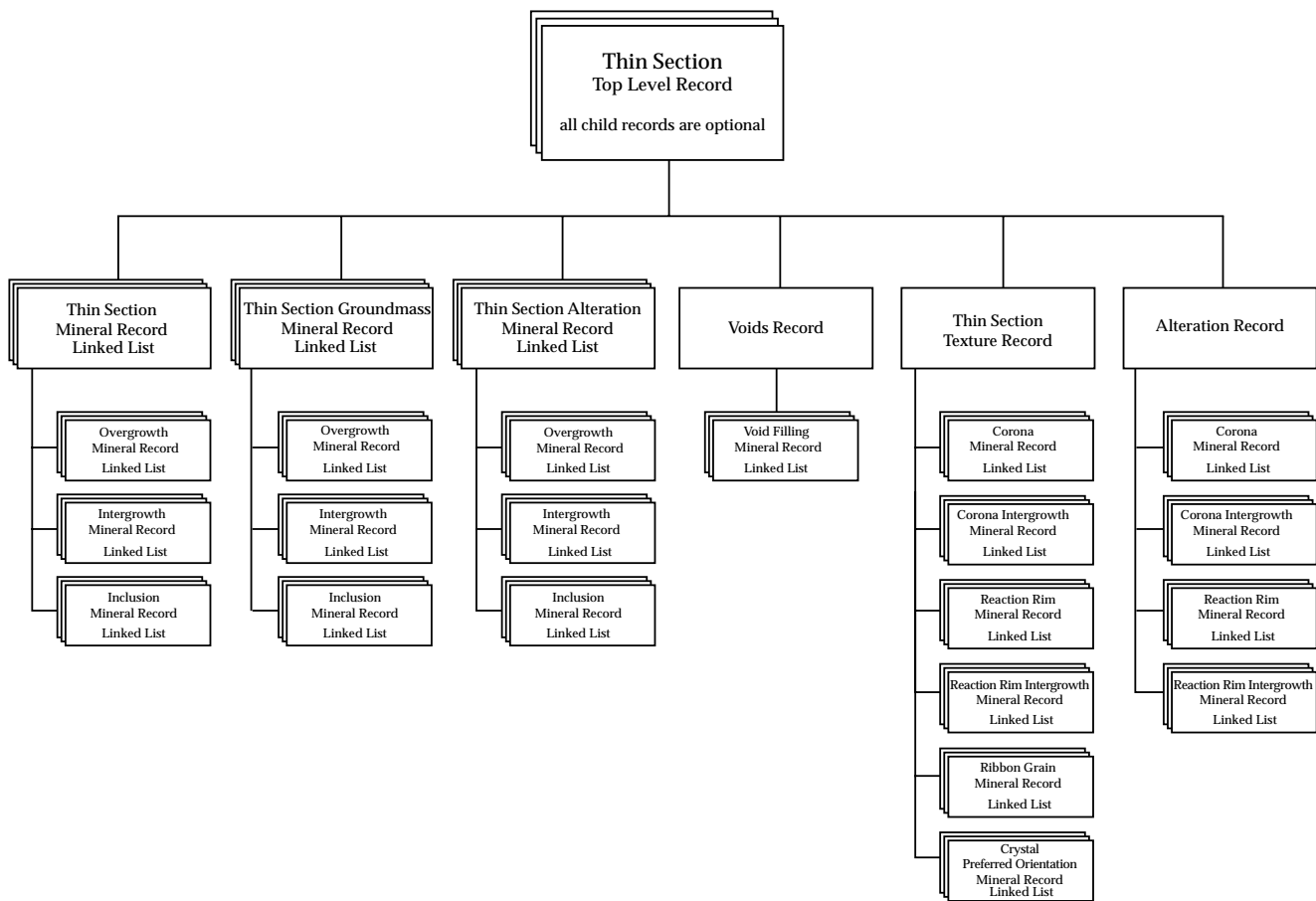
There are two types of text items: a “Long Text Item” and a “Short Text Item”. A Long Text Item can be any length (but 32K characters max) and can contain any character including carriage returns. A field in the record gives the number of characters in the Long Text Item and then the text follows on the next line (i.e. after a carriage return). The text ends in a carriage return which is not included in the character count.

A Short Text Item can have a maximum length of 255 characters and cannot contain carriage returns (AppleCORE will prevent carriage return input). In the ASCII file a carriage return delimits the end of the Short Text. The carriage return character is the Macintosh carriage return (ASCII Hex 0D)

If the user can make multiple selections from a set of choices, then the field is an array of Booleans (16 or 32), represented by 1’s and 0’s. See the Hard Rock Code Key for more information.

NOTE also that there is an option available when exporting to an ASCII file that will write the core and box numbers for each record. If “**Include Core and Box No.s**” is turned on from the export dialog, two additional fields are written to the top level THS record. These two fields directly follow the 3 character record type mnemonic and are in the FORTRAN format: I4, I4. They contain the Core number and Box number respectively. AppleCORE will import records in either format. None of the child records will contain the extra Core and Box fields.

AppleCORE ASCII File Thin Section Record Structure



Thin Section Record Formats - Description

Only the records unique to the Thin Sections are described here. All of the others are described under the Hard Rock Record Format Description.

The bracketed bold numbers in the field descriptions are the cross-reference to a table number in the Hard Rock Code Key. The tables describe the possible choices.

Thin Section Record

A3	'THS'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I6	Major lithology code (44)
I3	Rock Type (1)
I3	Crystallinity (2)
I5	Point Count: total number of points (0 = not point counted)
F7.3	Point Count interval (0.0 if not point counted)
I5	Number of child Thin Section Mineral Records (0 = none)
I5	Number of child Thin Section Groundmass Mineral Records (0 = none)
I5	Number of child Thin Section Alteration Mineralogy Records (0 = none)
I5	Voids child Record present? (0 = no, 1 = yes)
I2	Thin Section Texture child Record present? (0 = no, 1 = yes)
I2	Alteration child Record present? (0 = no, 1 = yes)
I5	Number of characters in Thin Section Comments LONG TEXT ITEM on following line.

Following line: Thin Section comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (User's Lithology Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Assigned Lithology Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Sample ID) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Described by - [name of scientist]) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Thin Section Mineral Record

Thin Section Groundmass Mineral Record

Thin Section Alteration Mineral Record

These three records are used to describe the major rock-forming mineral in a hard rock lithology. All have the same format.

- Thin Section Mineral Record type is 'TMN'
- Thin Section Groundmass Mineral Record Type is 'TGM'
- Thin Section Altered Mineral Record Type is 'TAM'

A3	'TMN' or 'TGM' or 'TAM'
I5	Mineral Code (45)
F7.2	Abundance % (not recorded= 0)
F7.2	Abundance % -upper range (not recorded= 0)
F7.2	Abundance % -lower range (not recorded= 0)
F8.3	Average Mineral Size (mm) (not recorded = 0.0)
F8.3	Maximum Mineral Size (mm) (not recorded = 0.0)
F8.3	Minimum Mineral Size (mm) (not recorded = 0.0)
I3	Crystal Faces (3)
1X	Space
16I1	Grain Habit Category (7) array [1..16] of Boolean
1X	Space
32I1	Grain Habit (8) array [1..32] of Boolean
I3	Distribution (4)
I3	Number of child Overgrowth Mineral Records (0 = none)
I3	Number of child Intergrowth Mineral Records (0 = none)
I3	Number of child Inclusion Mineral Records (0 = none)
I3	Zoning (5)
I3	Twinning (6)
1X	Space
16I1	Occurrence (9) array [1..16] of Boolean
1X	Space
16I1	Secondary Occurrence (10) array [1..16] of Boolean
I3	Approximate Composition (41)
I2	Undulating Extinction? (0 = no, 1 = yes)
I2	Deformation Lamellae? (0 = no, 1 = yes)
I5	Number of characters in Mineral Comments LONG TEXT ITEM on following line.

Following line: Mineral Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Crystal Face) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Grain Habit) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Distribution) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Cleavage Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Twinning Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Occurrence) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Secondary Occurrence) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Mineral Color) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Approximate Composition) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Thin Section Texture Record

A3 'TST'

I2 Altered? (0 = no, 1 = yes)

I2 Fragmented? (0 = no, 1 = yes)

I3 Granularity (12)

I3 Cumulate (13)

F8.3 Average Fragment Size (mm) (not recorded = 0.0)

F8.3 Maximum Fragment Size (mm) (not recorded = 0.0)

F8.3 Minimum Fragment Size (mm) (not recorded = 0.0)

I4 % Fragments (not recorded= 0)

I4 % Fragments -upper range (not recorded= 0)

I4 % Fragments -lower range (not recorded= 0)

I3 Fragment Shape (14)

1X Space

16I1 Fragment Composition (20) array [1..16] of Booleans

1X Space

32I1 Random Orientation (21) array [1..32] of Booleans

1X Space

16I1 Preferred Orientation (22) array [1..16] of Booleans

I3 Relict Texture (15)

I3 Foliated (16)

I3 Mylonite (42)

I3 Cataclastic Zone (43)

F8.3 Cataclastic Zone Thickness (mm) (not recorded = 0.0)

I3 Ribbon Grains (0 = none, 1 = present)

I3 Number of child Ribbon Grain Mineral Records (0 = none)

I3 Crystal Preferred Orientation (0 = none, 1 = present)

I3 Number of child Crystal Preferred Orientation Mineral Records (0 = none)

I3 Number of child Corona Mineral Records (0 = none)

I3 Number of child Corona Intergrowth Mineral Records (0 = none)

I3 Corona Texture (17)

I3 Number of child Reaction Rim Mineral Records (0 = none)

I3 Number of child Reaction Rim Intergrowth Mineral Records (0 = none)

I3 Reaction Rim Texture (18)

I5 Number of characters in Texture Comments LONG TEXT ITEM on following line

Following line: Texture Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Random) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Other Preferred) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Corona Zonation) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Reaction Rim Zonation) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Short Mineral Records

The “Short” Mineral Records are used to list various auxiliary components of the lithology (as opposed to the major rock-forming minerals)

Ribbon Grain Mineral Record

A3 ‘RBM’
I5 Mineral Code (45)
F8.3 Average Length/Width Ratio (not recorded = 0.0)

Crystal Preferred Orientation Mineral Record

A3 ‘COM’
I5 Mineral Code (45)

Hard Rock Structure Record Formats - Introduction

The hard Rock Structure ASCII Format uses an hierarchy of the following 6 record types:

FLT	- Fault Structure Record
FAB	- Fabric Structure Record
VEI	- Vein Structure Record
MNL	- Mineral List Record
VNM	- Vein Fill Mineral Record
RRM	- Reaction Rim Mineral Record

Fault Structure Records are used to describe faults and related structures: joints and shears. Fabric Structure Records describe foliation, cleavage, folds, fabrics, lineations, and contacts. Vein Structure Records describe veins, dikes, and sills.

Each of these three records, FLT, FAB, and VEI are parent records and may optionally have multiple child records. The child records are the MNL Mineral List Records, VNM Vein Fill Mineral Records and RRM Reaction Rim Mineral Records. The number of associated child records of each type is always indicated in a field of the parent record, and they must immediately follow the parent record.

Following is AppleCORE's write order for the ASCII file, indented to show the parent/child hierarchy of records.

FLT - Fault Structure Record (Top Level Parent record)
MNL - Mineral List Records

FAB - Fabric Structure Record (Top Level Parent record)
MNL - Mineral List Records

VEI - Vein Structure Record (Top Level Parent record)
VNM - Vein Fill Mineral Records
RRM - Reaction Rim Mineral Record

There are two types of text items: a "Long Text Item" and a "Short Text Item". A Long Text Item can be any length (but 32K characters max) and can contain any character including carriage returns. A field in the record gives the number of

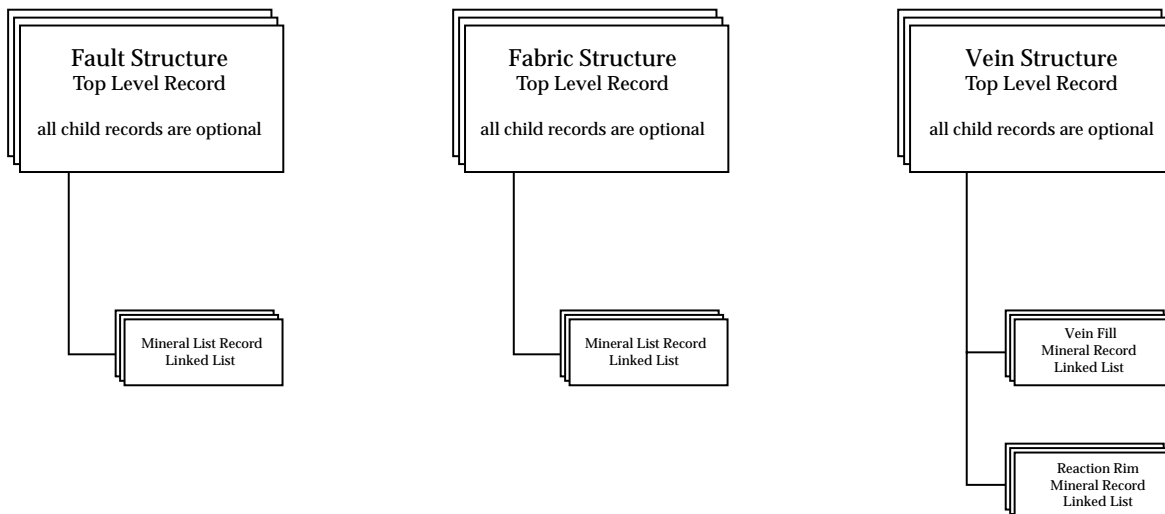
characters in the Long Text Item and then the text follows on the next line (i.e. after a carriage return). The text ends in a carriage return which is not included in the character count.

A Short Text Item can have a maximum length of 255 characters and cannot contain carriage returns (AppleCORE will prevent carriage return input). In the ASCII file a carriage return delimits the end of the Short Text. The carriage return character is the Macintosh carriage return (ASCII Hex 0D)

If the user can make multiple selections from a set of choices, then the field is an array of Booleans (16 or 32), represented by 1's and 0's. See the Hard Rock Code Key for more information.

NOTE also that there is an option available when exporting to an ASCII file that will write the core and box numbers for each record. If “**Include Core and Box No.s**” is turned on from the export dialog, two additional fields are written to the top level record. These two fields directly follow the 3 character record type mnemonic and are in the FORTRAN format: I4, I4. They contain the Core number and Box number respectively. AppleCORE will import records in either format. None of the child records will contain the extra Core and Box fields.

AppleCORE hard Rock Structural Features ASCII File Record Structure



Hard Rock Structure Record Formats - Description

The bracketed bold numbers in the field descriptions are the cross-reference to a table number in the Hard Rock Code Key. The tables describe the possible choices.

Fault Structure Record

(includes Faults, Joints and Shears)

A3	'FLT'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I3	Fault Class (31)
I3	Fault Type (32)
I3	Shear Sense (33)
I4	Core Dip (degrees; not recorded= 90)
I4	Core Dip Direction (degrees; not recorded= 0)
I4	First Apparent Dip (degrees; not recorded= 0)
I4	First Apparent Azimuth (degrees; not recorded= 0)
I4	Second Apparent Dip (degrees; not recorded= 0)
I4	Second Apparent Azimuth (degrees; not recorded= 0)
I4	True Dip in Core Reference Frame (degrees; not recorded= 0)
I4	True Strike in Core Reference Frame (degrees; not recorded= 0)
I4	True Dip (absolute) (degrees; not recorded= 0)
I4	True Strike (absolute) (degrees; not recorded= 0)
I4	Trend (degrees; not recorded= 0)
I4	Plunge (degrees; not recorded= 0)
I4	True Trend (absolute) (degrees; not recorded= 0)
I4	True Plunge (absolute) (degrees; not recorded= 0)
I3	Slickensides Habit (34) (used only for Slickensides Class, otherwise = 0)
I3	Number of child Mineral List Records (Slickenside fiber minerals; otherwise set to 0 = none)
I5	Number of characters in Fault Comments LONG TEXT ITEM on following line.

Following line: Fault Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Fabric Structure Record

(includes Foliation, Cleavage, Folds, Fabrics, Lineations, Contacts)

- A3 'FAB'
- F10.2 Depth at top of interval
- F10.2 Depth at base of interval
- I3 Fabric Class (35)
- I3 Fabric Type (36)
- I4 Core Dip (degrees; not recorded= 90)
- I4 Core Dip Direction (degrees; not recorded= 0)
- I4 First Apparent Dip (degrees; not recorded= 0)
- I4 First Apparent Azimuth (degrees; not recorded= 0)
- I4 Second Apparent Dip (degrees; not recorded= 0)
- I4 Second Apparent Azimuth (degrees; not recorded= 0)
- I4 True Dip (core reference frame) (degrees; not recorded= 0)
- I4 True Strike (core reference frame) (degrees; not recorded= 0)
- I4 True Dip (absolute) (degrees; not recorded= 0)
- I4 True Strike (absolute) (degrees; not recorded= 0)
- I4 Trend (degrees; not recorded= 0)
- I4 Plunge (degrees; not recorded= 0)
- I4 True Trend (absolute) (degrees; not recorded= 0)
- I4 True Plunge (absolute) (degrees; not recorded= 0)
- I3 Number of child Mineral List Records (0 = none)
- I5 Number of characters in Fabric Comments LONG TEXT ITEM on following line.

Following line: Fabric Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Vein Structure Record

(includes Veins, Dikes and Sills)

A3	'VEI'
F10.2	Depth at top of interval
F10.2	Depth at base of interval
I3	Vein Class (37)
I3	Vein Type (38)
F8.1	Average Width (mm) (not recorded = 0.0)
F8.1	Minimum Width (mm) (not recorded = 0.0)
F8.1	Maximum Width (mm) (not recorded = 0.0)
F8.1	Length (mm) (not recorded = 0.0)
I4	Core Dip (degrees; not recorded= 90)
I4	Core Dip Direction (degrees; not recorded= 0)
I4	First Apparent Dip (degrees; not recorded= 0)
I4	First Apparent Azimuth (degrees; not recorded= 0)
I4	Second Apparent Dip (degrees; not recorded= 0)
I4	Second Apparent Azimuth (degrees; not recorded= 0)
I4	True Dip in Core Reference Frame (degrees; not recorded= 0)
I4	True Strike in Core Reference Frame (degrees; not recorded= 0)
I4	True Dip (absolute) (degrees; not recorded= 0)
I4	True Strike (absolute) (degrees; not recorded= 0)
I2	Zoning present (0= no, 1= yes)
I2	Reaction Rim present (0= no, 1= yes)
F8.1	Reaction Rim Width (mm) (not recorded = 0.0)
I3	Reaction Rim Intensity (39)
I3	Number of child Vein Fill Mineral Records (0 = none)
I3	Number of child Reaction Rim Mineral Records (0 = none)
I5	Number of characters in Vein Comments LONG TEXT ITEM on following line.

Following line: Vein Comments text -variable number of characters (if 0, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Zoning Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Clastic Fill Rock Name) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Mineral Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Reaction Zonation Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Following Line: SHORT TEXT ITEM (Reaction Rim Comments) up to 255 characters ending in carriage return (if no text, this line must be blank: carriage return only).

Short Mineral Records

The “Short” Mineral Records are used to list various auxiliary components of the Structure.

Mineral List Record

Reaction Rim Mineral Record

- These two records have the same format.
- Mineral List Record type is ‘MNL’
- Reaction Rim Mineral Record type is ‘RRM’ (also described under Hard Rock)

A3 ‘MNL’ or ‘RRM’
I5 Mineral Code (45)

Vein Fill Mineral Record

A3 ‘VNM’
I5 Mineral Code (45)
F7.2 Abundance % (not recorded= 0)
F8.1 Maximum Crystal Size (mm) (not recorded = 0.0)
F8.1 Minimum Crystal Size (mm) (not recorded = 0.0)
1X Space
32I1 Crystal Habit (40) array [1..32] of Boolean

ASCII File Code Key

Grain Size Codes

	<u>modified</u>		<u>Undifferentiated</u>
	<u>lower</u>	<u>upper</u>	
cobble	100	200	0
pebble	101	201	1
granule	102	202	2
very coarse	103	203	3
coarse	104	204	4
medium	105	205	5
fine	106	206	6
very fine	107	207	7
silt	108	208	8
clay			9

Texture Codes

framestone	21
boundstone	22
bafflestone	23
rudstone	24
floatstone	25
grainstone	26
packstone	27
wackestone	28
mudstone	29

Note that for version 0.5.2 and later, the grain size and texture ASCII codes have been changed. It is vital that your systems people be advised of this fact if the data export facility was being used. Any existing AppleCORE files will be automatically updated to the new codes when opened by version 0.5.2 or later, so that no changes will be noticed by the user.

Sorting	Codes	Roundness Codes	
Bimodal	0		
Extremely Poor	1	Very Angular	1
Very Poor	2	Angular	2
Poor	3	Subangular	3
Moderate	4	Subrounded	4
Moderately Well	5	Rounded	5
Well	6	Well Rounded	6
Very Well	7		

Porosity	Codes	Staining Codes	
Excellent	0	Excellent	0
Very Good	1	Very Good	1
Good	2	Good	2
Fair	3	Fair	3
Poor	4	Poor	4
Tight	5	Nil	5

Fissility Codes		Consolidation Codes	
Extreme	1	Extreme	1
Strong	2	Strong	2
Moderate	3	Moderate	3
Poor	4	Poor	4
Non-fissile	5	Unconsolidated	5

Bioturbation Index Codes

Complete	0	Note: codes are not the BI numeric index (legacy reasons)
Intense	1	
Abundant	2	
Moderate	3	
Low	4	
Sparse	6	Note: discontinuity in numbering (for legacy reasons)
Barren	5	

Rock Color Codes

Intensity		Modifier		Hue	
none	999	none	999	Black	1
very light	2	bluish	2	Blue	2
light	3	brownish	3	Brown	3
medium light	4	creamy	4	Cream	4
medium	5	grayish	5	Gray	5
medium dark	6	greenish	6	Green	6
dark	7	orange	7	Orange	7
very dark	8	olive	8	Olive	8
very pale	10	pinkish	9	Pink	9
pale	11	purplish	10	Purple	10
dusky	12	reddish	11	Red	11
very dusky	13	whitish	12	White	12
brilliant	15	yellowish	13	Yellow	13
vivid	16	mottled	15	Buff	14
strong	17	spotty	16		
deep	18				
very deep	19				

Rock Color Abbreviations

Intensity		Modifier		Hue	
very light	vlt	bluish	bl	Black	BK
light	lt	brownish	br	Blue	BL
medium light	mlt	creamy	cr	Brown	BR
medium	med	grayish	gy	Cream	CR
medium dark	mdk	greenish	gn	Gray	GY
dark	dk	orange	or	Green	GN
very dark	vdk	olive	ol	Orange	OR
very pale	vpl	pinkish	pk	Olive	OL
pale	pal	purplish	pu	Pink	PK
dusky	dsk	reddish	rd	Purple	PU
very dusky	vds	whitish	wh	Red	RD
brilliant	bri	yellowish	ye	White	WH
vivid	viv	mottled	mo	Yellow	YE
strong	str	spotty	sp	Buff	BF
deep	dp				
very deep	vdp				

Standard Soft Rock Lithology Codes

1286		SAND/SANDSTONE
1287		silty sand
1288		shaly sand
1289		SILT/SILTSTONE
1290		sandy silt
1291		clayey silt
1292		SHALE/MUDSTONE
1293		silty shale
1294		sandy shale
1295		clay/claystone
1296		organic shale
1297		coal
1298		conglomerate -matrix supported
1299		conglomerate -grain supported
1300		conglomerate
1301		breccia
999		LOST CORE
1304		LIMESTONE
1305		DOLOMITE
1306		Dolomitic Lst
1307		Calcareous Dolst
1308		Oolitic Lst
1309		Oolitic Dolst
1310		Calcareous shale
1311		Dolomitic shale
1312		Cherty Lst
1313		Cherty Dolst
1314		Chert
1315		Gypsum/Anhyd.
1316		Coquina
1317		Halite
2301		Xstln basement




























Bedding Codes

Not observed	1
Thick	2
Medium	3
Thin	4

Contact Codes

	Sharp	392
	Scoured	393
	Bioturbated	394
	Uncertain	395
	Gradational	396
	Undulating	397
	Faulted	398
	Inclined	399
	Stylolite	400
	Firmground	401
	Hardground	402

Standard Physical Structure Codes

		<u>Code</u>			<u>Code</u>	
	small current ripples	200			minor scour	214
	trough cross-bedding	201			graded, fining upwards	215
	symmetrical ripples	202			graded, coarsening upwards	216
	climbing ripples	203			fault	217
	horizontal planar lamination	204			dessication cracks	218
	high angle planar lamination	205			syneresis cracks	219
	low angle planar lamination	206			reactivation surface	220
	flaser bedding	207			double mud drapes	221
	parallel wavy bedding	208			load cast	222
	lenticular	209			minor cemented horizon	223
	herringbone cross-bedding	210			imbricated clast fabric	224
	hummocky cross-stratification	211			stylolites	225
	convolute bedding	212			slickensides	226
	churned or chaotic bedding	213				

Abundance codes

- 1 rare
- 3 moderate
- 5 common
- 7 abundant
- 9 pervasive

Major: 0

Subordinate: 1

Standard Lithologic Accessory Codes

		<u>Code</u>			<u>Code</u>	
.....	sand lamina	248		Ch	chlorite	272
.....	silt lamina	249		Me	micaceous	273
-----	shale lamina	250		S	sulfur	274
o o o o	pebble - granule horizon	251		Q	quartz crystals	275
————	coal lamina	252		o o o	oolitic	276
▲▼▲▼	breccia horizon	253		⊙⊙⊙	pisolites	277
▨▨▨▨	organic shale lamina	254		Fe	ironstone, ironstain	266
≡≡	calcareous	255		↖ ↗ ↘ ↙	rip-up clasts	267
≡≡	dolomitic	256		— · — · — ·	coal - organic fragments	268
Sid	sideritic	257		wd	wood fragment	269
v v v	bentonite horizon	258		o o o	shell fragments	270
Sm	smectite	259		Palsl	paleosol horizon	271
Gl	glaucconitic	260		○ ○	grapestone	278
Fl	feldspathic	261		o o o	coated grains	279
Lth	lithic	262		♦ ♦	fecal pellets	280
▲▲	cherty	263		• • •	pelletoids	281
Kaol	kaolinitic	264		////	anhydritic	282
Py	pyritic	265				





























Abundance codes

- 1 rare
- 3 moderate
- 5 common
- 7 abundant
- 9 pervasive

Major: 0

Subordinate: 1

Standard Ichnofossil Codes

		<u>Code</u>			<u>Code</u>
	rootlets	296			<i>Conichnus</i> 311
	<i>Skolithos</i>	297			<i>Conostichus</i> 312
	<i>Monocraterion</i>	298			<i>Ppsilonichnus</i> 313
	<i>Planolites</i>	299		*	<i>Asterosoma</i> 314
	<i>Palaeophycus</i>	300			<i>Rosselia</i> 315
	<i>Gyrolithes</i>	301			<i>Thalassinoides</i> 316
	<i>Diplocraterion</i>	302			<i>Chondrites</i> 317
	<i>Arenicolites</i>	303			<i>Terebellina</i> 318
	<i>Macaronichnus</i>	304			<i>Teichichnus</i> 319
	<i>Ophiomorpha</i>	305			<i>Zoophycos</i> 320
	Escape Trace	306			<i>Helminthoida</i> 321
	<i>Trichichnus</i>	307			<i>Teredolites</i> 322
	<i>Rhizocorallium</i>	308			<i>Trypanites</i> 323
	<i>Cylindrichnus</i>	309			Bored hardground 324
	<i>Bergaueria</i>	310			












































Abundance codes

- 1 rare
- 3 moderate
- 5 common
- 7 abundant
- 9 pervasive

Major: 0

Subordinate: 1

Standard Fossil Codes

	Code		Code
 Algae undiff.	344	 Rudists, undiff.	369
 Algal Stromatolites	345	 Tentaculites	370
 Brachiopods	346	 Ostracods	371
 Bryozoa, fenestellid	347	 Plant Remains	372
 Bryozoa, tube-like	348	 Radiolarians	373
 Calcispheres	349	 Spicules	374
 Chara	350	 Spines	375
 Conodonts, Scolecodonts	351	 Sponges	376
 Corals, colonial	352	 Spores, pollen	377
 Corals, solitary	353	 Stromatoporoids, undiff.	378
 Crinoids	354	 " ", lamellar	379
 Diatoms	355	 " ", spherical	380
 Echinoderms	356	 " ", hemishperical	381
 Fish remains	357	 " ", branching	382
 Fish Scales	358	 " ", Amphipora, undiff.	383
 Foraminifera, undiff.	359	 " ", Amphipora, lamellar	384
 Foraminifera, pelagic	360	 Trilobites	385
 Foraminifera, benthonic	361	 Vertebrates	386
 Graptolites	362		
 Hydrozoa	363		
 Molluscs, undiff.	364		
 Belemnites	365		
 Cephalopods	366		
 Gastropods	367		
 Pelecypods	368		






































Abundance codes

- 1 rare
- 3 moderate
- 5 common
- 7 abundant
- 9 pervasive

Major: 0

Subordinate: 1

Standard Diagenesis Codes

	Code		Code
 birdseye structure, keystone vugs	1694	 limonite concretion	1715
 cone-in-cone structure	1695	 pyrite concretion	1716
 fossil ghost	1697	 siderite concretion	1717
 crystal ghost	1698	 cement, general	1718
 boxwork structure	1699	 anhydrite cement	1720
 stromatactis	1700	 barite cement	1721
 chicken wire structure	1701	 calcite cement	1722
 nodule/concretion, general	1702	 chalcedony/chert cement	1723
 analclime concretion	1704	 chalcopyrite cement	1724
 anhydrite concretion	1705	 dolomite cement	1725
 barite concretion	1706	 ferruginous cement	1726
 calcite concretion	1707	 gypsum cement	1727
 chalcedony/chert concretion	1708	 halite cement	1728
 chalcopyrite concretion	1709	 hematite cement	1729
 dolomite concretion	1710	 limonite cement	1730
 ferruginous concretion	1711	 pyrite cement	1731
 gypsum concretion	1712	 quartz cement	1732
 halite concretion	1713	 siderite cement	1733
 hematite concretion	1714		





Abundance codes

- 1 rare
- 3 moderate
- 5 common
- 7 abundant
- 9 pervasive

Major: 0

Subordinate: 1

Standard Fracture Codes

	Code		Code
/	1600		1631
/□	1601		1634
/▨	1602		1633
∖	1603		1634
∕∕	1604	◁▷	1637
+	1613	↗	1638
∕∕	1614	◀	1639
∕	1616	∧	1640
∕▨	1617	∧∧	1641
∕∕	1619	∧∧*	1645
∕ _n	1620	∕∕	1649
∕ _o	1621	⊗	1650
∕∕	1623	⊗	1651
+	1626	∩	1653
∕∕	1627	∅	1652
∕∕	1629		













Abundance codes

- 1 rare
- 3 moderate
- 5 common
- 7 abundant
- 9 pervasive

Major: 0

Subordinate: 1

Standard Pore Type Codes

	Code		Code
 intrafossil	14	 intergranular	32
 intrafossil (primary)	15	 intergranular (primary)	33
 intrafossil (secondary)	16	 intergranular (secondary)	34
F fracture	23	 intercrystal	35
M _w mouldic / vuggy	24	 intercrystal (primary)	36
M _f mouldic after fossils	25	 intercrystal (secondary)	37
M _g mouldic after grains	26	1 primary porosity	38
M _c mouldic after crystals	27	2 secondary porosity	39
 interparticle	29	∴ pinpoint porosity	40
 interparticle (primary)	30	∅ no visible porosity	44
 interparticle (secondary)	31	⊗ no porosity	45










Standard Hydrocarbon Indicator Codes

	Code		Code
● oil stain	59	◇ gas odour	67
◐ patchy oil stain	60	⊠ H ₂ S odour	68
◑ residual oil stain	61	∴ natural fluorescence	69
◒ streaky oil stain	62	∴ patchy natural fluorescence	70
◓ spotty oil stain	63	∴ streaky natural fluorescence	71
A asphalt	65	⊗ no hydrocarbon indications	74
B bitumen	66		

Abundance codes

- 1 rare
- 3 moderate
- 5 common
- 7 abundant
- 9 pervasive

Standard Core Condition Codes

	Code		Code
 - Slightly Disturbed	107	 - Slightly Fractured	111
 - Moderately Disturbed	108	 - Moderately Fractured	112
 - Very Disturbed	109	 - Highly Fractured	113
 - Soupy	110	 - Drilling Breccia	114
 - Oriented Core Flag	122		

Intensity codes

3 not recorded

5 slight

7 moderate

9 extreme

Hard Rock Code Key

If the user can make only a single selection from a set of choices, then the field is an integer, and the key indicates the number assigned to each possible choice.

If the user can make multiple selections from a set of choices, then the field is an array of Booleans, represented by 1's and 0's (0 if not selected, 1 if selected). The array of possible choices is numbered 1 to 16 (or 32), from left to right. For example: 0101000000000000 indicates that choices 2 and 4 have been selected. All Boolean arrays are either 16 or 32 in length, and the key indicates the array position assigned to each choice. Any unused positions should be recorded as 0 on input and output.

Hard Rock Lithology (Top Level) Record

Single Choice Items

1. Rock Type

- 0 = not recorded
- 1 = Fine Grained Igneous
- 2 = Medium/Coarse Grained Igneous
- 3 = Sulfides/Sulfates/Oxides
- 4 = Metamorphic
- 5 = Altered

2. Crystallinity

- 0 = not recorded
- 1 = holohyaline
- 2 = hypohyaline
- 3 = hypocrystalline
- 4 = holocrystalline-aphanitic
- 5 = holocrystalline -phaneritic fine-grained (<1mm)
- 6 = holocrystalline -phaneritic medium-grained
- 7 = holocrystalline -phaneritic coarse-grained

Mineral Record
Groundmass Mineral Record
Alteration Mineral Record

Single Choice Items

3. Crystal Face

- 0 = not recorded
- 1 = euhedral
- 2 = subhedral
- 3 = anhedral (none)
- 4 = embayed
- 5 = scalloped
- 6 = sutured
- 7 = highly serrated
- 8 = other

4. Distribution

- 0 = not recorded
- 1 = isolated
- 2 = cumulophyric
- 3 = glomeroporphyritic
- 4 = banded
- 5 = other

5. Zoning

- 0 = none
- 1 = weak [thin rim]
- 2 = moderate
- 3 = strong [thick rim])

6. Twinning

- 0 = none
- 1 = growth
- 2 = inversion
- 3 = deformation

Multi-Choice Items

7. Grain Habit Category: array [1..16] of Boolean

- Note: no selections = “not recorded”
- This table is the same as table no. 29

- 1 = Equidimensional
- 2 = Inequidimensional
- 3 = irregular
- 4 to 16 = unused

8. Grain Habit: array [1..32] of Boolean

- Note: no selections = “not recorded”
- Note that there are some unused positions placed within the array and not just at the end.
- This table is the same as table no. 30

(Following are “Equidimensional” choices)

- 1 = spherical
- 2 = equant
- 3 = cubic
- 4 = polyhedral
- 5 = octahedral
- 6 = rounded
- 7 = globular
- 8 = unused

(Following are “Inequidimensional” choices)

- 9 = tabular
- 10 = lamellar
- 11 = bladed
- 12 = platy
- 13 = flaky
- 14 = columnar
- 15 = bleb
- 16 = prismatic
- 17 = acicular
- 18 = fibrous
- 19 = needle
- 20 = semirounded
- 21 = elongate

22 = unused

23 = unused

24 = unused

(Following are “Irregular” choices)

25 = skeletal

26 = dendritic

27 = embayed

28 = jagged

29 = spongy

30 = amoeboid

31 = other

32 = unused

9. Occurrence: array [1..16] of Boolean;

Note: no selections = “not recorded”

1 = augen

2 = granoblast

3 = intergranular

4 = intersertal

5 = interstitial

6 = matrix

7 = neoblast

8 = poikiloblast

9 = porphyroblast

10 = other

11 to 16 = unused

10. Secondary Occurrence: array [1..16] of Boolean;

Note: no selections = “not recorded”

1 = pseudomorph

2 = patch

3 = vein

4 = vesicle filling

5 = void filling

6 = other

7 to 16 = unused

Voids Record

Single Choice Items

11. Voids Type

0 = not recorded

1 = vesicles

2 = miaroles

3 = amygdules

4 = cavities

5 = other



Hard Rock Texture Record

Single Choice Items

12. Granularity

0 = not recorded

(Following are "Equigranular" Choices)

1 = panidiomorphic

2 = hypidiomorphic

3 = allotriomorphic

(Following are "Inequigranular" choices)

4 = poikilitic

5 = ophitic

6 = subophitic

7 = intergranular

8 = consertal

9 = myrmekitic

13. Cumulate

0 = not recorded

1 = Adcumulate

2 = Mesocumulate

3 = Orthocumulate

4 = Heteradcumulate

5 = Crescumulate

6 = Varitextured

14. Fragment Shape

0 = not recorded

1 = angular

3 = subangular

5 = subrounded

7 = rounded

15. Relict Texture

- 0 = none
- 1 = igneous
- 2 = sedimentary
- 3 = metamorphic

16. Foliated

- 0 = none
- 1 = weakly
- 2 = strongly
- 3 = complete

17. Metamorphic Corona Texture

- 0 = none
- 1 = unused
- 2 = symplectitic
- 3 = radiating

18. Metamorphic Reaction Rim Texture

- 0 = none
- 1 = unused
- 2 = symplectitic
- 3 = radiating
- 4 = hourglass

19. Sulfide Primary Texture

- 0 = not recorded
- 1 = open-space filling
- 2 = granular
- 3 = porous
- 4 = massive
- 5 = breccia
- 6 = nodular
- 7 = other



Multi-Choice Items

20. Fragment Composition array [1..16] of Boolean;

- Note: no selections = “not recorded”

1 = glass

2 = crystals

3 = lithics

21. Random Orientation array [1..32] of Boolean;

- Note: no selections = “none”

1 = seriate

2 = microlitic

3 = porphyritic

4 = glomeroporphyritic

5 = poikilitic

6 = ophitic

7 = subophitic

8 = interstitial

9 = intersertal

10 = intergranular

11 = vesicular

12 = scoriaceous

13 = porphyroblastic

14 = porphyroclastic

15 = granoblastic

16 = decussate

17 = consertal

18 = myrmekitic

19 = other

20 = vitrophyric

21 to 32 = unused

22. Preferred Orientation array [1..16] of Boolean;

- Note: no selections = “none”

1 = trachytic

2 = parallel

3 = aligned

4 = wavy

5 = banded

- 6 = foliated
- 7 = lineated
- 8 = layered
- 9 = comb-layered
- 10 = radiate
- 11 = spherulitic
- 12 = variolitic
- 13 = planar
- 14 = other
- 15 to 16 = unused

23. Sulfide Secondary Texture: array [1..16] of Boolean;

- Note: no selections = "none"

- 1 = replacement
- 2 = cooling
- 3 = deformation
- 4 = annealing
- 5 = other
- 6 to 16 = unused



Alteration Record

Single Choice Items

24. Alteration Intensity

- 0 = none
- 1 = unused
- 2 = negligible
- 3 = slight
- 4 = moderate
- 5 = high
- 6 = very high

25. Secondary Corona Texture

- 0 = none
- 1 = unused
- 2 = symplectitic
- 3 = radiating

26. Secondary Reaction Rim Texture

- 0 = none
- 1 = unused
- 2 = symplectitic
- 3 = radiating
- 4 = hourglass

Overgrowth Mineral Record

Single Choice Items

27. Overgrowth Habit

- 0 = not recorded
- 1 = corona
- 2 = reaction rim
- 3 = kelphtic rim
- 4 = spherulite
- 5 = variolite
- 6 = other

Intergrowth Mineral Record

Single Choice Items

28. Intergrowth Habit

- 0 = not recorded
- 1 = felsophyritic
- 2 = graphic
- 3 = myrmekitic
- 4 = ophitic
- 5 = subophitic
- 6 = hyaloophitic
- 7 = poikilitic
- 8 = ocellar
- 9 = sieve
- 10 = other

Inclusion Mineral Record

Multi-Choice Items

29. Grain Habit Category: array [1..16] of Boolean

- Note: no selections = “not recorded”

- This table is the same as table no. 7

1 = Equidimensional

2 = Inequidimensional

3 = irregular

4 to 16 = unused

30. Grain Habit: array [1..32] of Boolean

- Note: no selections = “not recorded”

- Note that there are some unused positions placed within the array and not just at the end.

- This table is the same as table no. 8

(Following are “Equidimensional” choices)

1 = spherical

2 = equant

3 = cubic

4 = polyhedral

5 = octahedral

6 = rounded

7 = globular

8 = unused

(Following are “Inequidimensional” choices)

9 = tabular

10 = lamellar

11 = bladed

12 = platy

13 = flaky

14 = columnar

15 = bleb

16 = prismatic

17 = acicular

18 = fibrous

19 = needle

20 = semirounded

21 = elongate

22 = unused

23 = unused

24 = unused

(Following are "Irregular" choices)

25 = skeletal

26 = dendritic

27 = embayed

28 = jagged

29 = spongy

30 = amoeboid

31 = other

32 = unused



Fault Structure Record

Single Choice Items

31. Fault Class



1 = joint



2 = fault



3 = slickensides



4 = brittle shear zone



5 = ductile shear zone

32. Fault Type

0 = none

1 = unused

2 = simple

3 = planar

4 = irregular

33. Shear Sense

0 = none, unknown

1 = unused

2 = normal

3 = reverse

4 = strike-slip (sub-horizontal)

5 = oblique

34. Slickensides Habit

0 = none, unknown

1 = unused















2 = gouges

3 = fibers

Fabric Structure Record

Single Choice Items

35. Fabric Class

-  1 = foliation
-  2 = disjunctive cleavage
-  3 = crenulation cleavage
-  4 = fold
-  5 = slump fold
-  6 = crystal/plastic fabric
-  7 = crystal mineral lineation
-  8 = magmatic fabric
-  9 = compositional/textural variation
-  10 = compositional layering
-  11 = igneous contact
-  12 = sedimentary bedding
-  13 = lamination/color banding
-  14 = paleocurrent direction

36. Fabric Type

- 0 = none
- 1 = unused
(Crystal/plastic choices)
- 2 = crystal shape oblate
- 3 = crystal shape prolate
- 4 = schistose
- 5 = gneissic
(Igneous contact choices)
- 6 = sharp planar
- 7 = gradational planar
- 8 = sharp irregular
- 9 = gradational irregular
(Sedimentary bedding choices)
- 10 = graded bedding reversed
- 11 = graded bedding normal
- 12 = single graded interval reversed

13 = single graded interval normal

14 = cross-bedded

15 = flaser bedded

16 = contorted/convoluted

17 = scoured bedding contact

18 = fining upward sequence

(lamination choices)

19 = planar

20 = wedge-planar

21 = wavy

22 = cross



Vein Structure Record

Single Choice Items

37. Vein Class



1 = mineral vein



2 = magmatic vein



3 = clastic vein



4 = dike

38. Vein Type

0 = none

1 = unused

2 = simple

3 = family

4 = irregular

5 = parallel array

6 = en echelon array

7 = network

39. Reaction Rim Intensity

0 = none

1 = unused

2 = negligible

3 = slight

4 = moderate

5 = high

Vein Fill Mineral Record

Multi-Choice Items

40. Crystal Habit: array [1..32] of Boolean

- Note: no selections = “not recorded”

- Note that there are some unused positions placed within the array and not just at the end.

- This table is the same as table no. 8

1 = spherical

2 = equant

3 = cubic

4 = polyhedral

5 = octahedral

6 = rounded

7 = globular

8 = unused

9 = tabular

10 = lamellar

11 = bladed

12 = platy

13 = flaky

14 = columnar

15 = bleb

16 = prismatic

17 = acicular

18 = fibrous

19 = needle

20 = semirounded

21 = elongate

22 = unused

23 = unused

24 = unused

25 = skeletal

26 = dendritic

27 = embayed

28 = jagged

29 = spongy

30 = amoeboid

31 = other

32 = unused

Thin Section Texture Record

Single Choice Items

- Note: Most codes are the same as those described under the Hard Rock Texture Record. Only tables unique to the Thin Section Texture Record are described here.

41. Approximate Composition

0 = not recorded

(Plagioclase items:)

1 = An0-An10

2 = An20

3 = An30

4 = An40

5 = An50

6 = An60

7 = An70

8 = An80

9 = An90-An100

10 = (unused)

11 = (unused)

(Clinopyroxene items:)

12 = Diopside

13 = Augite

14 = Clinoenstatite

15 = Pigeonite

16 = Hedenbergite

17 = (unused)

18 = (unused)

19 = (unused)

(Orthopyroxene items:)

20 = enstatite

21 = bronzite

22 = hypersthene

23 = ferrohypersthene

24 = other

42. Mylonite

0 = none

1 = mylonitic gneiss

2 = protomylonite

3 = mylonite

4 = ultramylonite

43. Cataclastic Zone

0 = none

1 = breccia

2 = microbreccia

3 = gouge

4 = pseudotachylite

5 = cataclasite



44. Standard Hard Rock Lithology Codes

5286	Basalt
5287	Aphyric Basalt
5288	Sparsely Phyric Basalt
5289	Moderately Phyric Basalt
5290	Highly Phyric Basalt
5291	Volcaniclastic Basalt Breccia
5292	Volcaniclastic Basalt Ash
5293	Volcaniclastic Basalt Hyaloclastite
5294	Volcaniclastic Basalt Pumice
5295	Volcaniclastic Basalt Lapilli
5296	Epiclastic Basalt Breccia
5297	Epiclastic Basalt Conglomerate
5298	Epiclastic Basalt Sand
5299	Epiclastic Basalt Silt
5300	Alkali Feldspar Rhyolite
5301	Rhyolite
5304	Dacite
5305	Alkali Feldspar Quartz Trachyte
5306	Quartz Trachyte
5307	Quartz Latite
5308	Andesite
5309	Alkali Feldspar Trachyte
5310	Trachyte
5311	Latite
5312	Phonolite
5313	Tephritic Phonolite
5314	Phonolitic Tephrite
5315	Tephrite
5316	Basanite
5317	Feldspathoidite
5318	Leucite
5319	Nephelinite
6286	Cancrinite
6287	Sodalite
6288	Hauynite

6289 Melilite
6290 Not Igneous
6291 Volcaniclastic Felsic/Intermediate Breccia
6292 Volcaniclastic Felsic/Intermediate Ash
6293 Volcaniclastic Felsic/Intermediate Hyaloclastite
6294 Volcaniclastic Felsic/Intermediate Pumice
6295 Volcaniclastic Felsic/Intermediate Lapilli
6296 Epiclastic Felsic/Intermediate Breccia
6297 Epiclastic Felsic/Intermediate Conglomerate
6298 Epiclastic Felsic/Intermediate Sand
6299 Epiclastic Felsic/Intermediate Silt
6300 Dunite
6301 Anorthosite
6304 Clinopyroxenite
6305 Orthopyroxenite
6306 Wehrlite
6307 Olivine Clinopyroxenite
6308 Harzburgite
6309 Olivine Orthopyroxenite
6310 Websterite
6311 Lherzolute
6312 Olivine Websterite
6313 Gabbro
6314 Norite
6315 Gabbronorite
6316 Troctolite
6317 Olivine Gabbro
6318 Olivine Norite
6319 Hornblendite
7286 Pyroxene Hornblendite
7287 Hornblende Pyroxenite
7288 Hornblende Gabbro
7289 Pyroxene-Hornblende Gabbro/Norite
7290 Alkali Feldspar Granite
7291 Granite
7292 Granodiorite
7293 Tonalite
7294 Alkali Feldspar Quartz Syenite
7295 Quartz Syenite



7296	Quartz Monzonite
7297	Quartz Monzodiorite
7298	Quartz Diorite
7299	Alkali Feldspar Syenite
7300	Syenite
7301	Monzonite
7304	Monzodiorite
7305	Diorite
7306	Feldspathoid Syenite
7307	Feldspathoid Monzodiorite
7308	Feldspathoid Diorite
7312	Sulfide
7313	Sulfate
7314	Oxide
7315	Other
7316	Serpentine
7317	Amphibolite
7318	Felsic Gneiss
7319	Mafic Gneiss
8286	Felsic Schist
8287	Mafic Schist
8288	Oxide Gabbro
8289	Diabase
8290	Microgabbro
8291	Olivine Microgabbro
8293	Oxide Pyroxenite
8294	Oxide Gabbronorite
8295	Oxide Microgabbronorite
8296	Oxide Olivine Gabbro
8297	Oxide Olivine Gabbronorite
8298	Oxide Vein
8299	Oxide Olivine Microgabbro
8318	Altered
8319	Feldspathoid Monzosyenite
10319	Undetermined



45. Mineral Codes

100	actinolite
101	actinolite amphibole
102	albite
103	alkali felspar
104	amphibole
105	analcite/analcime
106	anatase
107	anglesite
108	anhydrite
109	anorthite
110	anthophyllite
111	antigorite
112	apatite
113	aragonite
114	arsenopyrite
115	argentite/acanthite
116	barite
117	bastite
118	benitoite
119	biotite
120	bornite
121	bravoite
122	brookite
123	brucite
124	calcite
125	cancrinite
126	carbonate
127	celadonite
128	celestite
129	chabasite
130	chalcocite
131	chalcopyrite
132	chlorite
133	chrome spinel
134	chromite
135	chrysotile

136	cinnabar
137	clay minerals
138	clinopyroxene
139	clinozoisite
140	cobaltite
141	corrensite
142	covellite
143	cubanite
144	cummingtonite
145	diopsidic clinopyroxene
146	edenite
147	enargite
148	epidote
149	feldspathoid
150	ferroactinolite
151	ferrochromite
152	fuchite (Cr-rich)
153	galena
154	garnet
155	goethite
156	graphite
157	gypsum
158	hauynite
159	hematite
160	heulandite
161	hornblende
162	hydro diopside
163	hydrogarnet
164	hydrothermal clinopyroxene
165	idaite
166	iddingsite
167	illite
168	ilmenite
169	iron oxide
170	jamesonite
171	K-feldspar
172	kaolinite
173	laumonite
174	leucite



175	lizardite
176	mackinawite
177	maghemite
178	magnesio-horneblende
179	magnesiochromite
180	magnesite
181	magnetite
182	marcasite
183	melilite
184	Mg-rich chlorite
185	miargyrite
186	millerite
187	mixed-layer chlorite-smectite
188	mixed-layer clays
189	molybdenite
190	muscovite
191	native copper
192	native gold
193	native platinum
194	native silver
195	natrolite
196	nepheline
197	neptunite
198	nontronite
199	olivine
200	orpiment
201	orthopyroxene
202	pararammelsbergite
203	pearcite
204	pentlandite
205	phillipsite
206	phlogopite
207	plagioclase
208	polybasite
209	prehnite
210	proustite
211	pseudobrookite
212	pumpellyite
213	pyrargyrite



214	pyrite
215	pyrrhotite
216	quartz
217	rutile
218	saponite
219	scolecite
220	secondary calcium-plagioclase
221	secondary clinopyroxene
222	serpentine
223	sieginite
224	silica
225	smectite
226	sodalite
227	sphalerite
228	spinel
229	stannite
230	stephanite
231	stibnite
232	stomeyerite
233	talc
234	tennantite
235	tetradymite
236	tetrahedrite
237	thomsonite
238	titanite
239	titanomagemite
240	titanomagnetite
241	tremolite
242	tremolite-actinolite
243	tremolitic amphibole
244	ulvospinel
245	vesuvianite
246	violarite
247	wairakite
248	wurtzite
249	wustite
250	zeolite
251	zircon
252	oxy-hydroxide



253	iron oxy-hydroxide
254	andalusite
255	sillimanite
256	kyanite
257	topaz
258	tourmaline
259	monazite
260	scapolite
261	beryl
262	cordierite
263	wollastonite
264	lepidolite
265	stilpnomelane
266	cassiterite
267	corundum
268	periclase
269	diaspore
270	fluorite

(Fluid Inclusion Phases)

271	gas
272	liquid
273	gas, liquid
274	gas, liquid, solid
275	2 gases, 1 liquid
276	2 gases, 1 liquid, 1 solid
277	2 liquids
278	2 liquids, 1 solid
279	other

(Additional Items)

280	none
281	opaques
282	glass