CGNHS OFR-1987-2
Connecticut Geological Survey
Department of Environmental Protection
79 Elm St., Hartford, CT

Moodus Borehole EI-2
East Haddam, Connecticut
1000' Continuous Drill Core

(-72.457507 41.533805)

Lithologic Logs

Table of Contents

Introduction 2p.

Summary of Logging Conventions used in the Description of Core Materials 24p.

Detailed Lithologic Log (Ambers, 1987 after London, 1983) 1:12 100p.

Summary of Core 1p.

Total 129 pages

INTRODUCTION TO THE MOODUS, CONNECTICUT, 1000', 1:12 BASEMENT DRILL CORE LOG

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The Moodus, Connecticut 1000' continuous basement drill core is here represented by 102 pages of 1:12 log, one 10' box to a page. The log was reconstructed by Ambers (this work) after reexamining the entire core with an earlier drafted log by London (1983) available.

The entire core was found to relate closely to the Hebron Gneiss at the surface in which the drill hole begins. A unique, layered granitic gneiss extending from 250' to 525' was revealed in the drilling that had not been recognized as an important lithology within the Hebron Gneiss at the surface prior to drilling.

In reexamining the core to construct this log, extensive sodium cobaltinitrite staining for Kspar was performed. The Kspar content for the lithologies has been incorporated into the descriptions in the SUMMARY OF LOGGING CONVENTIONS and is therefore extrapolated to the Gillette Castle 1500' and Moodus 4764' cores which were not tested similarly.

As in all of the drawn representations of the cores studied, the Moodus 1000' log should not be construed as indicating orientation of any fabric elements. The fabrics have been totally removed from relating to any direction except up and down.

SUMMARY OF LOGGING CONVENTIONS USED IN THE DESCRIPTION OF CORE MATERIALS FROM THE 4764' DEEP WELL AT MOODUS, CONNECTICUT; 1000' WELL AT MOODUS, CONNECTICUT; AND 1500' WELL AT GILLETTE CASTLE, CONNECTICUT

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Summer - Fall, 1987

AKNOWLEDGEMENTS

This author would like to thank the state of Connecticut as represented by Sidney Quarrier for this unique opportunity to participate in the state's inquiry of it's geologic materials. Support provided by National Science Foundation grants NSF-EAR-83-13807 and NSF-EAR-86-18305 made to Robert Wintsch is gratefully aknowledged. Finally, personal thanks is due Sidney Quarrier, David London, Robert Wintsch and Robert Altamura for many fruitful discussions which helped greatly in the production of this work.

INTRODUCTION

The early summer 1987 drilling of the Moodus, Connecticut 4764' deep well made apparent the need for updating and coordinating information relating to basement drilling in Connecticut. This document forms the basis for standardizing the existing information on basement drilling in Connecticut, allowing the relationships between the different wells to be recognized.

Reexamination of all basement well materials was beyond the scope of this project so that various use was made of preexisting descriptions of the materials. The new materials from the Moodus 4764' well were completely examined and described. The core from the Moodus 1000' well was reexamined in its entirety and editions to the log prepared earlier by David London were made. The log prepared by Robert Wintsch and John Bernitz for the Gillette Castle 1500' well was spot checked against the core to determine its accuracy. It was determined to be sufficient for this compilation and was redrafted.

The new logs were constructed in a form which was designed to allow rapid appreciation of various details of each core section. In essence, a reproduction on paper of the actual appearance of each core was the goal. This was very well

realized in the Moodus 4764' 1:1 logs and sufficiently realized in the Moodus 1000' and Gillette Castle 1500' 1:12 logs. Notes accompanying each log section relating to lithology, fabrics and mineral segregations add detail to the drafted columns. It is very important to note that the core materials considered in the logs were not oriented when retrieved from their respective wells and therefore the fabrics shown in the logs bear no relation to the actual orientation of the features in the Earth except up and down.

A step-by-step scheme is suggested for examination of the log sheets which should aid in the total appreciation of each section. This SUMMARY OF LOGGING CONVENTIONS should always be available to consult when new symbols or abbreviations are encountered. Check each symbol or abbreviation to become familiar with each and do not assume that the meaning of a symbol or abbreviation is obvious as it may not be even though the attempt was made to make each symbol and abbreviation a reminder of it's meaning. When examining a new section, first note the drafted fabrics and contacts of the section. Then note the overall or host rock lithology for the section offset to the far right column with the key lithologies underlined. Each major break in fabric or lithology has it's host rock lithology described and each of these major subdivisions of the logs is shown by a thick lined break aligned in a centralized column in the right half of each page. Secondly, note details of the lithologies in the section placed a few spaces right of the log column, adjacent to the layer or body in question. Finally,

observe any specific fabric notes in the left half of the page. These fabrics are typically low-grade overprinting fabrics, and the fabrics shown by symbols on the log column usually are higher grade ductile fabrics. This approach to the logs is similar to the manner in which they were constructed and seems most useful.

ABBREVIATIONS USED IN THE LOGS

Abbreviations were found to be a necessary tool in logging to help reduce time in logging and prevent clutter from too many words on a page. In the drafted logs they continue to help reduce clutter. Three groups of abbreviations were used in logging and description: mineral abbreviations, general descriptor abbreviations, and fabric abbreviations. An alphabetized listing of each of these groups is provided here.

Mineral Abbreviations

Mineral abbreviations are most often the first part of a mineral name, but not always. These abbreviations are not all standard but were chosen to most easily remind one of the mineral in question.

act	actinolite
biot	biotite
chl	chlorite
cpx	clinopyroxene
diop	diopside
epid	epidote

Mineral Abbreviations cont.

fspar or F	feldspar
gnt	garnet
hbl	hornblende
Kspar or K	potassium feldspar
mgt	magnetite
musc	muscovite
plag or P	plagioclase
pyr	pyrite
qtz or Q	quartz
sill	sillimanite

General Abbreviations

Abbreviations of repeatedly used words were chosen to resemble the word in question. Again, use of these abbreviations resulted in less written material on each page which increased the clarity of the log.

acc	accessory
@	at
alt	altered, alteration
apprec	appreciable
blast	porphyroblast
blastic	porphyroblastic
dk	dark
diam	diameter
diss	disseminated

General Abbreviations cont.

frag(s)	fragments, fragment
lt	light
med	medium
MFS	mean fragment size (chip descriptions only)
mod	moderate, moderately
seg	segregation
tr	trace
v	very
w/	with

Fabric Abbreviations

Along with the symbols for fabric shown in the log columns, abbreviations were also used for fabrics in written descriptions where these were necessary. These abbreviations are summarized here.

fol	foliated, foliation
gfsc	granofelsic
gns	gneiss, gneissose
lin	lineated, lineation
myl	mylonitic
phyll	phyllitic
s	segregation, always prefixed by one or more mineral abbreviation(s)
sch	schist, schistose
vein or V	vein filled with a given mineral

LITHOLOGIC DESCRIPTIONS

Throughout all of the logs and the chip descriptions from the Moodus 4764' well, abbreviations for lithologies are used to designate the rock type in a certain interval. Accompanying many of the abbreviations in the logs are modifiers which indicate any deviations from the generalized descriptions of the lithologies given here. Familiarization with these definitions is crucial in understanding these logs and chip descriptions.

An important note is that terms traditionally reserved for fault rock fabric have occasionally been used in the descriptions of core and chip lithologies because of the inability to properly describe the mineralogy of the rock in hand specimen. Such "rock types" include microbreccia = microcataclasite, ultramylonite, mylonitic schist, phyllonite, and pseudotachyllite.

<u>alask</u> (alaskite)

subequal qtz, plag, Kspar

accessory biot, mgt, hematite

typically fleshy pink in color

grain size varies from .5 - 1.5 mm.

generally mod-well foliated and gneissose

Amph (amphibolite)

hbl 50 - 100%

plag 0 - 50%

biot 0 - 30 %

accessory apatite, pyrite, mgt, cpx

black, brown-black to dk greenish black in color

grain size varies from 1 - 3 mm.

generally mod-well foliated gneissose to schistose

Ap (aplite)

subequal qtz and plag, sometimes w/ minor Kspar up to 10%

accessory biotite up to a few percent

v. lt. gray to cream to white in color

generally < 1 mm. grain size

usually gneissose w/ recovered sucrosic grains

a common vein material in the Hebron Gneiss

BAS (biotite amphibole schist)

biot 50 - 100%

green amphibole usually act 10 - 50%

plag 0 - 20%

accessory tremolite, scapolite, pyr

dk. greenish brown to black in color

up to 2 mm. grained

schistose to myl schistose fabric

often cuts host rock foliation at a low angle
common in the Hebron Gneiss

BGG (biotite granitic gneiss)

subequal qtz, plag, kspar

biot at least 5% up to 10%

accessory musc, pyr, gnt

lt - med gray to pink in color

usually even grained from 1 - 2 mm.

poorly to well foliated and lineated, gneissose

largely restricted to layered granitic intrusions within the Hebron Gneiss

BHG (biotite hornblende gneiss)

plag	50 - 90%
qtz	0 - 30%
hbl	0 - 50%
biot	0 - 30%

accessory sphene, mgt, epid, Kspar

med - dk gray in color

even to irregular grained .5 - 4 mm.

poorly - well foliated and lineated, gneissose

abundant lithology in the Avalon Terrain

BHS (biotite hornblende schist)

biot	50 - 80%
hbl	20 - 50%

accessory sphene, mgt, plag (sometimes important)

dk. green black to black in color

variably grained .5 - 3 mm.

well foliated myl schistose fabric

BMS (biotite mylonitic schist)

biot	30 - 50%
qtz	30 - 50%
plag	10 - 30%
Kspar	0 - 10%

accessory musc, gnt, sill, apatite, pyr

medium - dk brown in color

highly variable grain size, .5 - 5 mm.

always v. well foliated myl sch fabric

segregations of qtz and qtz-fspar are common
a common rock type in the Honey Hill Fault zone

BPG (biotite plagioclase gneiss)

plag	70 - 90%
qtz	0 - 30%
biot	< 5% but always present
Kspar	0 - 20%

lt - med gray in color

even grained from .5 - 1.5 mm.

mod - well foliated and lineated, gneissose
often laminated

BQP (biotite quartz plagioclase schist)

biot	30 - 70%
qtz	20 - 30%
plag	20 - 30%
Kspar	0 - 15%

accessory hbl, diop, gnt, musc, scap, pyr, calcite

med - dk brown in color

fairly even grained .5 - 2 mm.

schistose fabric

varies from markedly biot-rich to plag-rich
common lithology in the Hebron Gneiss

LGG (leucogranitic gneiss)

a very similar lithology to BGG already described except that this lithology contains <5% biotite and is often musc bearing, is always white or lt. gray, and is sometimes fairly uneven grained

microbreccia

a v. fine rock with characteristics like those described later in the fabric symbols, which is commonly composed of Kspar, chl, qtz, mgt and ground host rock as determined by SEM backscatter imagery

MMS (muscovite mylonitic schist)

musc 20 - 50%

chl or biot 10 - 30%

qtz 20 - 40%

accessory plag, Kspar, pyr, gnt

med green gray to brown gray to silvery white in color

highly variable grain size, .5 - 5 mm.

always well foliated myl sch fabric

commonly w/ QS or QFS

myl sch (mylonitic schist)

a general name for rocks w/ myl sch fabric and having unique mineralogy. myl sch fabric is described later in the fabric symbols

PBS (plagioclase biotite schist)

plag 10 - 30%

biot 50 - 90%

qtz up to 10%

accessory hbl, diop, musc, Kspar, gnt, scap

dk. brown to black in color

highly variable grain size .5 - 5 mm.

well foliated schistose to myl sch fabric

this lithology commonly truncates foliations in the host lithology at a low angle. common in all rock units

pegmatite

a vein-type lithology with extremely variable and uneven grain size from .5 mm. to 3 cm. commonly contains qtz, plag, and Kspar in highly variable proportions with accessory biot, musc, tourmaline, gnt, chl, sulfide

phyllonite

a phyllitic appearing rock of variable mineralogy, but typically chl-musc-rich. this fabric is described later in the symbol description section

QDG (quartz diopside granofels)

qtz	30 - 60%
plag	20 - 30%
diop	10 - 30%

accessory act, scap, calcite, biot, tourmaline, sulfide, gnt

med greenish gray to green in color

even to variably grained .5 - 4 mm.

granofelsic to poorly foliated gneissose fabric

restricted almost entirely to the Hebron Gneiss

QFS (quartz feldspar segregation)

a thin, discontinuous vein material of variable grain size .5 - 10 mm. and composed entirely of quartz and feldspar most often plag. often occurs in highly deformed zones

QS (quartz segregation)

a thin, discontinuous pure quartz veinlette. often occurs in highly deformed zones

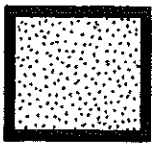
v. Qtz (vein quartz)

a planar, often quite thick, body of pure quartz

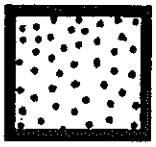
LOG SYMBOLS AND SHEET ORGANIZATION

The following sheets are the guide to all of the symbols, most of them fabric related, used in visually representing the cores considered in this project. Most of the symbols were independent of log scale (1:1 vs. 1:12) and these are given first. Some symbols did vary with log scale or were better represented on the log sheets, and are presented on actual log sheets. The description of the sheet organization is presented on the last 1:12 log sheet in a form similar to the instructions for GSA abstract format.

Micro- to cryptocrystalline black rock sometimes bearing minute mineral fragments. Fluidal characteristics are shown by intrusion of material into dikelettes off thicker dikes. Origin of this material is probably fault related as microbrecciation often accompanies this material. May include ultramylonites, microbreccias and pseudotachyllites.



Microbreccia having rock and mineral fragments visible with a 10X hand lense or greater magnification. Cements are given in the logs where they are discernable, but color is often the only indication of mineral content: green = chl and/or epid, black = mgt, brown = biot.



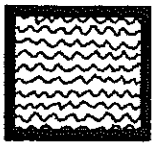
Breccia having rock and mineral fragments visible with the naked eye. Cements are given in the logs where they were discernable.

(a)

Mylonitic Schist (a). Very micaceous (greater than 30%) rock having clearly anastomosing foliation and lensoid fabric. Commonly exhibits "S-C" fabric. Blasts of plag and muscovite are common, but less than 10%. QS and QFS are very common and often abundant in zones with this fabric.

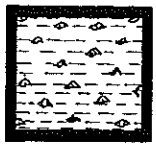
(b)

Blastomylonitic Schist (b). Identical fabric as (a), but bearing greater than 10% porphyroblasts.



Crenulated Schist. Very micaceous rock with well developed crenulation observable in hand sample. Commonly in chl-musc schists.

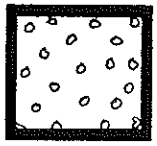
Phyllonite. Mica-rich (commonly chl-musc) rock with individual grains barely visible with a hand lense (that is phyllitic in appearance). In thin section these zones show highly anastomosing fabric indicative of shearing.



Ultramylonite. Ultra-fine grained rock of great variety of color resembling chert or flint. A streaky foliation is visible only as color variation, and thin less than 1 mm. partings are common parallel to the color bands. In thin section, minute feldspar clasts are visible. This fabric is commonly developed in low biotite and qtz rocks.

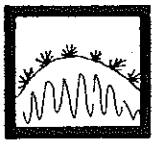
Augen Gneiss. Quartzofeldspathic rock usually metaigneous in origin bearing augen of feldspar in a finer grained groundmass of qtz, fspar, and some mica. The gneissose foliation in the rock is anastomosing and lensoid (myl). Pegmatites, BHG, and BGG commonly have this fabric developed.

Straight gneiss. Gneiss bearing high grade mineralogy and often being migmatitic with extremely planar foliation and quartzofeldspathic and micaceous laminae 1 - 3 mm. thick that extend for several meters when observed in outcrop. Where migmatitic, the leucosomes are in strong parallelism with laminae. Feldspar blasts up to several centimeters in diameter are common but not abundant enough to constitute an augen gneiss.



Spotted Plagioclase Blast Granofels. The recently described "blastocataclasite" of Wintsch (1985), which is described as a high grade brittle fabric overprinted by ductile shear. The rock is of unique character being biotite and sometimes muscovite rich with abundant (10 - 50%) plag blasts, generally not augen in shape. The micas are often very weakly foliated in a mylonitic fabric, but the overall appearance of the rock is granofelsic. This fabric often truncates host rock foliations at low angles.

Quartz Vein Filling. Planar layers filled with v's are interpreted as veins and discontinuous lenses, pods and layers are considered as segregations.



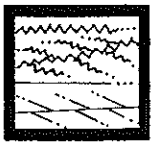
Mineral rosettes on some surface. Commonly exhibited by tourmaline on the walls of a vein.

Quartzofeldspathic Vein Material. X's stand for feldspar the variety of which is usually given, but if not is likely plag. V's stand for quartz. Planar layers are considered veins, and the type is given. Irregular bodies are segregations and often have no descriptors.

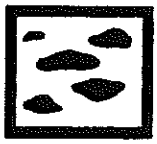
Feldspathic Vein Material. Uncommon feldspar veins were noted as well as segregations. The feldspar type is always given.

Single Plagioclase Grains. Designed to suggest albite twinning, this symbol was entirely restricted to the Moodus 4764' 1:1 logs.

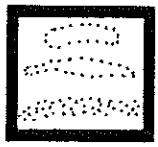
Single Microcline Grains. Designed to suggest tartan twinning in microcline, this symbol was entirely restricted to the Moodus 4764' 1:1 logs.



Fractures And Thin Fabric Elements. Jagged lines indicate rough fractures in the core and straight lines indicate smooth breaks in the core or less than 1 cm. thick fabric layers which are always described (usually in the left half of the log page). Unaltered fractures are not noted except in the MOodus 4764' logs. Alterations along fracture are always listed.



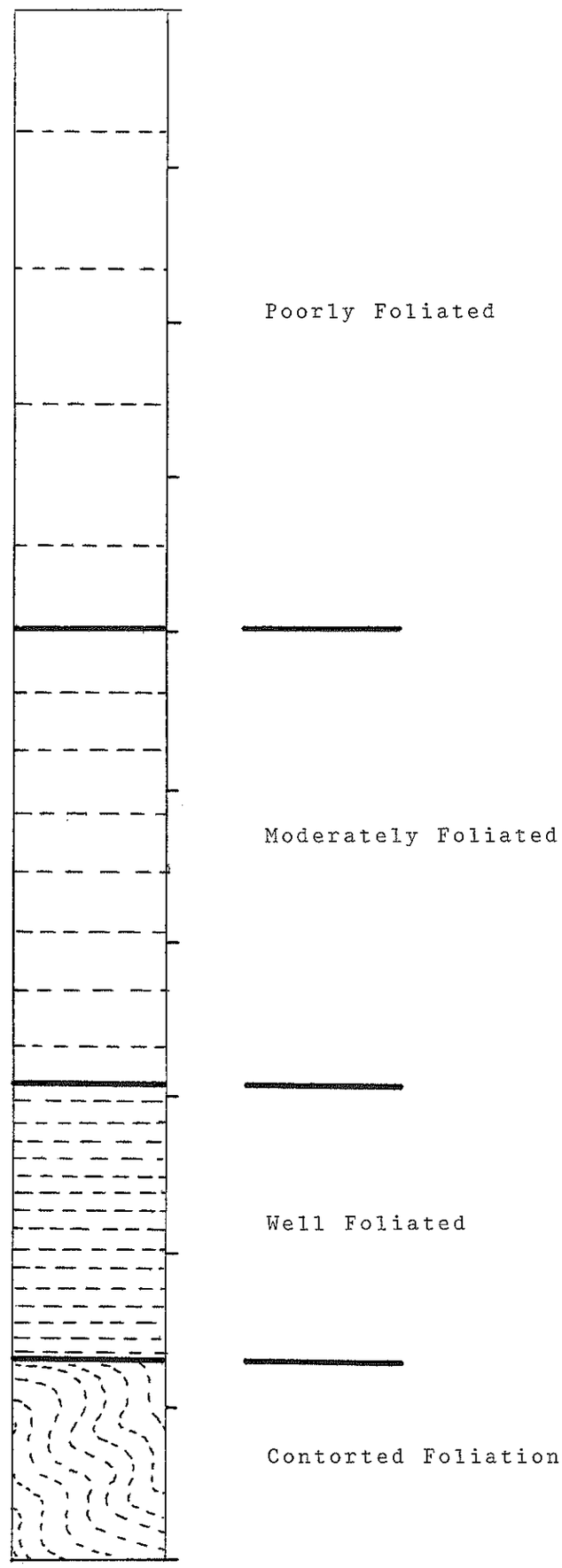
Dark Mineral Segregations. Tourmaline and hornblende were found in a few places in pod-like segregations that required a unique symbol. The mineralogy of the segregations are always given.



Mineral Concentration Zones. Dotted outlines define the perimeter of a diffuse mineral segregation, the mineral always given. A stippled pattern defines the region of a unique disseminated mineral.

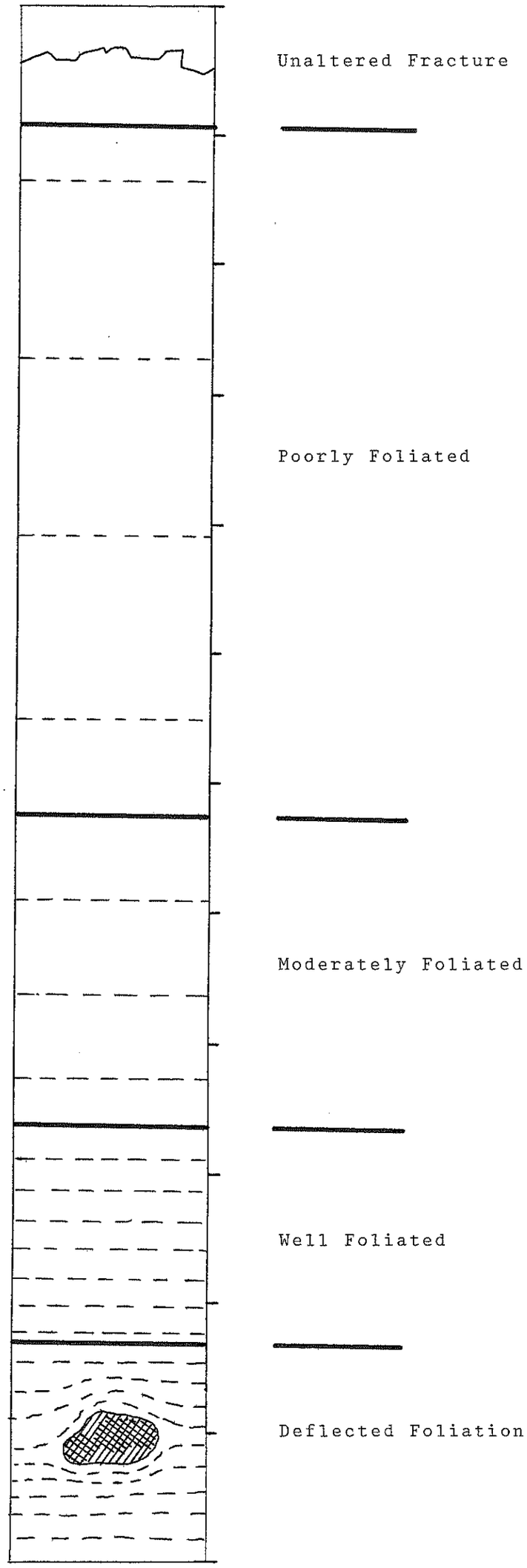
CORE LOG_____ BOX#_____ INTERVAL_____

Foliation Symbols Used In The 1:12 Logs.



CORE LOG_____ BOX#_____ INTERVAL_____

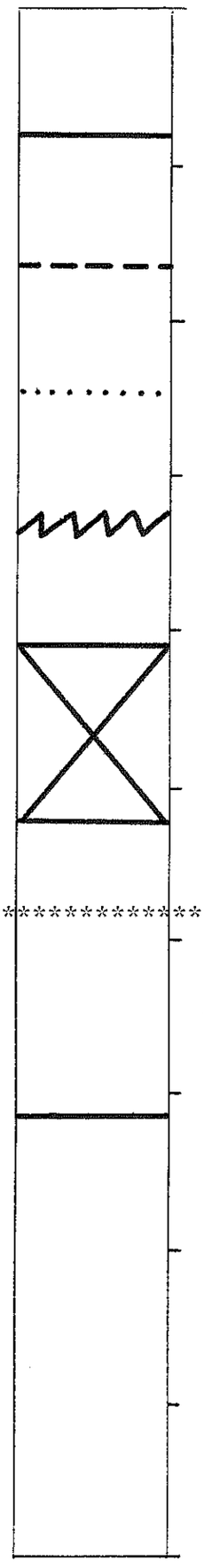
Foliation and Fracture Symbols Used in the 1:1 Logs.



CORE LOG_____ BOX#_____ INTERVAL_____

Contacts and Other Log Symbols

Sheet Organization (below ******)



Sharp Lithologic Contact

Gradational Lithologic Contact over 1 - 2 cm.

Gradational Lithologic Contact over Greater Than 2 cm.

Skip in log over homogeneous section. Footages given above and below skip give amount of compressed log.

Section not recovered or sampled by drilling firm for physical testing. Not used in the Moodus 4764' logs.

****

This line separates major breaks in lithology or fabric in the log.

The overall host rock of the sectio is described in this region with the key terms <u>underlined</u>.

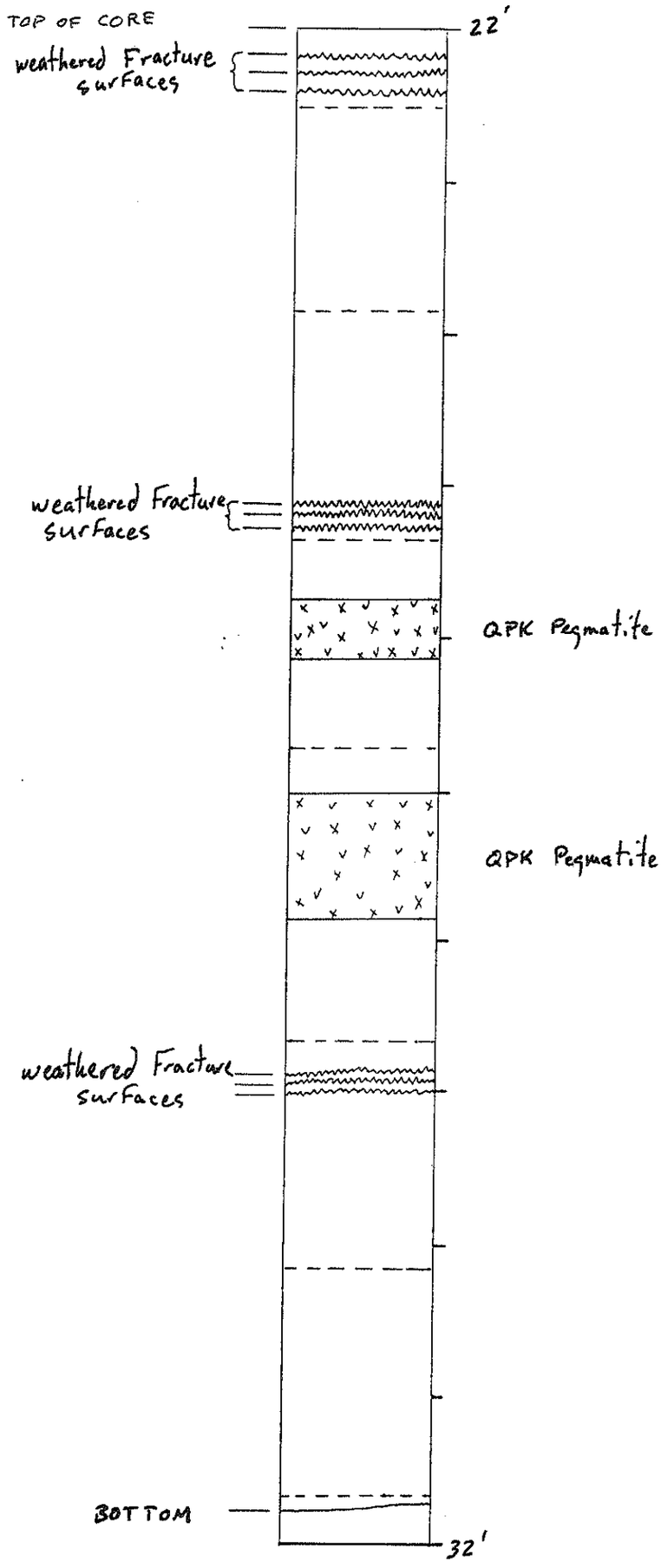
Fabric observations not readily shown by symbols on the log column appear in this portion of the log sheet. As brittle features tend to be thin and ductile features wide, this area is generally restricted to low grade brittle fabrics.

Detailed observations about the core are placed adjacent to the column, next to the item in question.

SUMMARY

The product of this work is an internally consistant set of logs for the three drill holes considered and a description of chips from the Moodus deep well in a similar context. The rules developed, and here presented, under which this "homogenization" of the work to date has been accomplished are hoped to assist in future examination of these materials and notes as well as to guide future description of new materials from the basement rock of Connecticut.

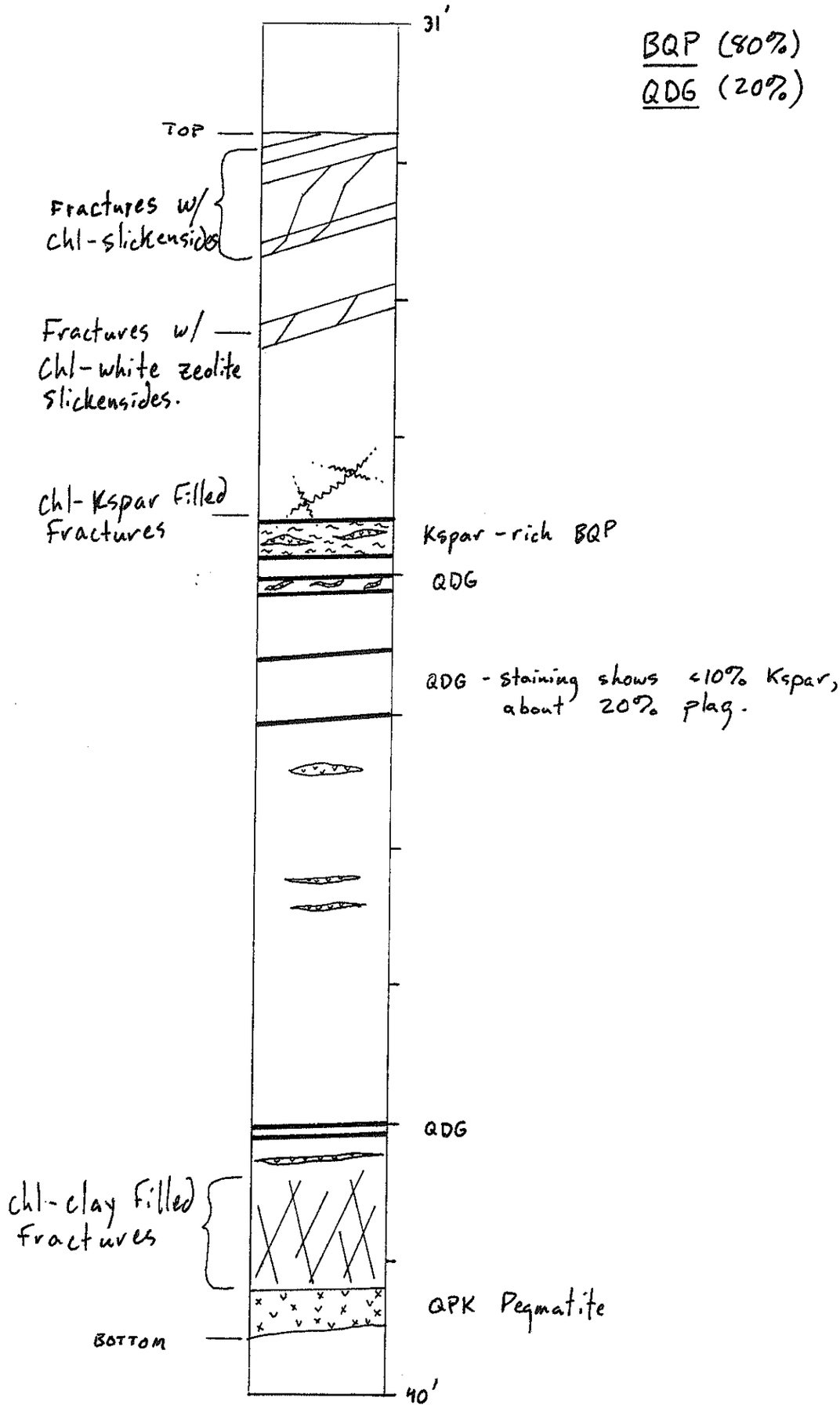
CORE LOG Moodus 1000' BOX# 1 INTERVAL 22.0' - 31.7'



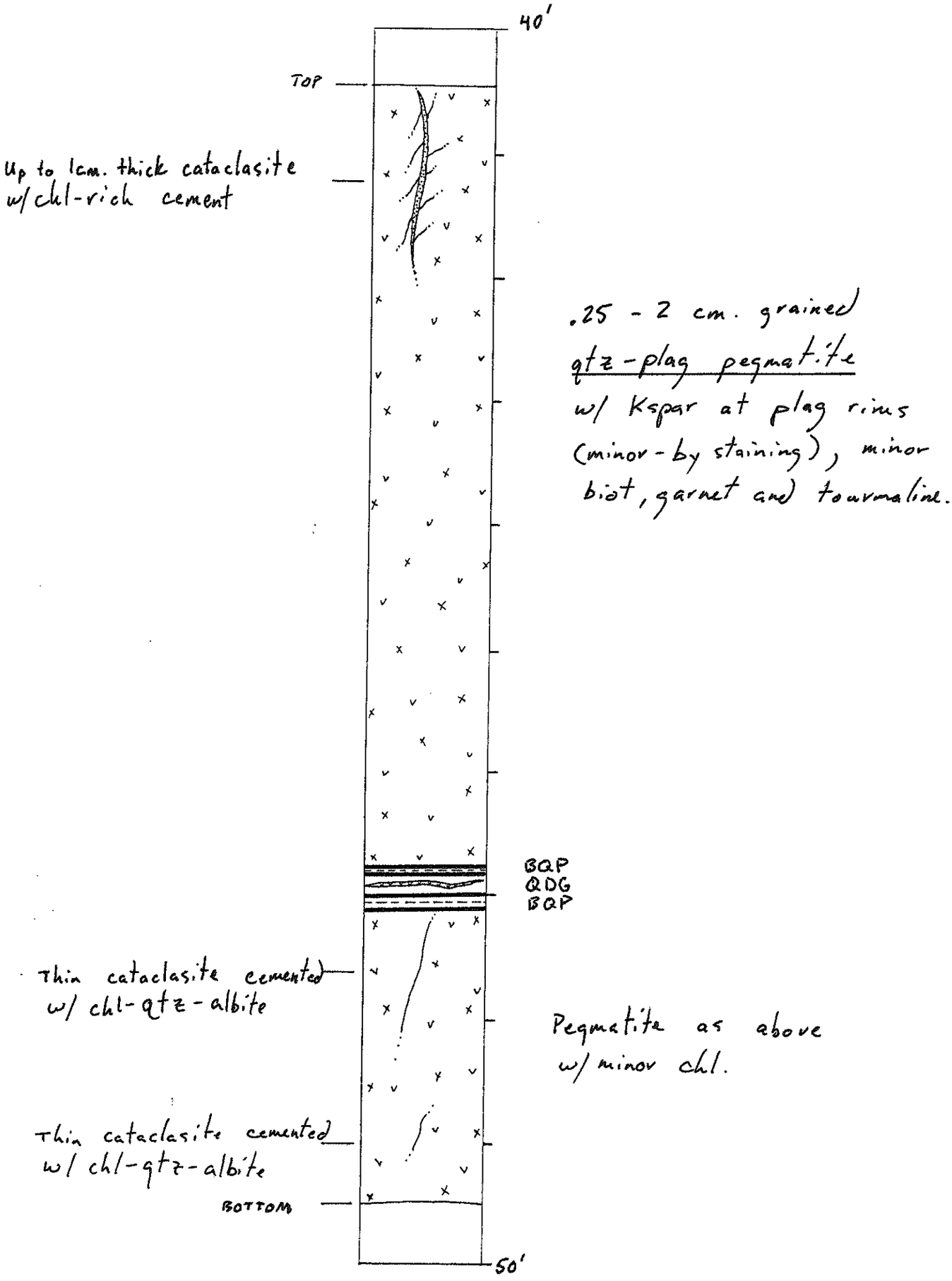
BQP (80%)

QDG (20%)

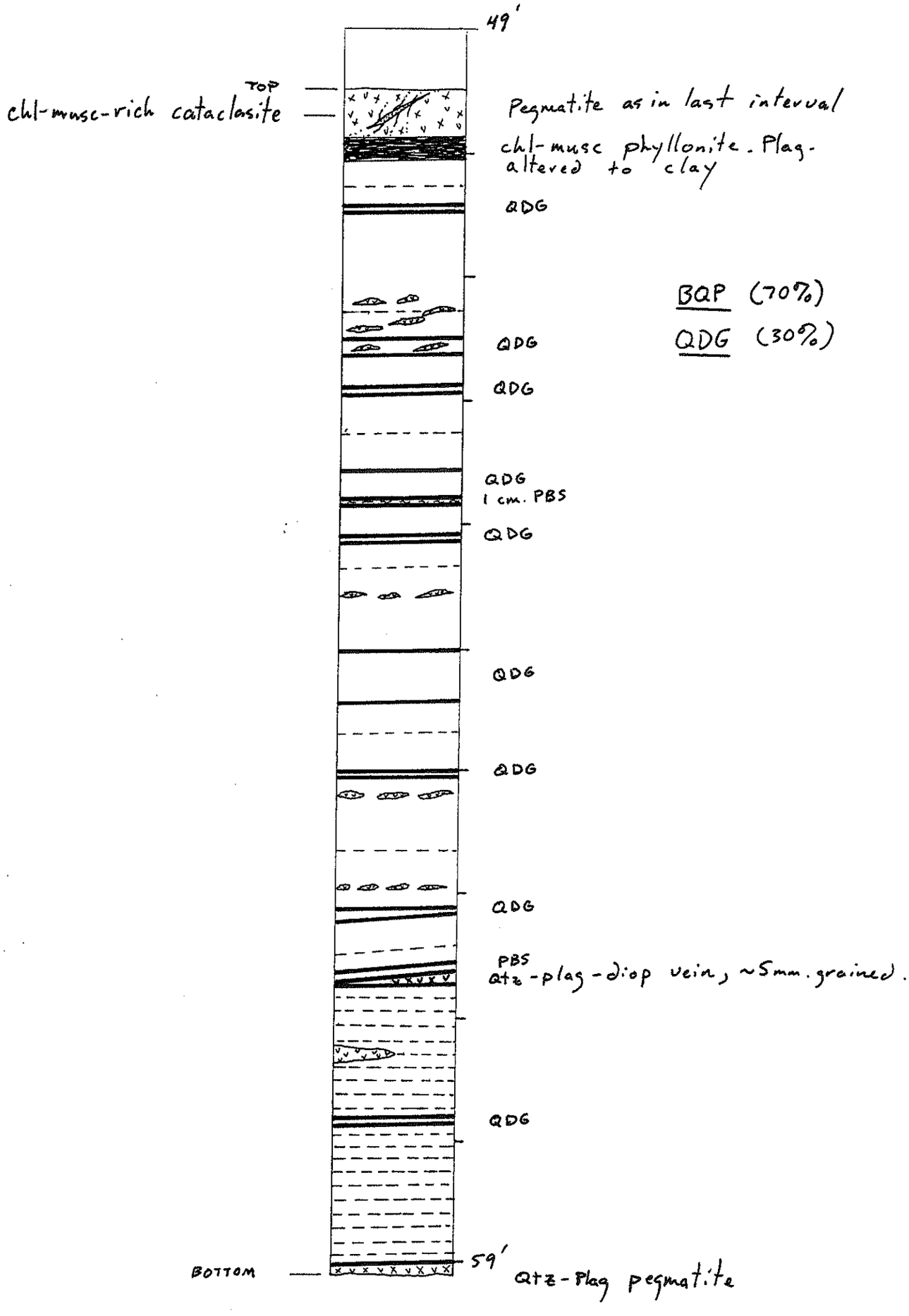
CORE LOG Moodus 1000' BOX# 2 INTERVAL 31.7' - 40.4'



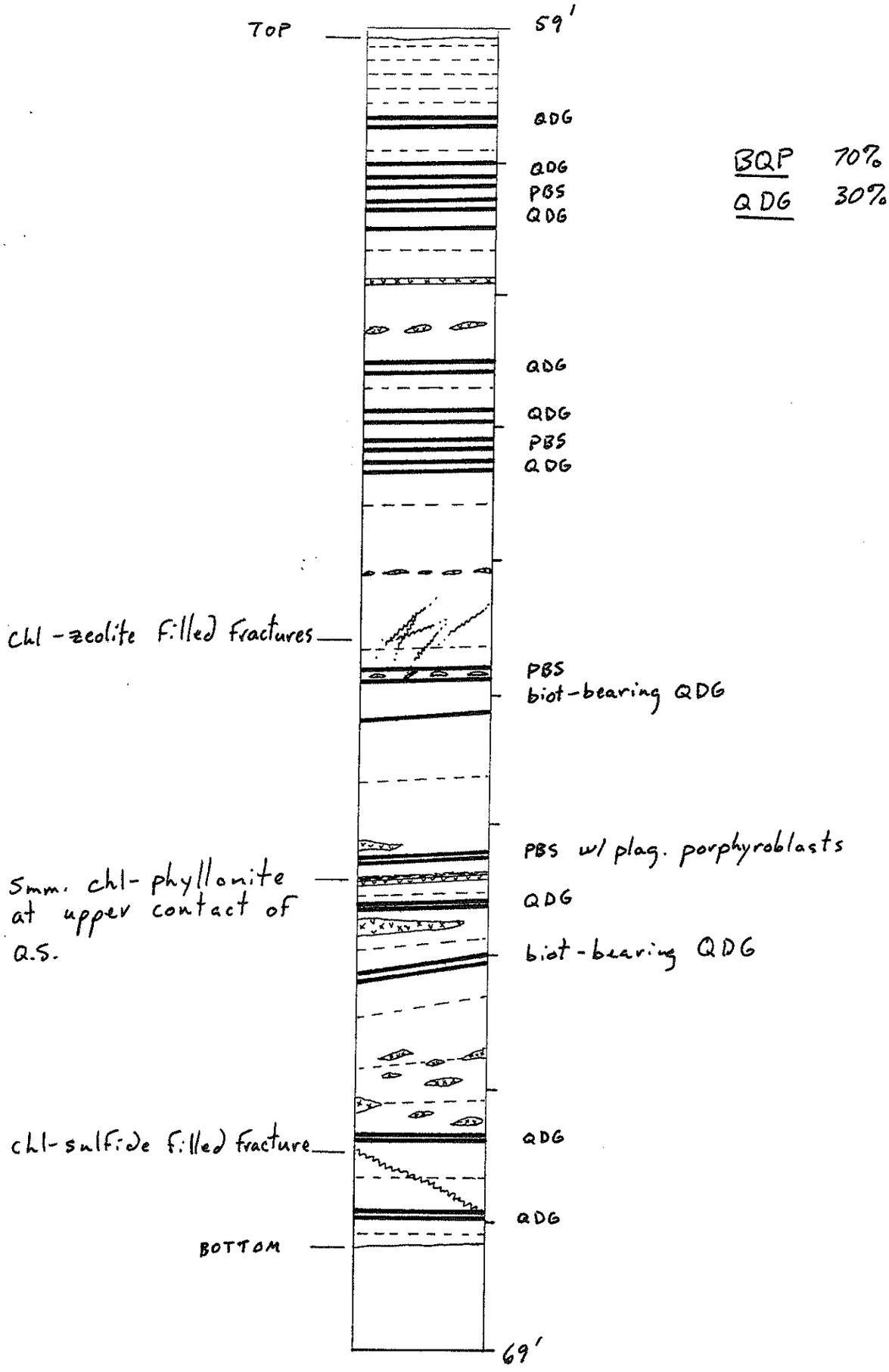
CORE LOG Moodus 1000' BOX# 3 INTERVAL 40.4' - 49.5'



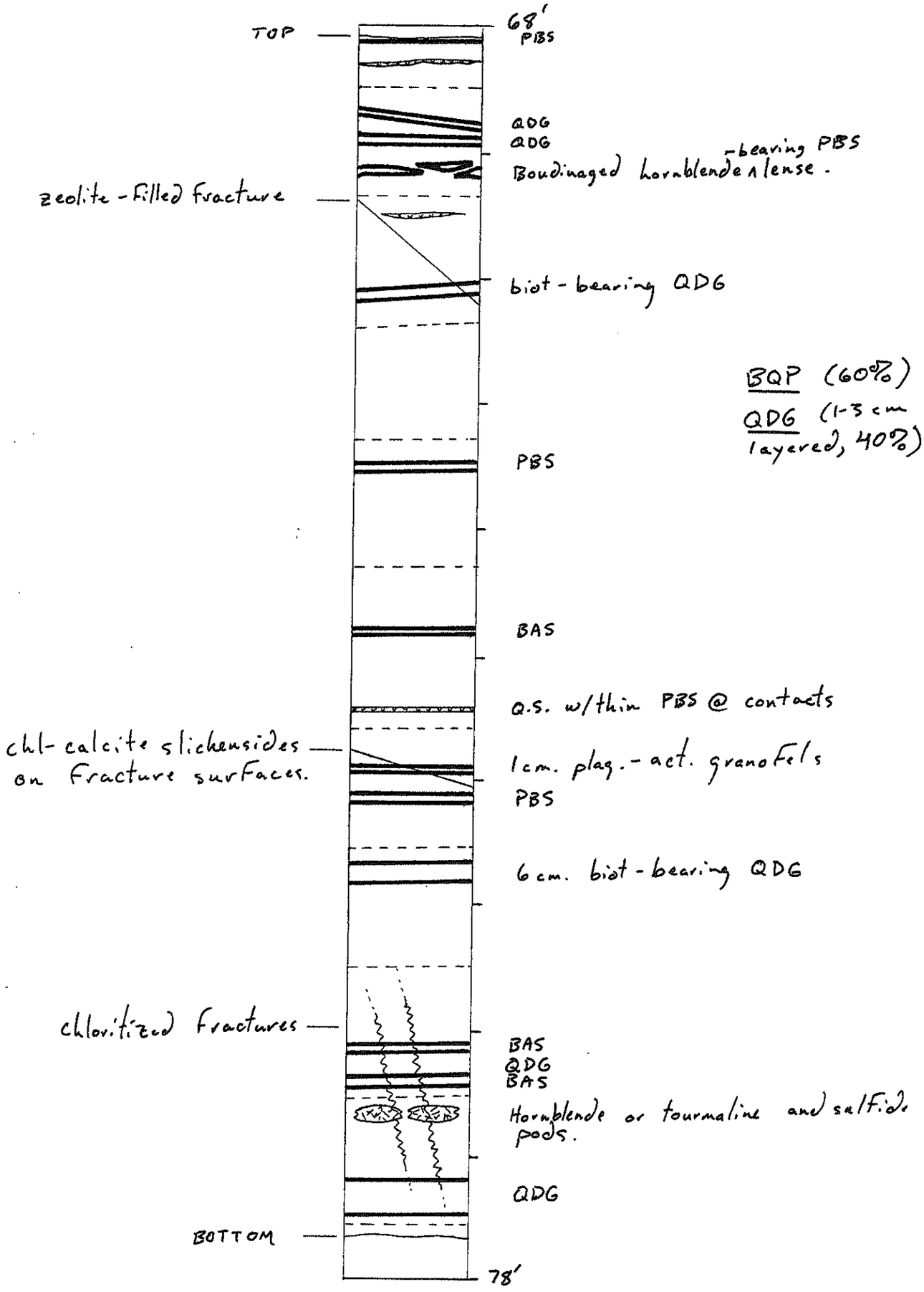
CORE LOG Moodus 1000' BOX# 4 INTERVAL 49.5' - 59.1'



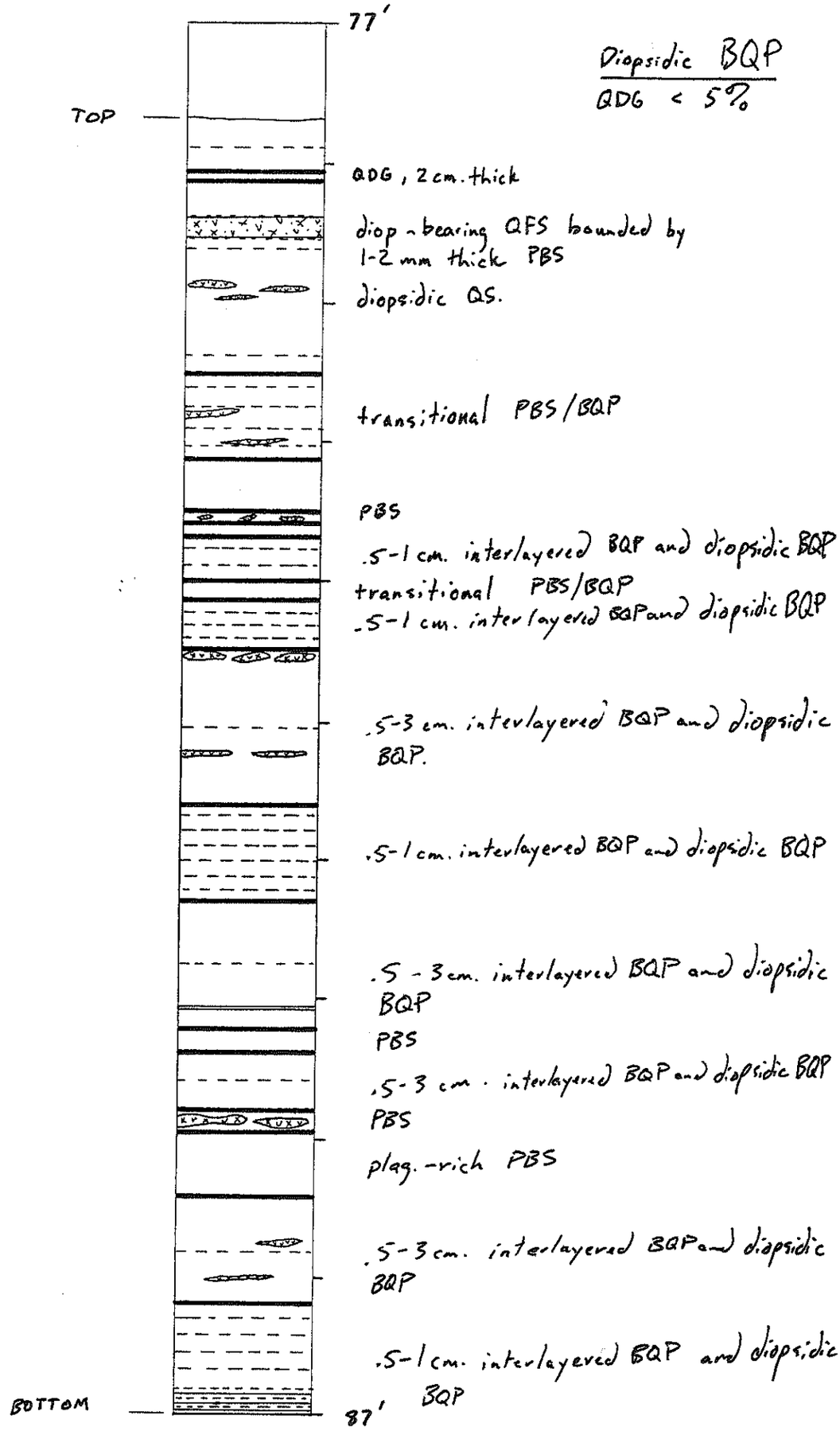
CORE LOG Moodus 1000' BOX# 5 INTERVAL 59.1' - 68.2'



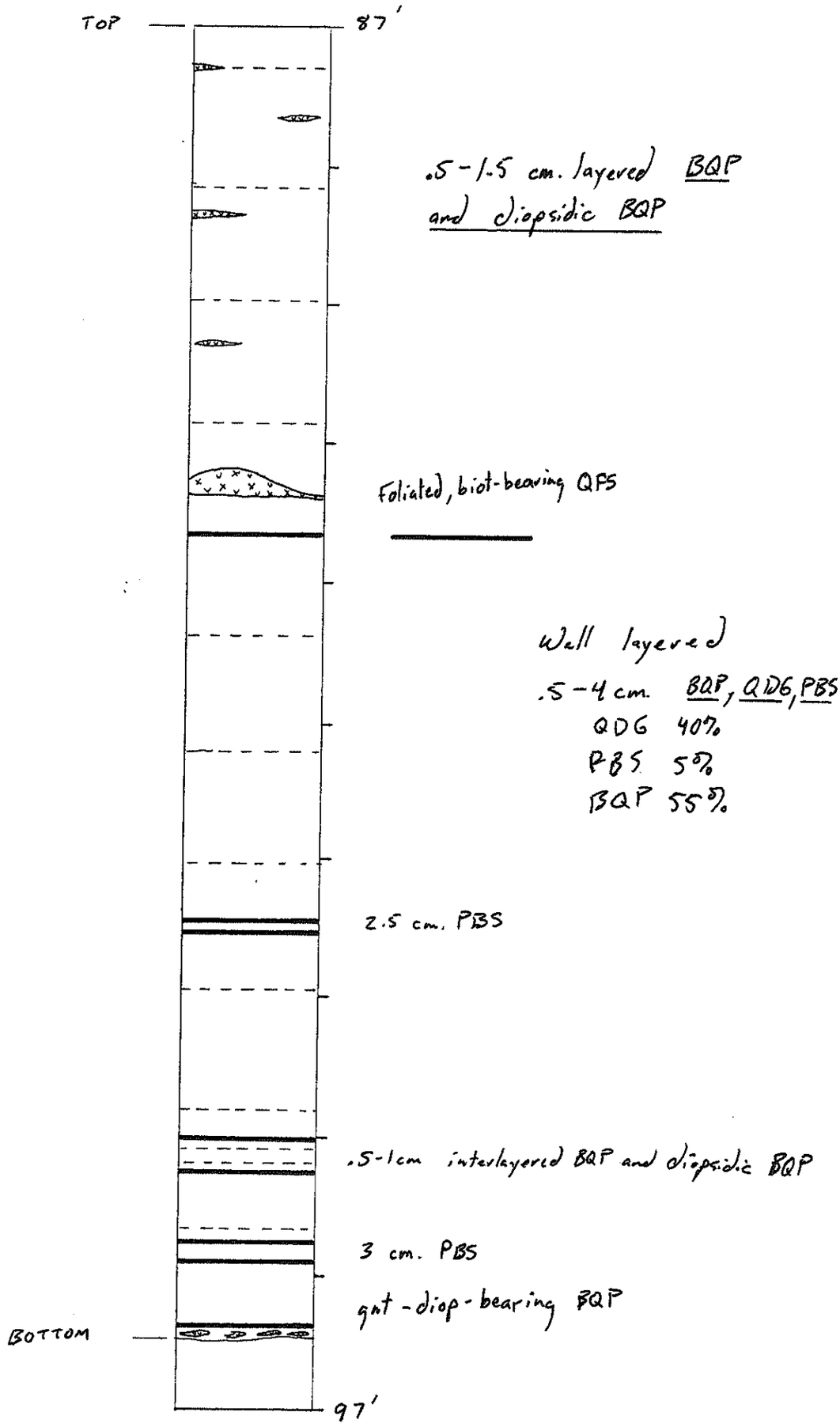
CORE LOG Moodus 1000' BOX# 6 INTERVAL 68.2' – 77.7'



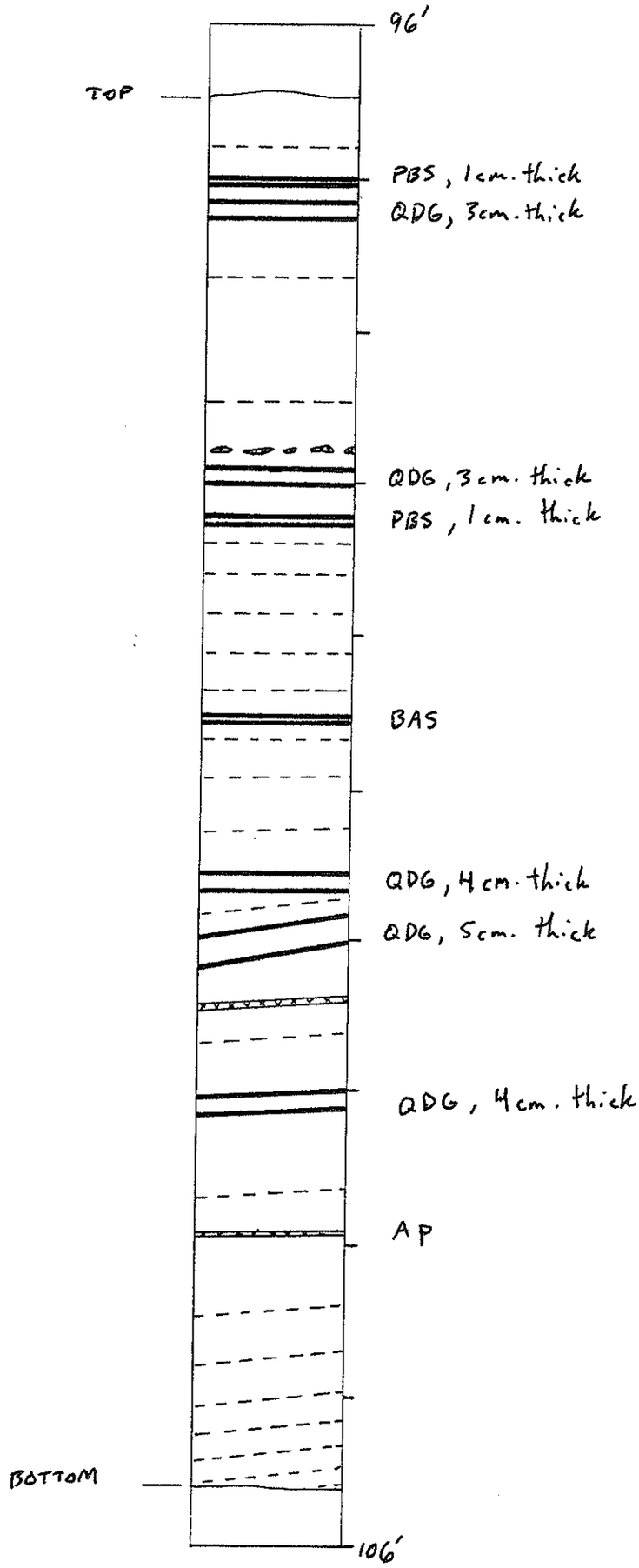
CORE LOG Moodus 1000' BOX# 7 INTERVAL 77.7' - 87.0'



CORE LOG Moodus 1000' BOX# 8 INTERVAL 87.0' - 96.4'

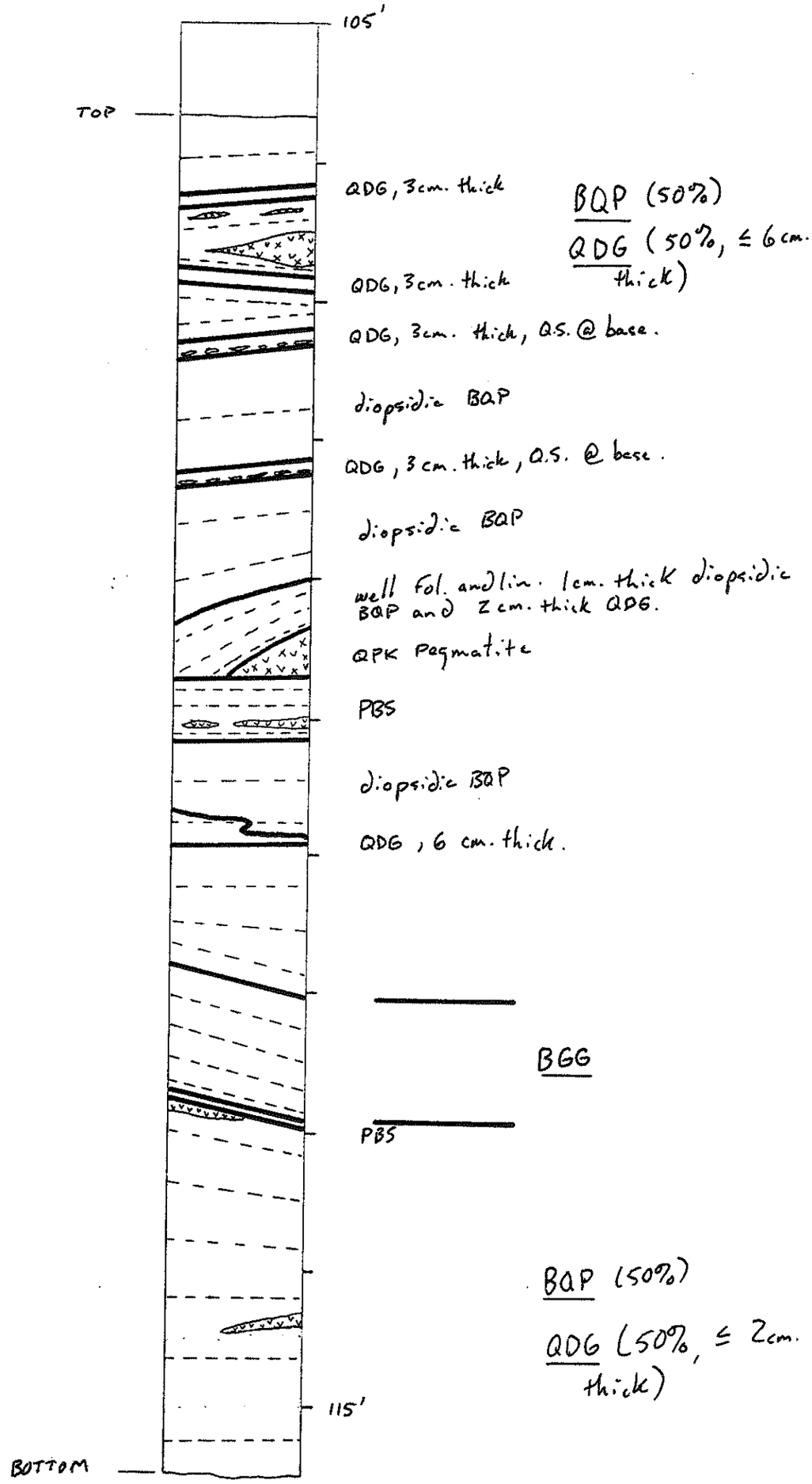


CORE LOG Moodus 1000' BOX# 9 INTERVAL 96.4' - 105.7'

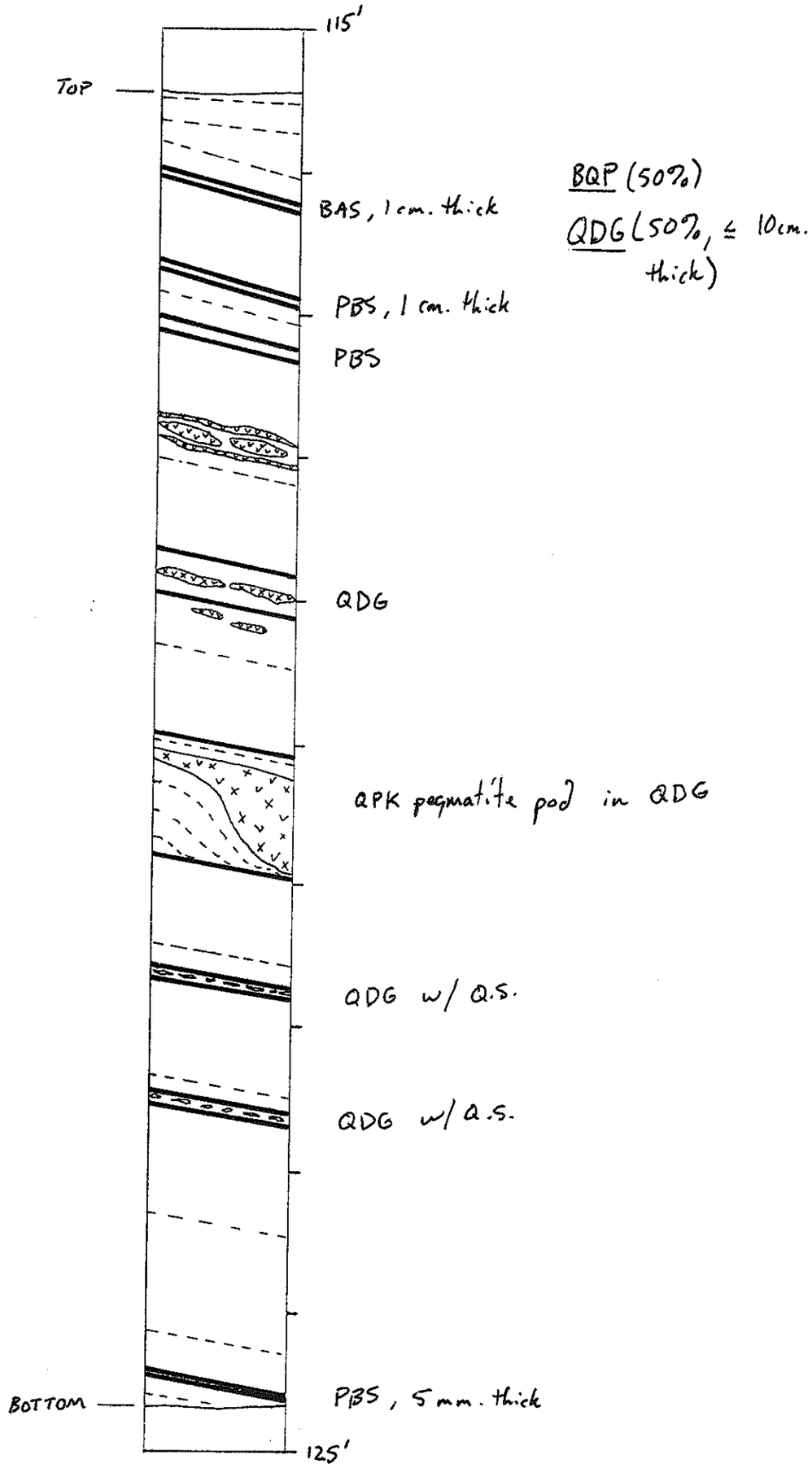


BQP (60%)
QDG (40%, ≤5cm. thick)

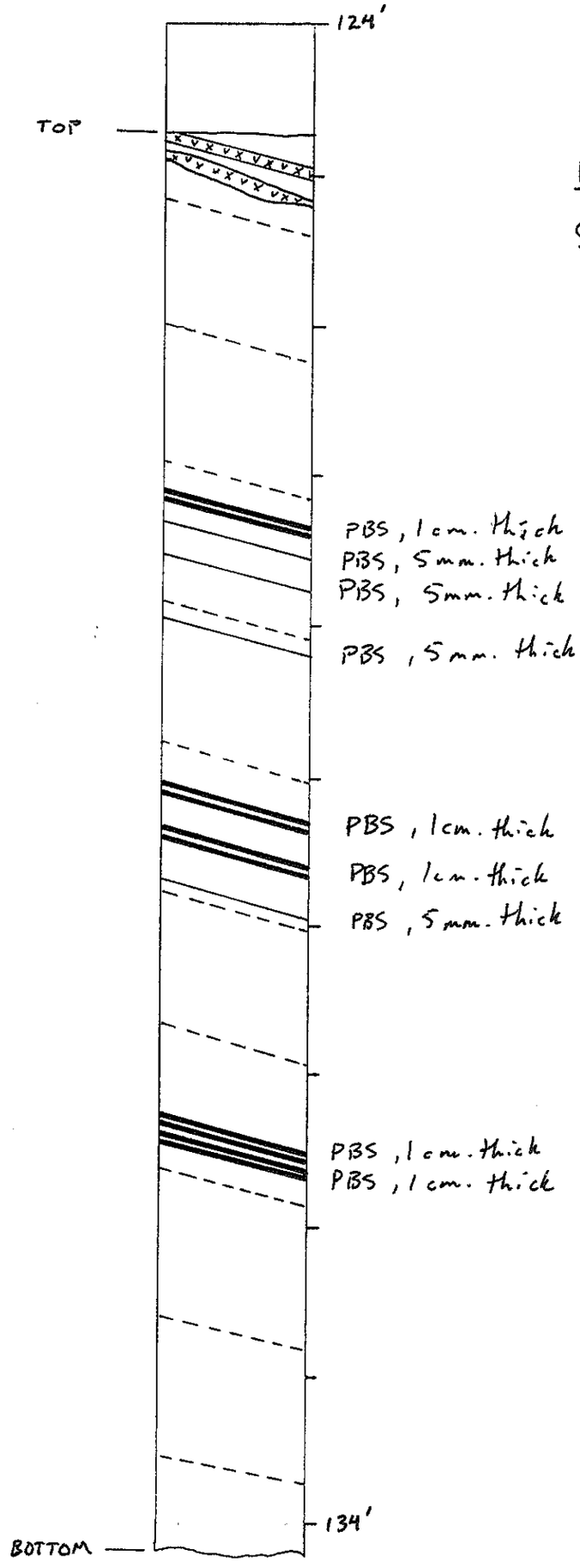
CORE LOG Moodus 1000' BOX# 10 INTERVAL 105.7' - 115.4'



CORE LOG Meadus 1000' BOX# 11 INTERVAL 115.4' - 124.7'



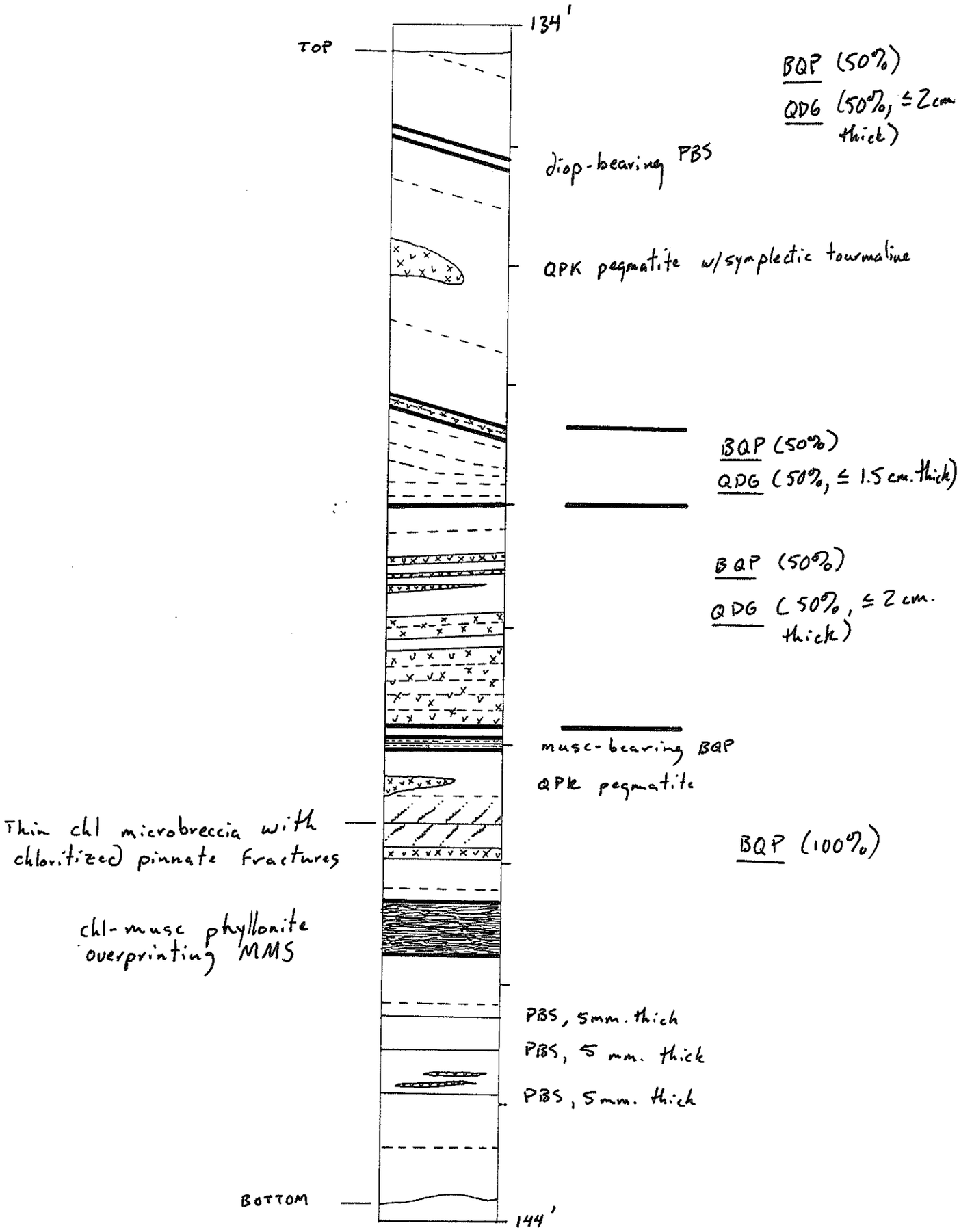
CORE LOG Moodus 1000' BOX# 12 INTERVAL 124.7' - 134.2'



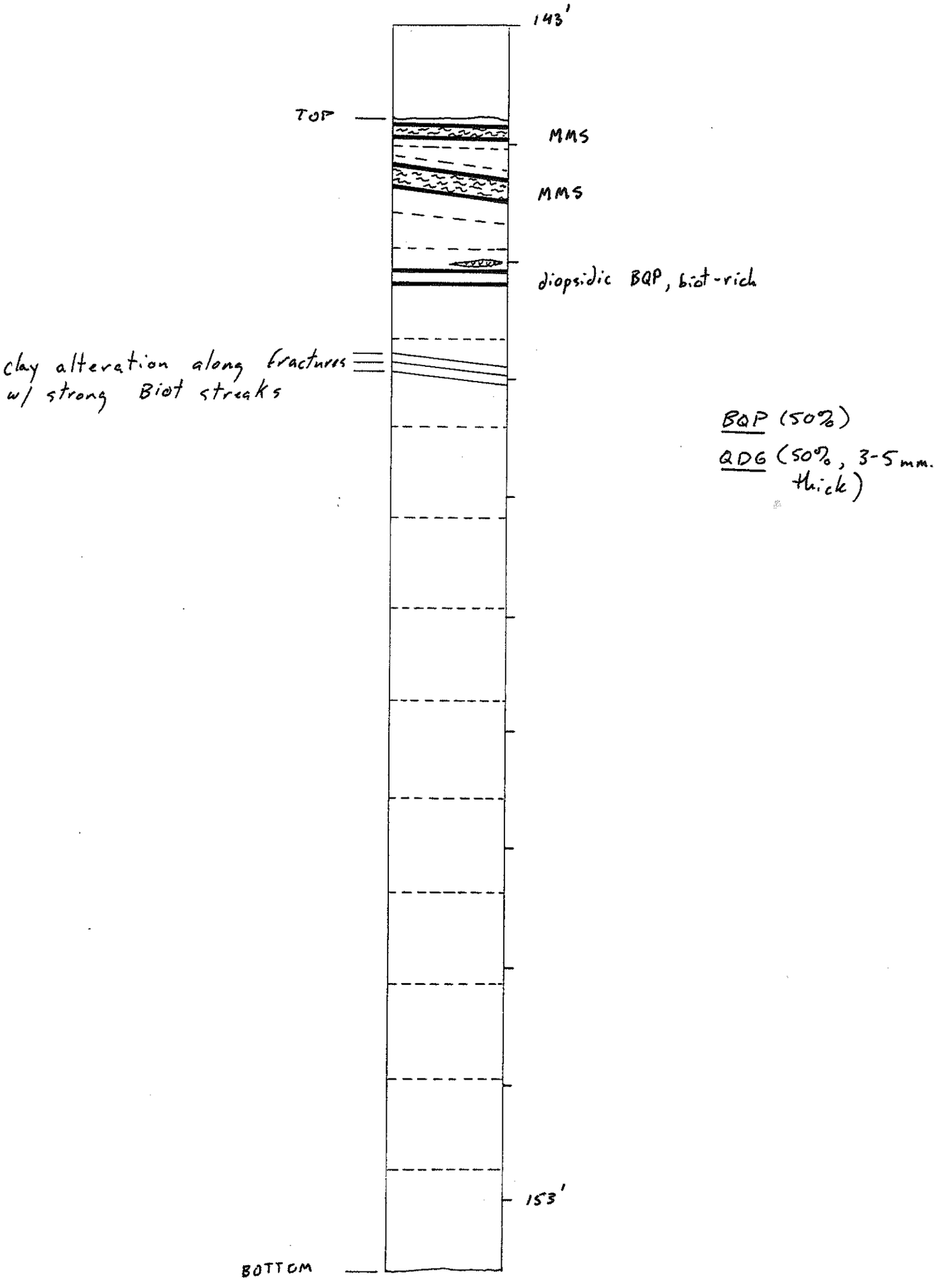
BQP (60%)

QDG (40%, ≤ 1cm. thick; layering 3-5 mm. thick from 127'-133')

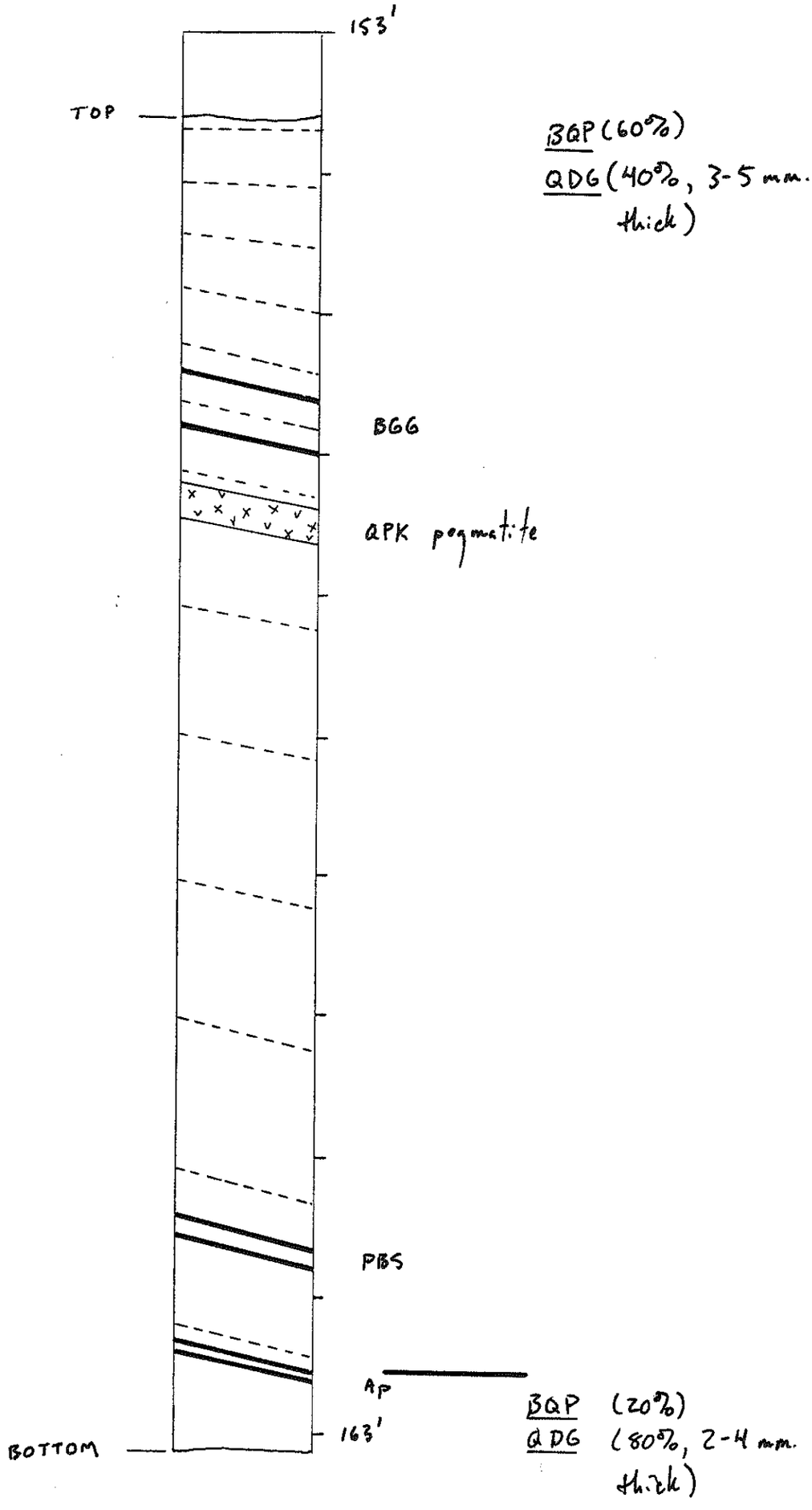
CORE LOG Moodus 1000' BOX# 13 INTERVAL 134.2' - 143.8'



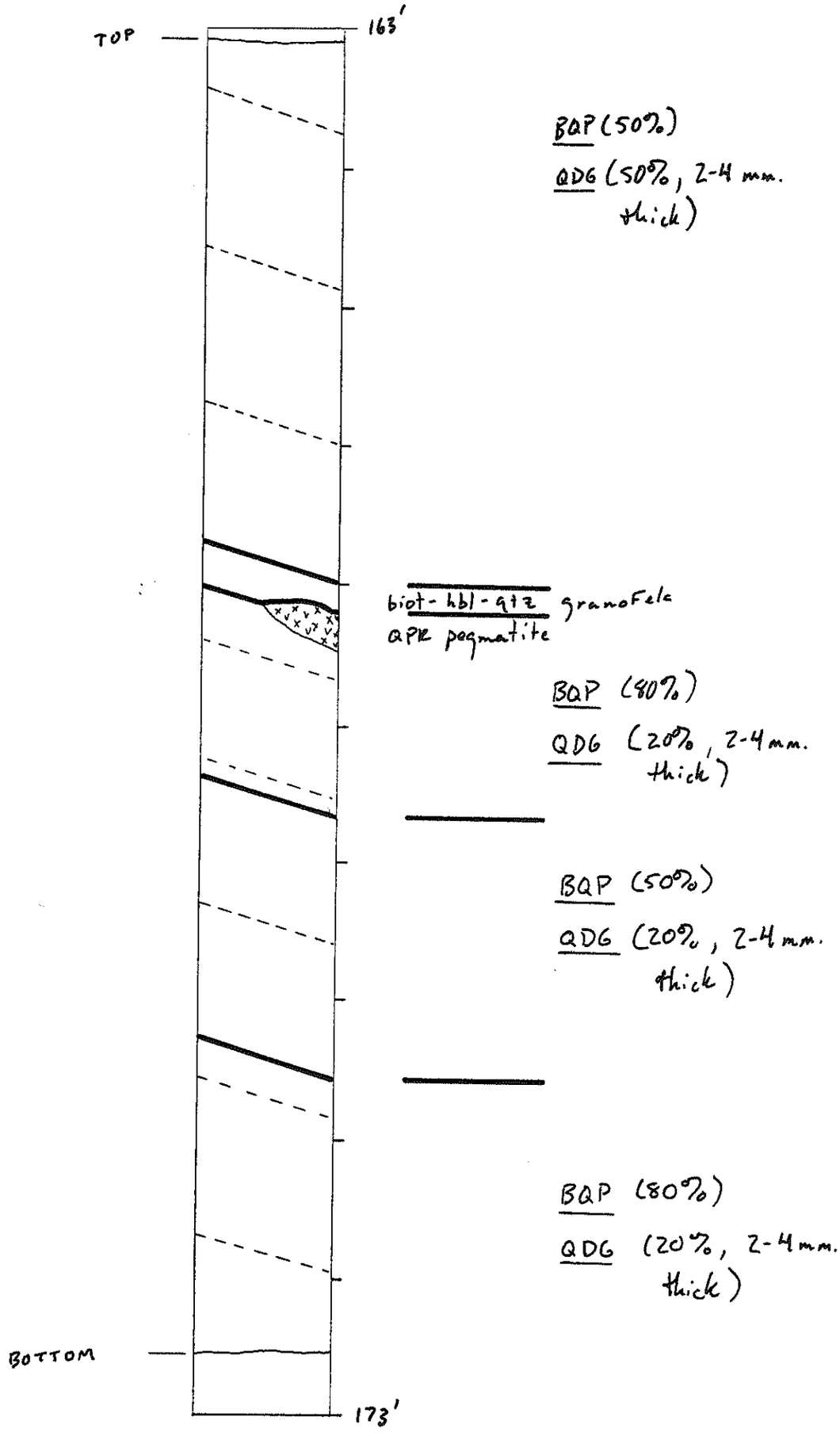
CORE LOG Meadus 1000' BOX# 14 INTERVAL 143.8' - 153.6'



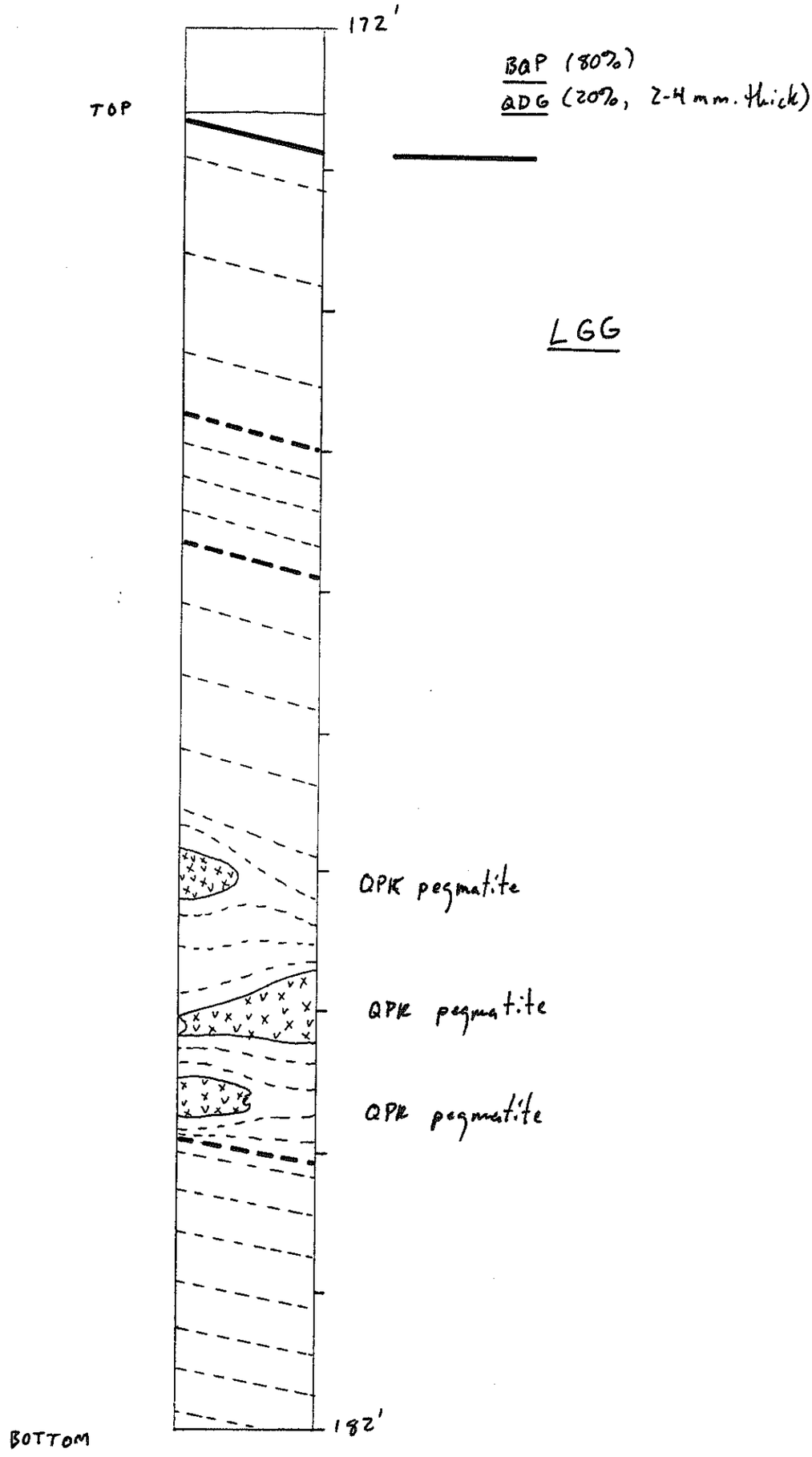
CORE LOG Moodus 1000' BOX# 15 INTERVAL 153.6'-163.1'



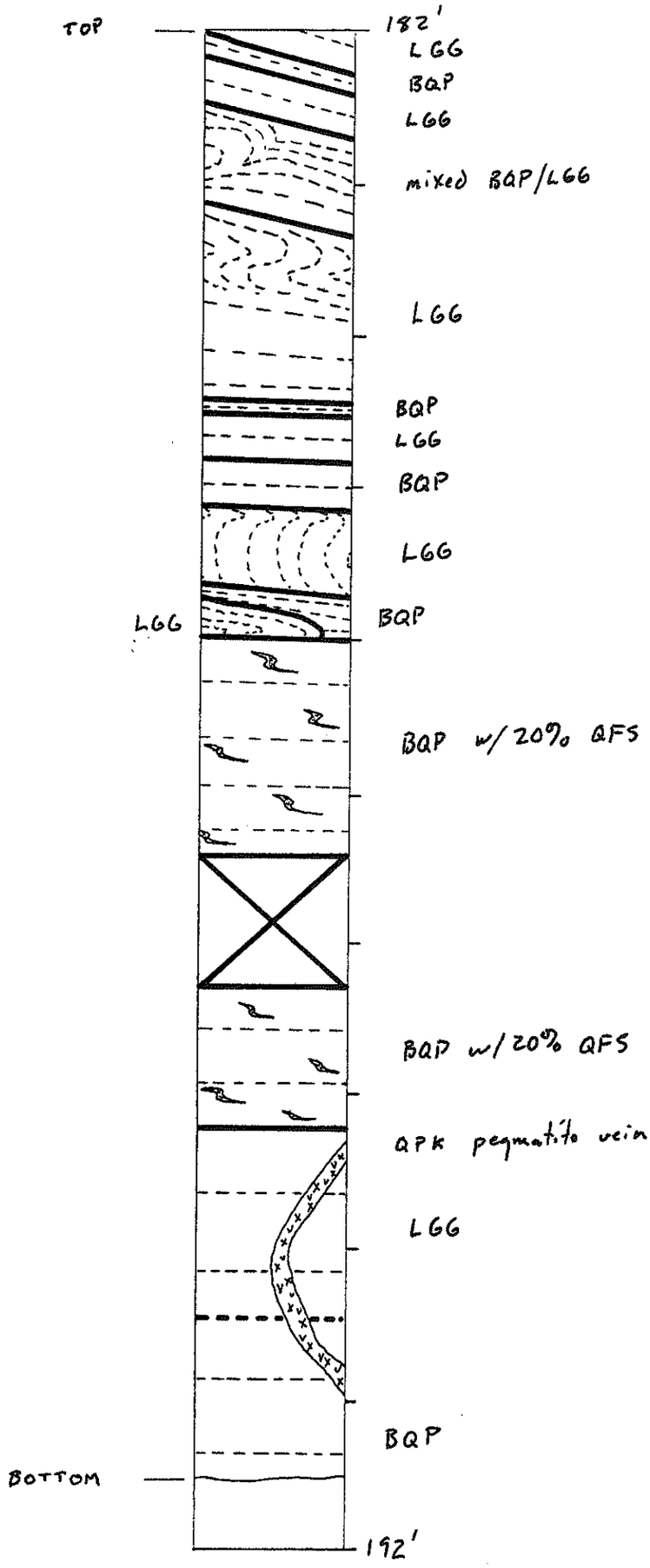
CORE LOG Moodus 1000' BOX# 16 INTERVAL 163.1' - 172.6'



CORE LOG Meadus 1000' BOX# 17 INTERVAL 172.6' - 182.0'

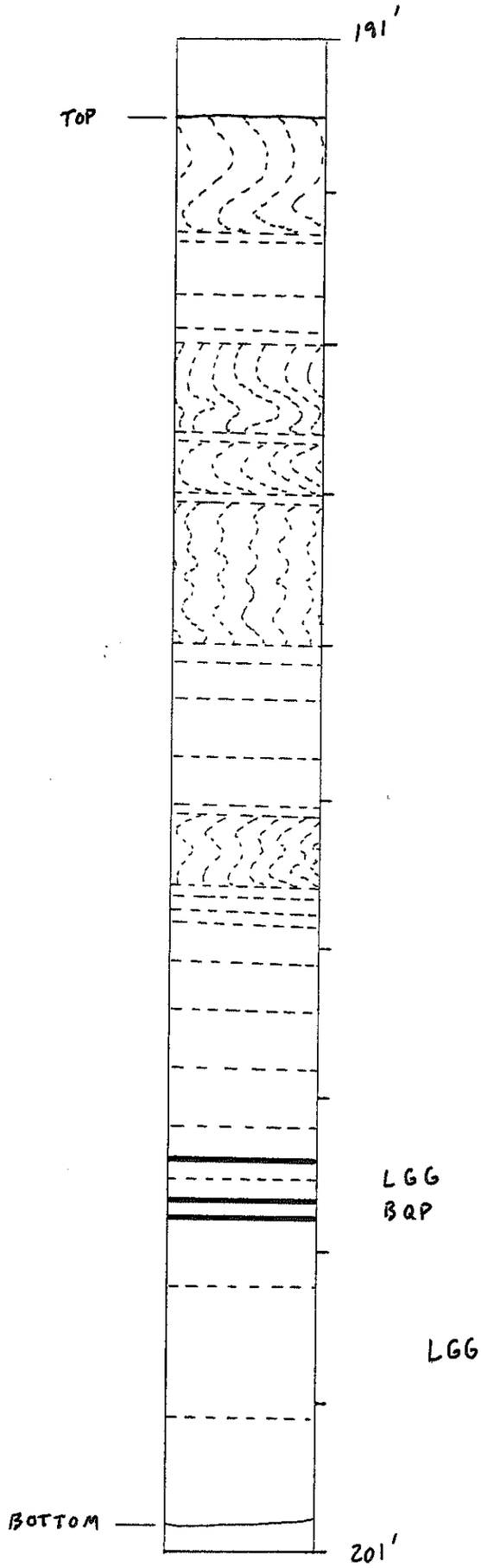


CORE LOG Moodus 1000' BOX# 18 INTERVAL 182.0' - 191.5'



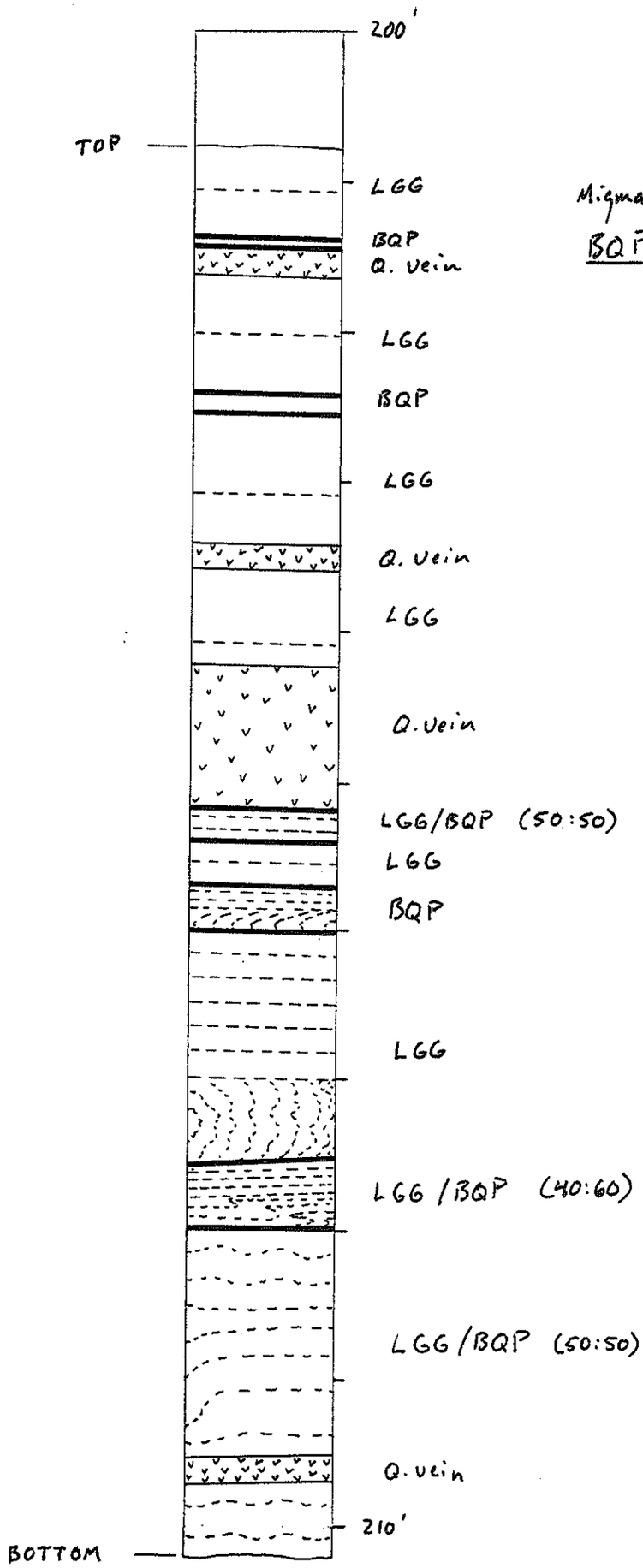
BQP transitional with LGG

CORE LOG Moodus 1000' BOX# 19 INTERVAL 191.5' - 200.8'



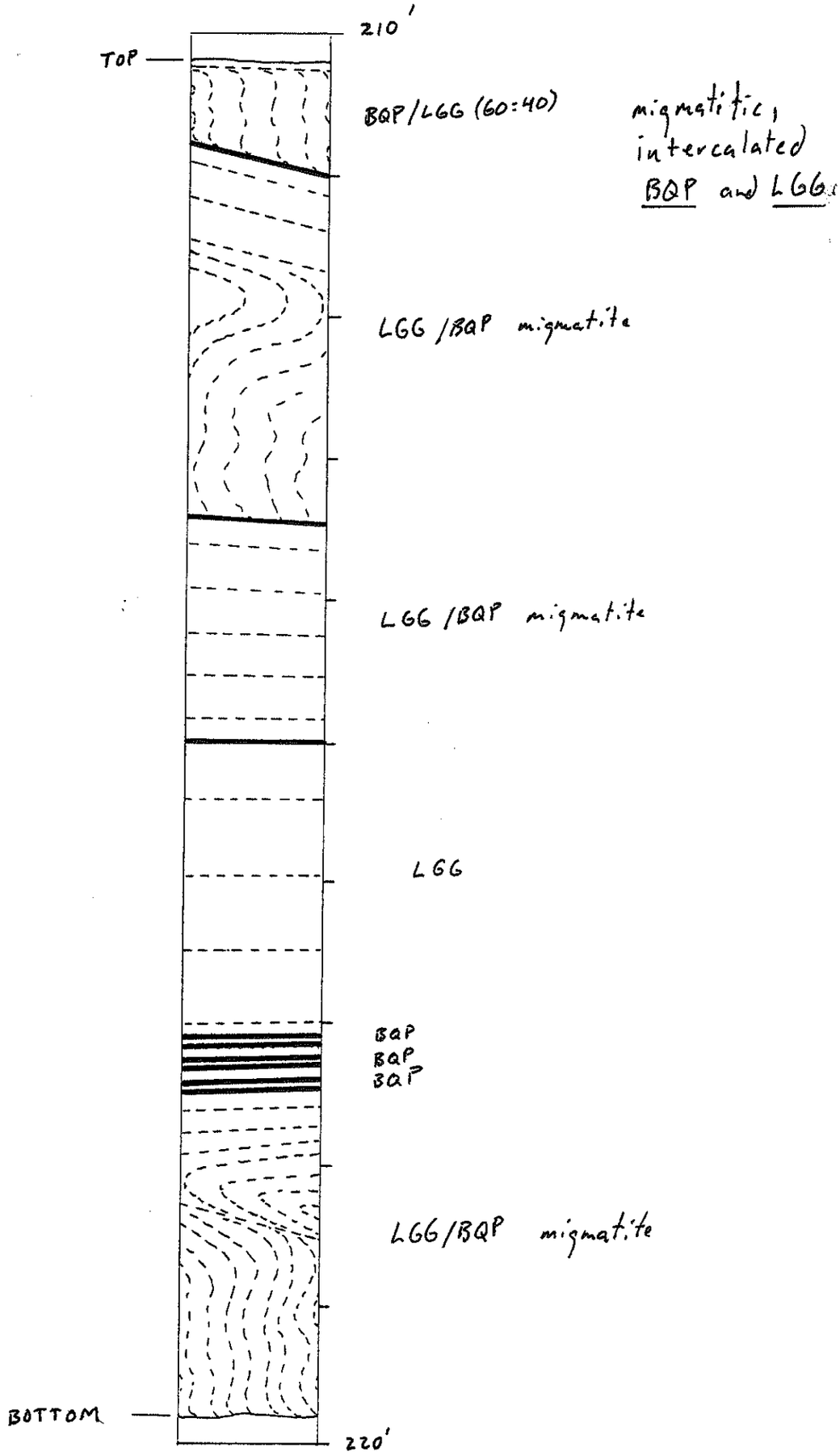
Migmatitic intercalated BQP and LGG.

CORE LOG Moodus 1000' BOX# 20 INTERVAL 200.8' - 210.2'

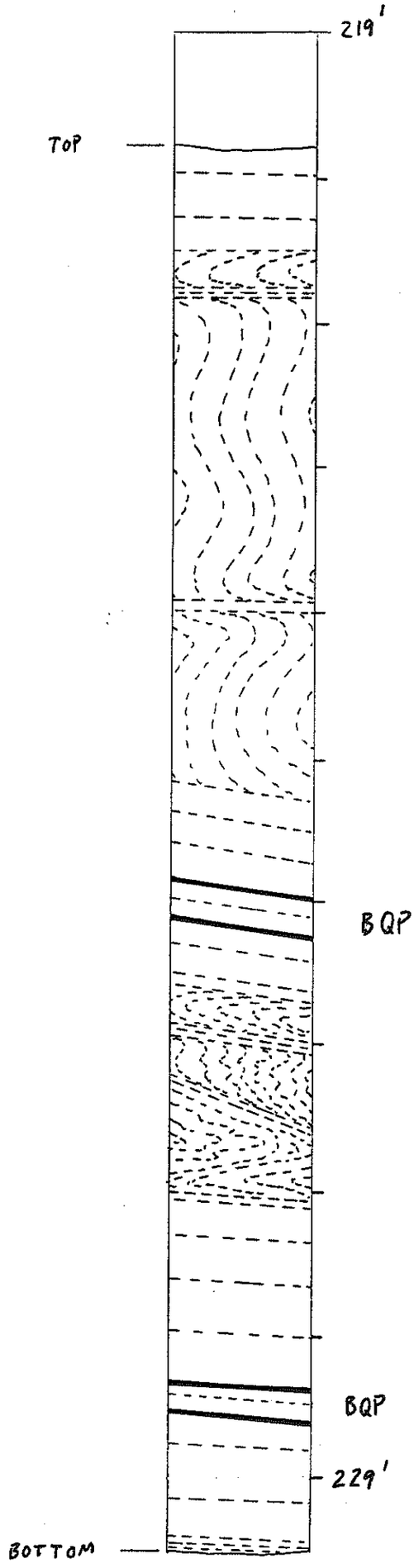


Migmatitic, intercalated BQP and LGG.

CORE LOG Moodus 1000' BOX# 21 INTERVAL 210.2' - 219.8'

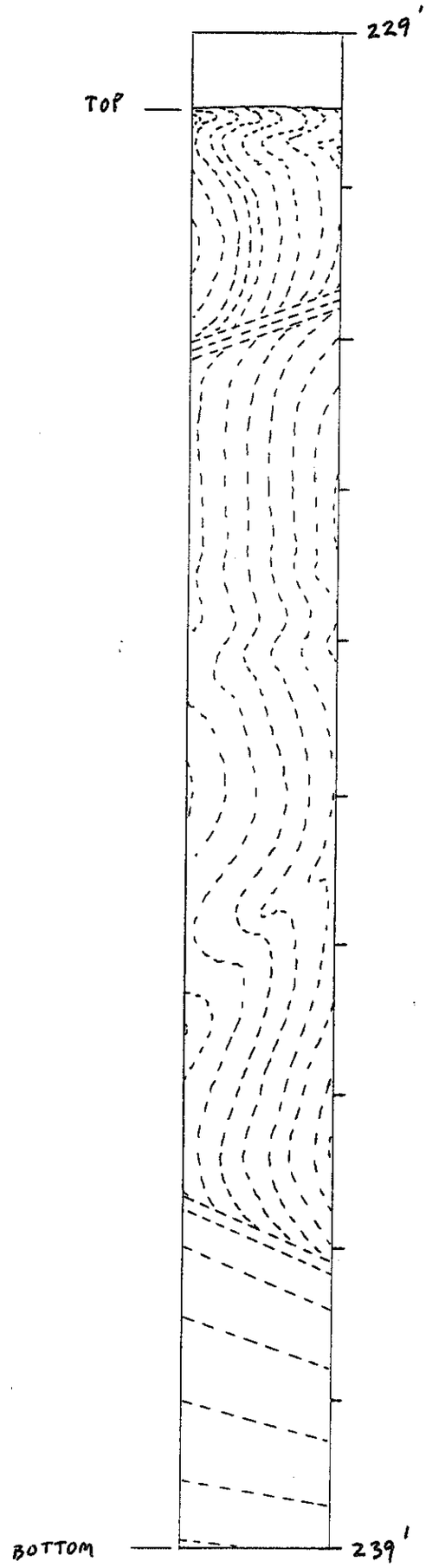


CORE LOG Moodus 1000' BOX# 22 INTERVAL 219.8' - 229.5'



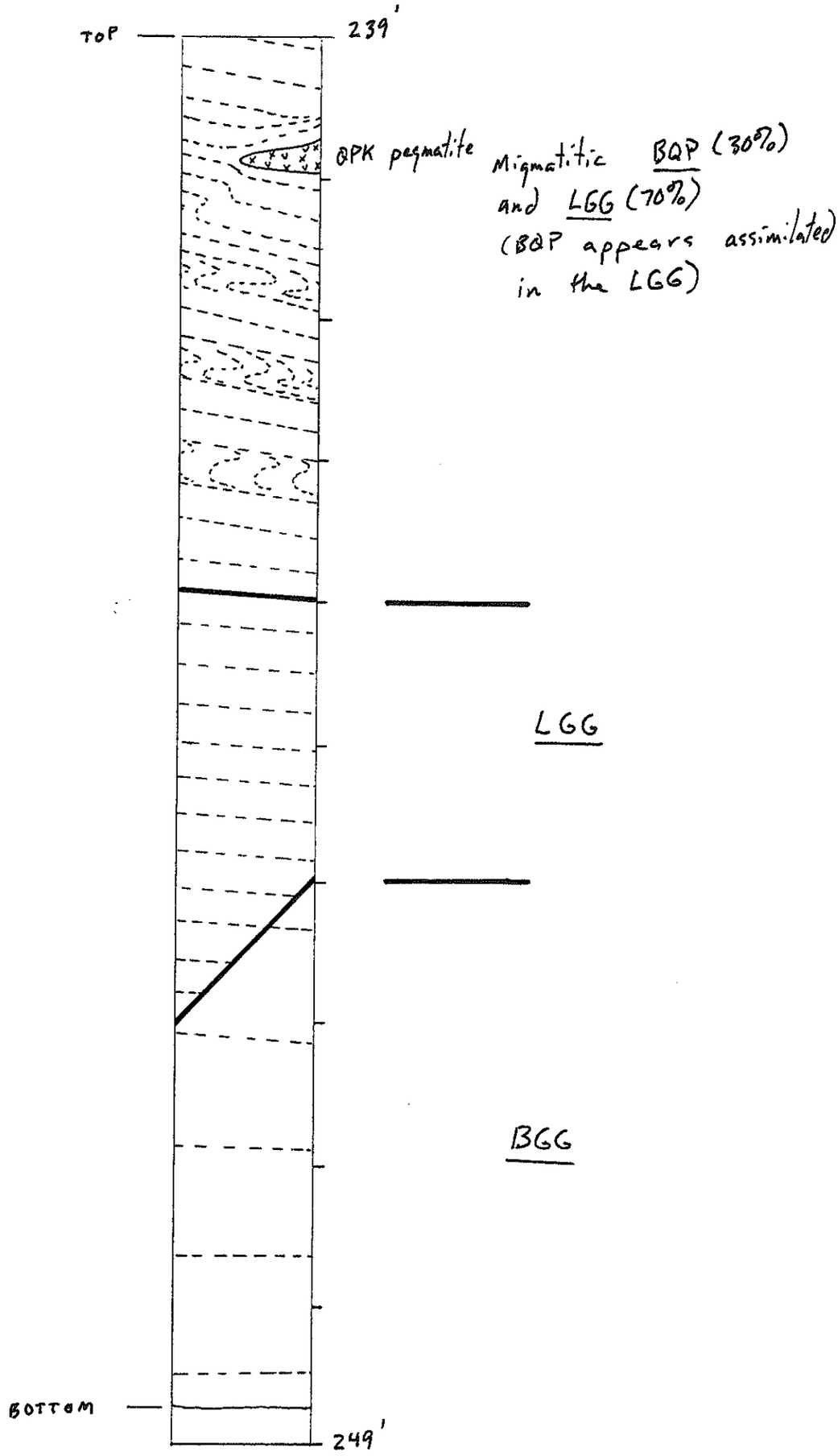
migmatitic BQP / LGG
(BQP appears assimilated in the LGG)

CORE LOG Moodus 1000' BOX# 23 INTERVAL 229.5' - 239.0'

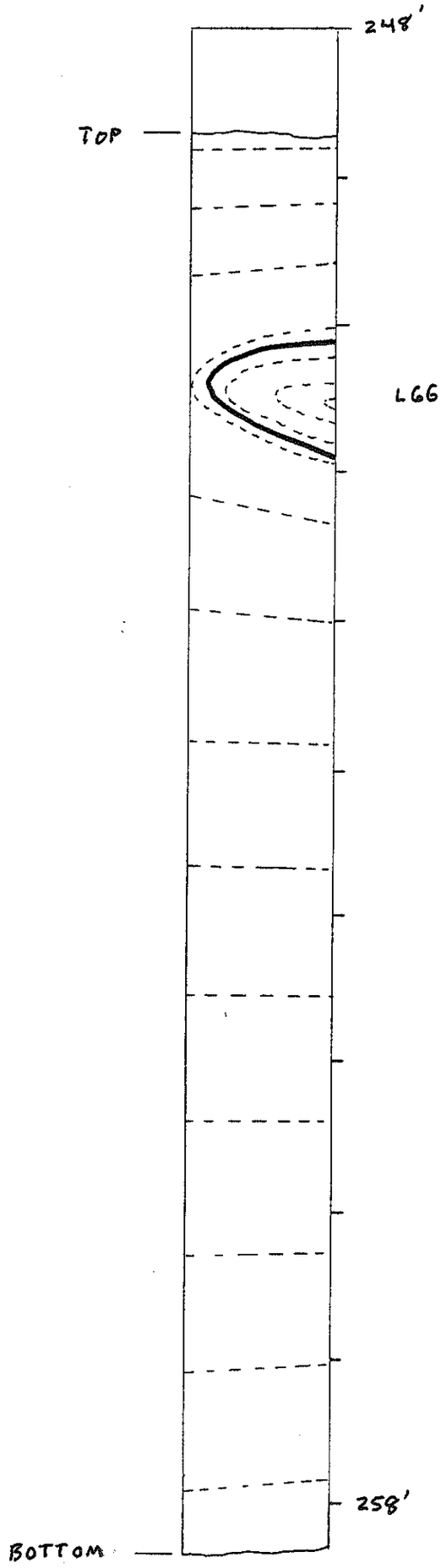


Migmatitic BQP (30%) and LGG (70%). (BQP appears assimilated in the LGG)

CORE LOG Moodus 1000' BOX# 24 INTERVAL 239.0' - 248.7'

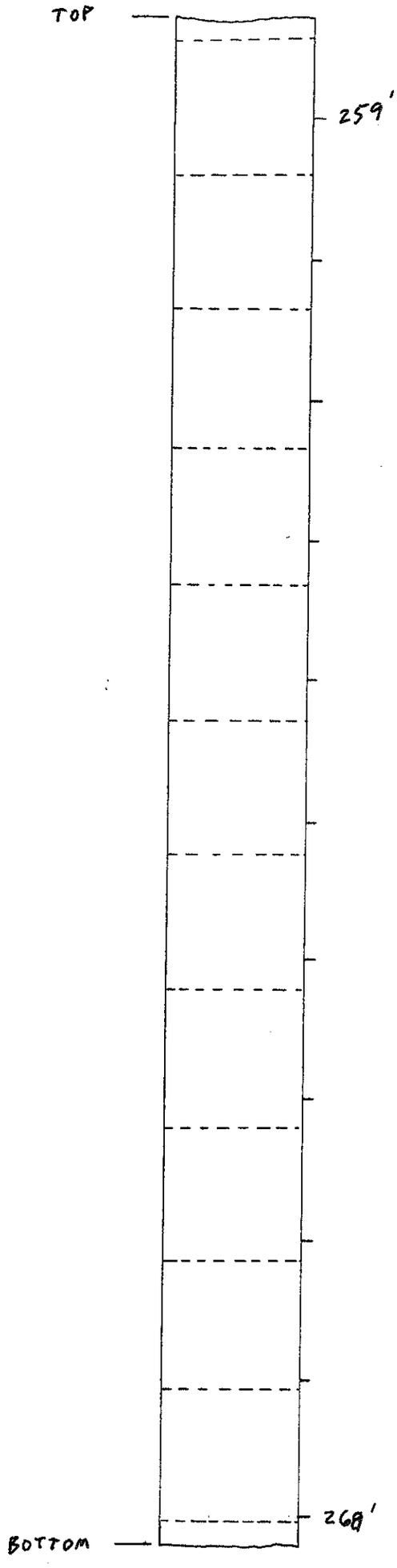


CORE LOG Moodus 1000' BOX# 25 INTERVAL 248.7'-258.3'



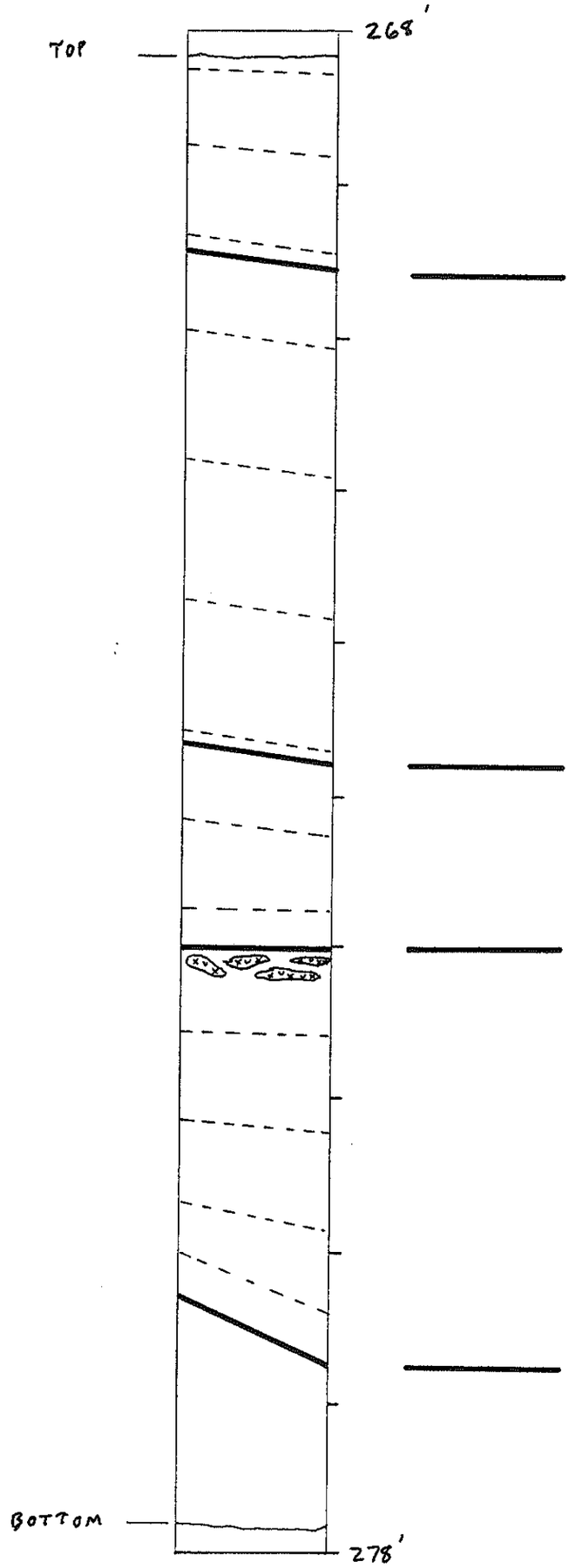
BGG, barely visible Fol. and lin.

CORE LOG Moodus 1000' BOX# 26 INTERVAL 258.3' - 268.2'

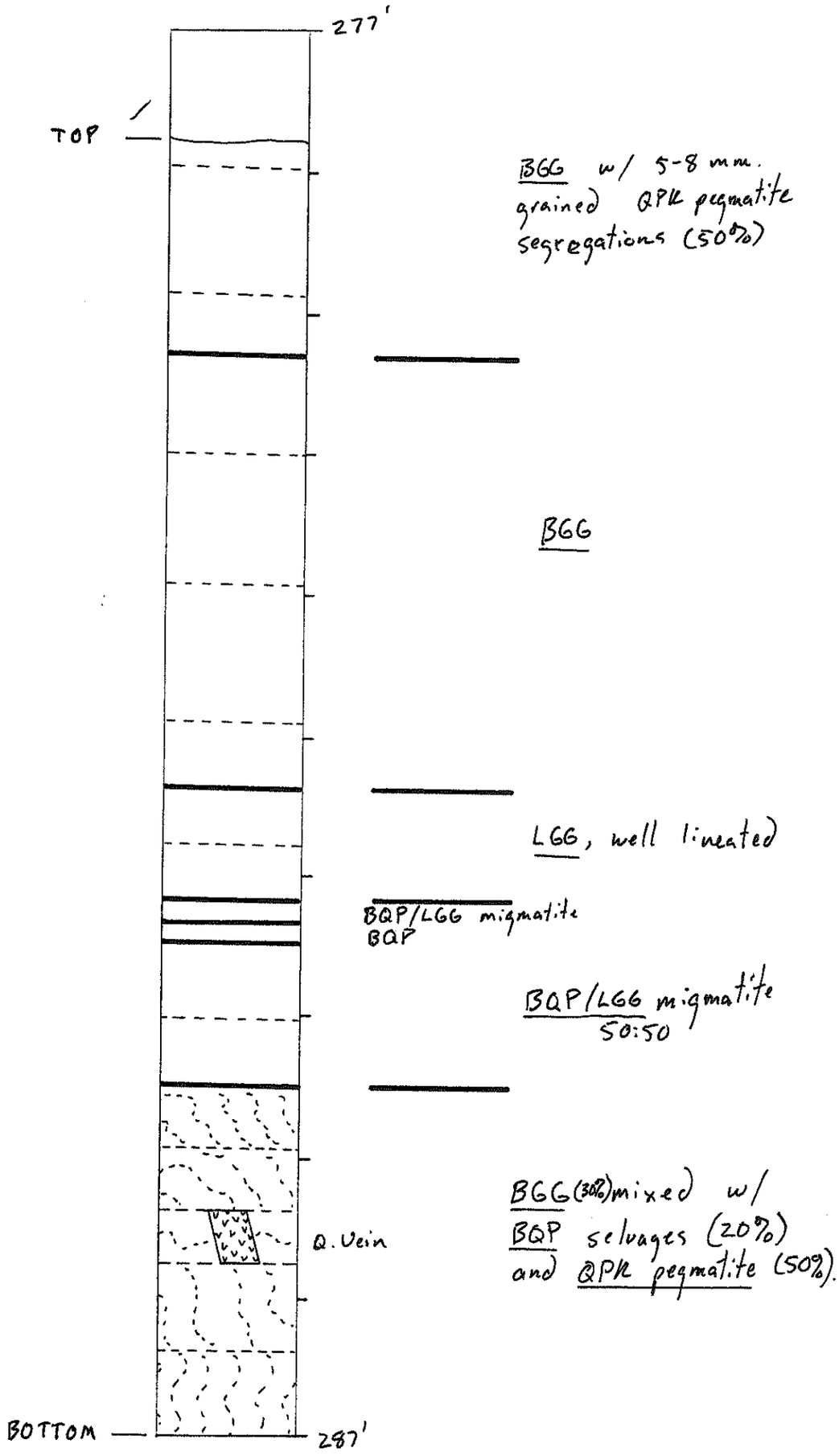


BGG

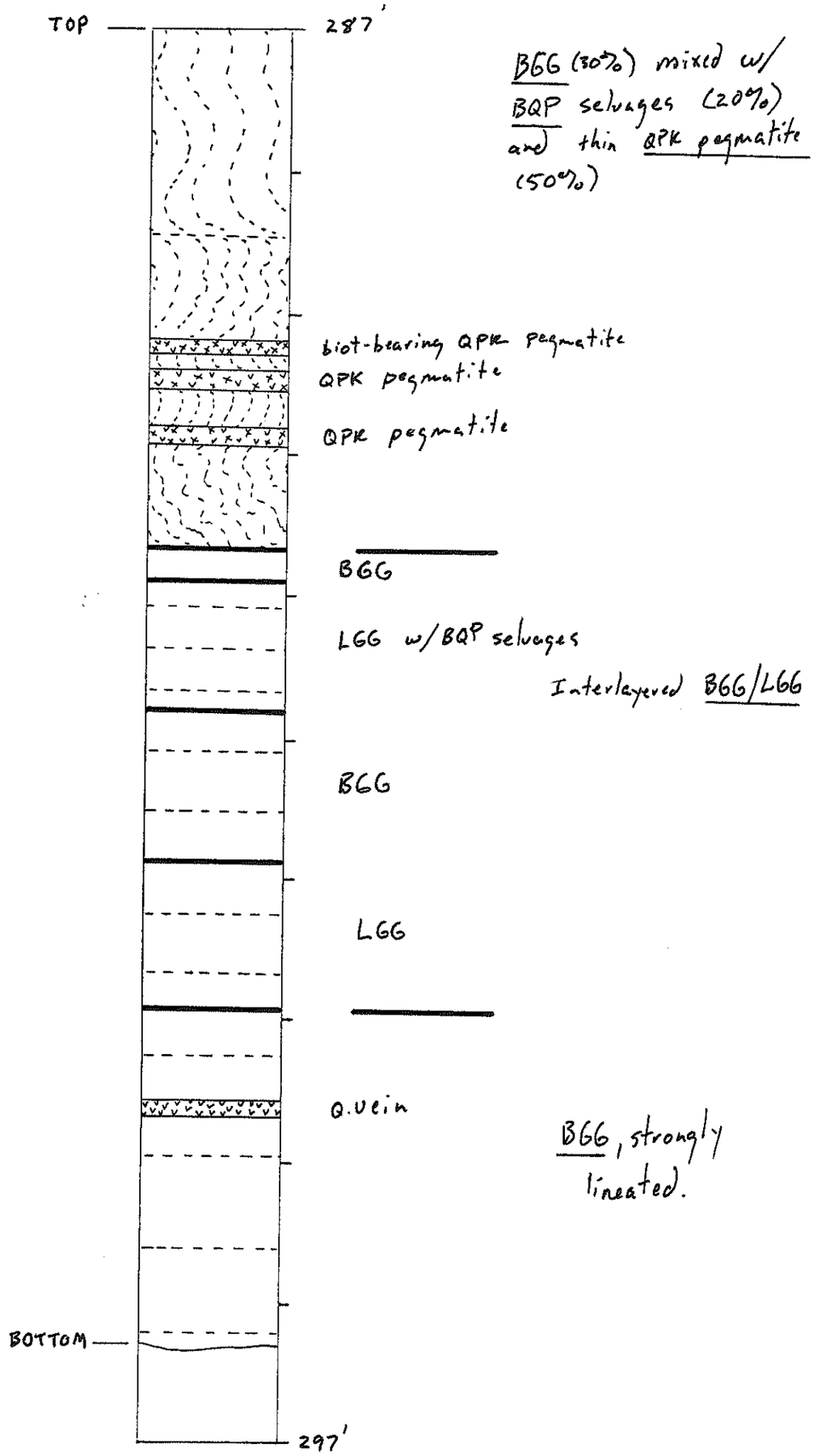
CORE LOG Moodus 1000' BOX# 27 INTERVAL 268.2'- 277.8'



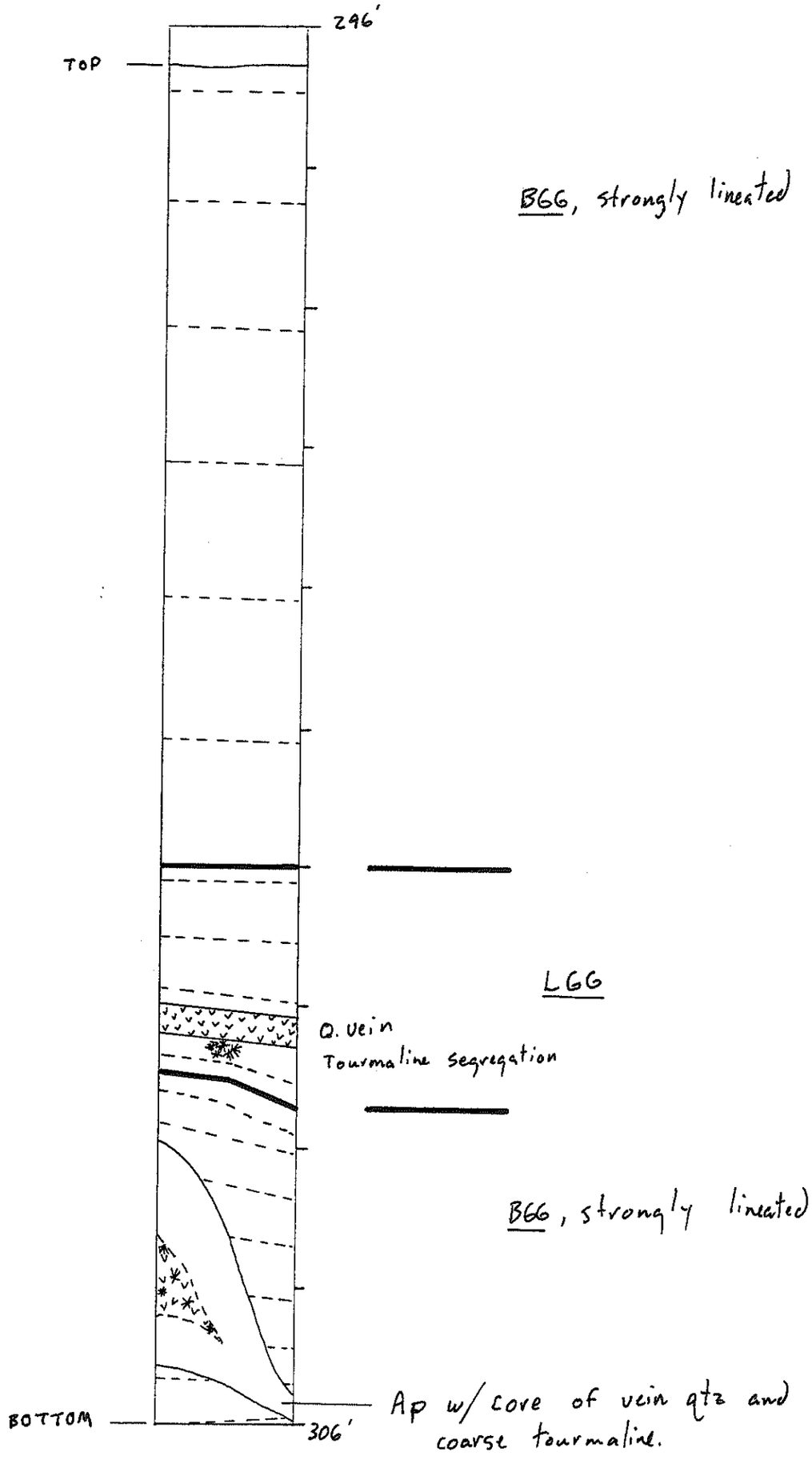
CORE LOG Meadus 1000' BOX# 28 INTERVAL 277.8' - 287.0'



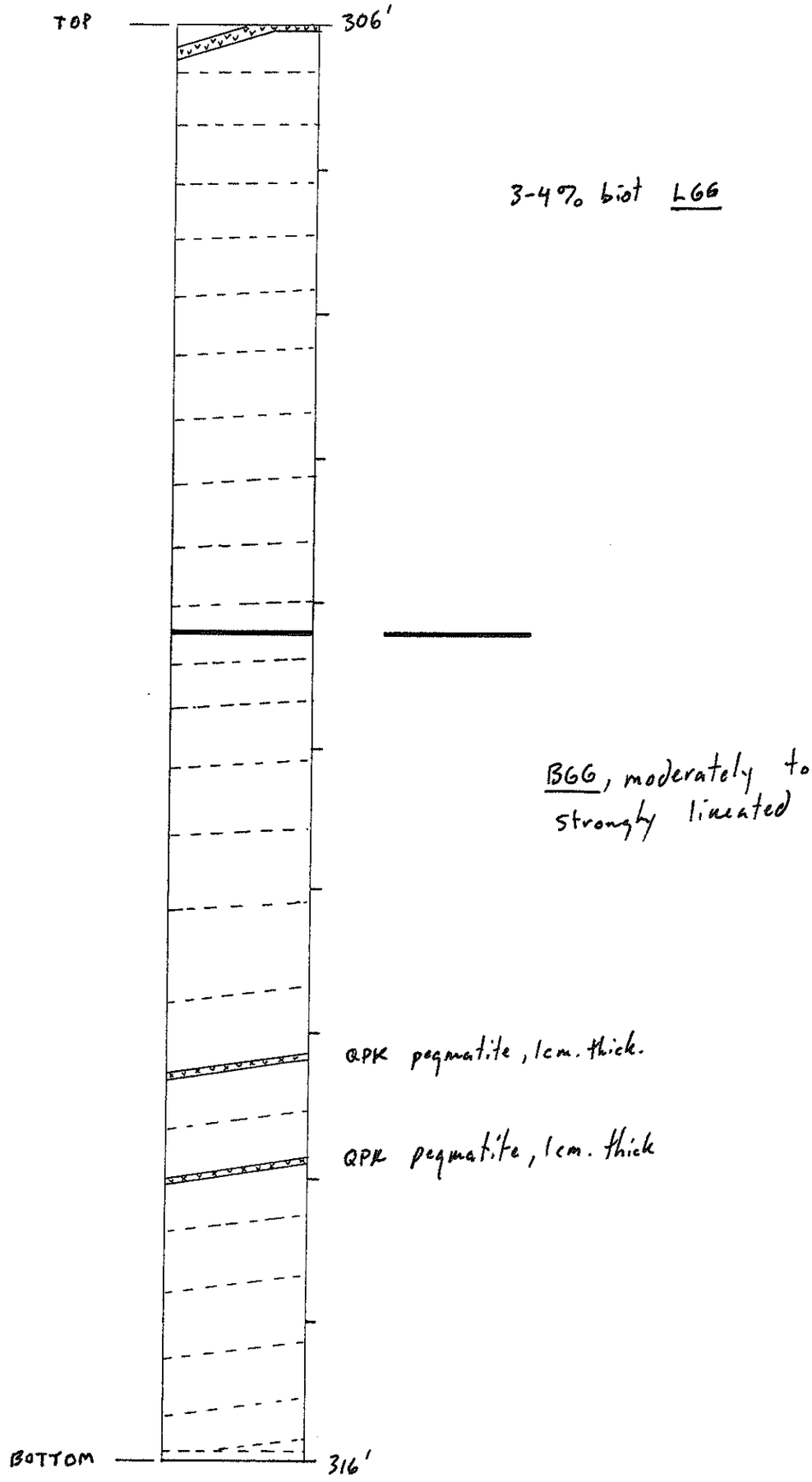
CORE LOG Meadus 1000' BOX# 29 INTERVAL 287.0' - 296.3'



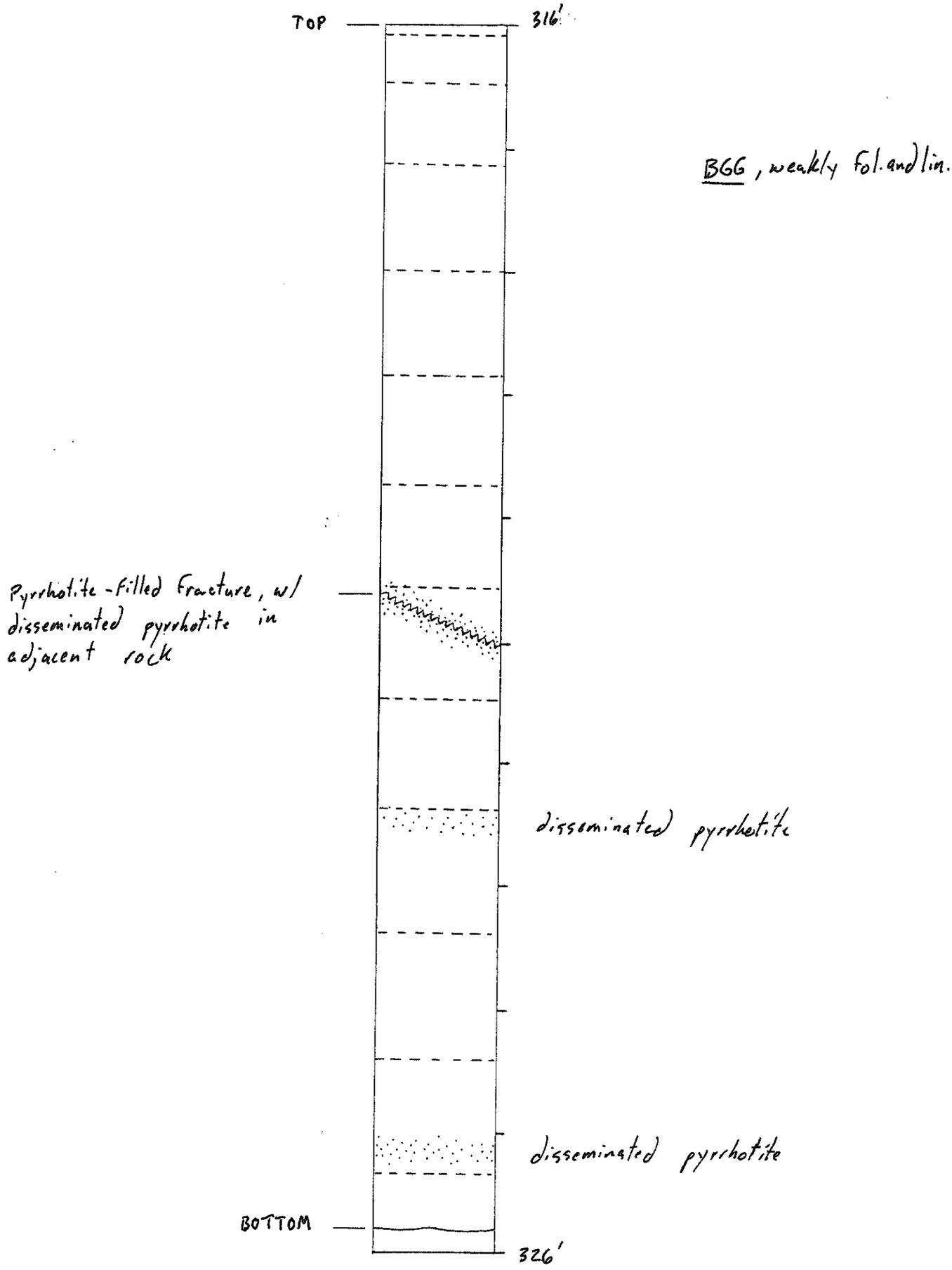
CORE LOG Moodus 1000' BOX# 30 INTERVAL 296.3' - 306.0'



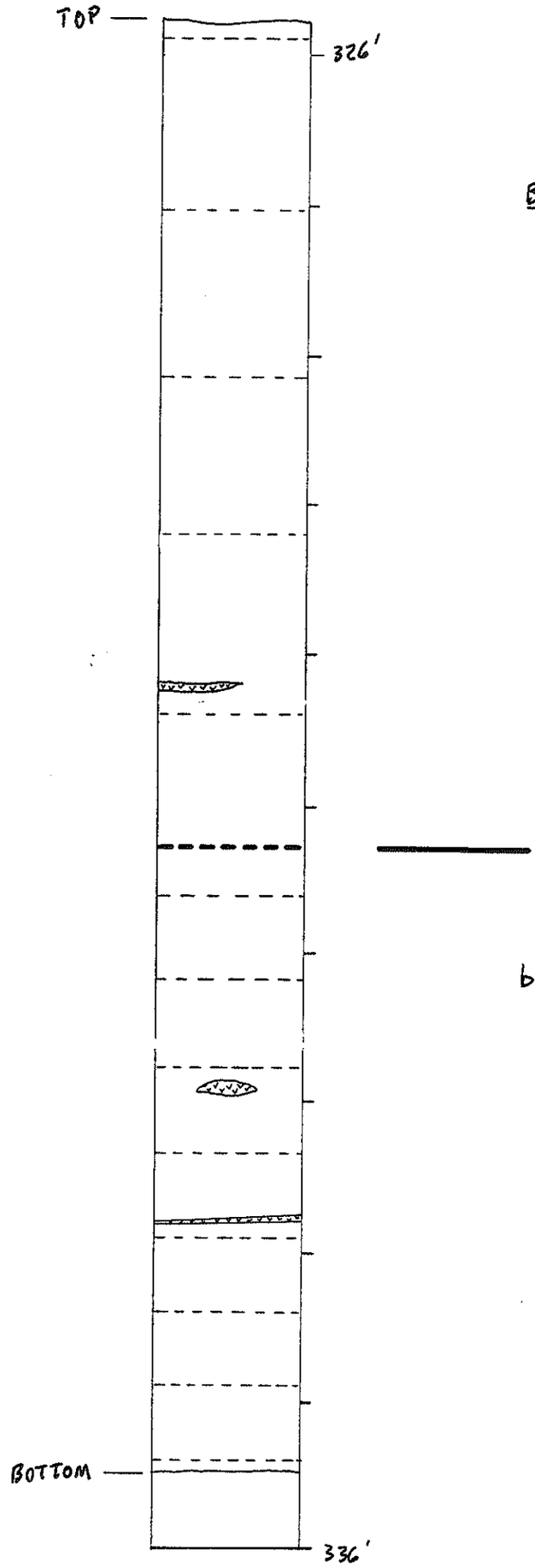
CORE LOG Moodus 1000' BOX# 31 INTERVAL 306.0' - 316.0'



CORE LOG Moodus 1000' BOX# 32 INTERVAL 316.0' - 325.8'



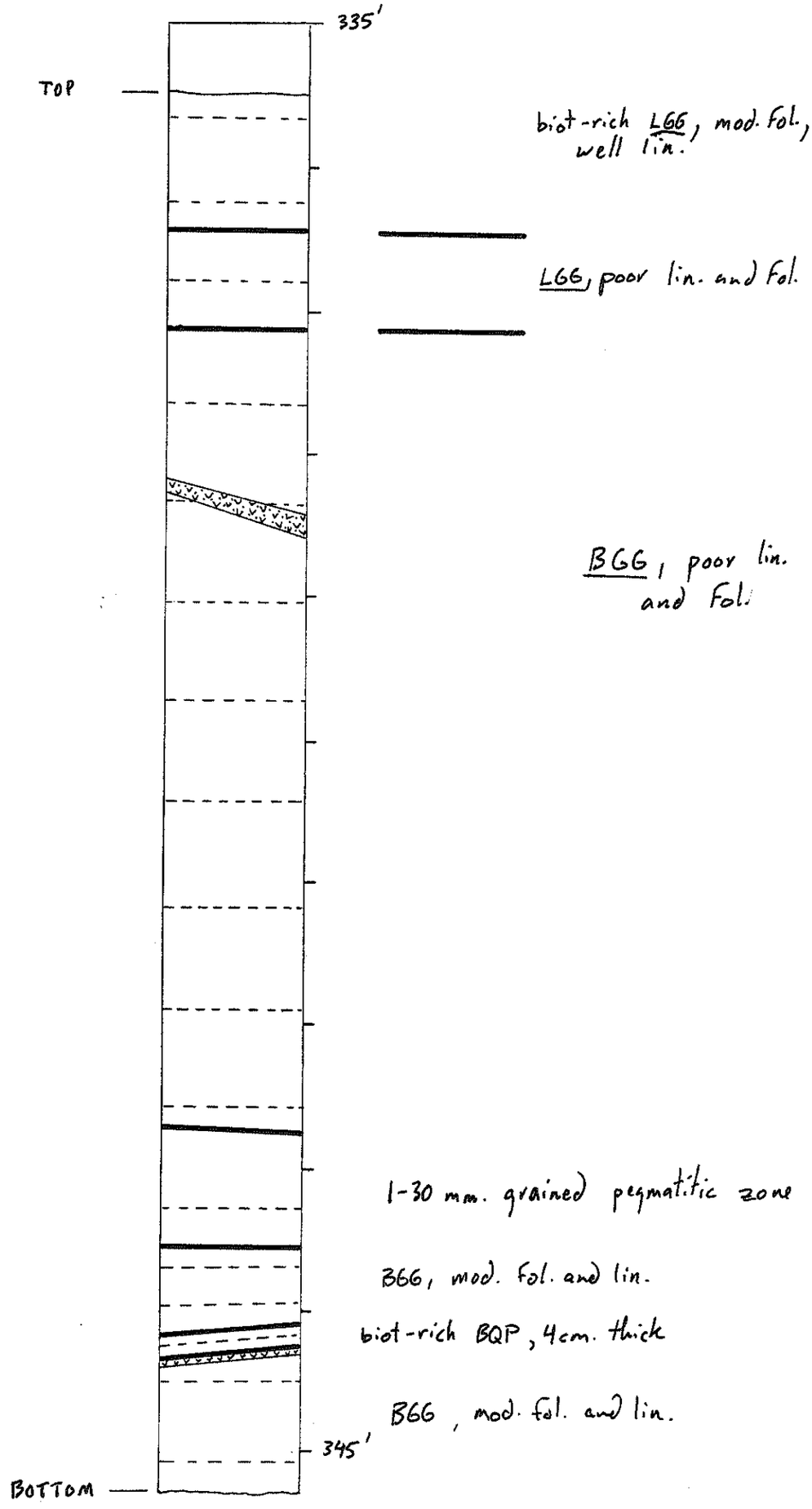
CORE LOG Moodus 1000' BOX# 33 INTERVAL 325.8' - 335.5'



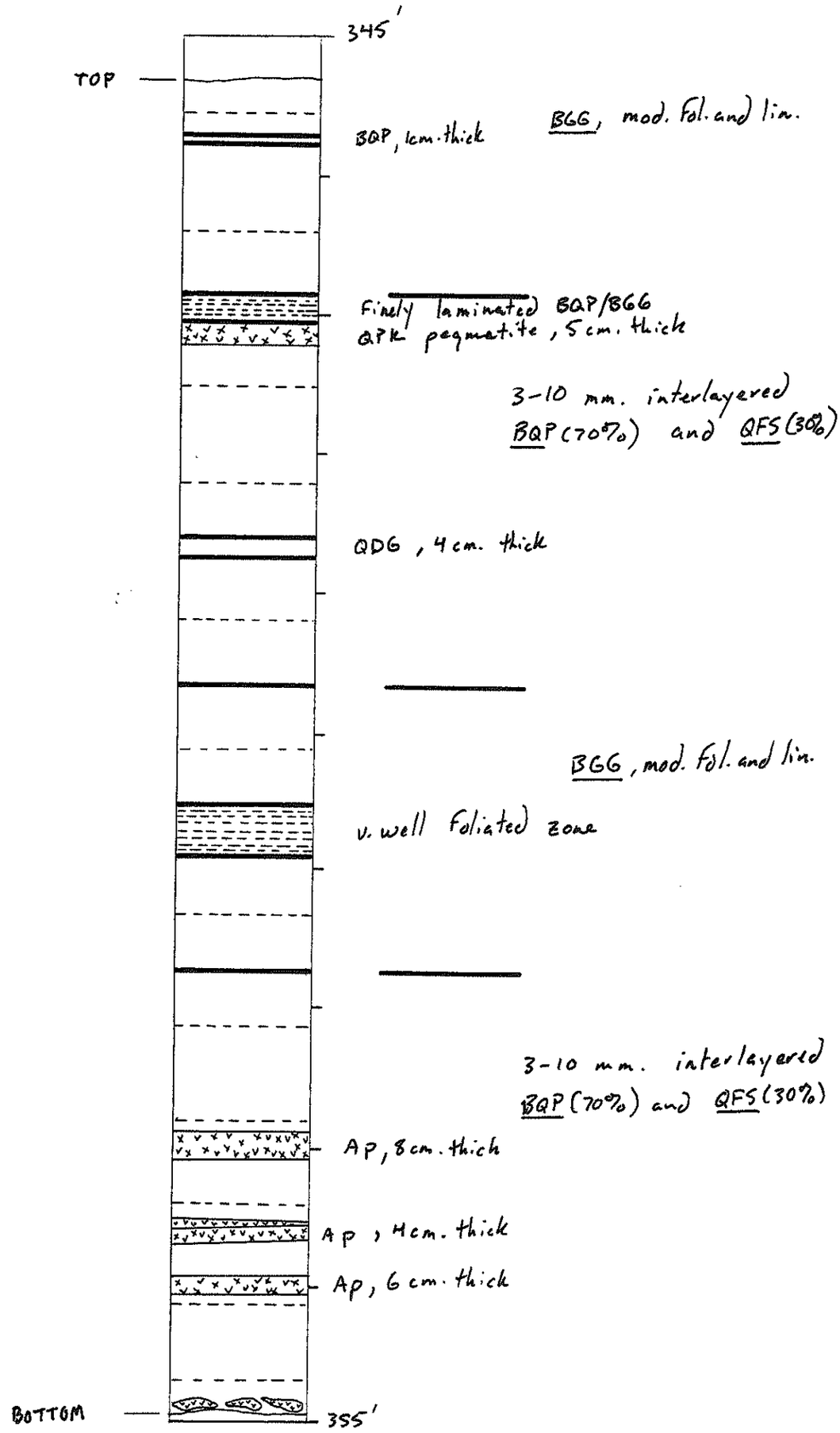
BGG, weakly fol. and lin.

biot-rich LGG, mod. fol. and lin.

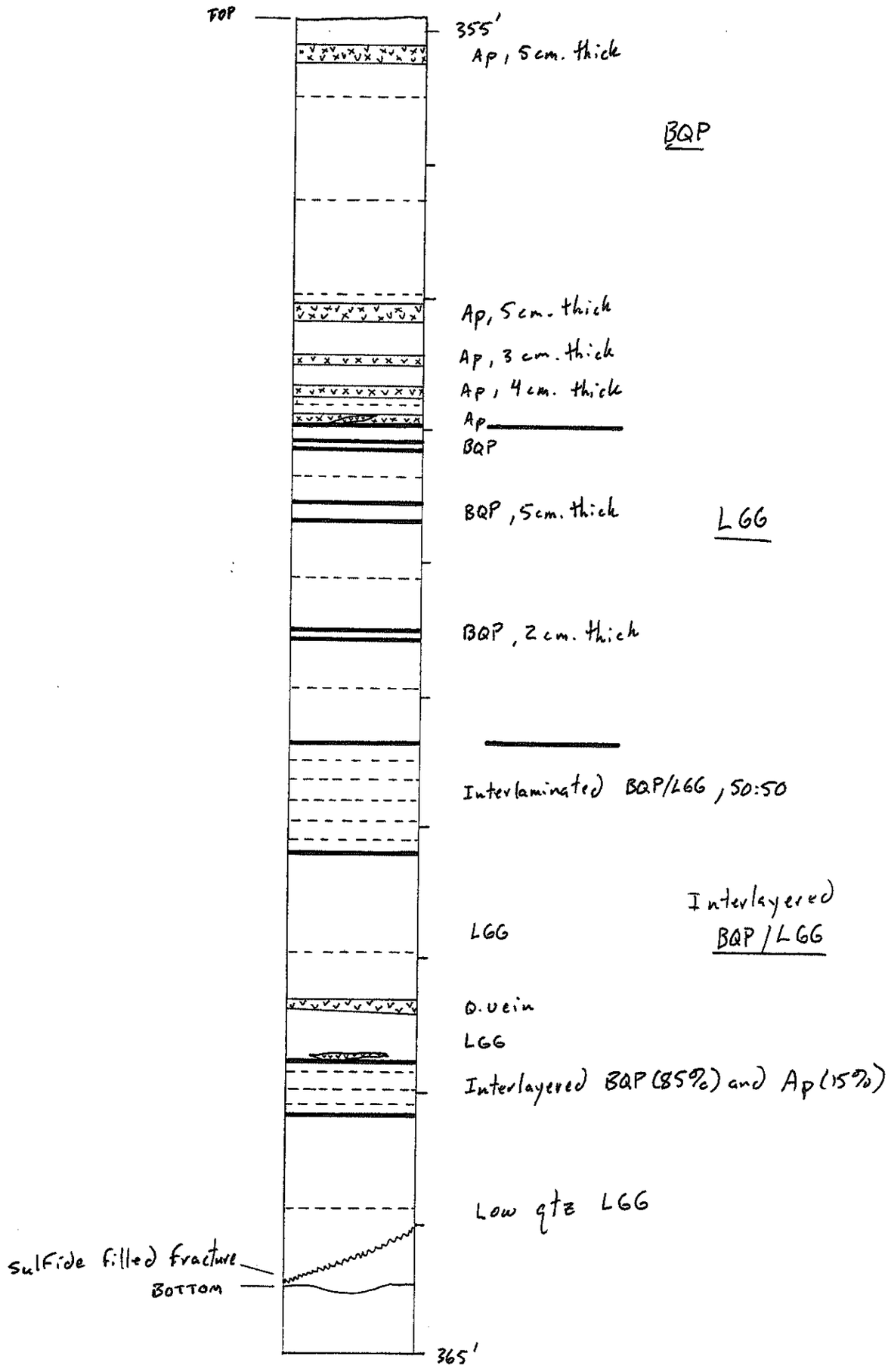
CORE LOG Moodus 1000' BOX# 34 INTERVAL 335.5' - 345.3'



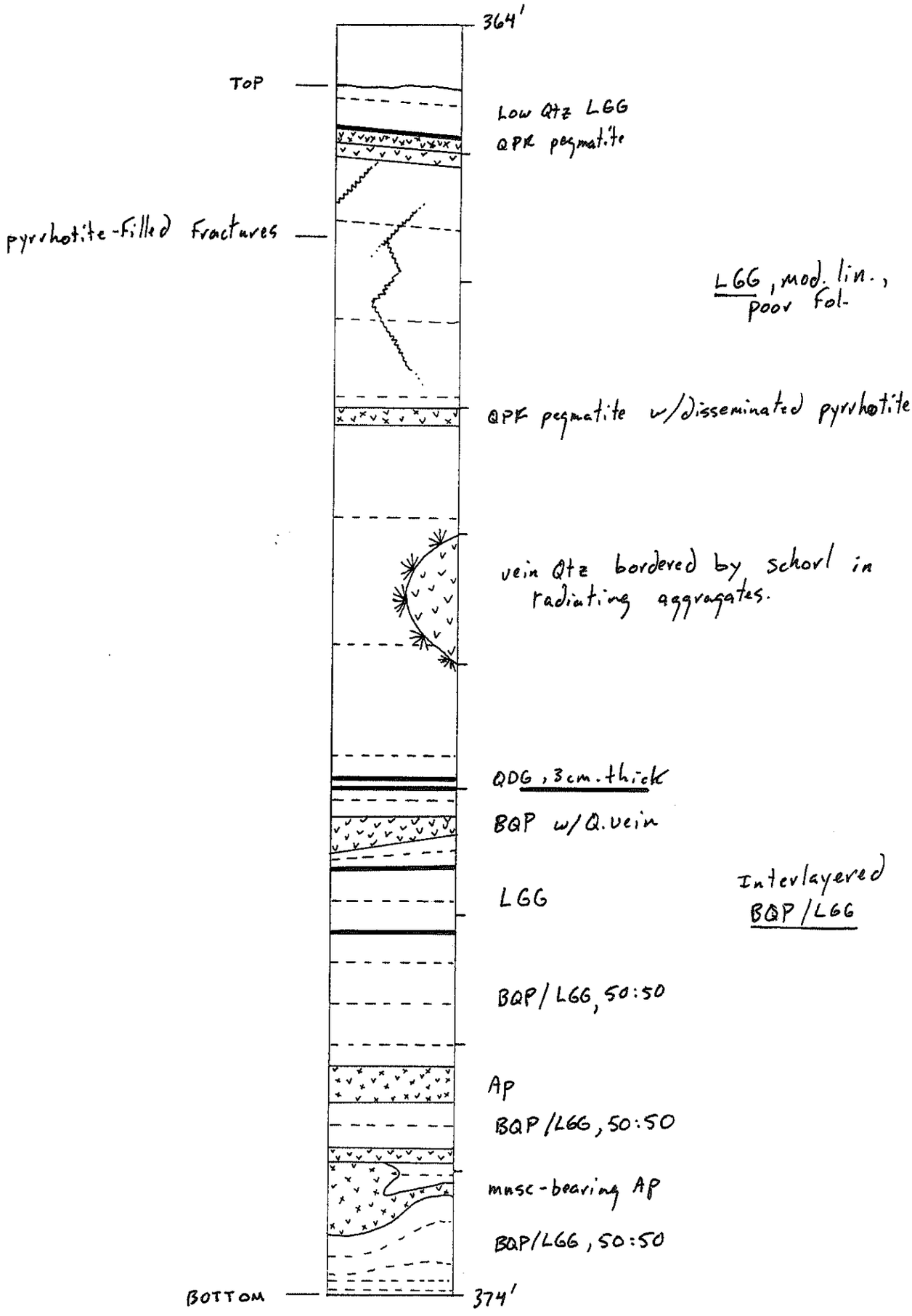
CORE LOG Moodus 1000' BOX# 35 INTERVAL 345.3' - 354.9'



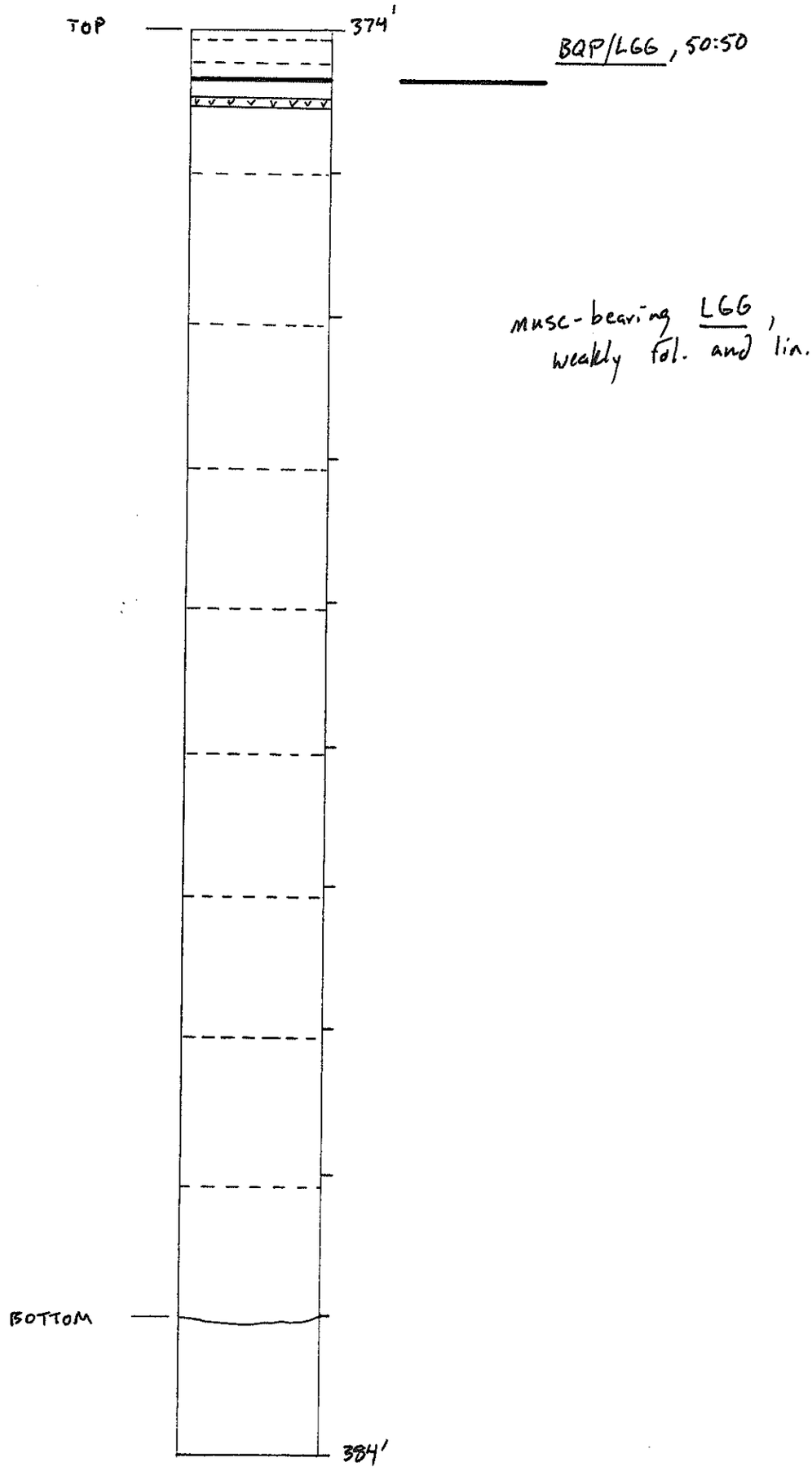
CORE LOG Moodum 1000' BOX# 36 INTERVAL 354.9' - 364.5'



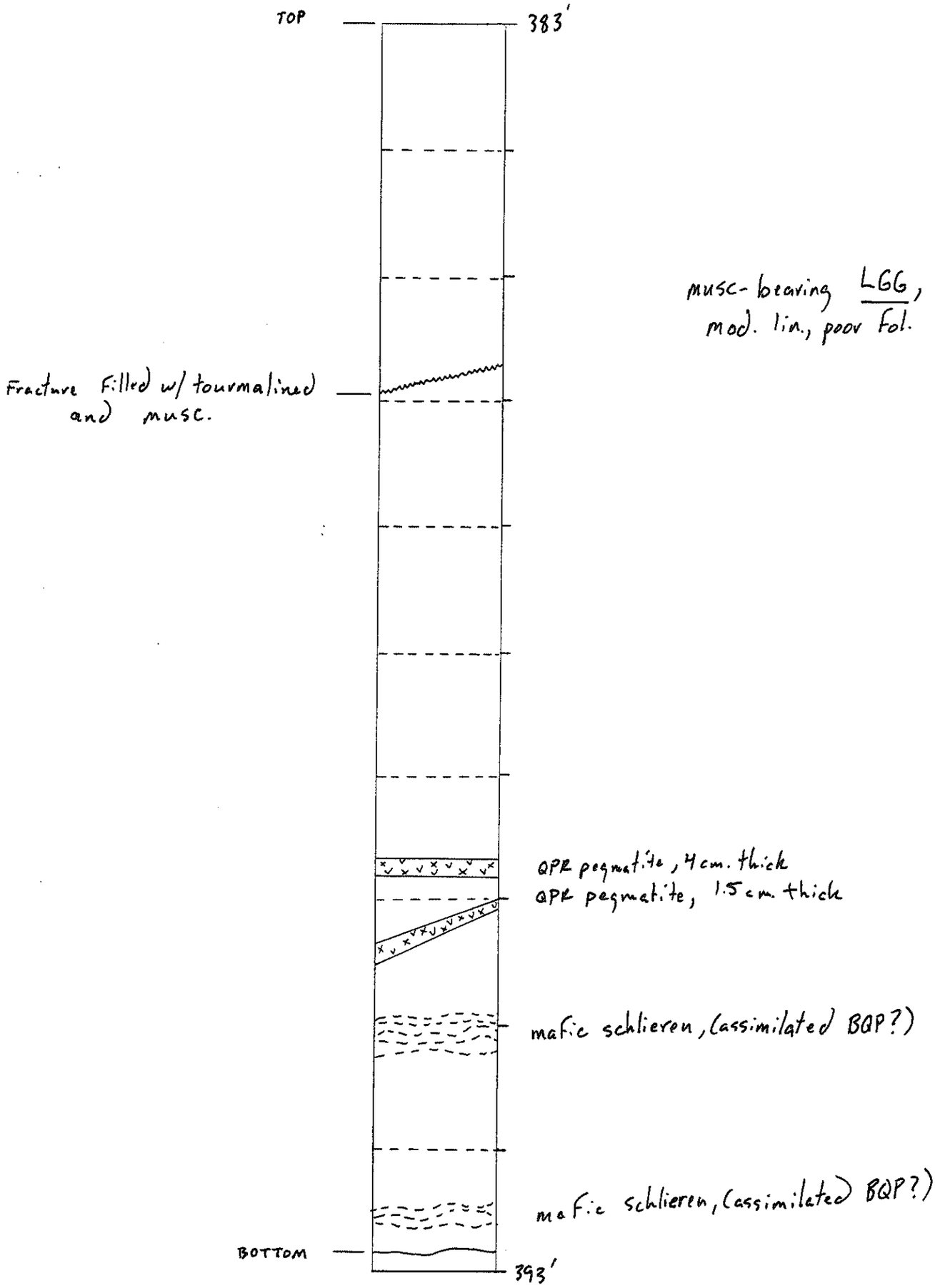
CORE LOG Meadow 1000' BOX# 37 INTERVAL 364.5' - 374.0'



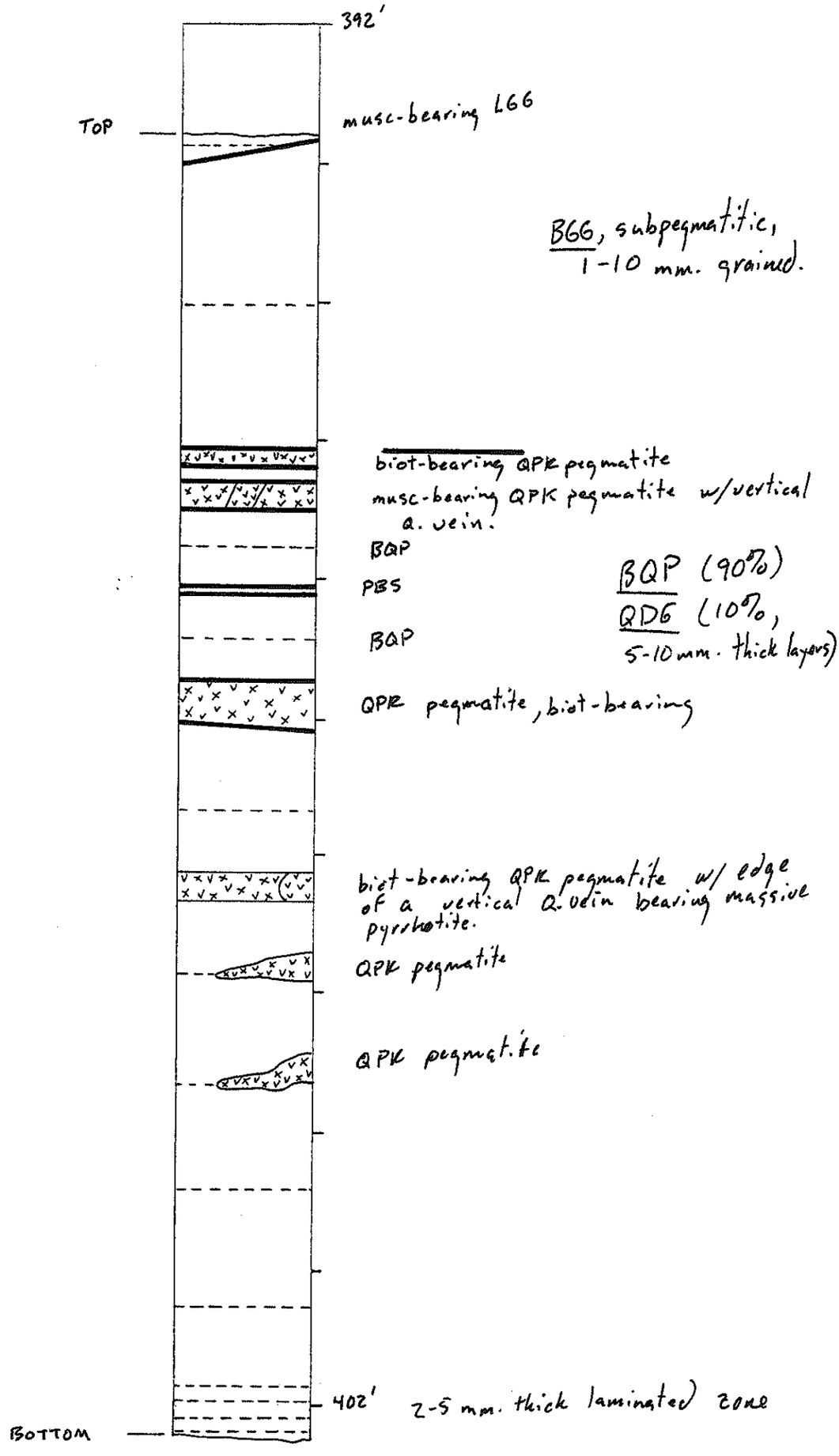
CORE LOG Moodus 1000' BOX# 38 INTERVAL 374.0' - 383.0'



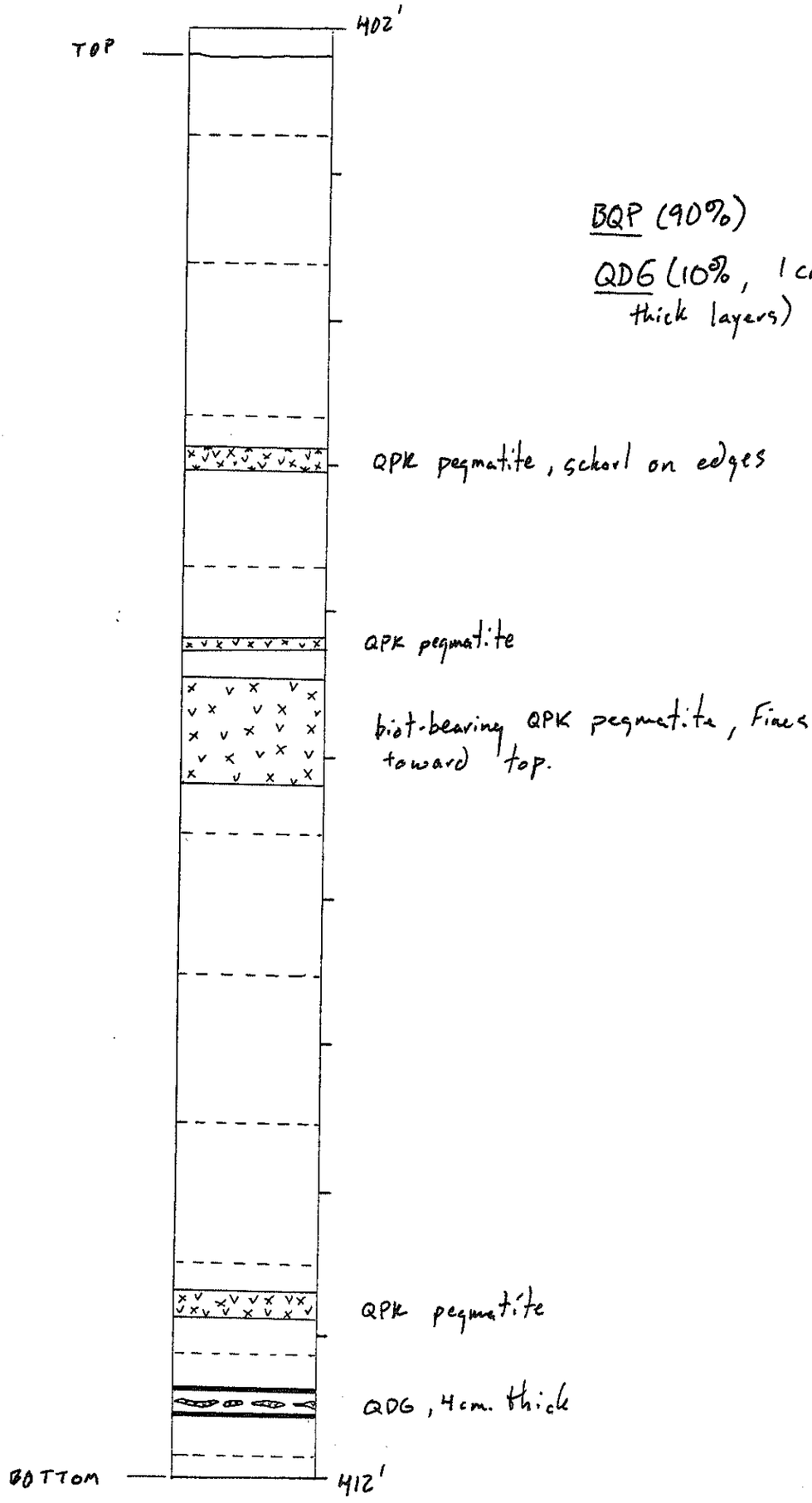
CORE LOG Moodus 1000' BOX# 39 INTERVAL 383.0' - 392.8'



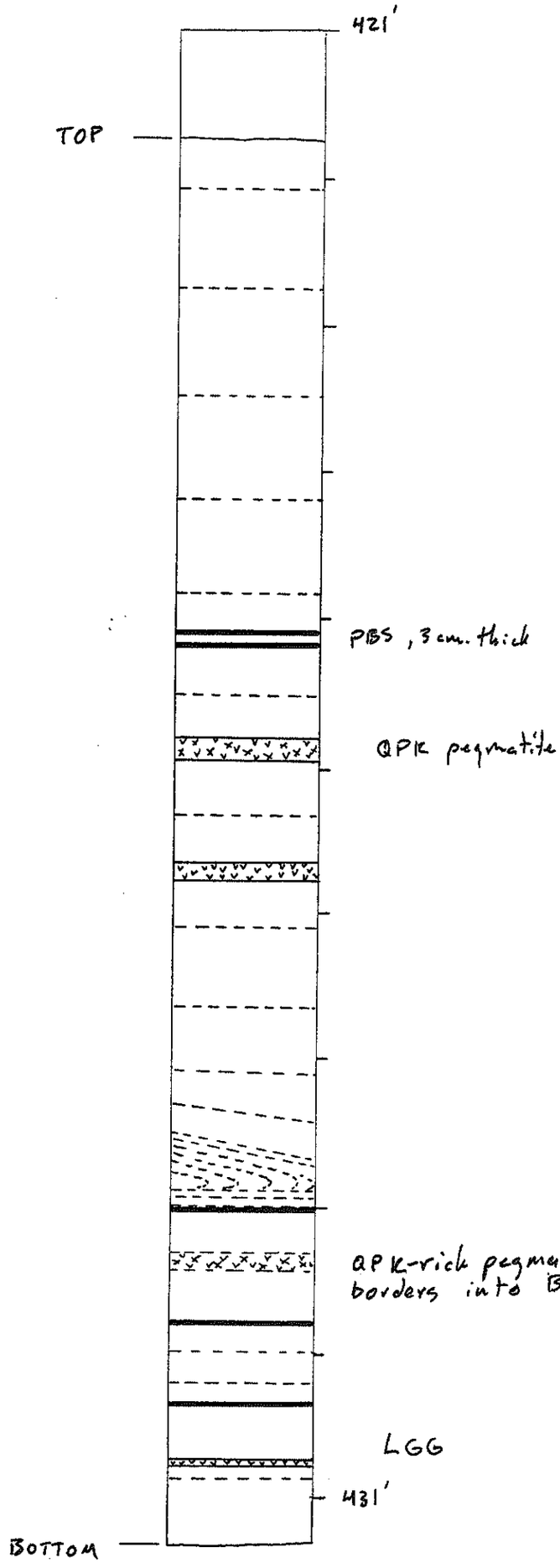
CORE LOG Moodus 1000' BOX# 40 INTERVAL 392.8' - 402.2'



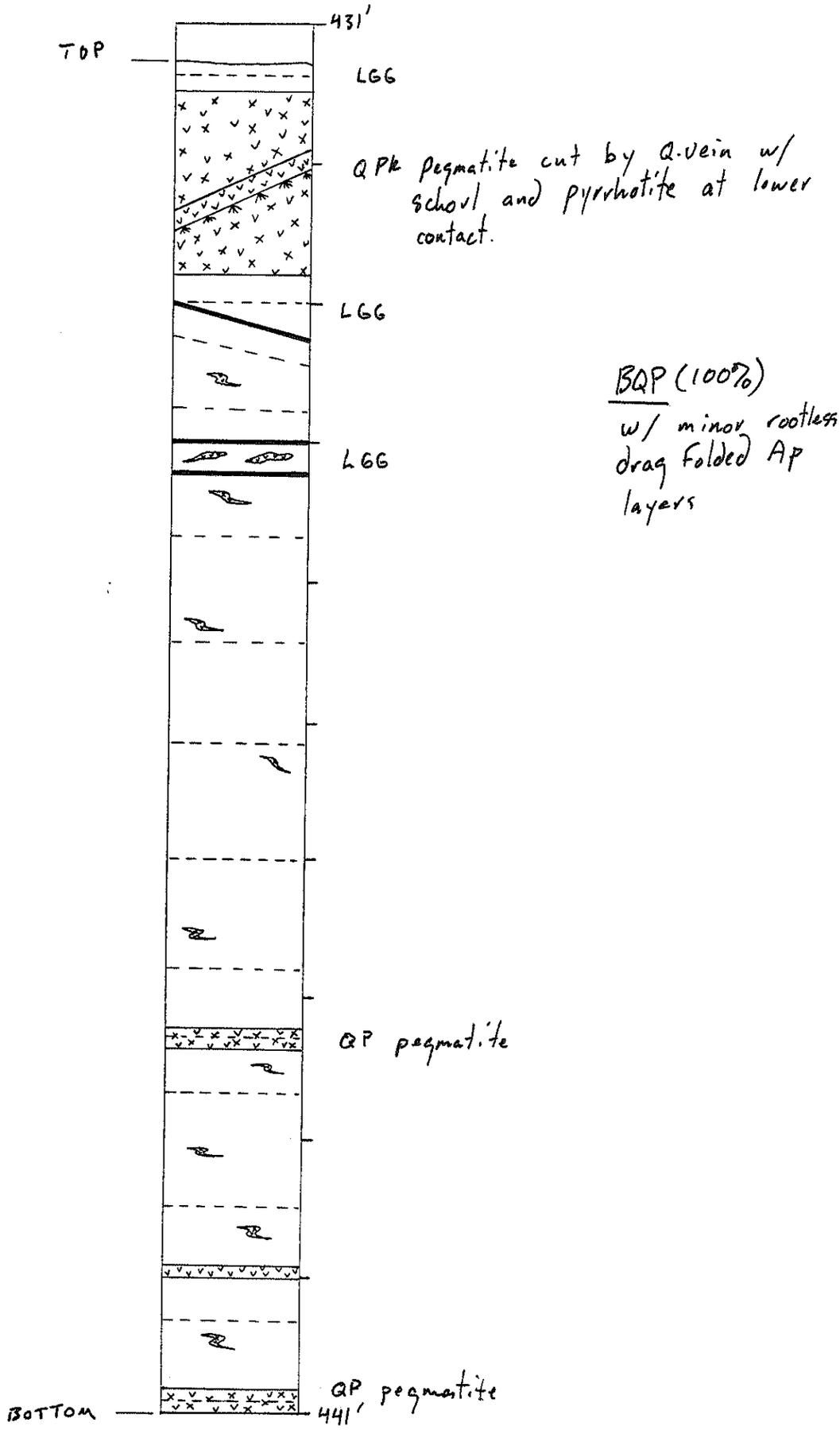
CORE LOG Moodus 1000' BOX# 41 INTERVAL 402.2' - 412.0'



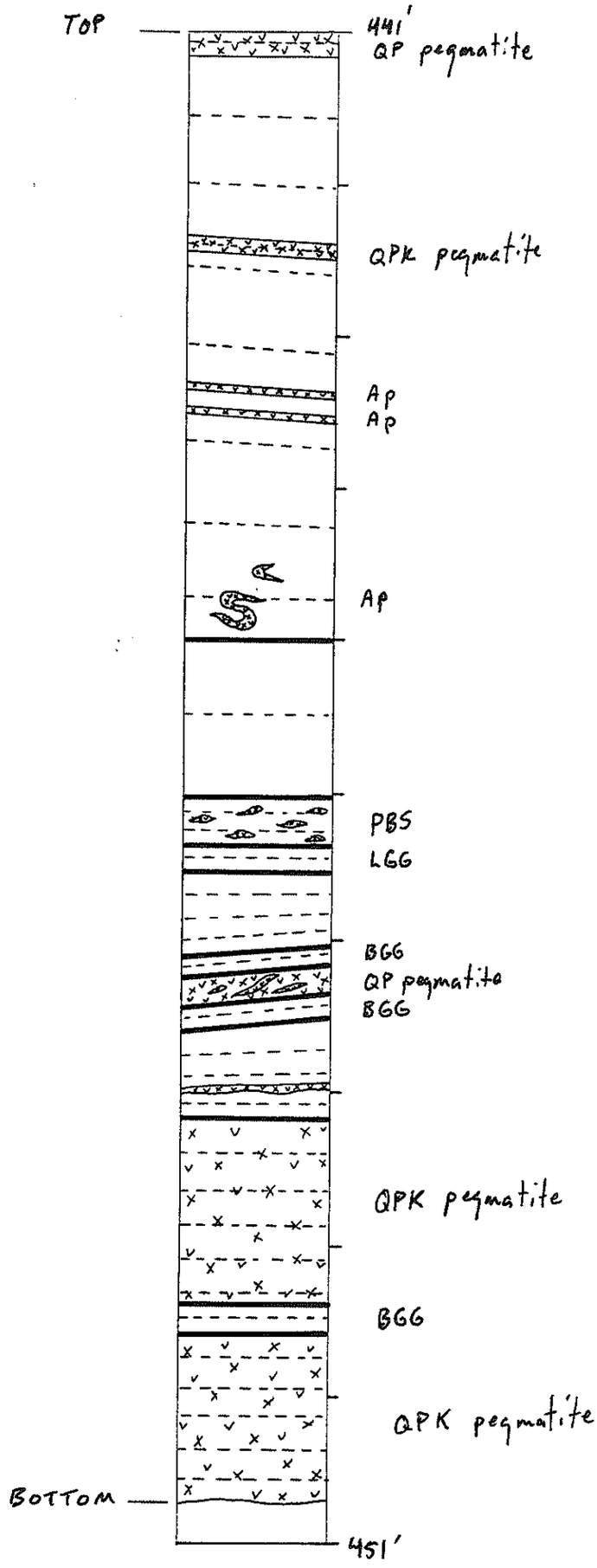
CORE LOG Meadows 1000' BOX# 43 INTERVAL 421.7 - 431.3



CORE LOG Moodus 1000' BOX# 44 INTERVAL 431.3' - 441.0'

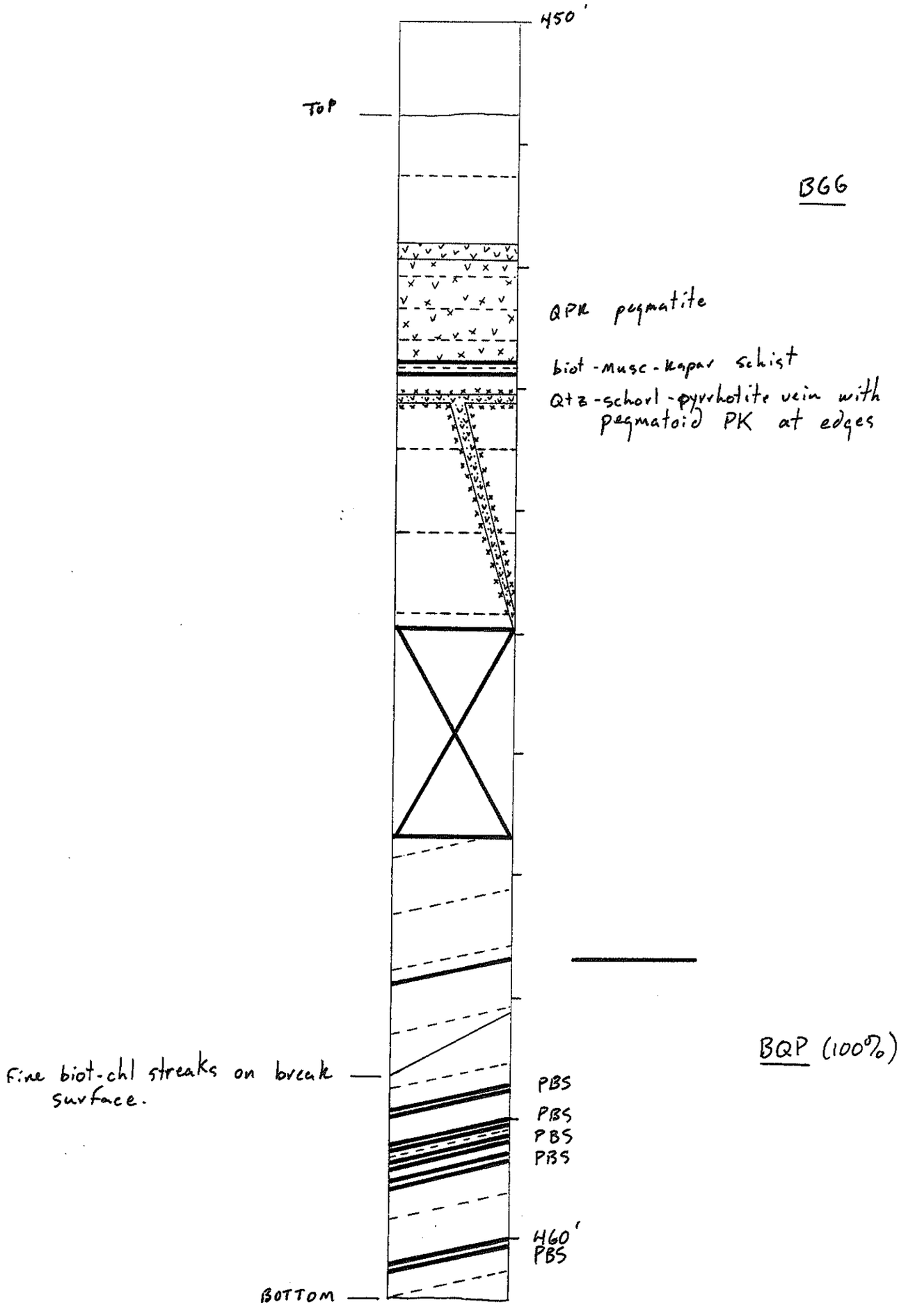


CORE LOG Moodus 1000' BOX# 45 INTERVAL 441.0'-450.7'

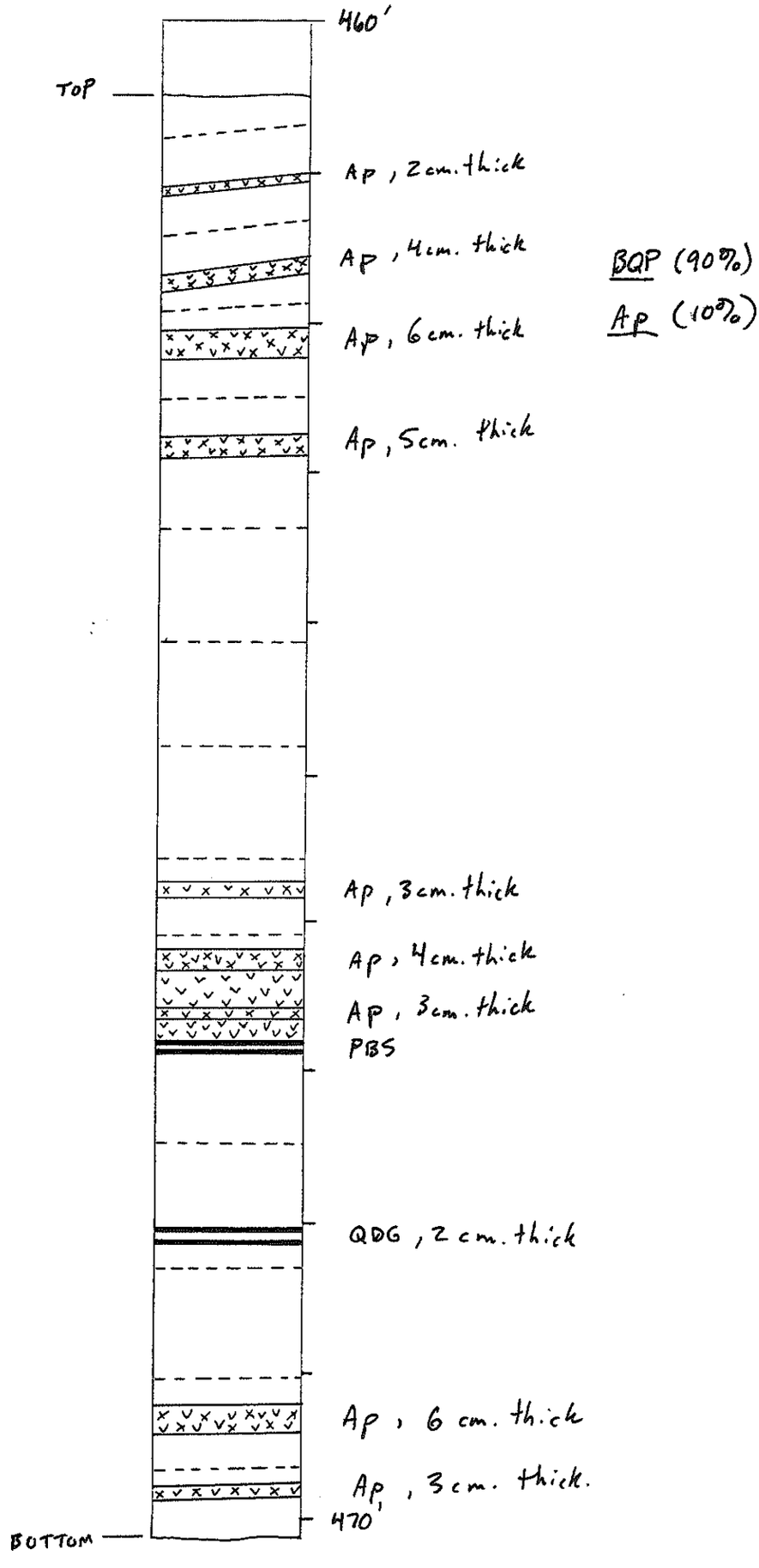


BQP (100%) w/ minor Ap layers.

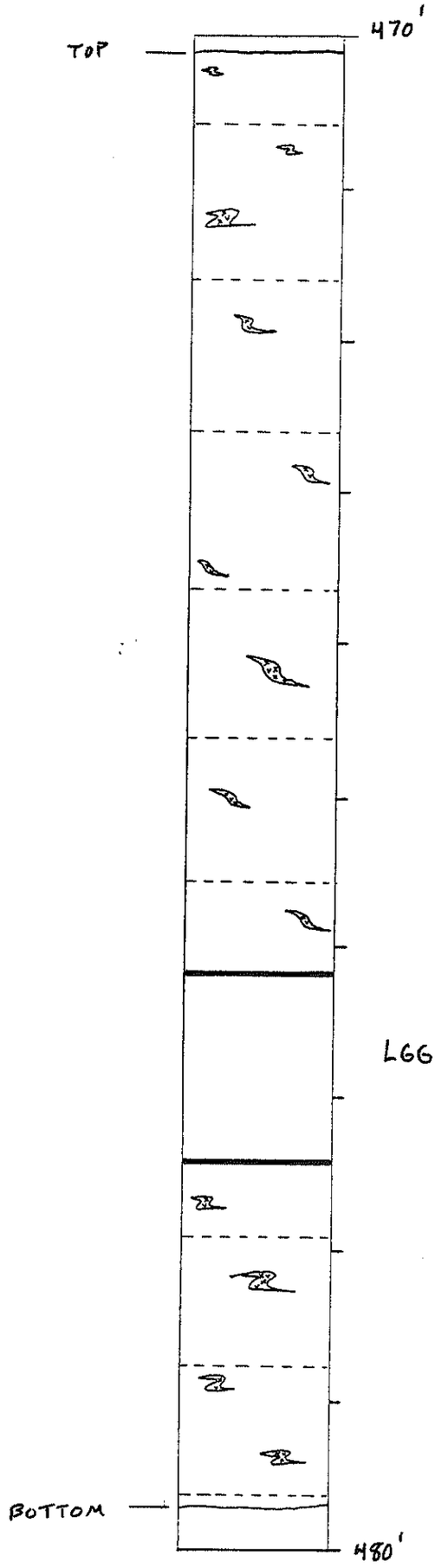
CORE LOG Moodus 1000' BOX# 46 INTERVAL 450.7' - 460.5'



CORE LOG Meadus 1000' BOX# 47 INTERVAL 460.5'-470.1'



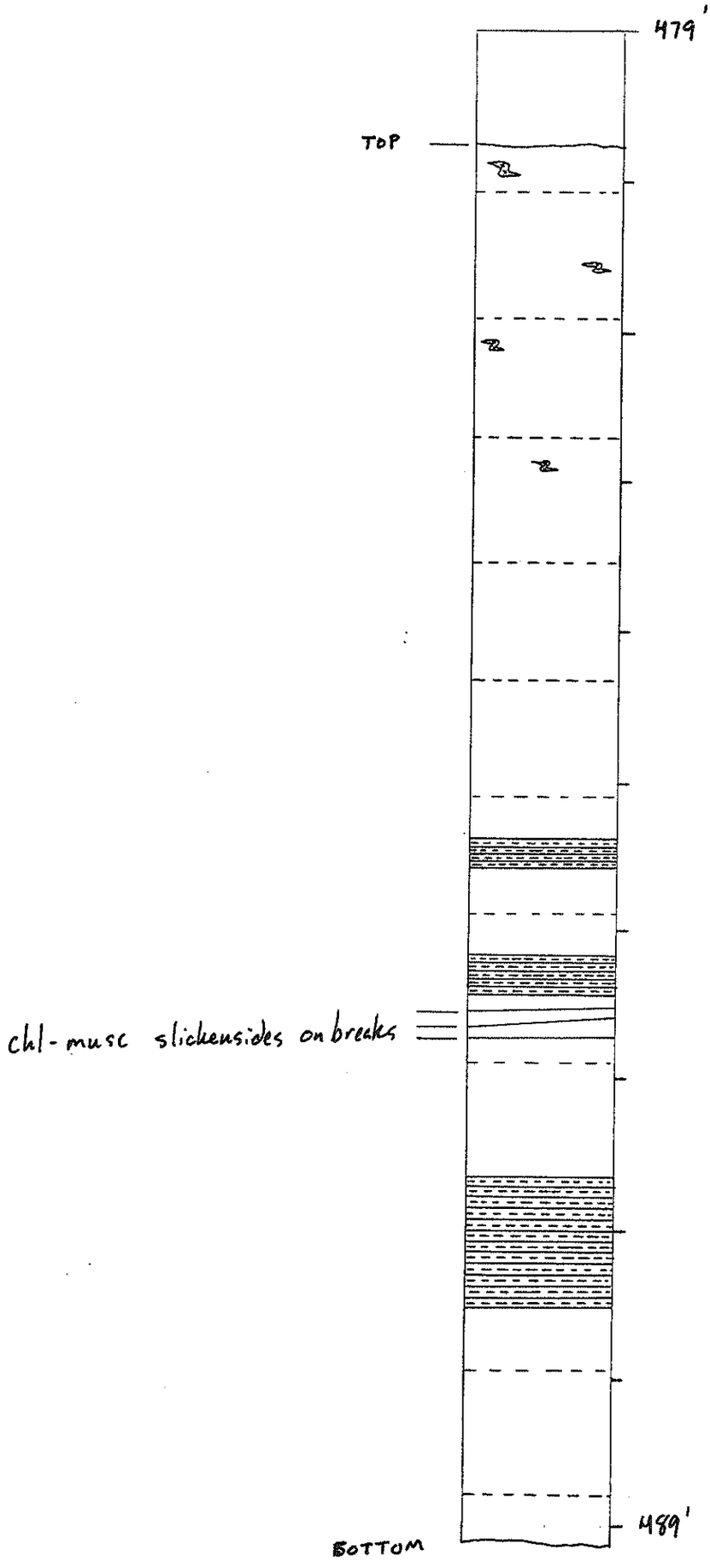
CORE LOG Moodus 1000' BOX# 48 INTERVAL 470.1' - 479.7'



BQP (90%)
Ap (10%, deformed into 1-5 cm. rootless drag folds)

LGG, mod. fol. and lin.

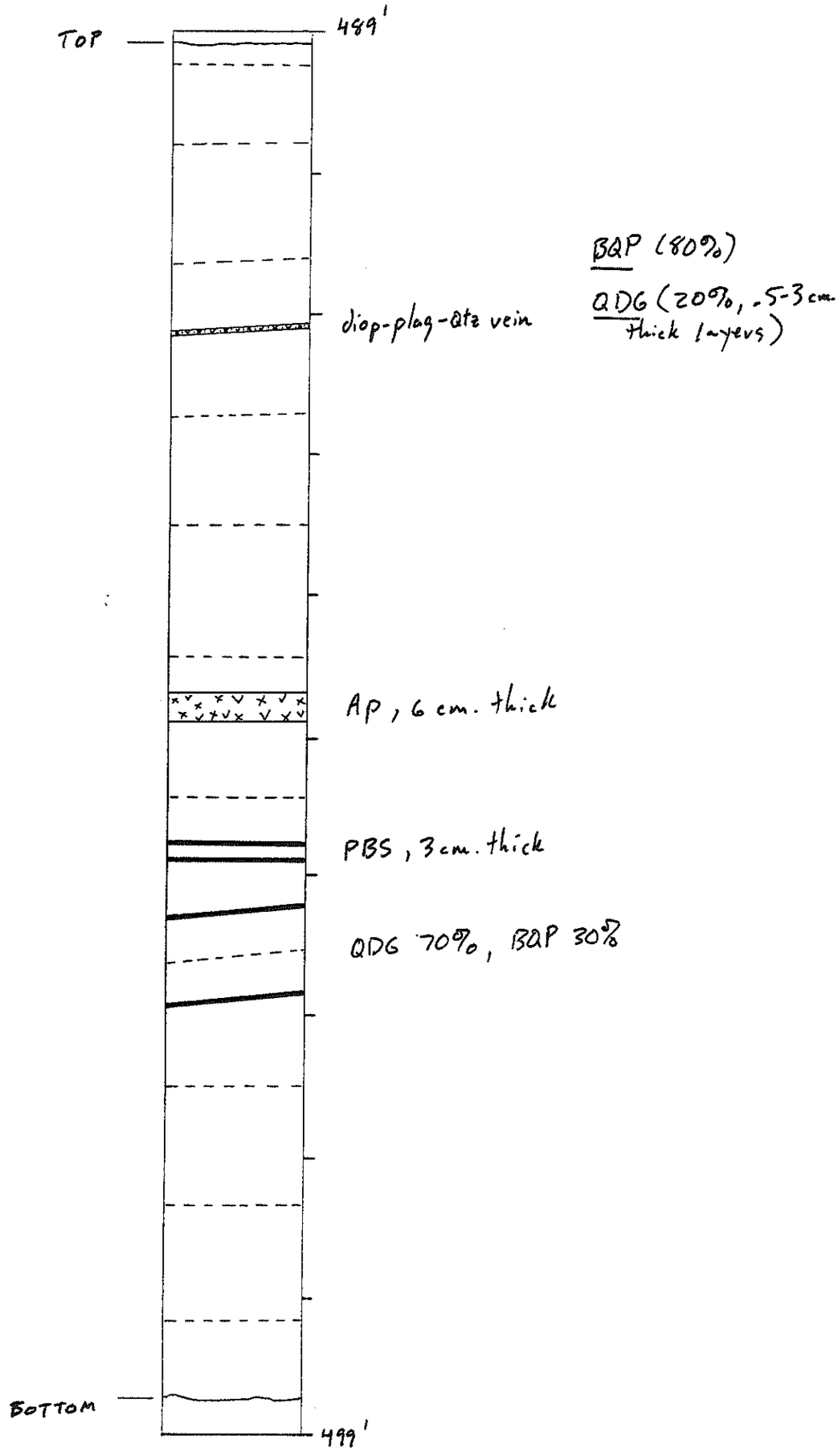
CORE LOG Moodus 1000' BOX# 49 INTERVAL 479.7' - 489.1'



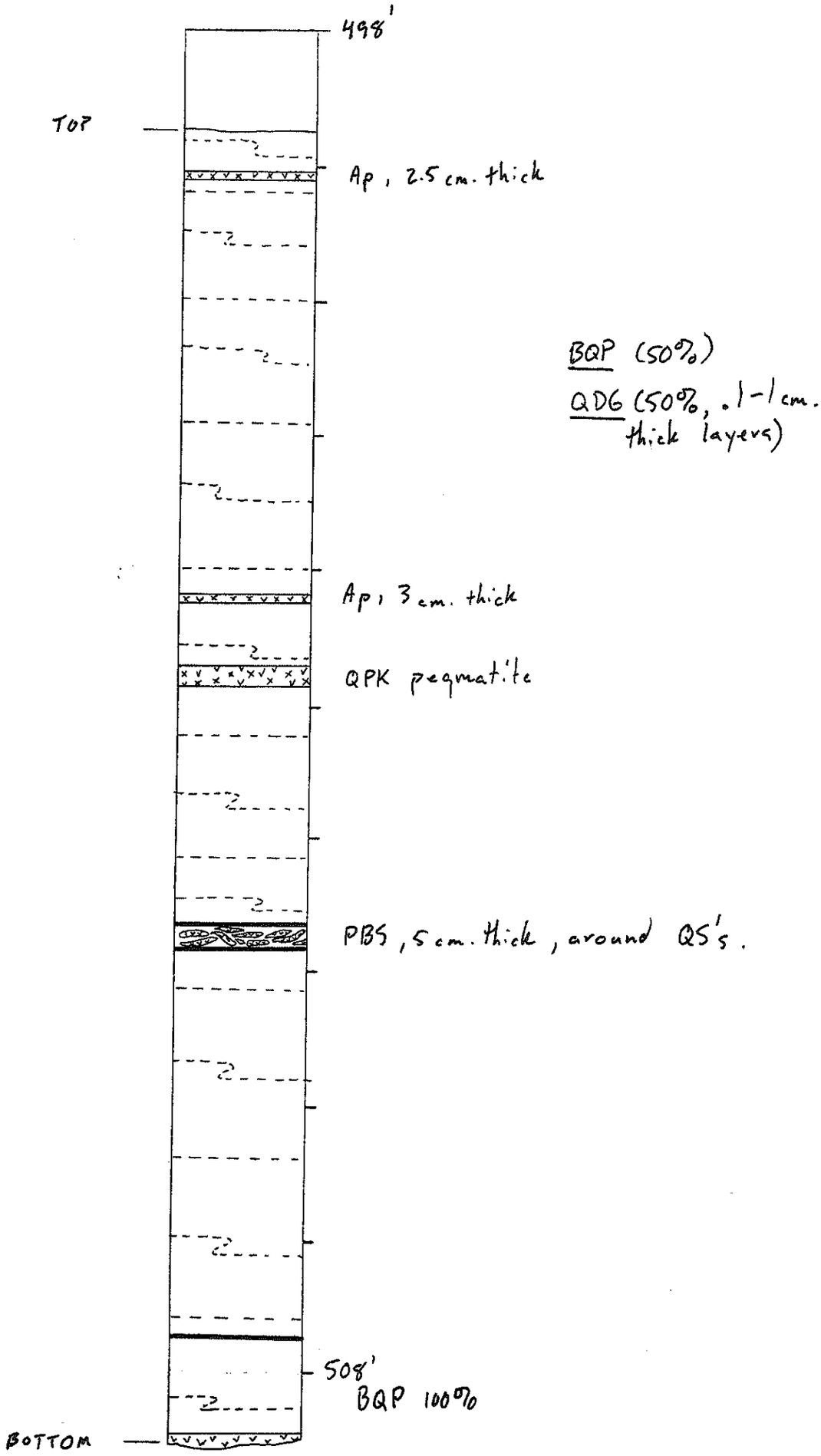
BQP (85%)
Ap (10%)
QDG (5%)

Ap and QDG become planar toward bottom.

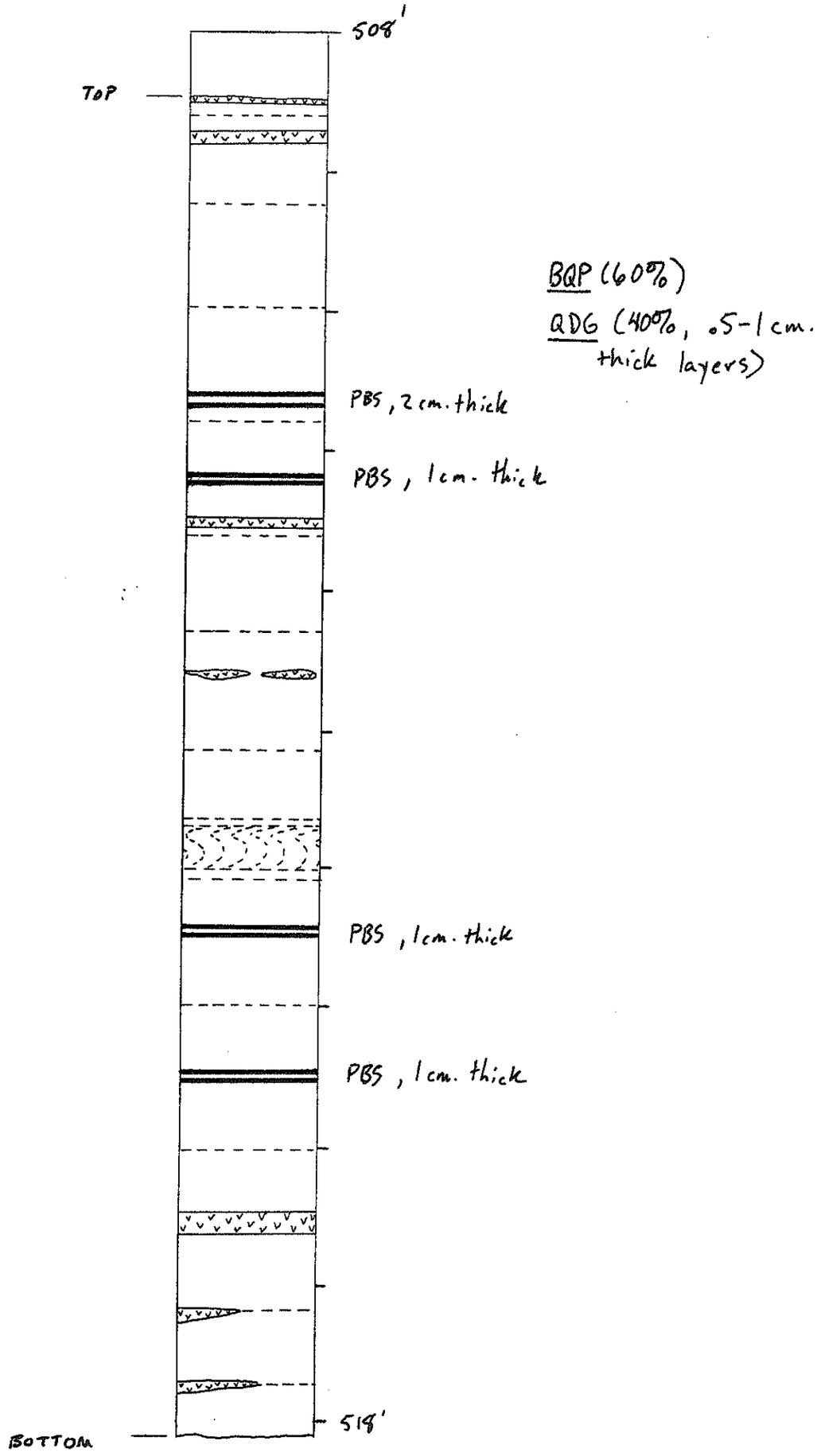
CORE LOG Moodus 1000' BOX# 50 INTERVAL 489.1' - 498.7'



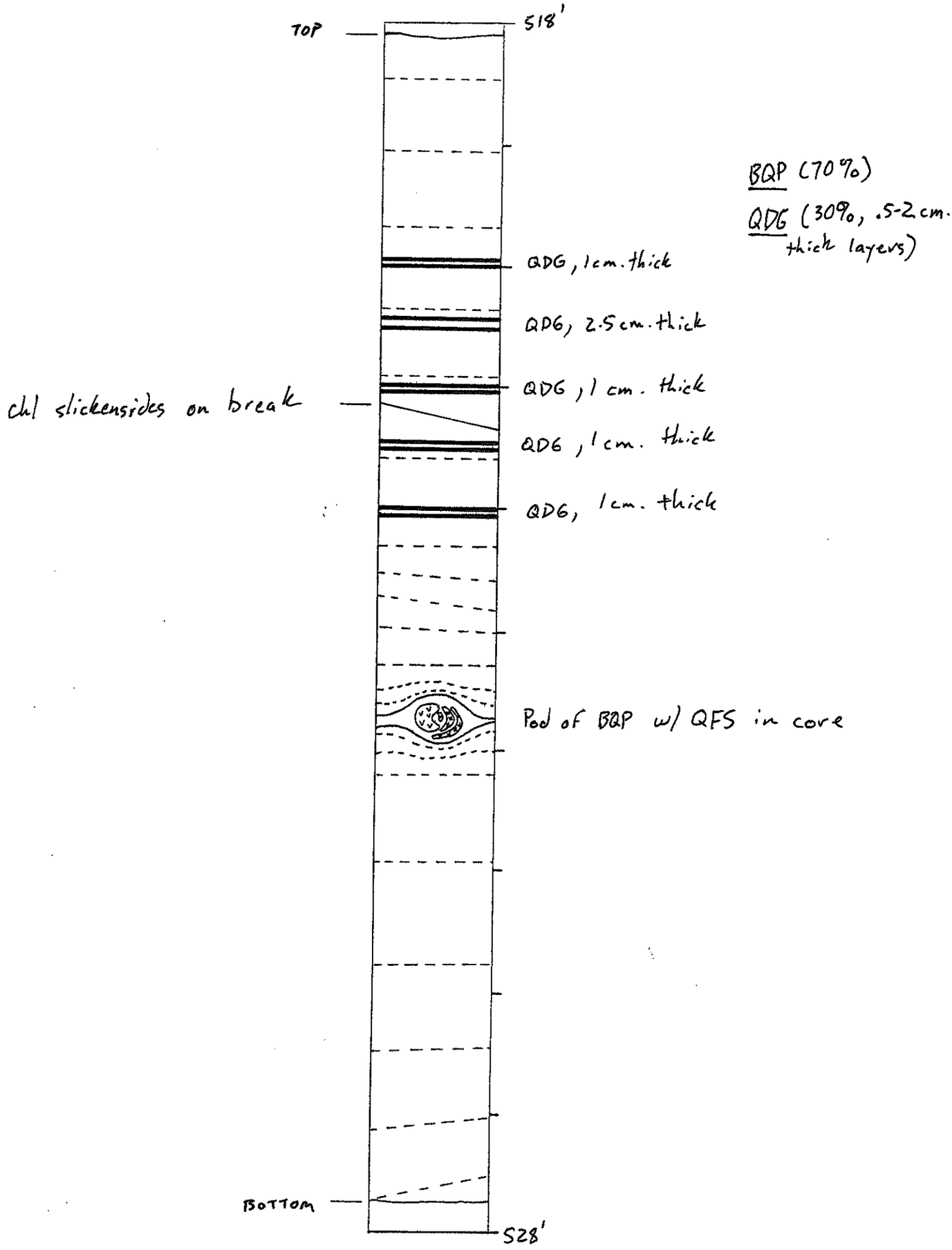
CORE LOG Moodus 1000' BOX# 51 INTERVAL 498.7' - 508.4'



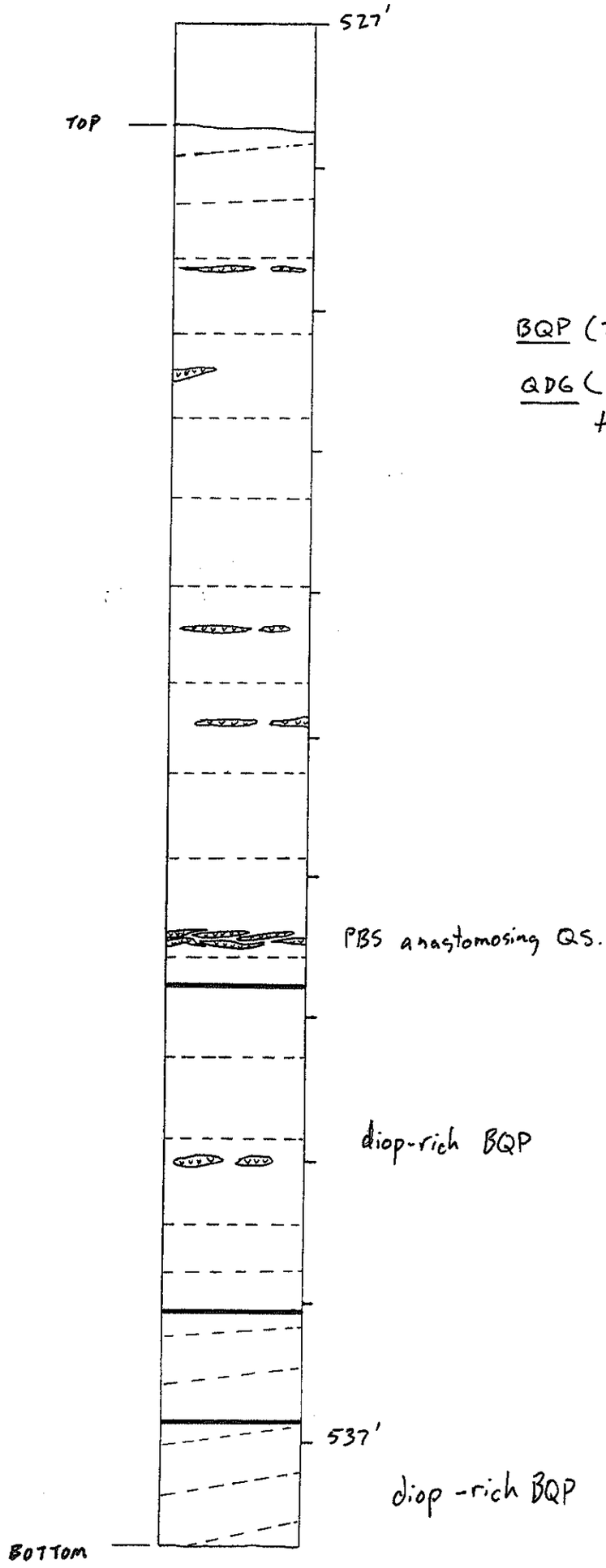
CORE LOG Moodus 1000' BOX# 52 INTERVAL 508.4' - 518.1'



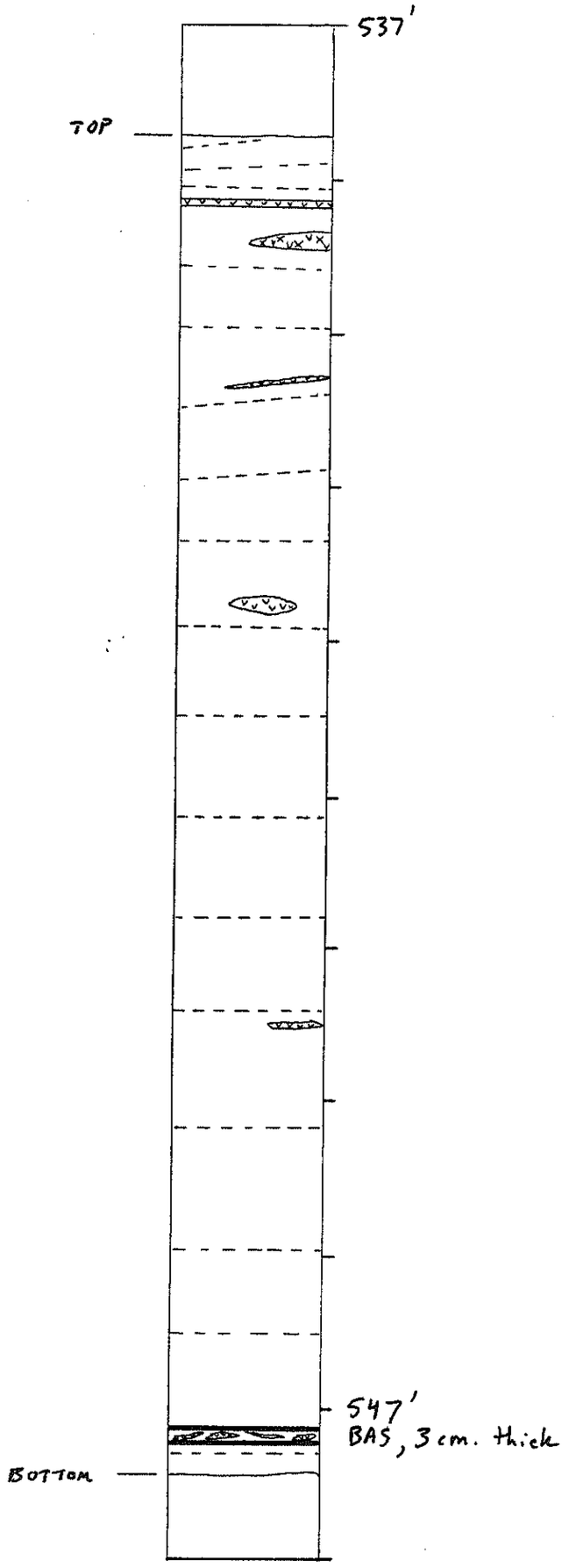
CORE LOG Moodus 1000' BOX# 53 INTERVAL 518.1' - 527.7'



CORE LOG Meadows 1000' BOX# 54 INTERVAL 527.7' - 537.7'

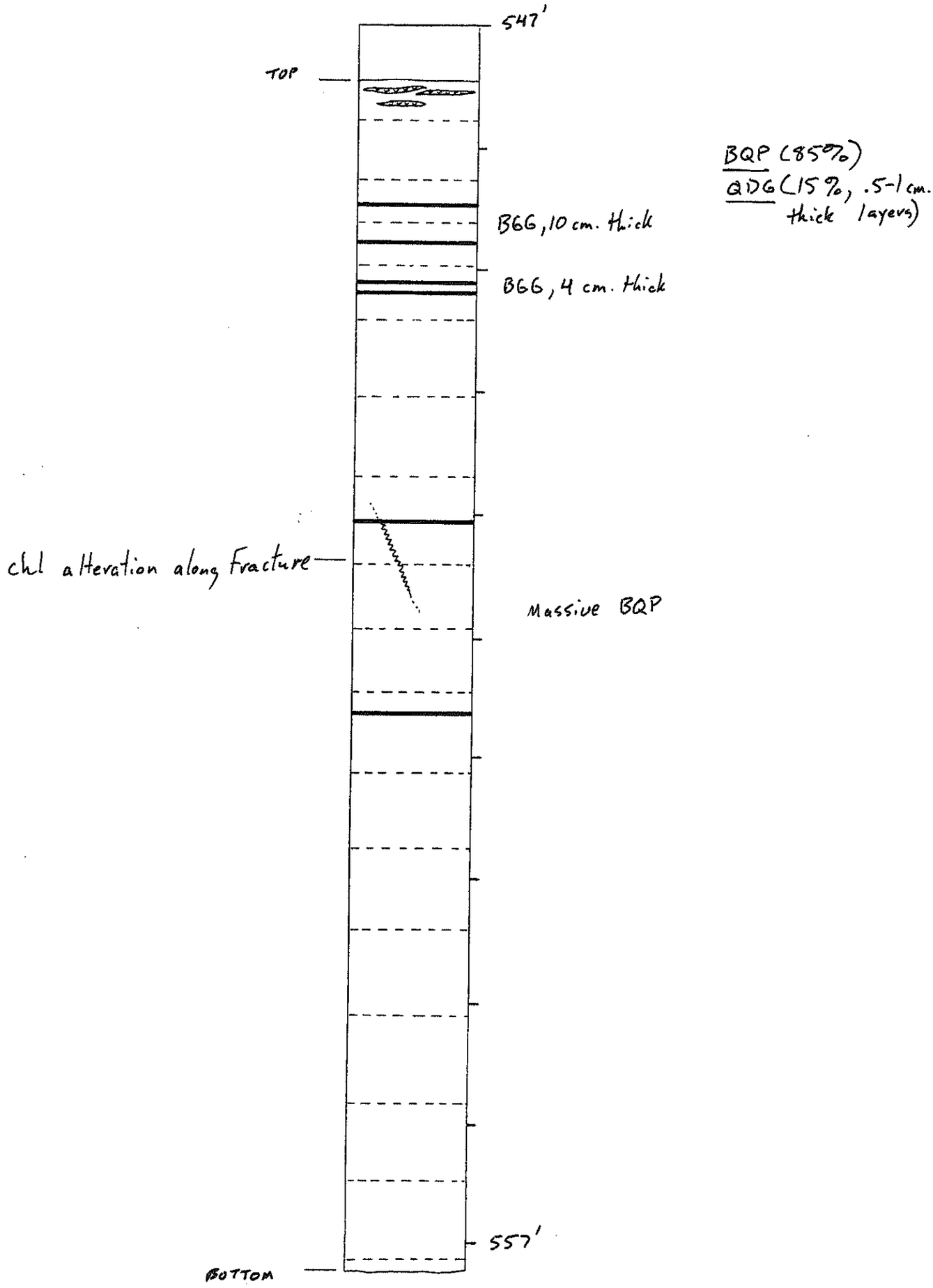


CORE LOG Meadows 1000' BOX# 55 INTERVAL 537.7' - 547.4'

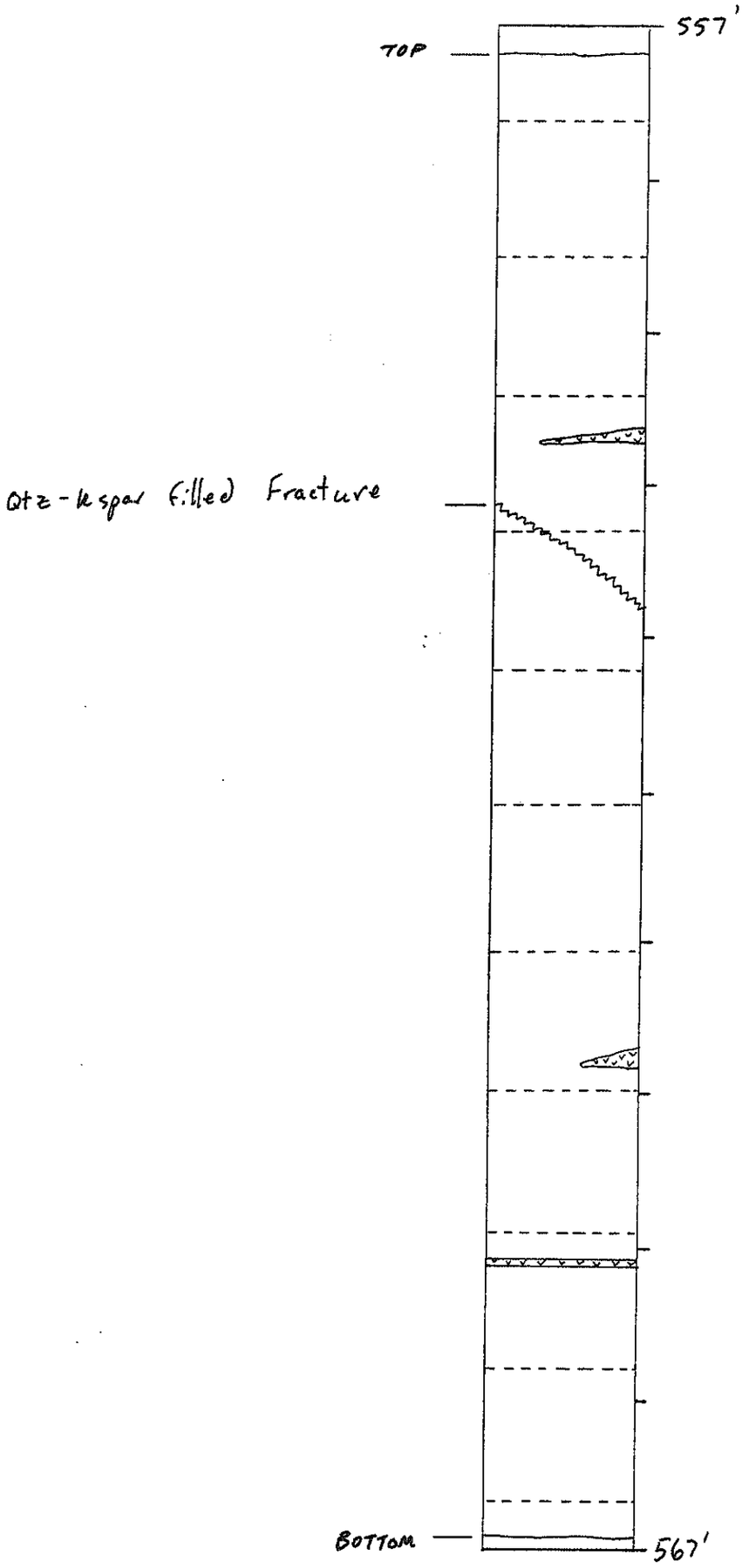


BQP (85%)
QDG (15%, 1-2 cm. thick layers)

CORE LOG Moodus 1000' BOX# 56 INTERVAL 547.4' - 557.2'



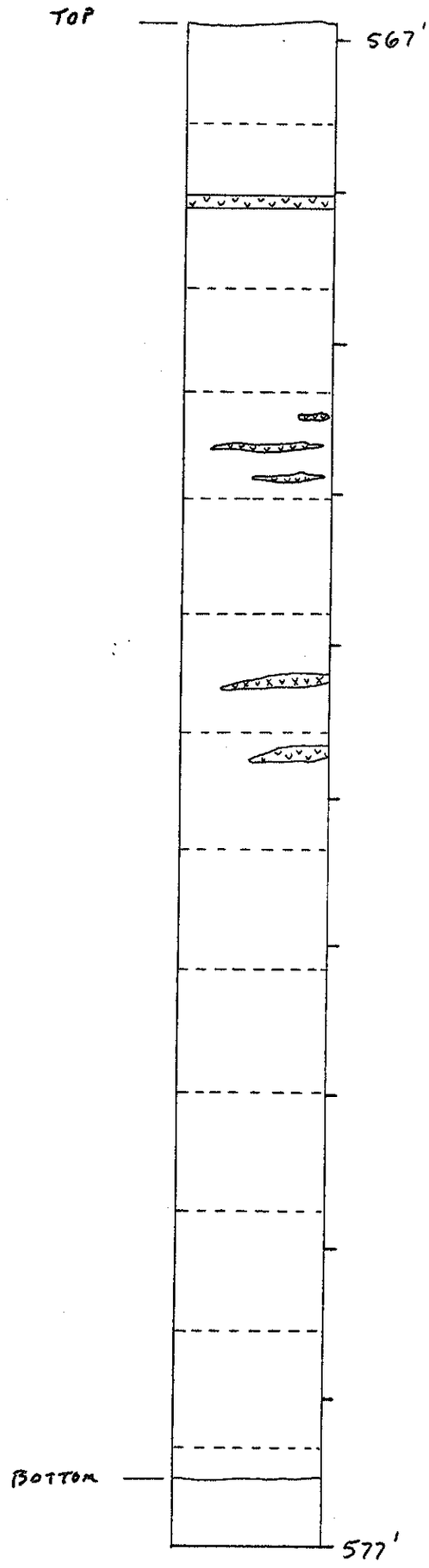
CORE LOG Moodus 1000' BOX# 57 INTERVAL 557.2'-566.9'



BQP (80%)

QDG (20%, .5-1cm. thick layers)

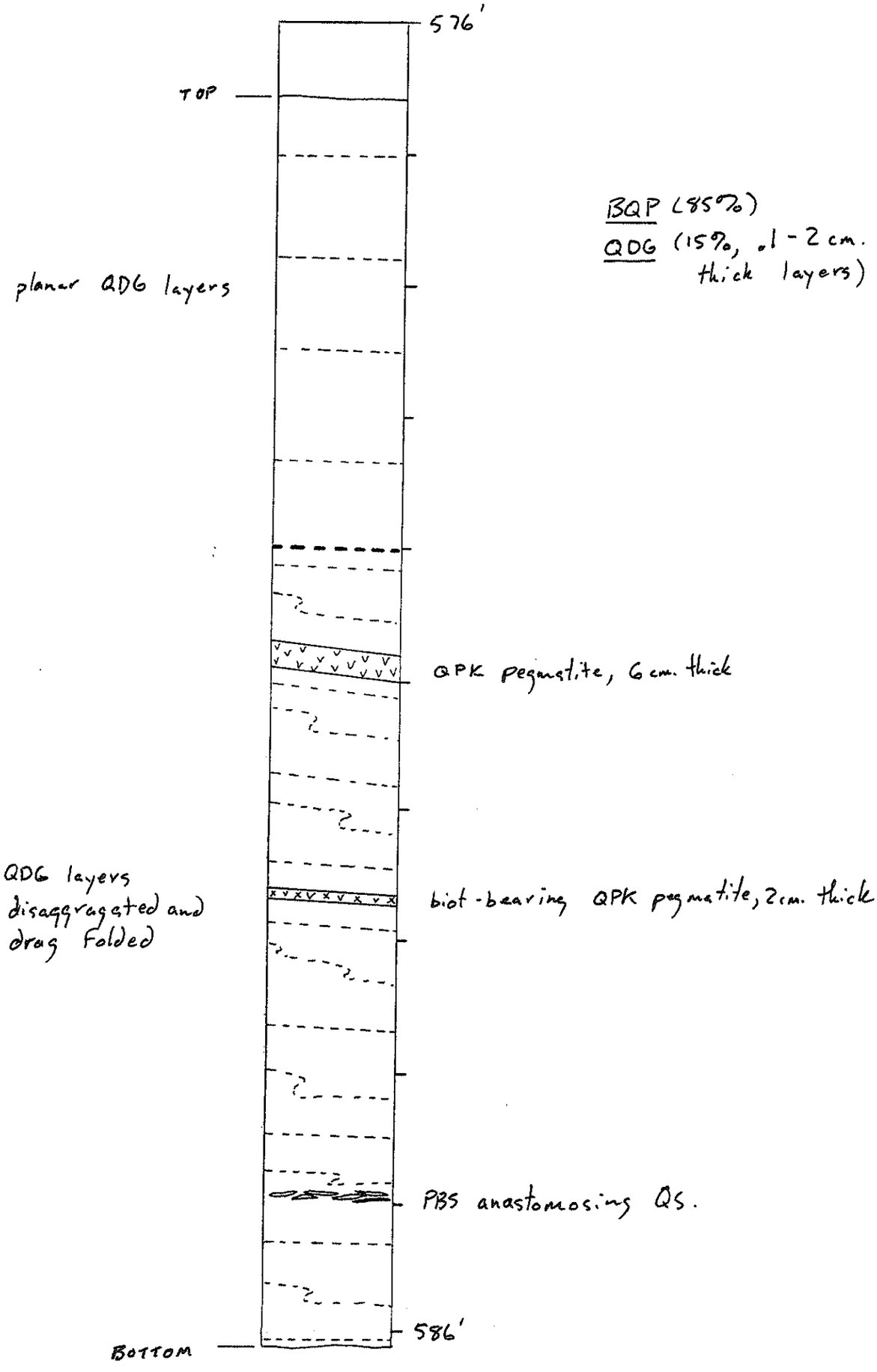
CORE LOG Moodus 1000' BOX# 58 INTERVAL 566.9'-576.6'



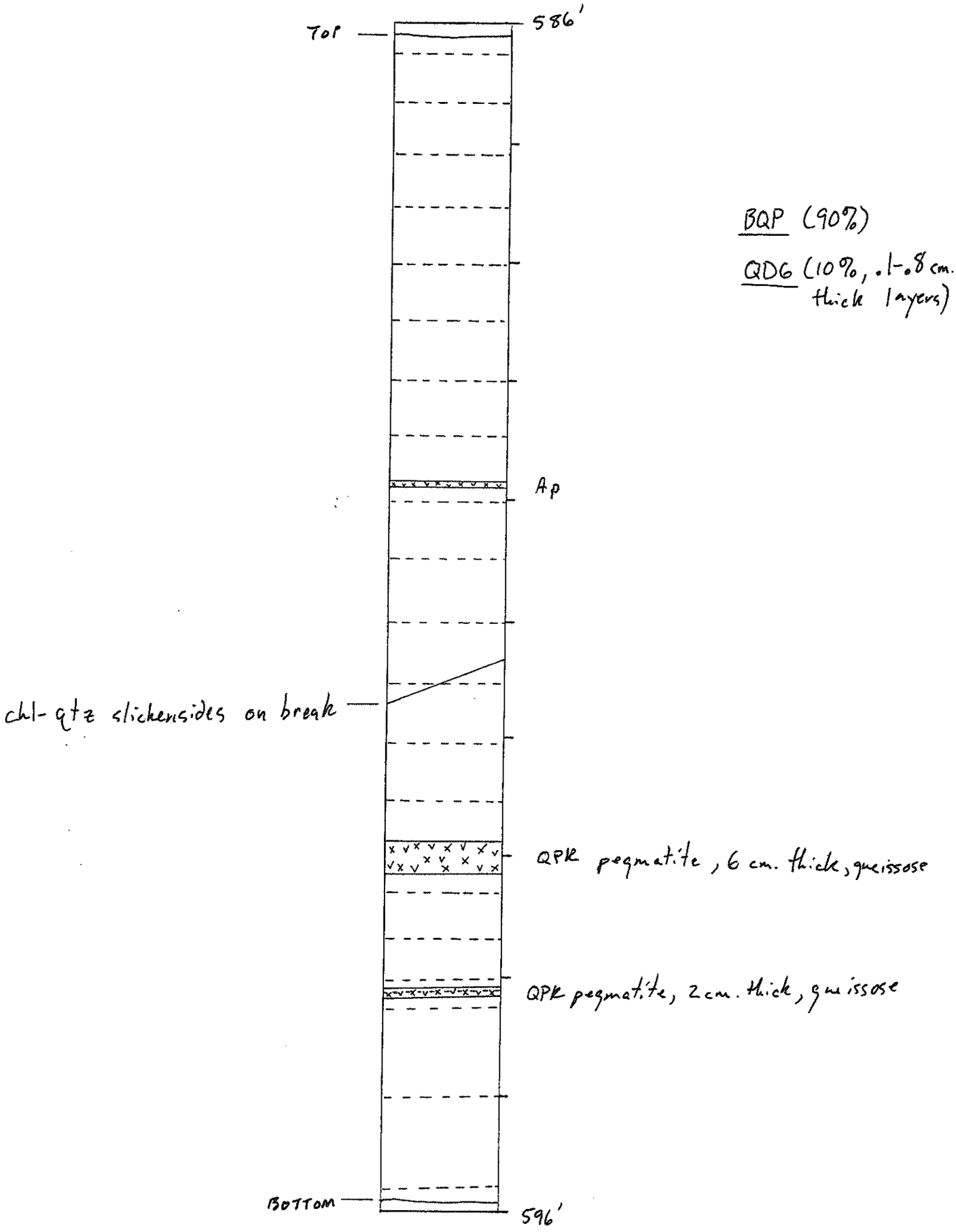
BQP (80%)

QDG (20%, .5-2cm. thick layers)

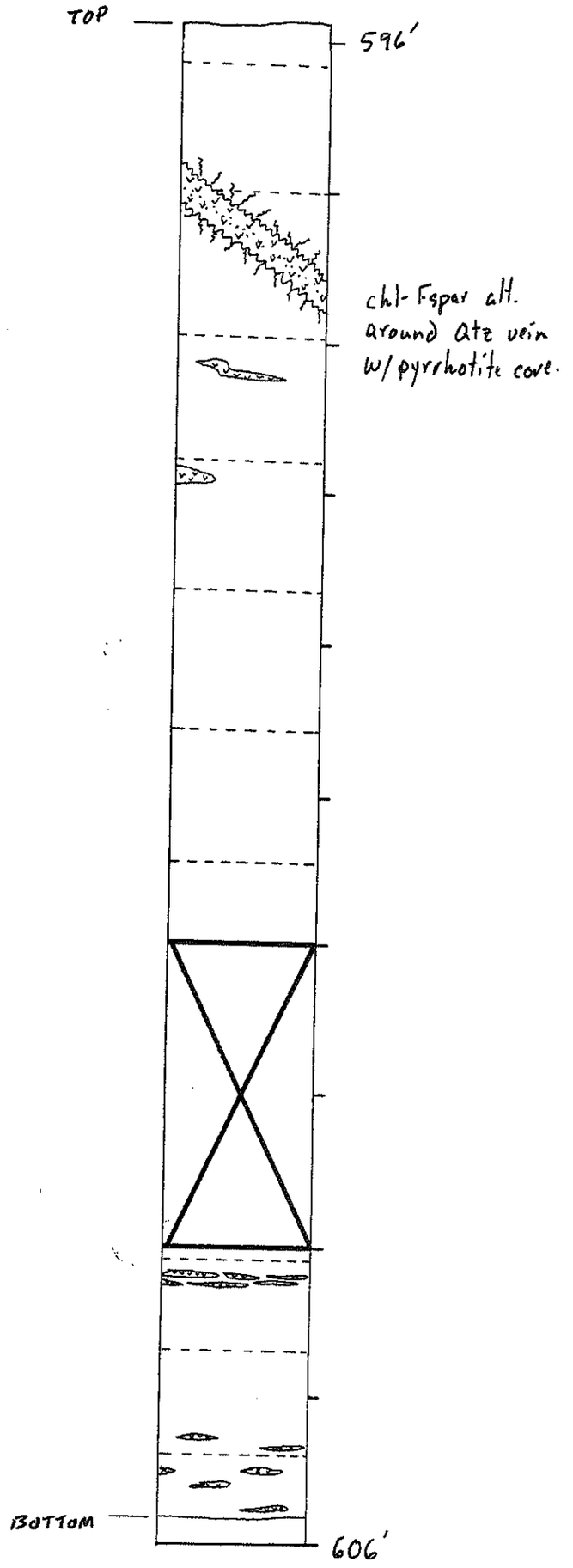
CORE LOG Moodus 1000' BOX# 59 INTERVAL 576.6' - 586.1'



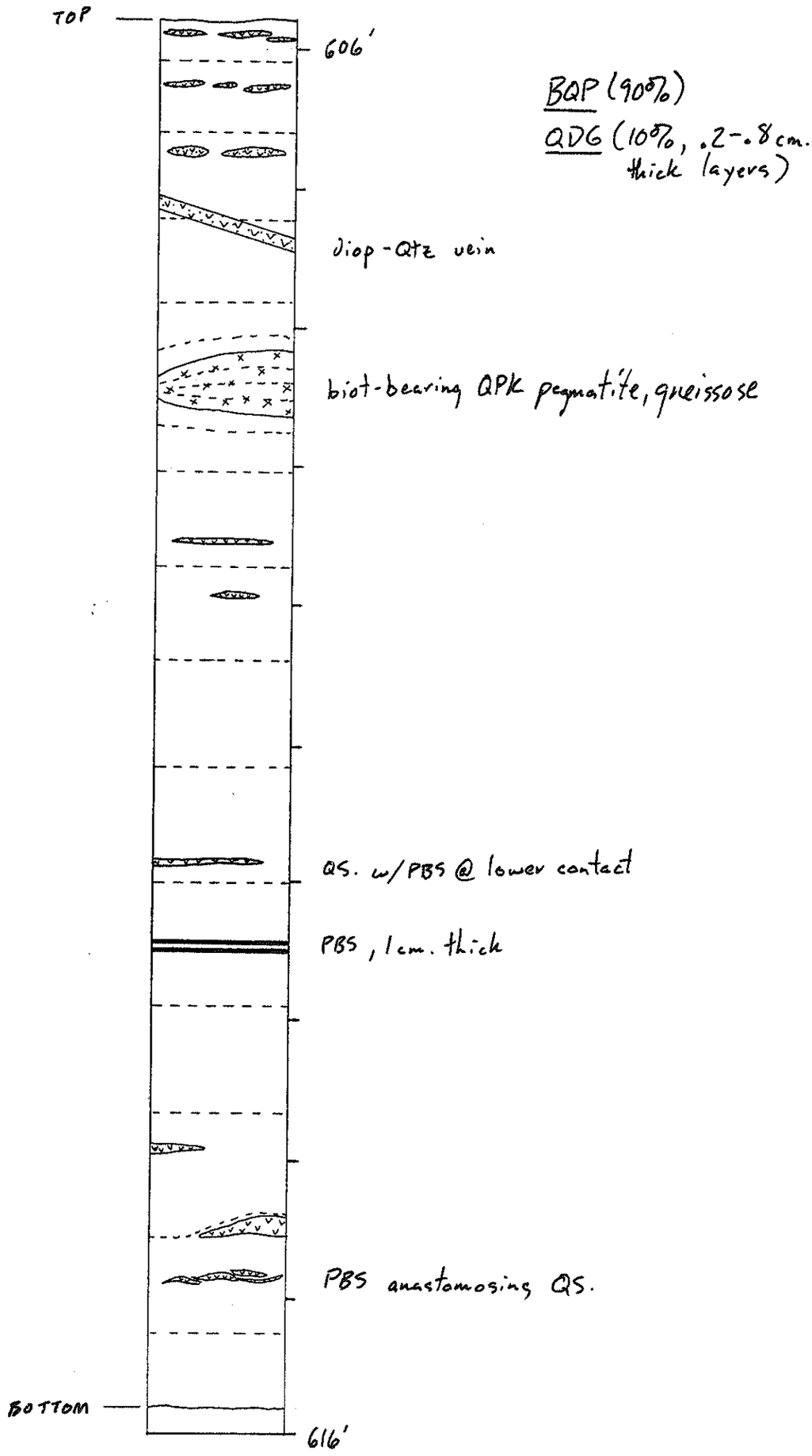
CORE LOG Moodus 1000' BOX# 60 INTERVAL 586.1' - 595.9'



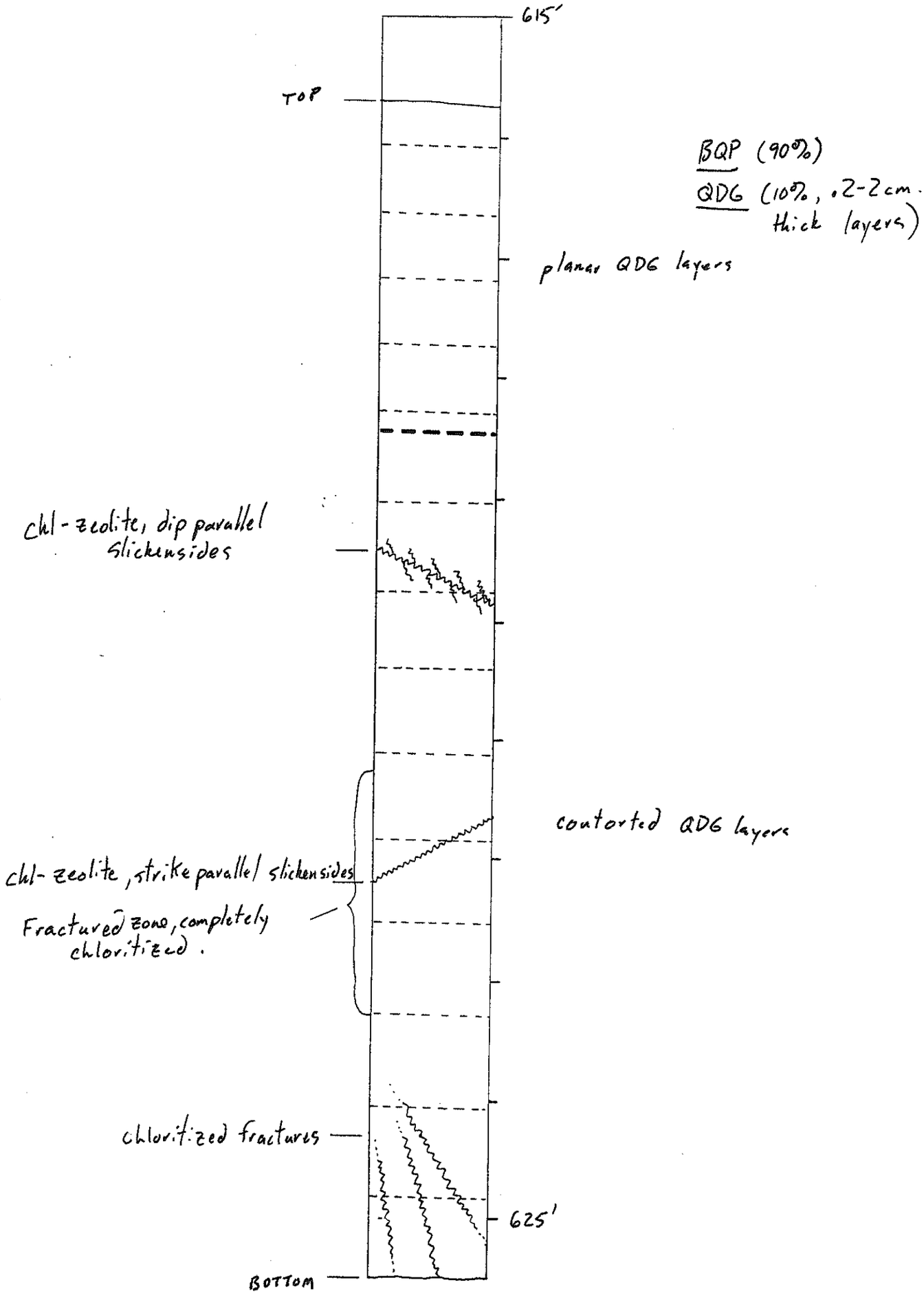
CORE LOG Moodus 1000' BOX# 61 INTERVAL 595.9'-605.8'



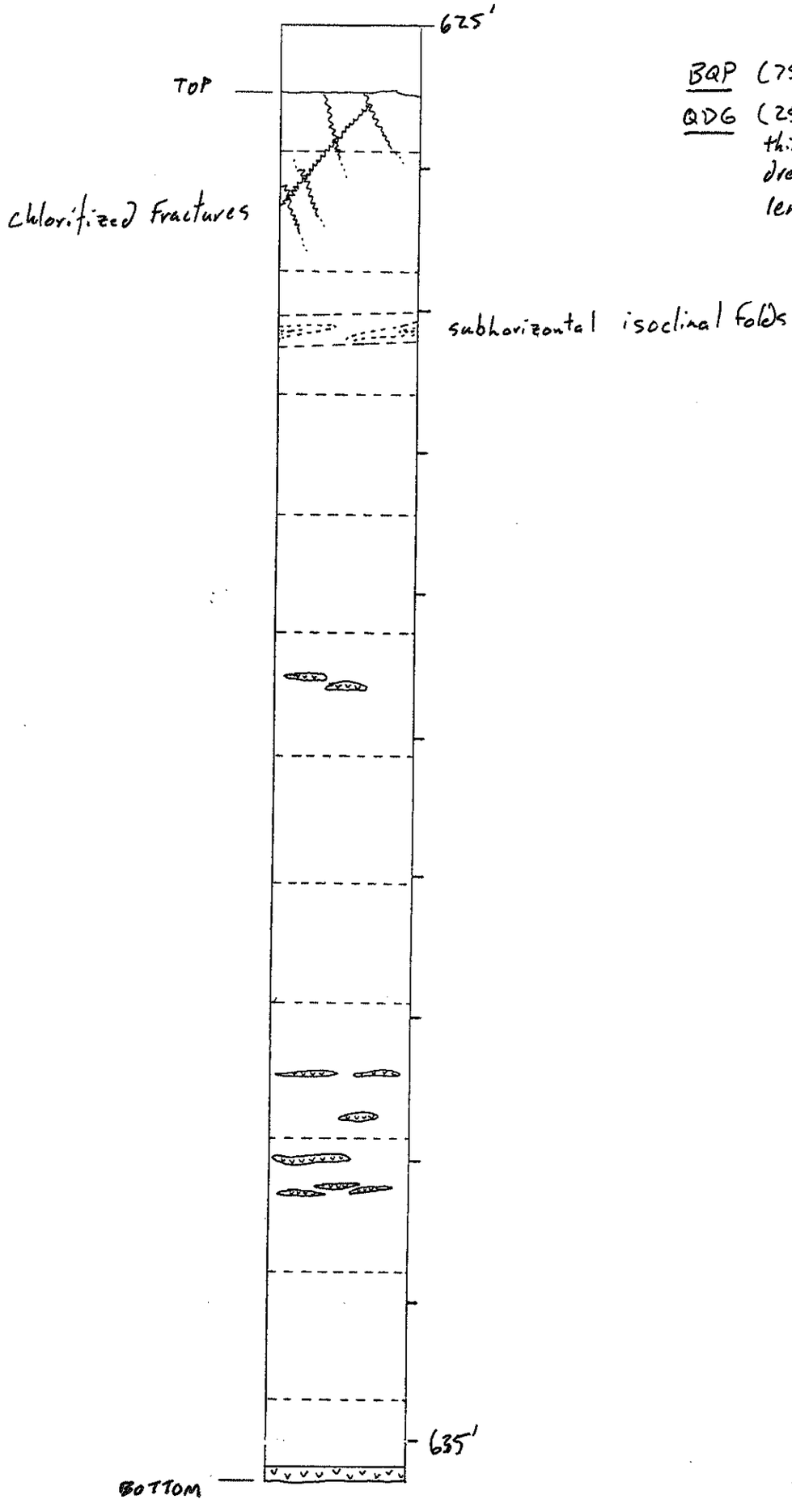
CORE LOG Moodus 1000' BOX# 62 INTERVAL 605.8'-615.7'



CORE LOG Moodus 1000' BOX# 63 INTERVAL 615.7' – 625.5'



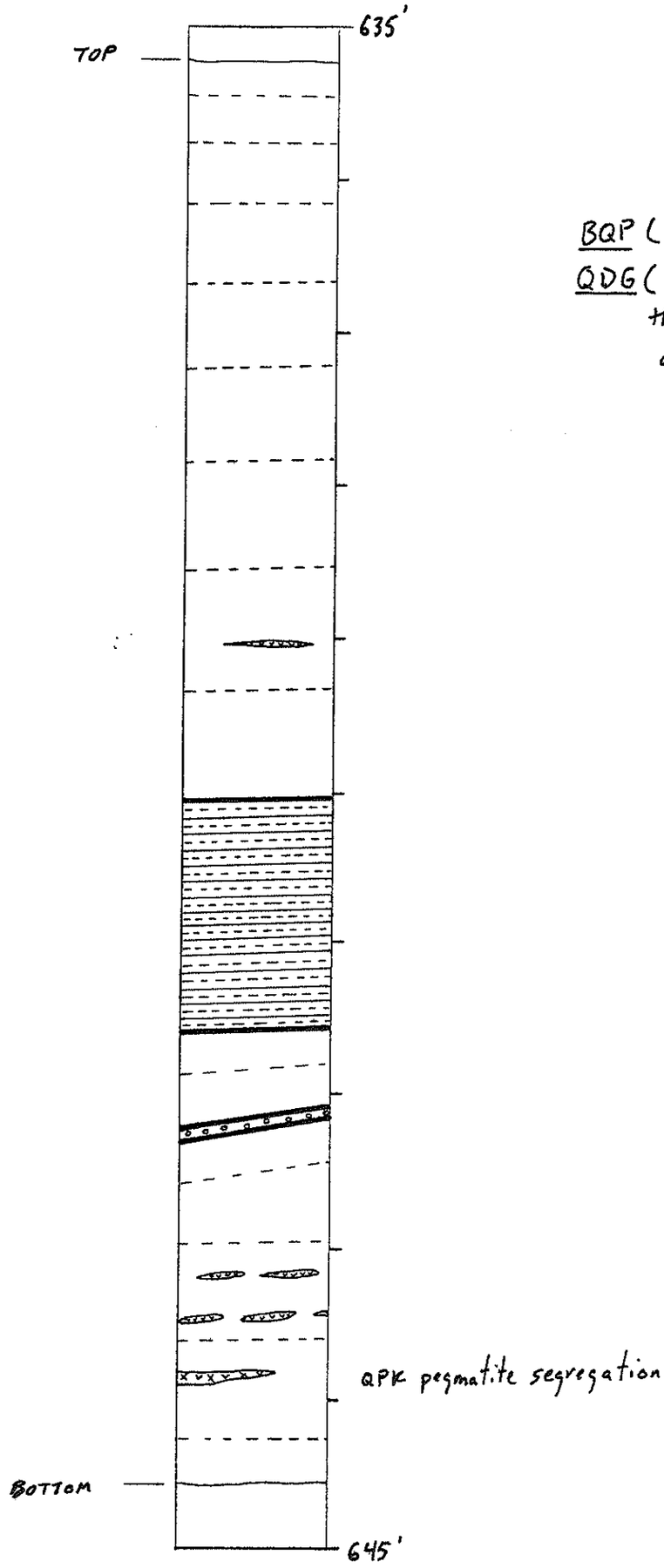
CORE LOG Moodus 1000' BOX# 64 INTERVAL 625.5' - 635.3'



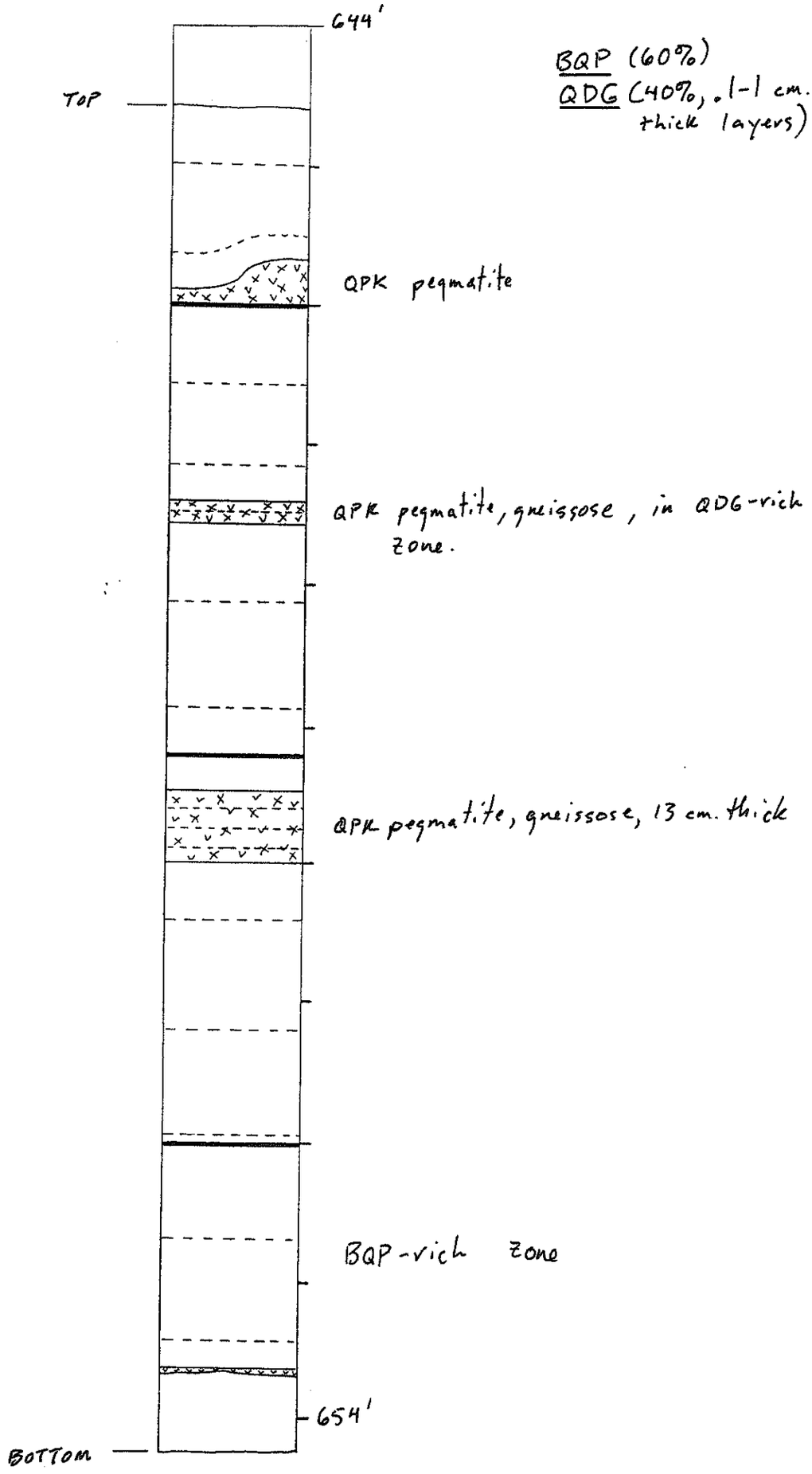
BQP (75%)

QDG (25%, .1 - 2cm. thick layers, drag folded and lensoid)

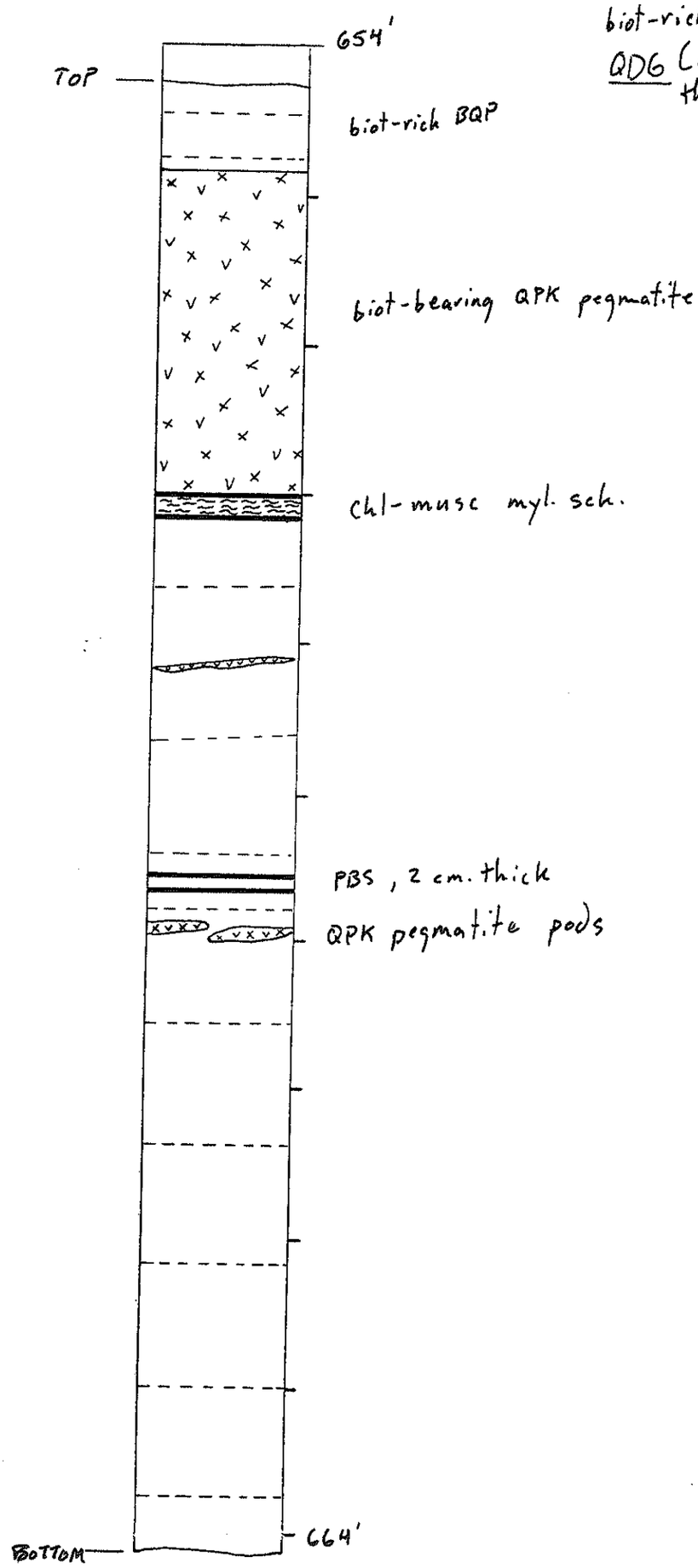
CORE LOG Moodus 1000' BOX# 65 INTERVAL 635.3'-644.6'



CORE LOG Moodus 1000' BOX# 66 INTERVAL 644.6'-654.3'

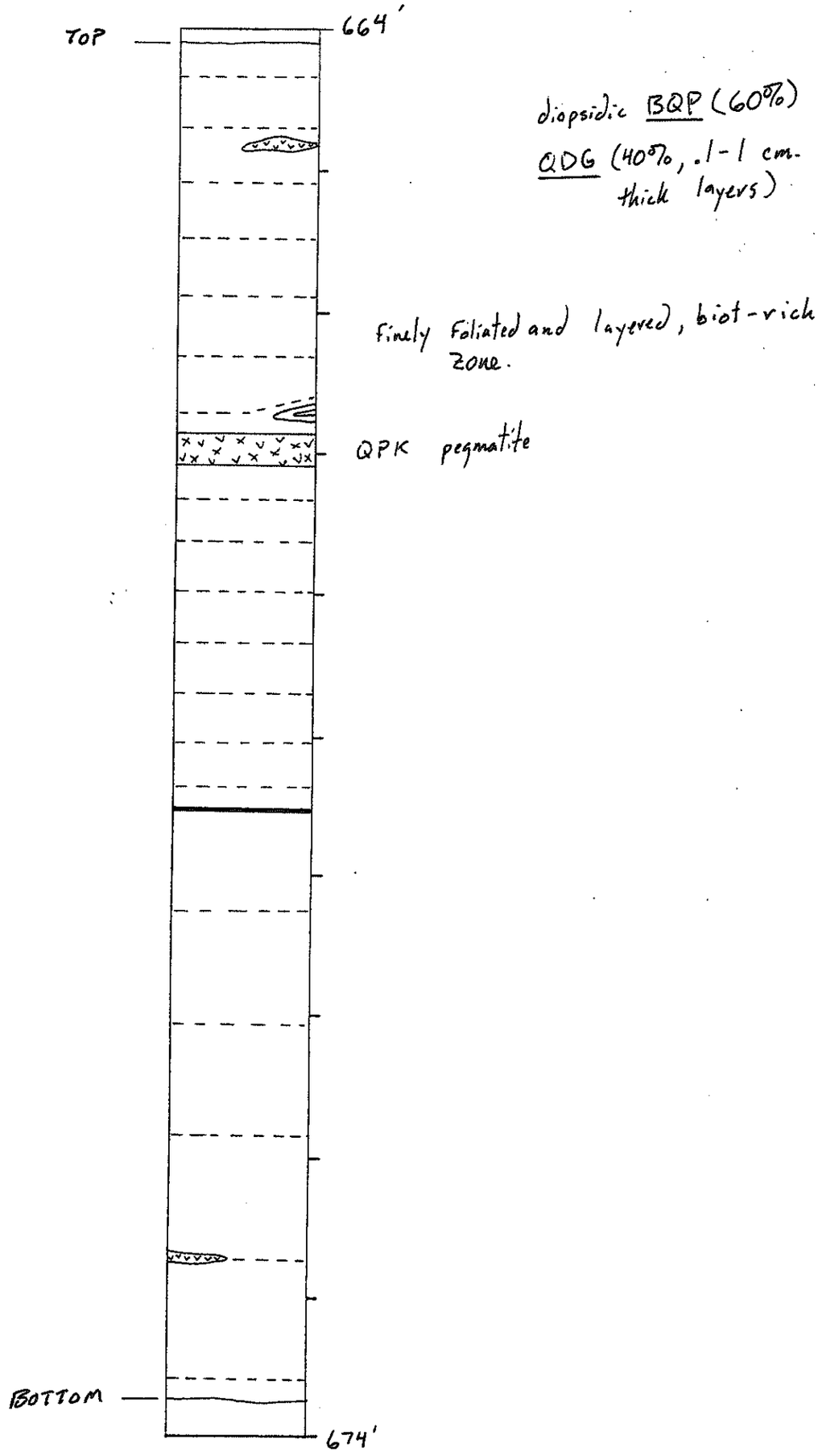


CORE LOG Moodus 1000' BOX# 67 INTERVAL 654.3' - 664.1'

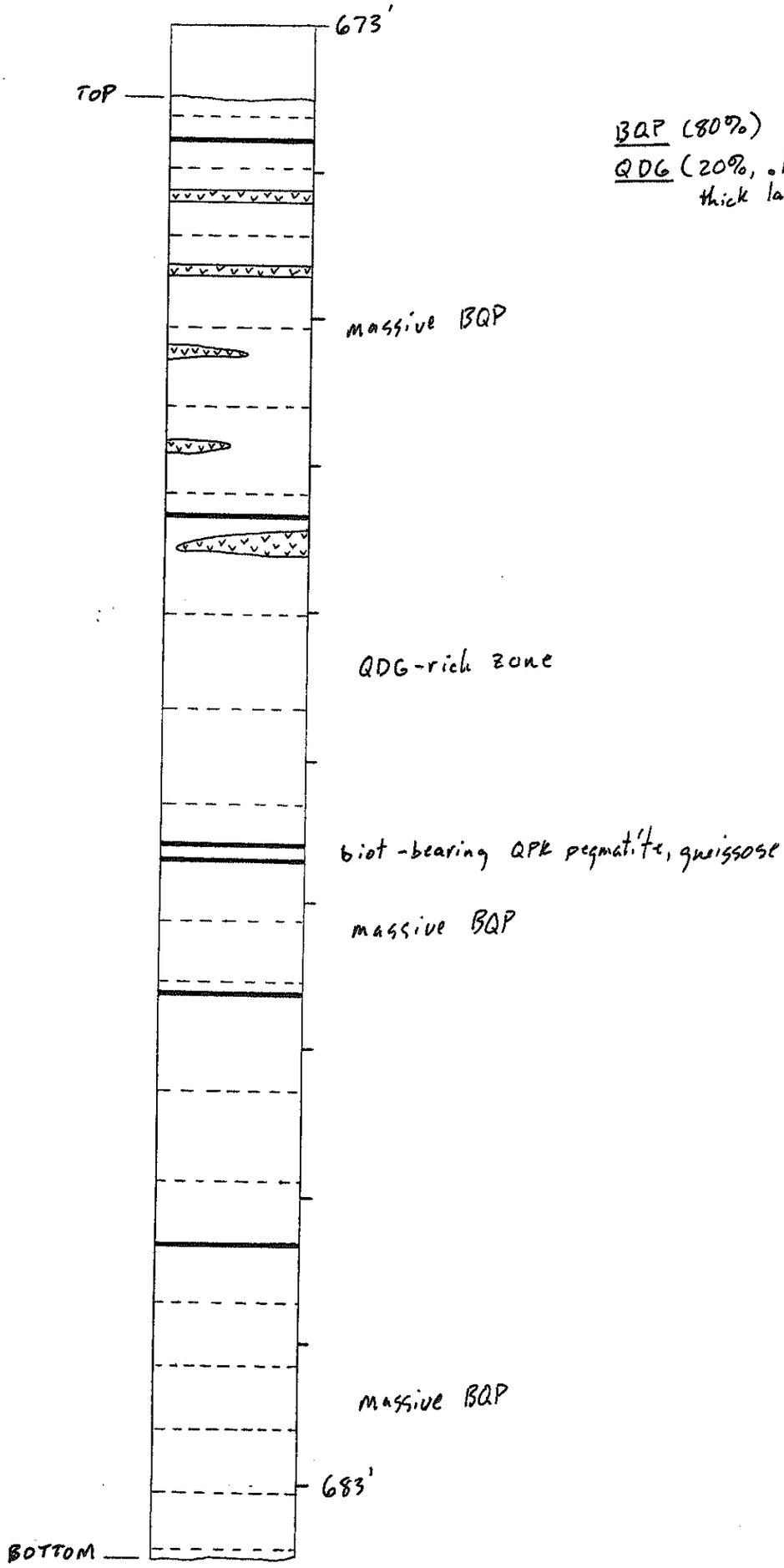


biot-rich BQP (90%)
QDG (10%, .1-.5 cm. thick layers)

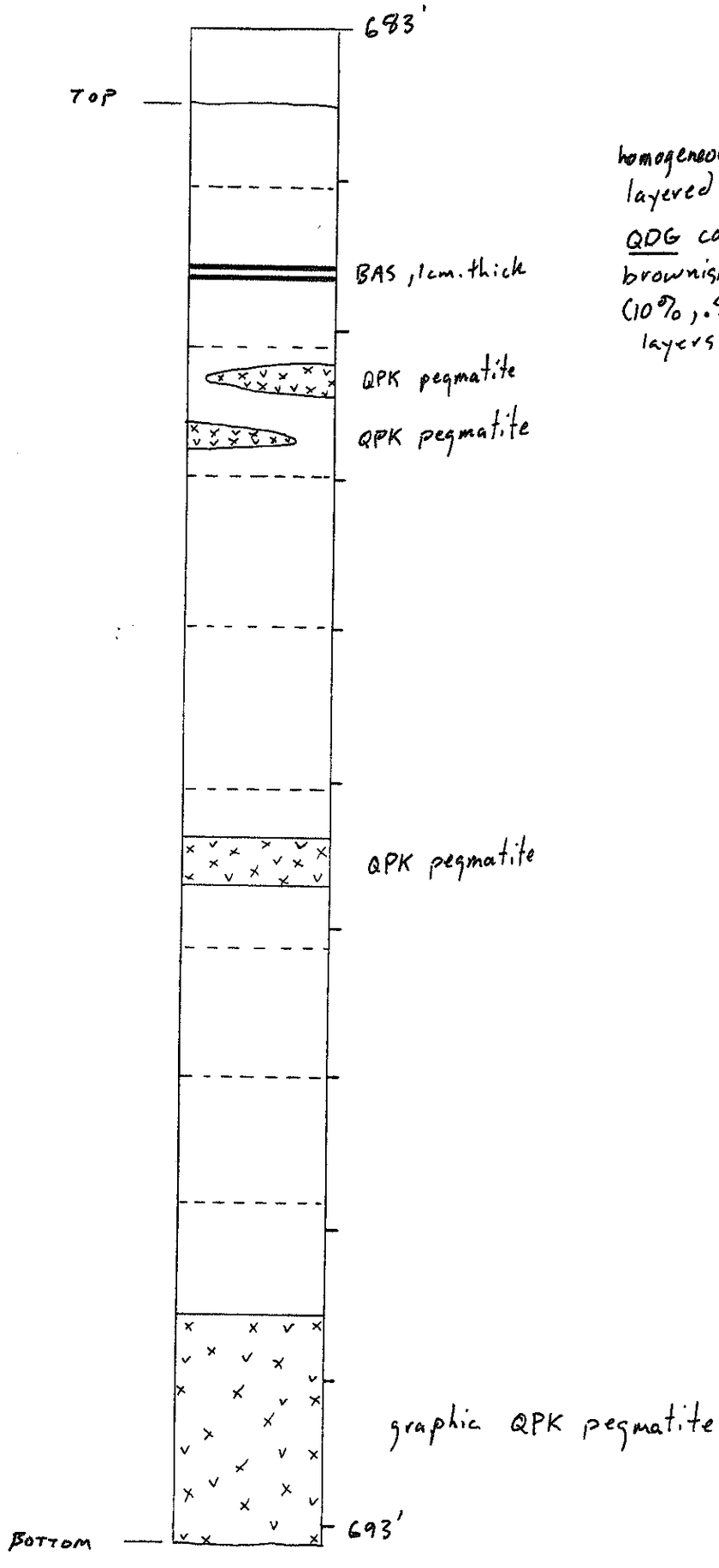
CORE LOG Moodus 1000' BOX# 68 INTERVAL 664.1' - 673.7'



CORE LOG Moodus 1000' BOX# 69 INTERVAL 673.7'- 683.5'

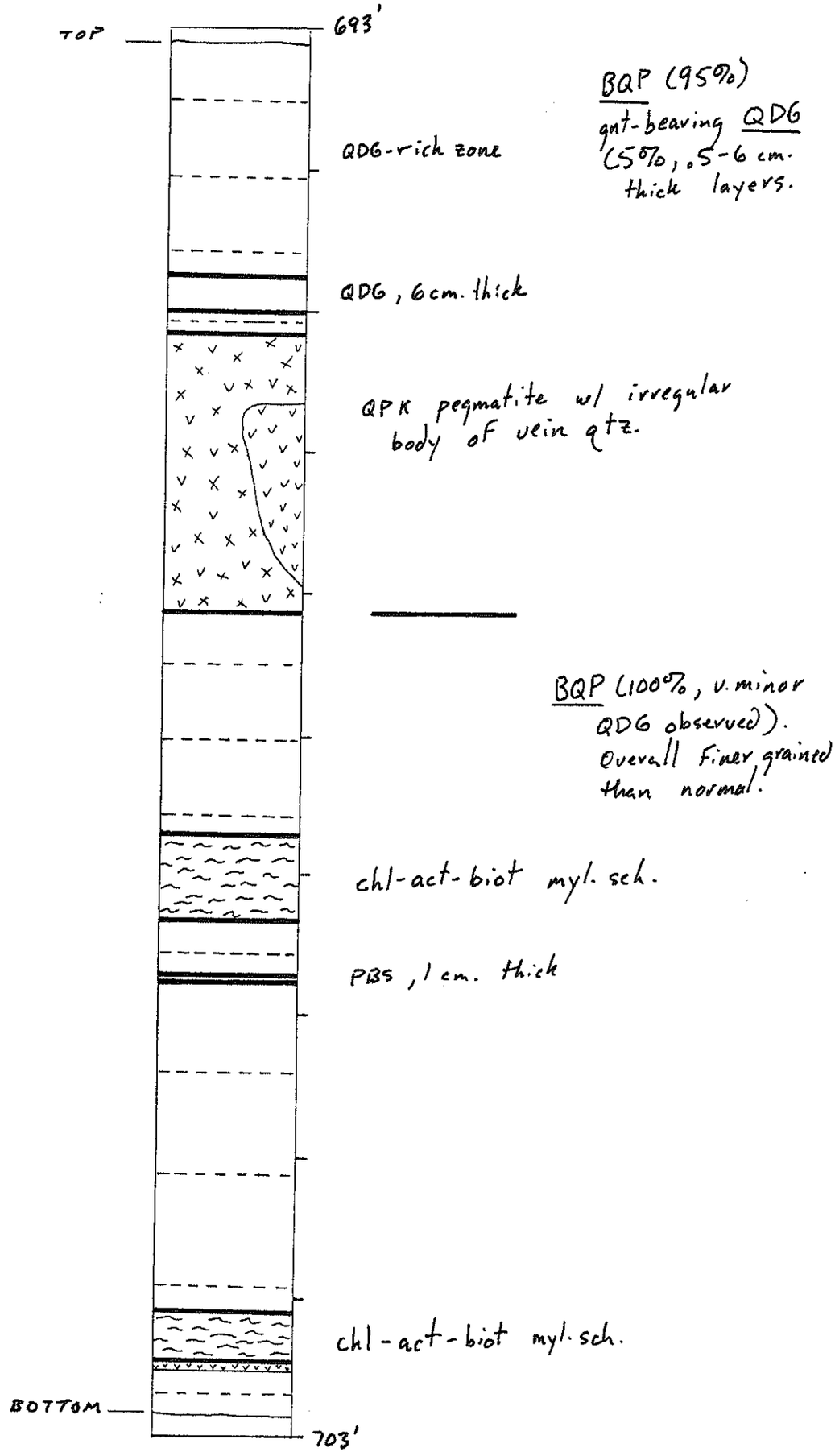


CORE LOG Moodus 1000' BOX# 70 INTERVAL 683.5'-693.1'

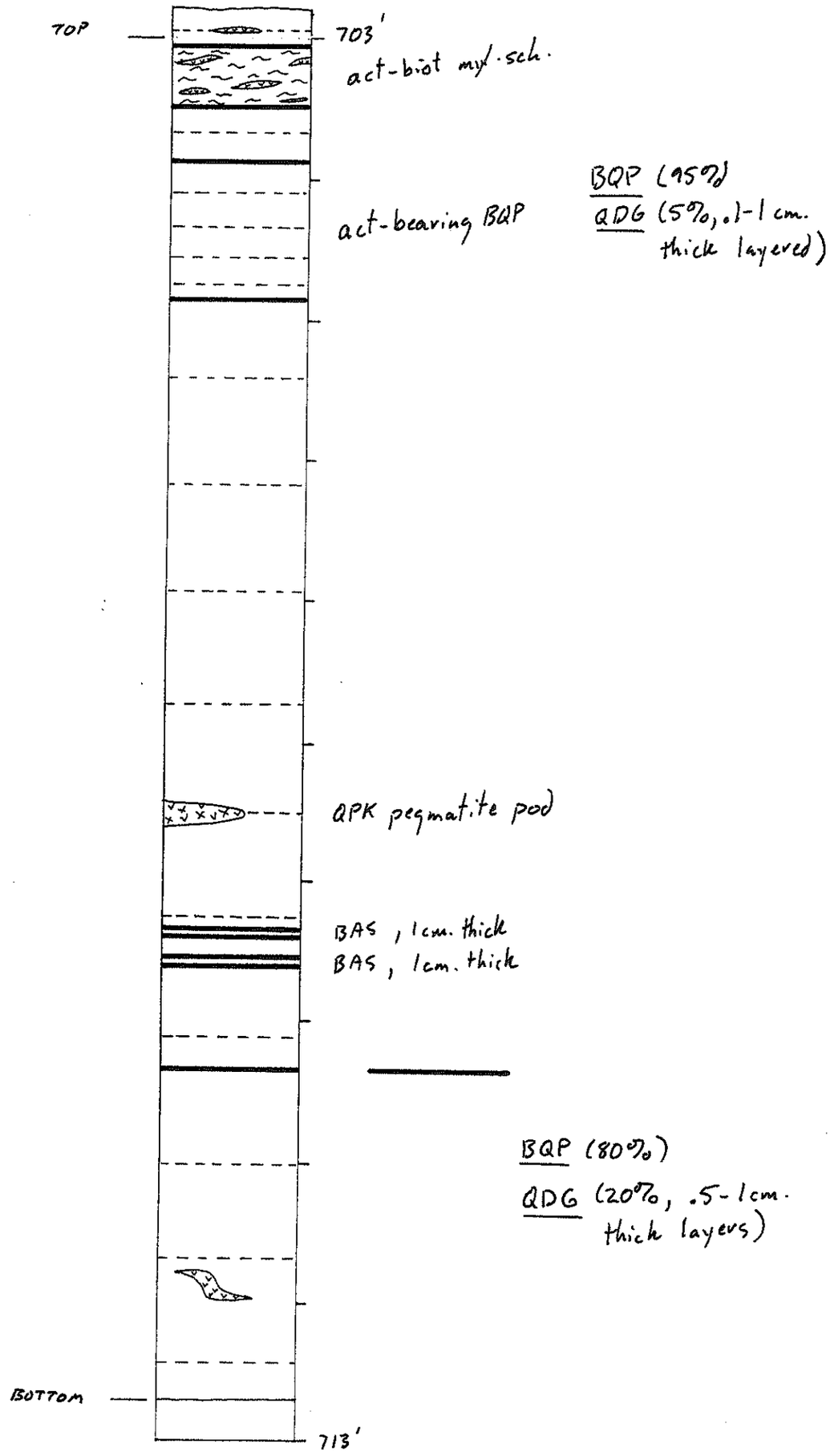


homogeneous, thick layered BQP (90%). QDG commonly w/ brownish-red gnt (10%, .5-3cm. thick layers)

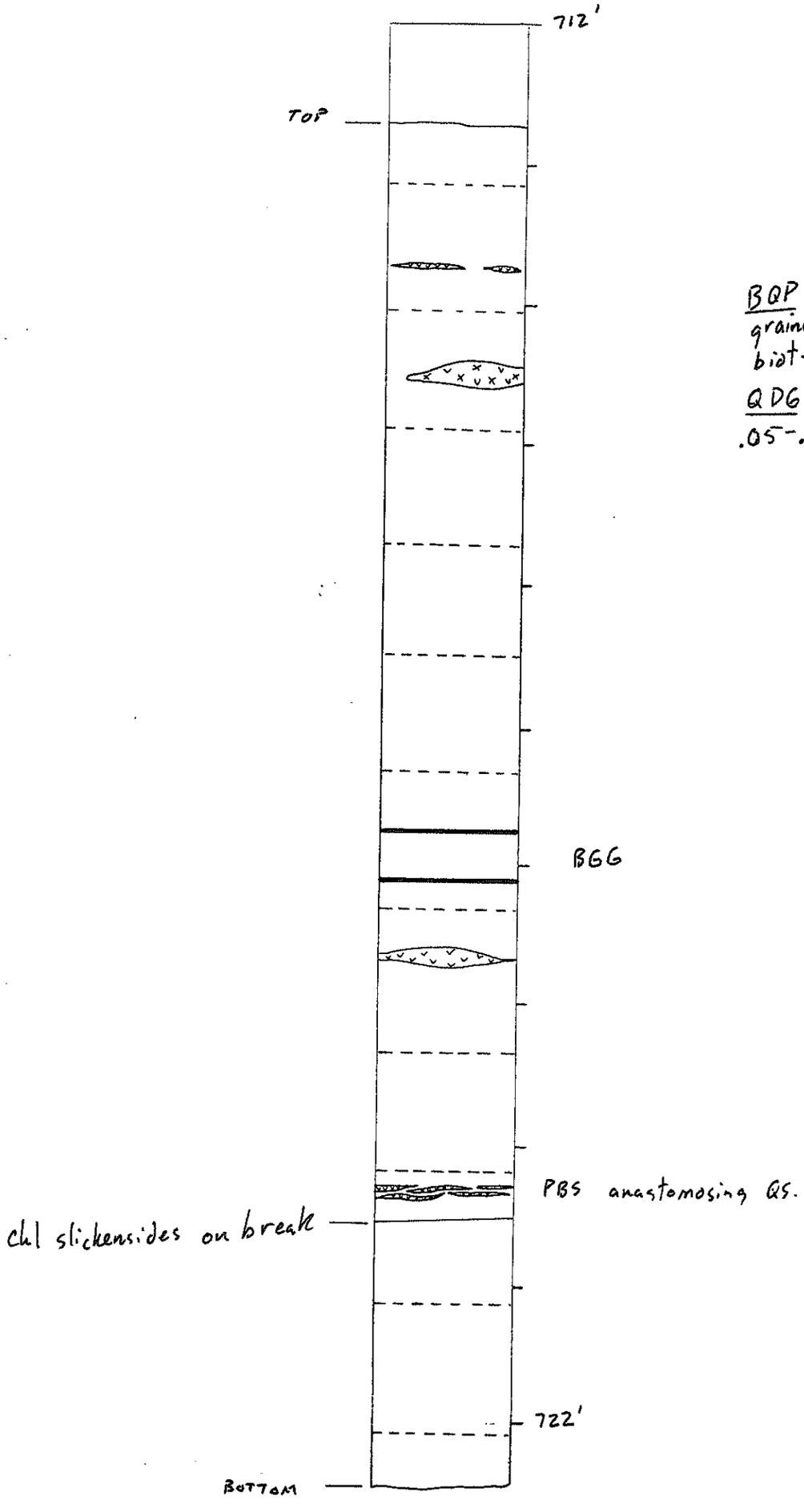
CORE LOG Moodus 1000' BOX# 71 INTERVAL 693.1' - 702.8'



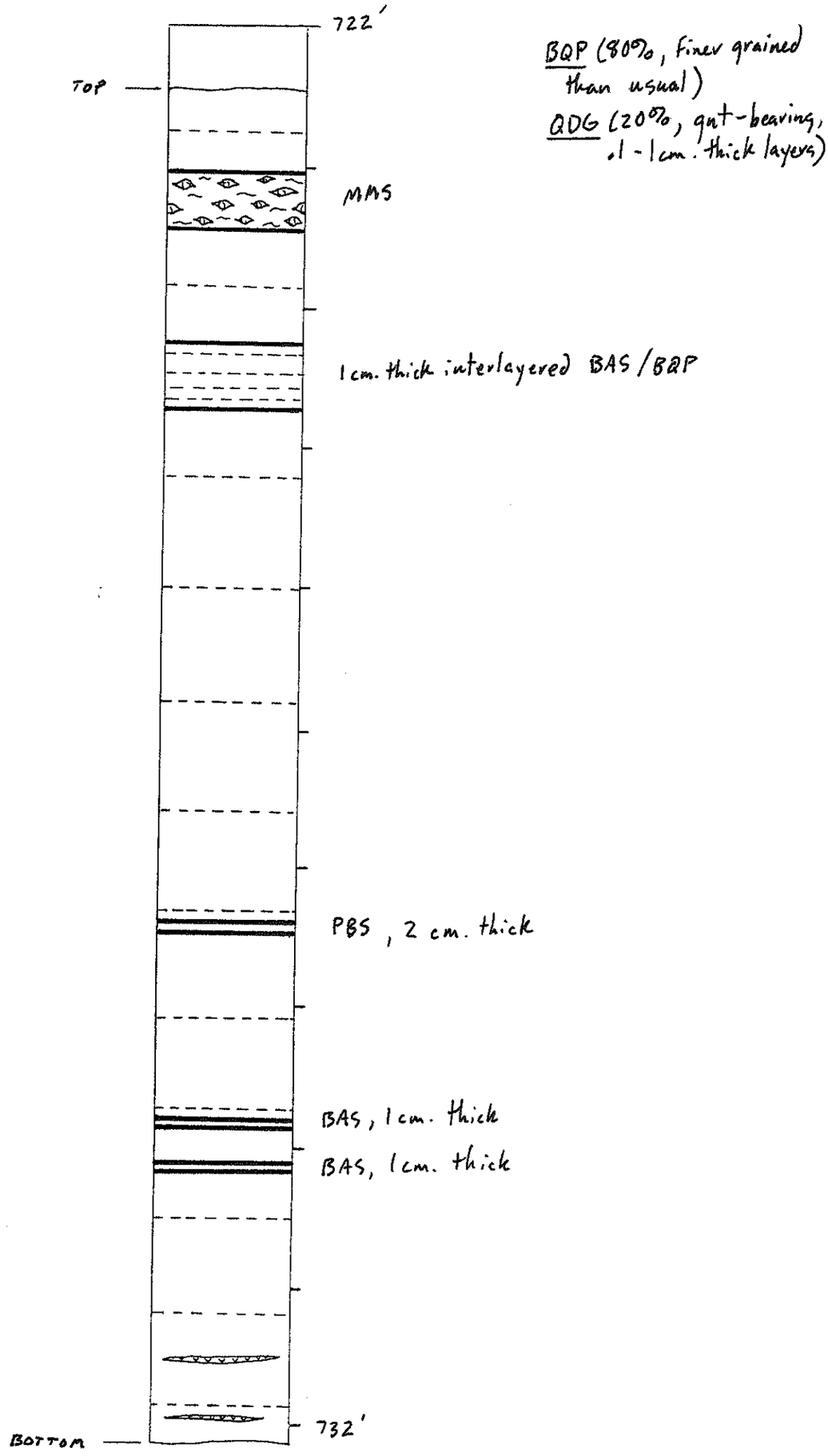
CORE LOG Moodus 1000' BOX# 72 INTERVAL 702.8' - 712.7'



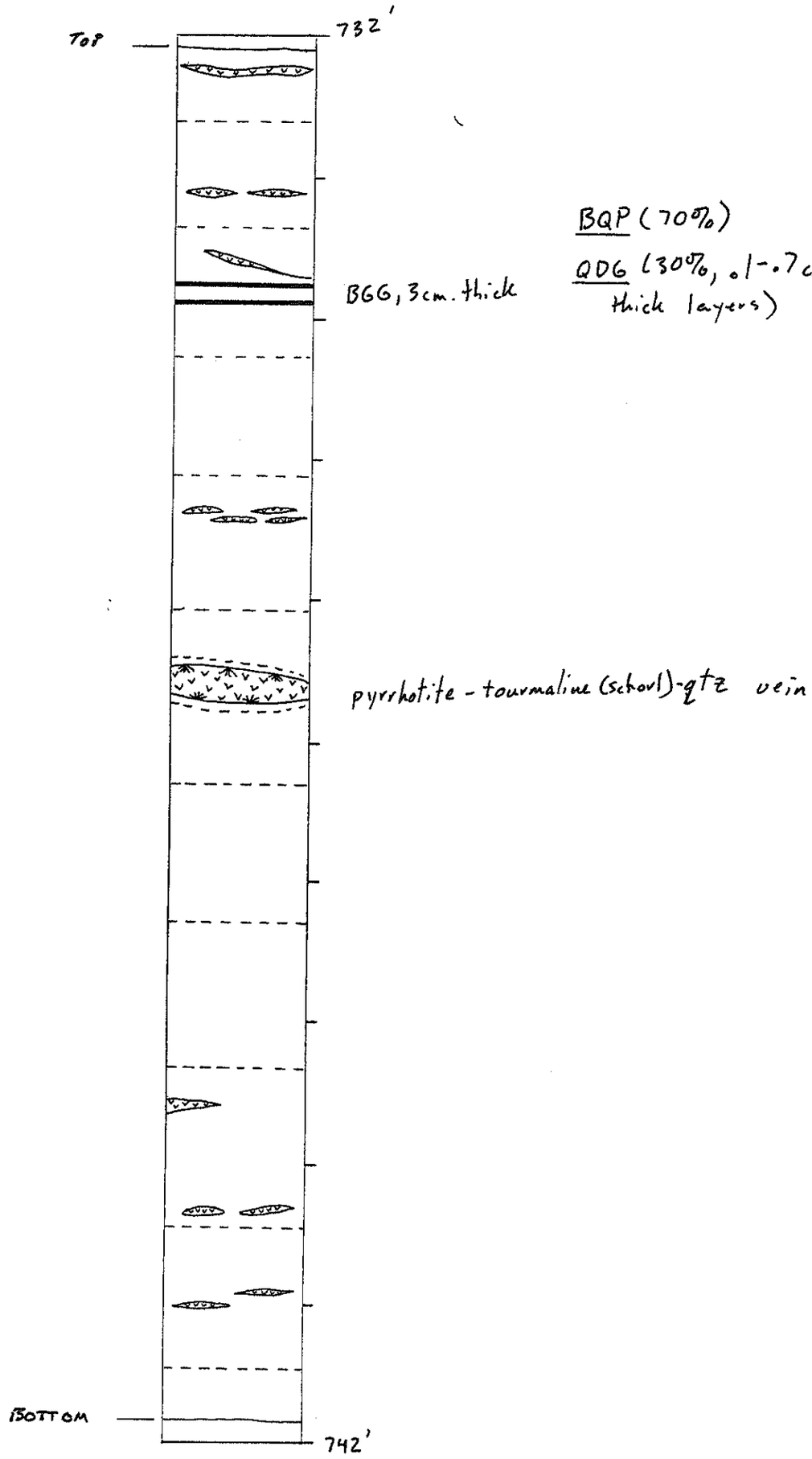
CORE LOG Moodus 1000' BOX# 73 INTERVAL 712.7' - 722.4'



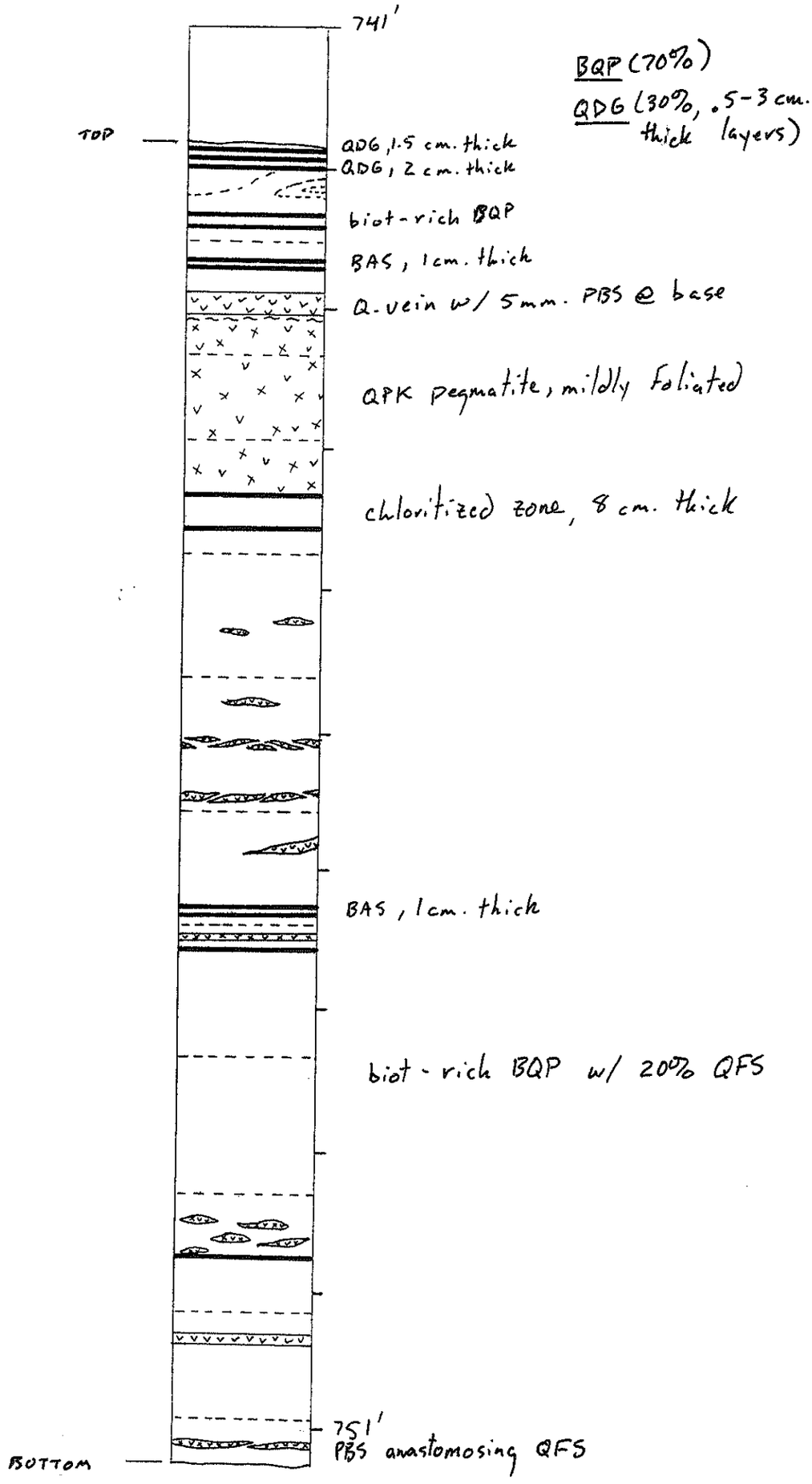
CORE LOG Moodus 1000' BOX# 74 INTERVAL 722.4'-732.1'



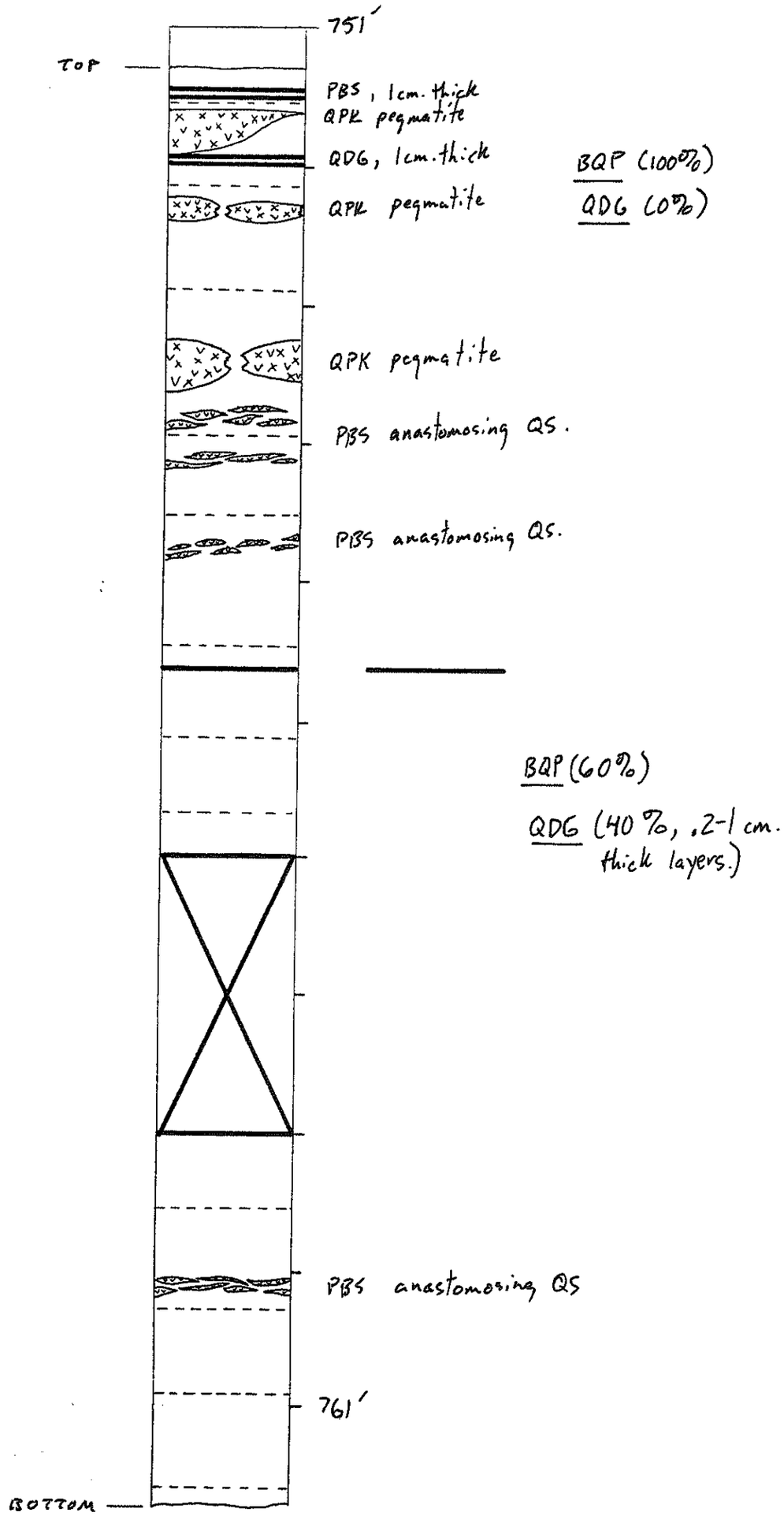
CORE LOG Moodus 1000' BOX# 75 INTERVAL 732.1' - 741.8'



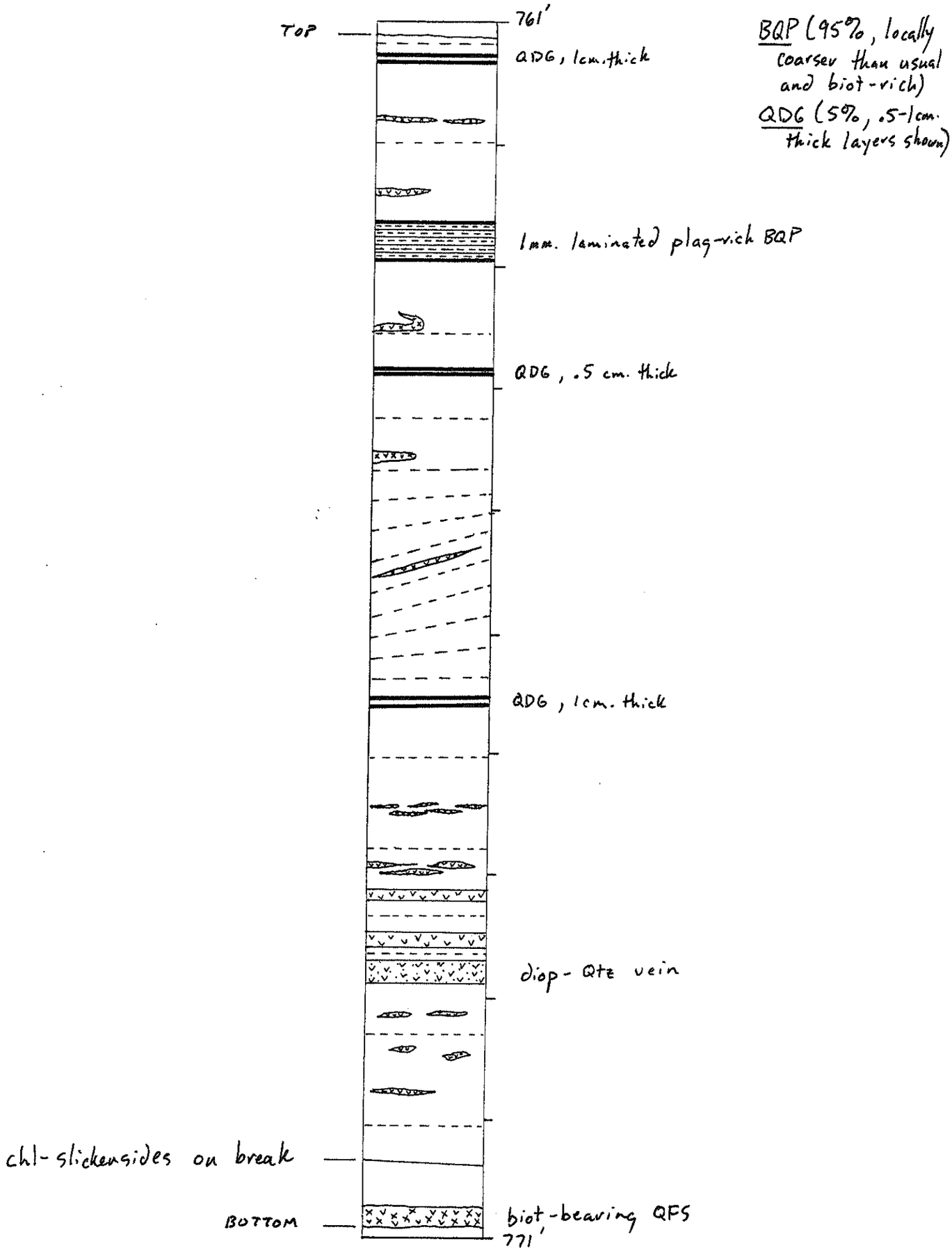
CORE LOG Moodus 1000' BOX# 76 INTERVAL 741.8'-751.3'



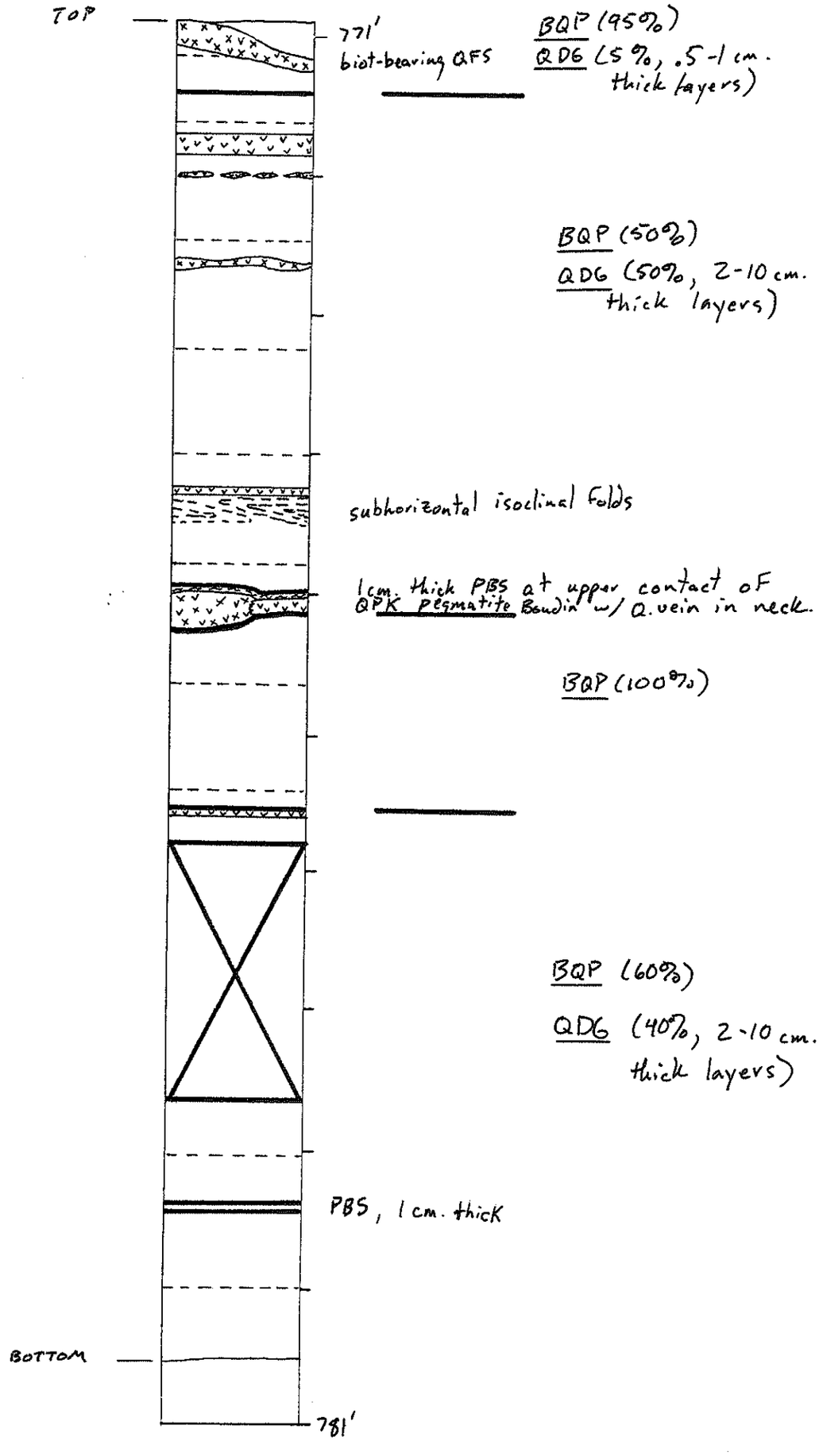
CORE LOG Moodus 1000' BOX# 77 INTERVAL 751.3'-761.1'



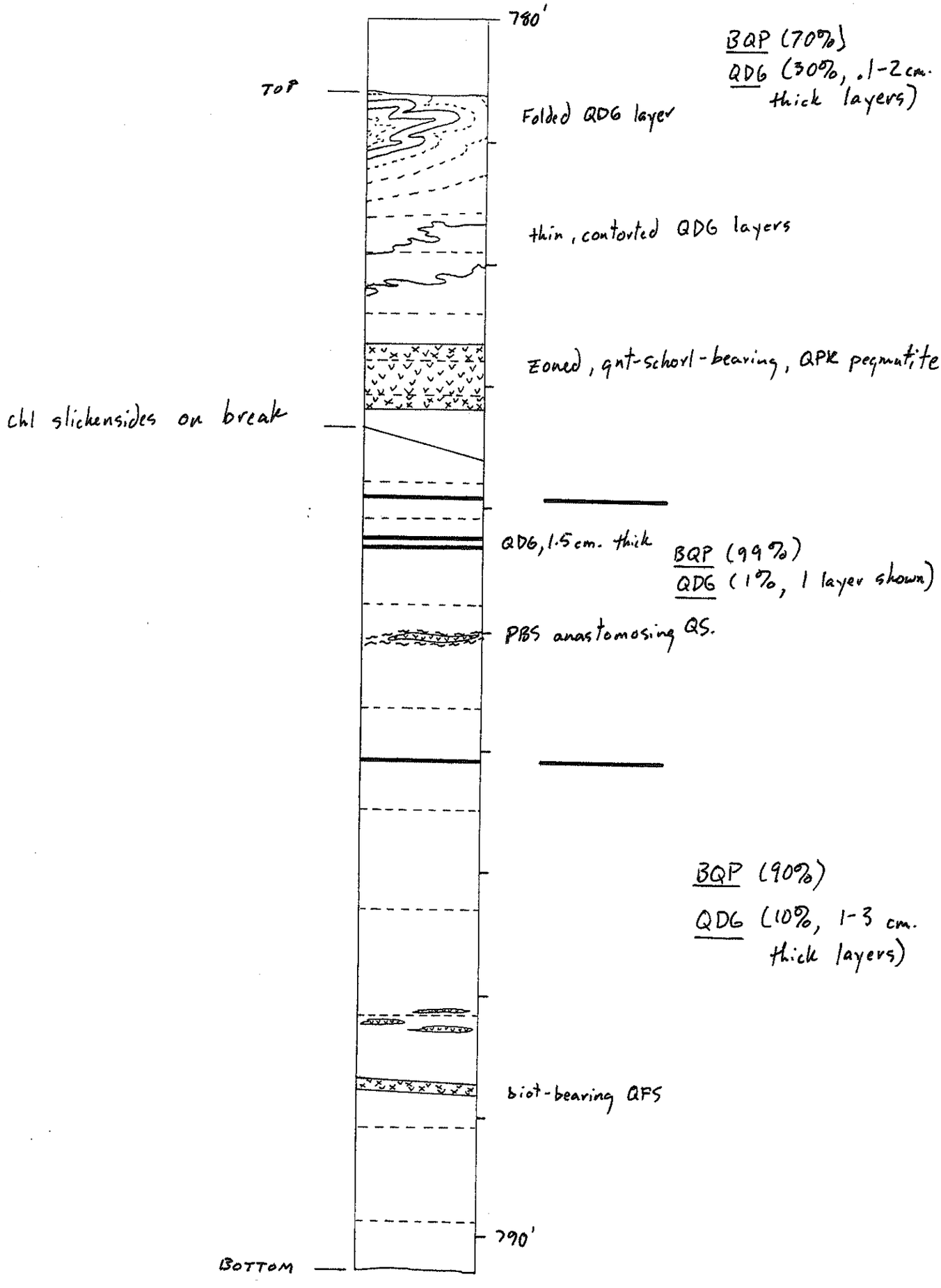
CORE LOG Moodus 1000' BOX# 78 INTERVAL 761.1' - 770.9'



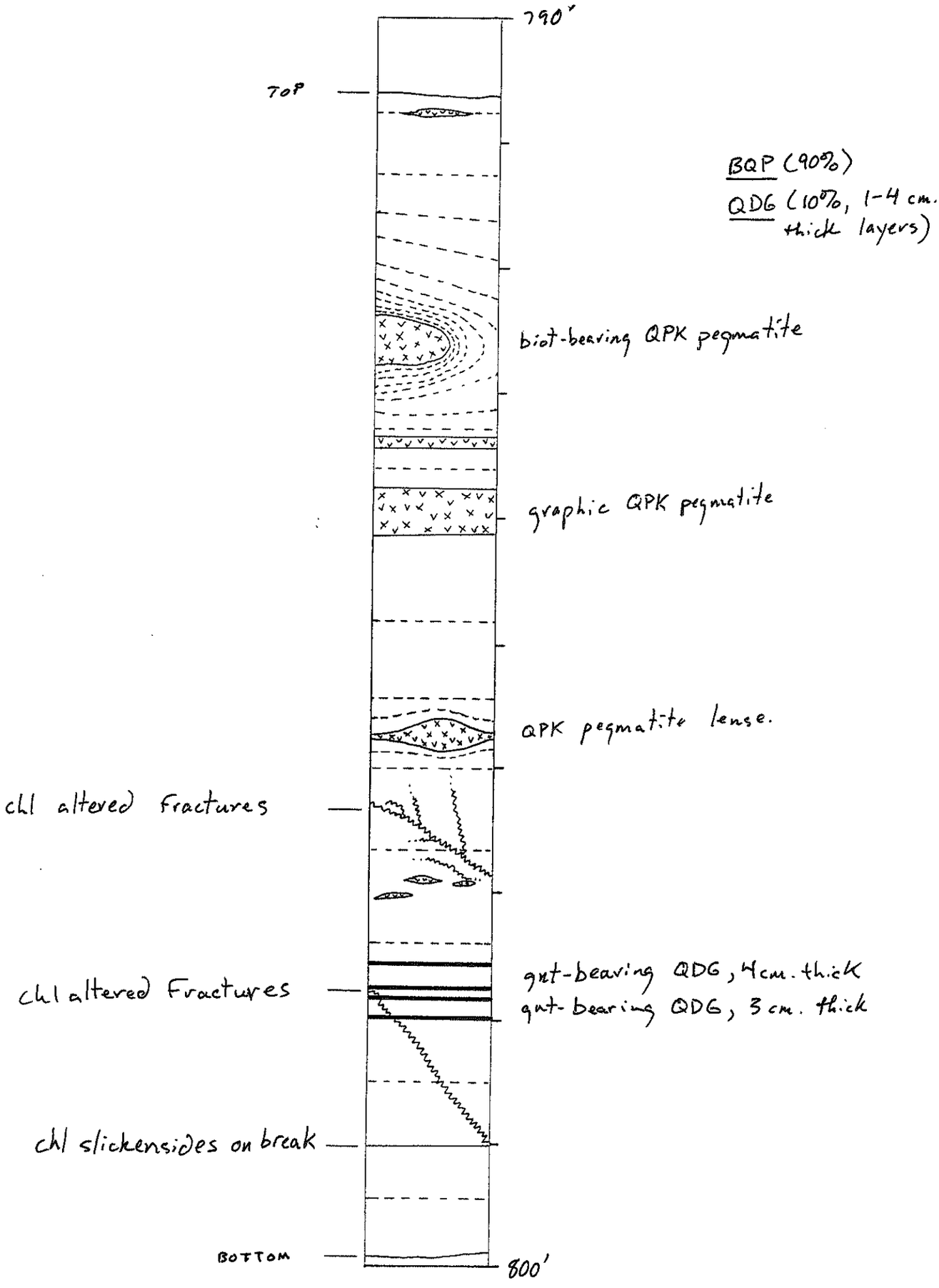
CORE LOG Moodus 1000' BOX# 79 INTERVAL 770.9' - 780.6'



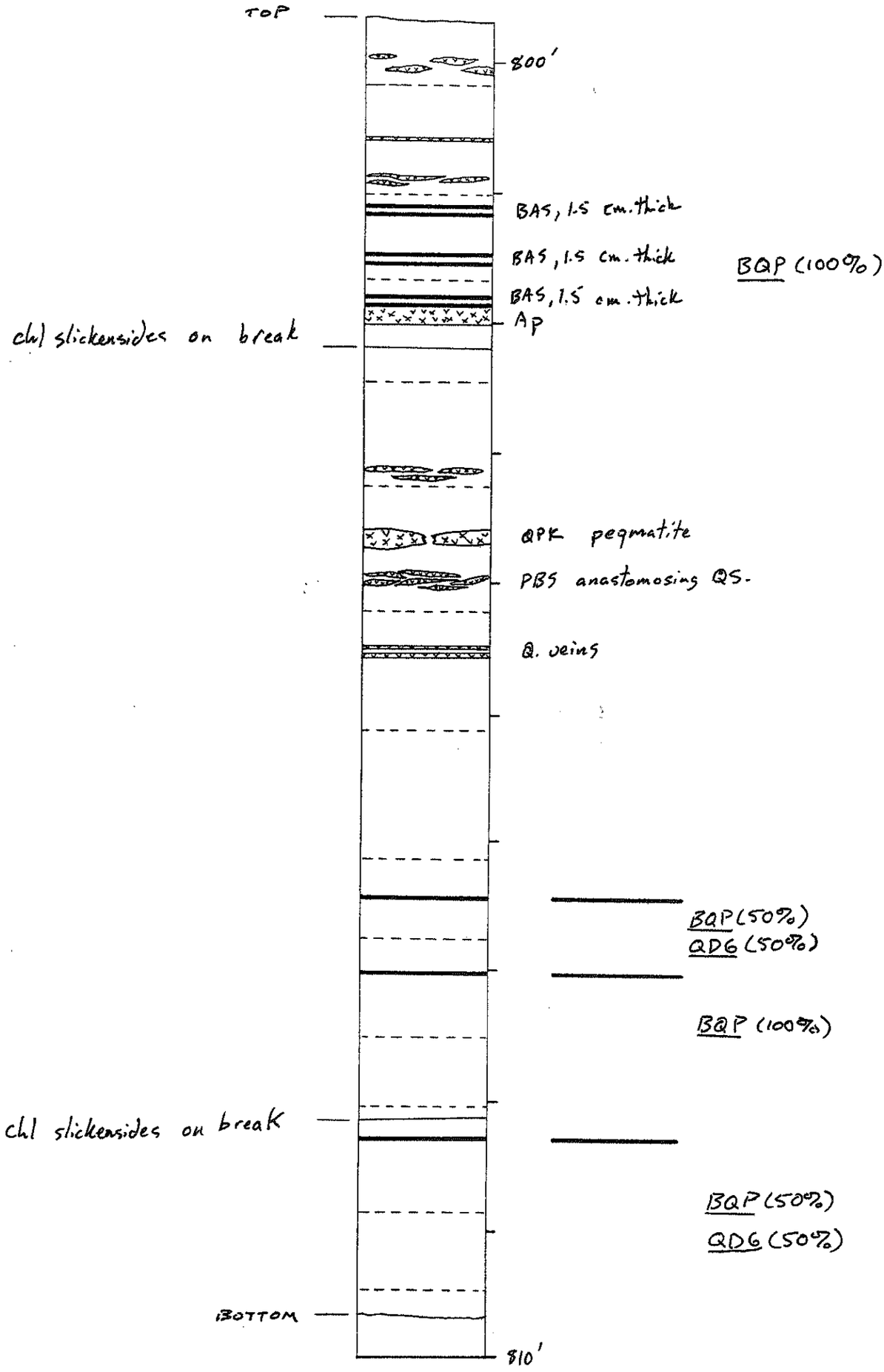
CORE LOG Moodus 1000' BOX# 80 INTERVAL 780.6'-790.3'



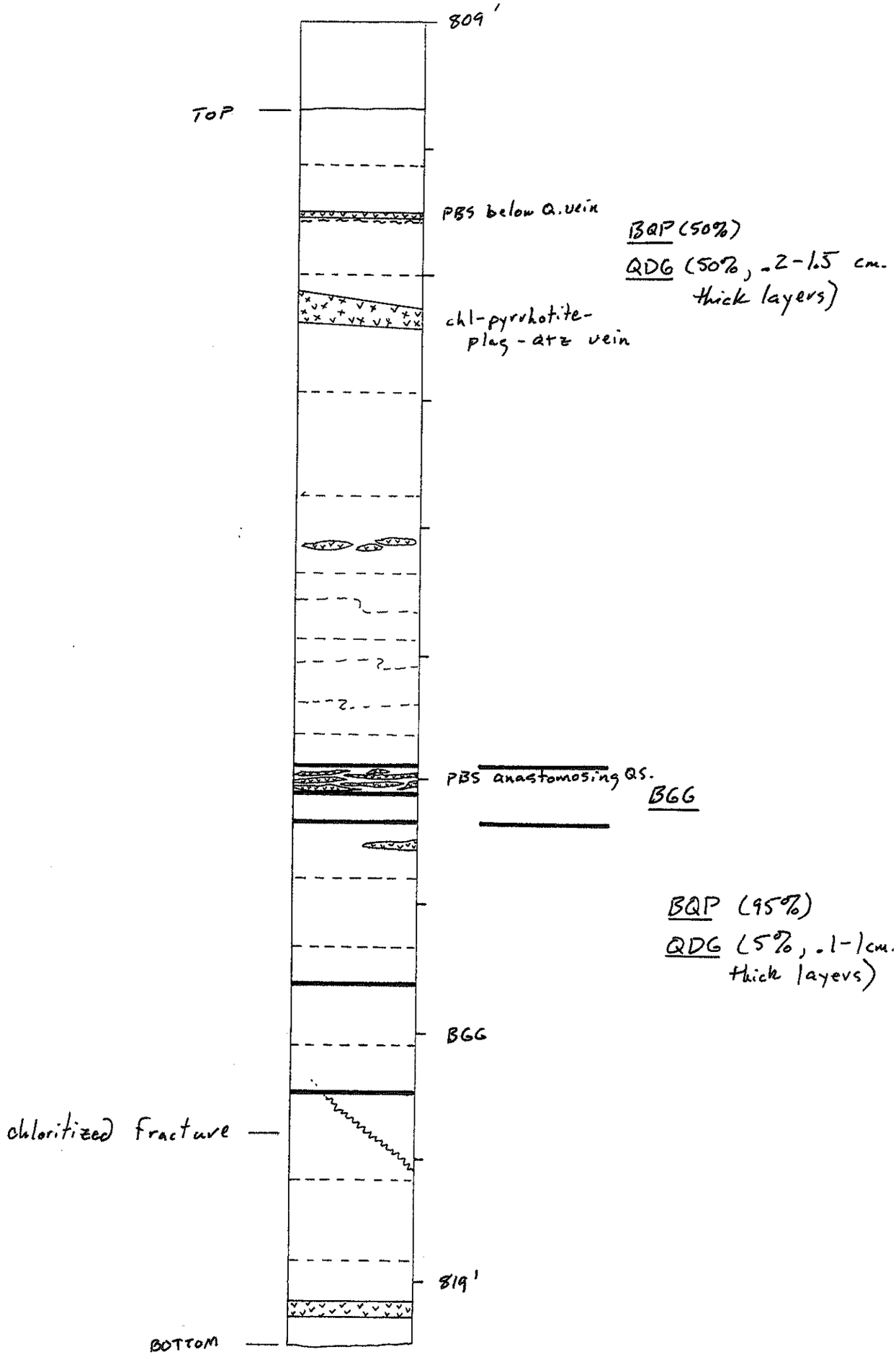
CORE LOG Moodus 1000' BOX# 81 INTERVAL 790.3' - 799.9'



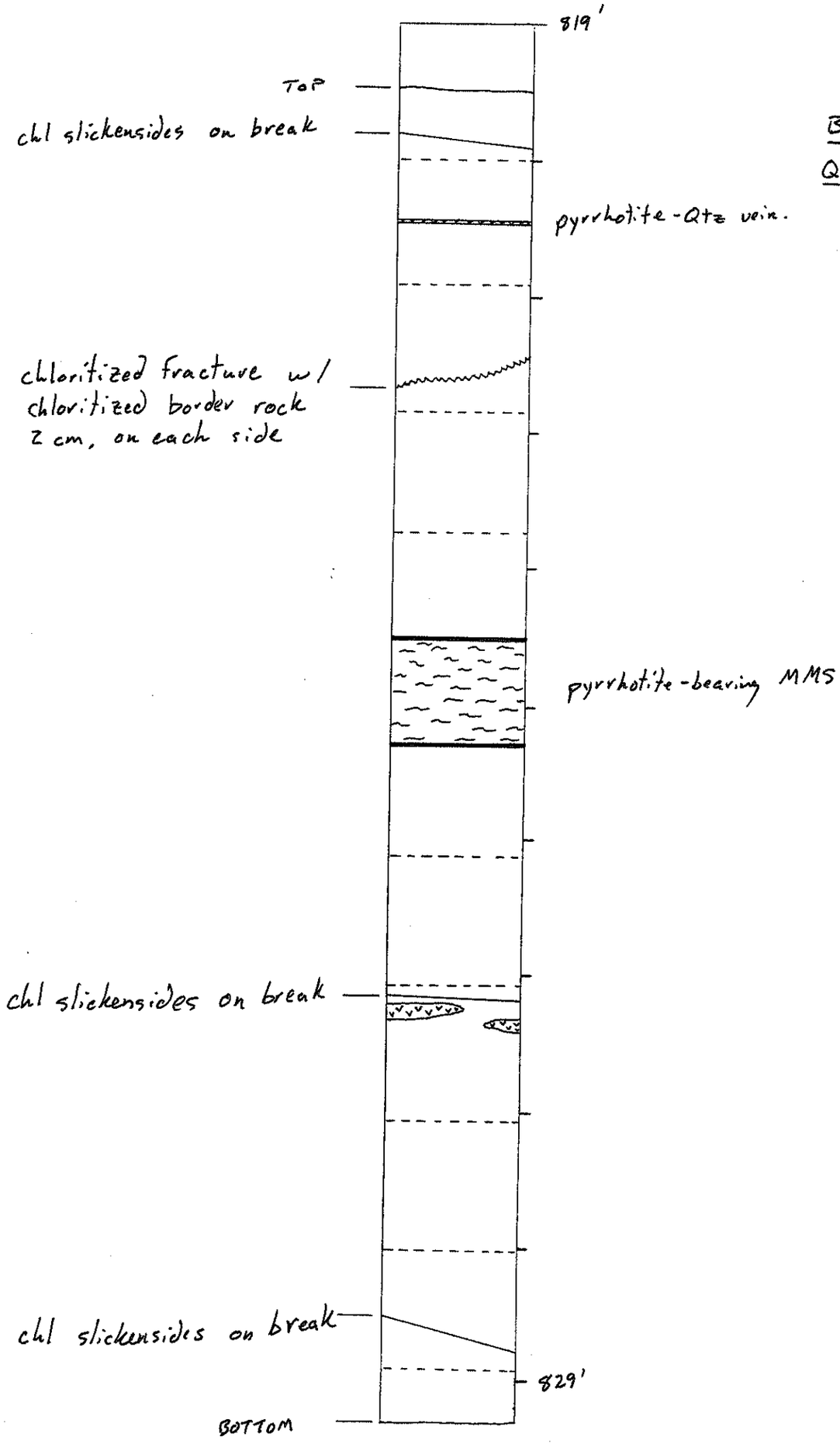
CORE LOG Moodus 1000' BOX# 82 INTERVAL 799.9' - 809.7'



CORE LOG Moodus 1000' BOX# 83 INTERVAL 809.7' - 819.5'

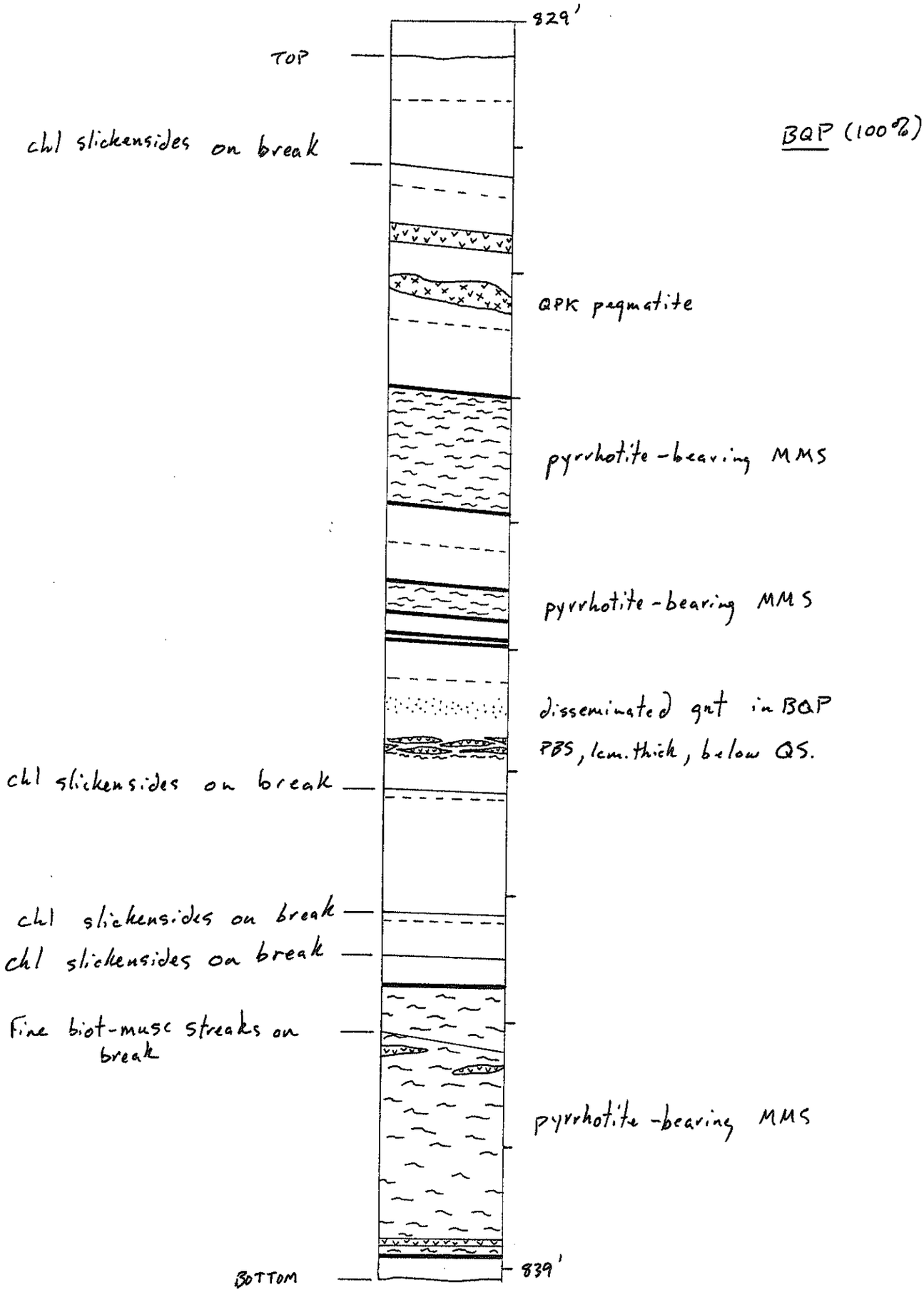


CORE LOG Moodus 1000' BOX# 84 INTERVAL 819.5' - 829.3'

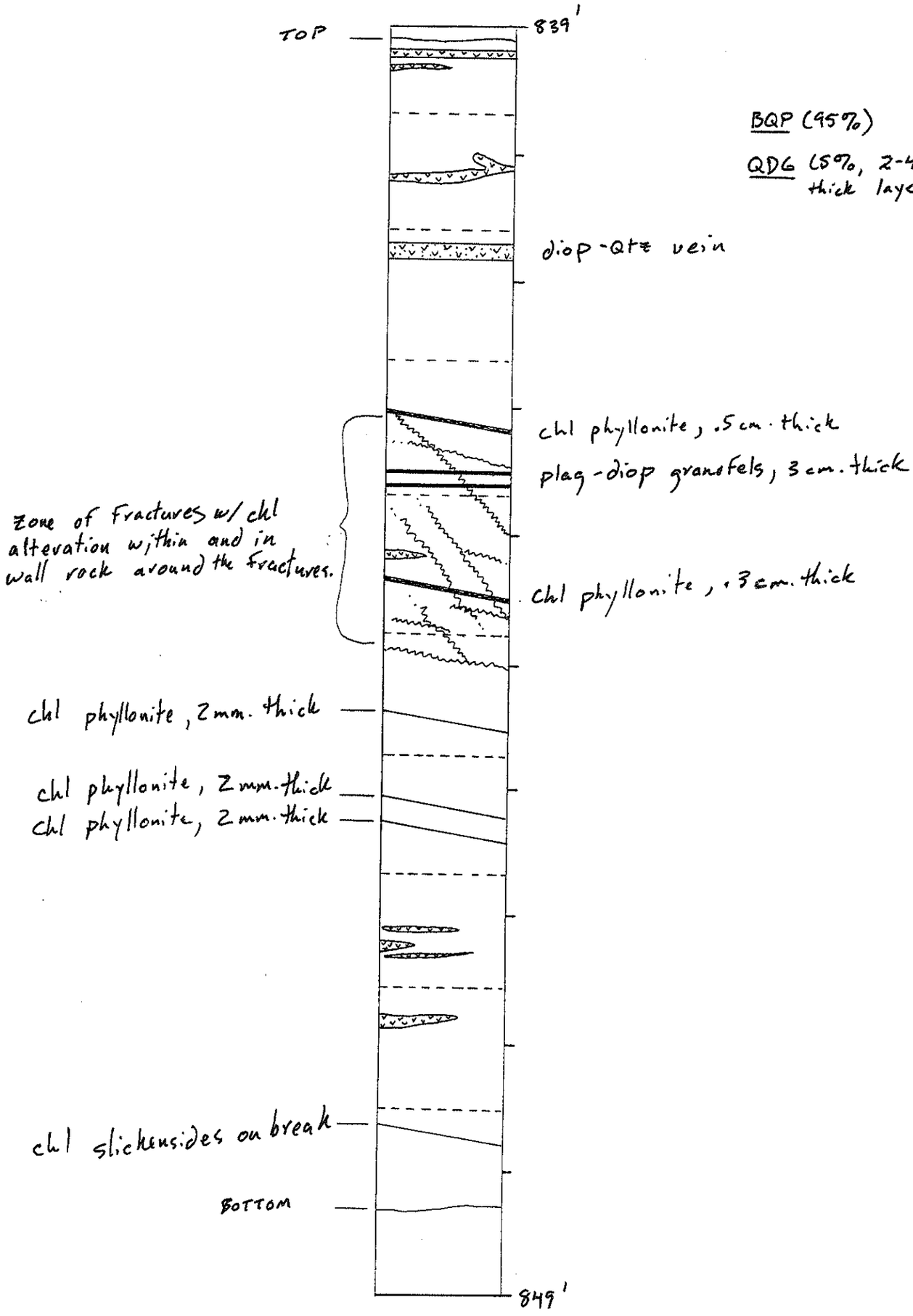


BQP (90%)
QDG (10%, .1-1cm. thick layers)

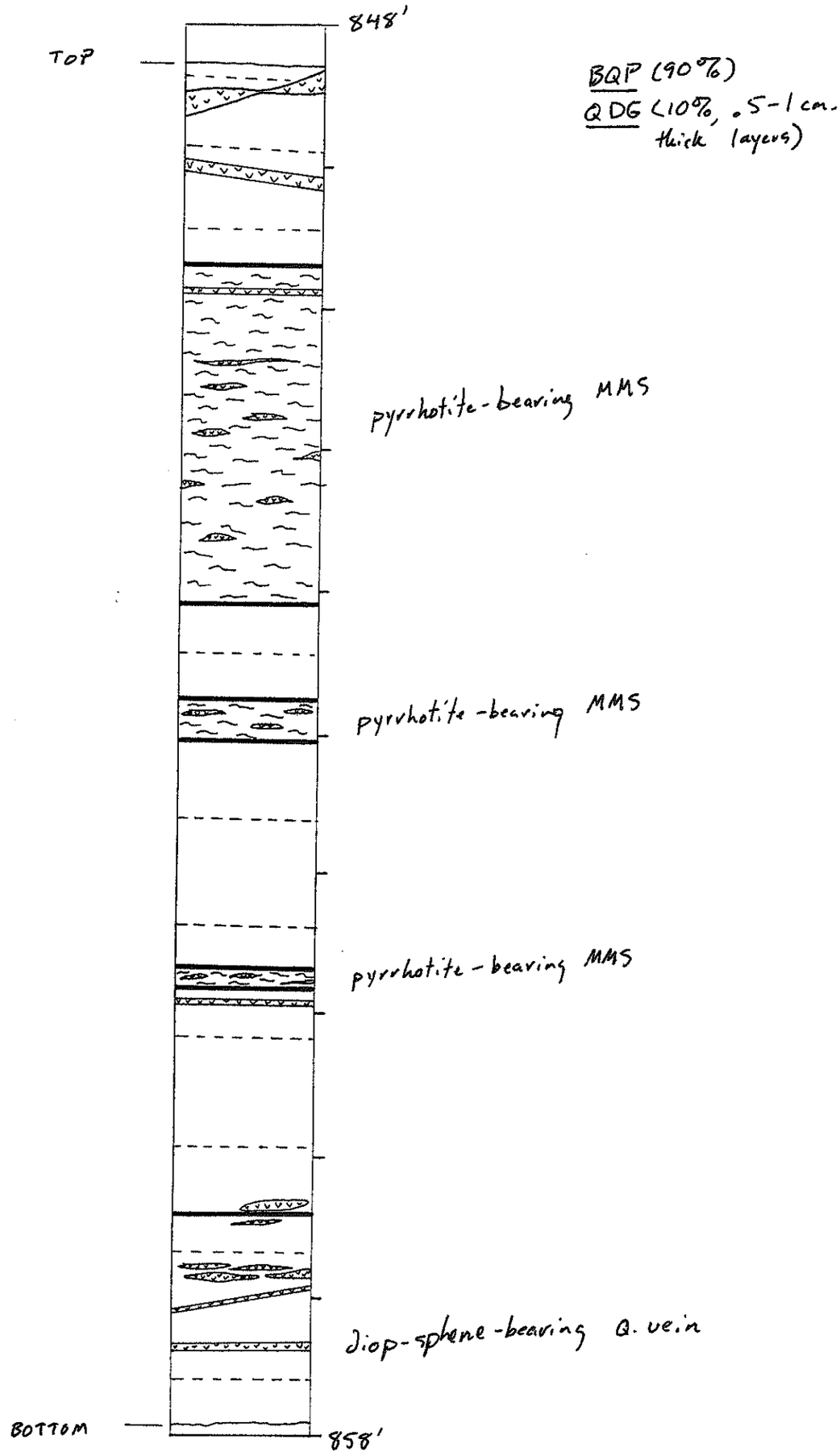
CORE LOG Moodus 1000' BOX# 85 INTERVAL 829.3'-839.1'



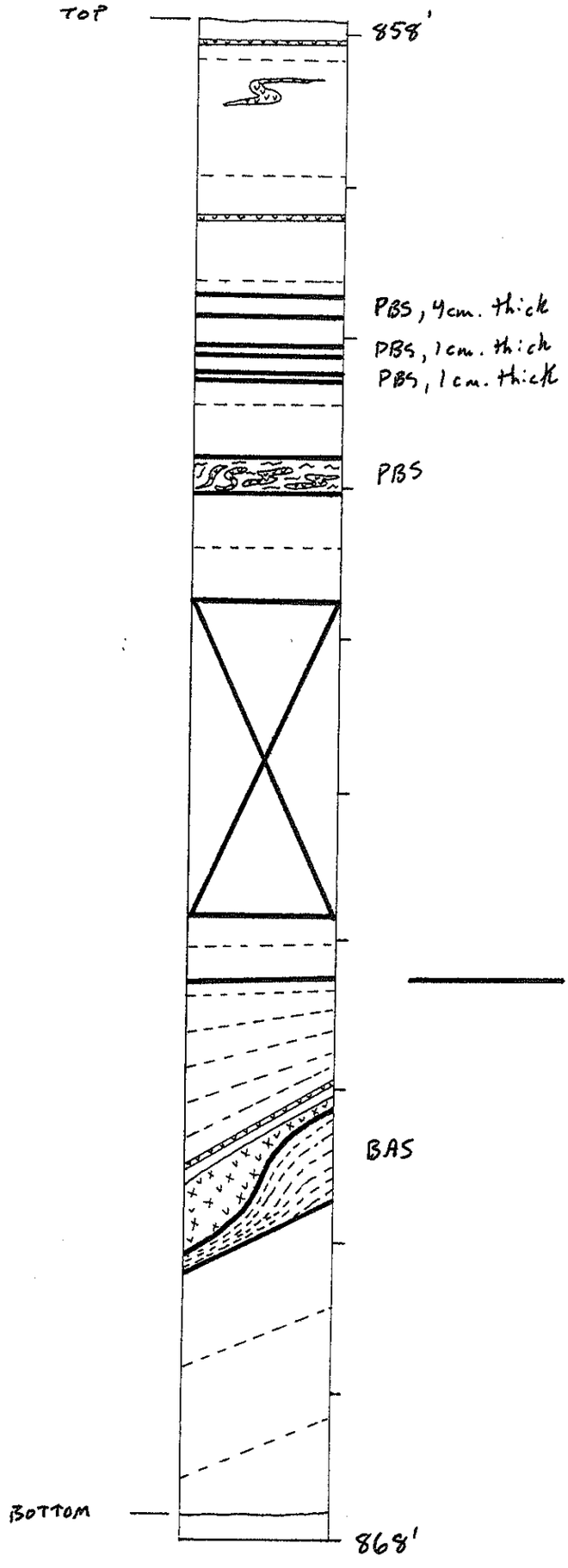
CORE LOG Moodus 1000' BOX# 86 INTERVAL 839.1' - 848.3'



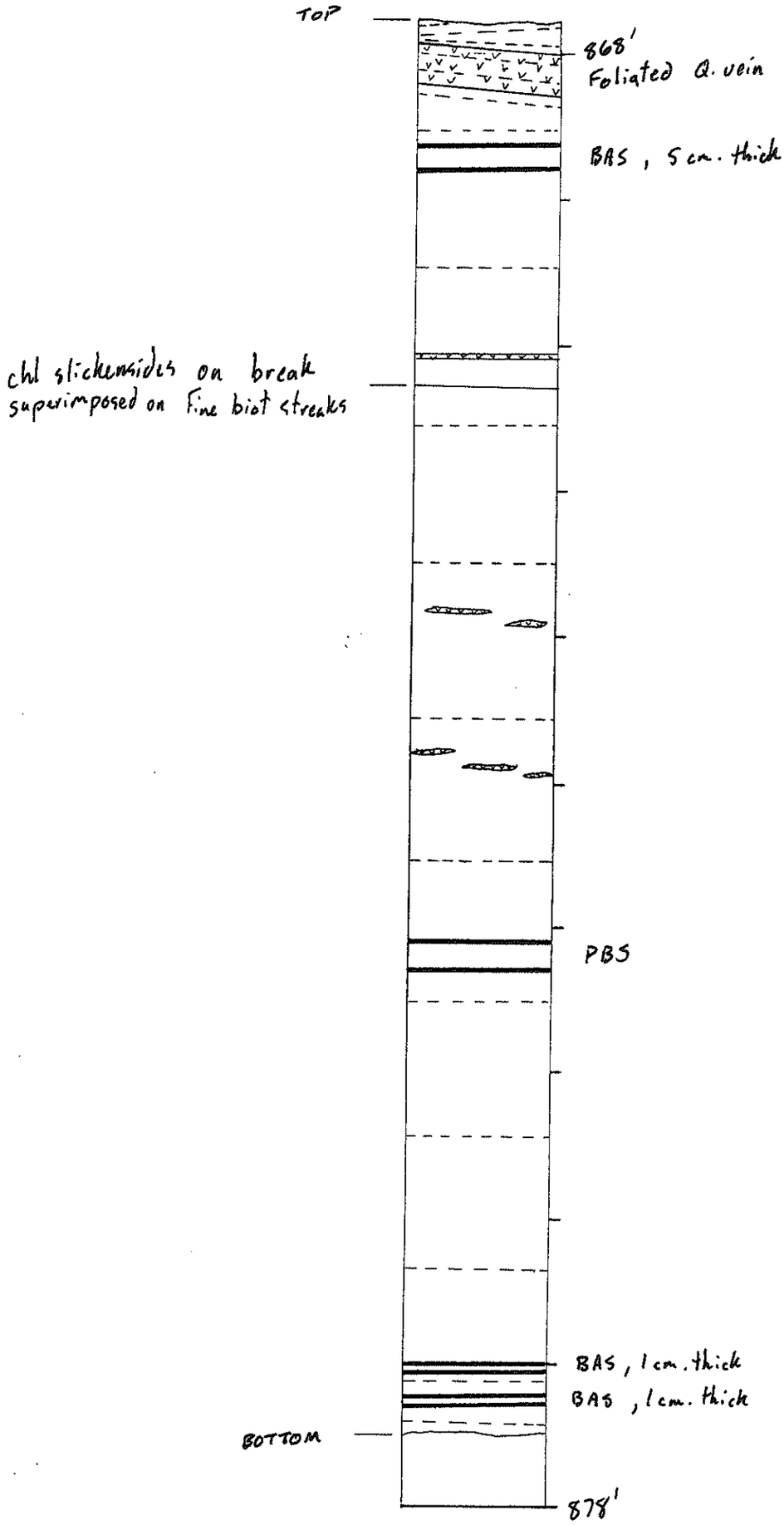
CORE LOG Moodus 1000' BOX# 87 INTERVAL 848.3'-857.9'



CORE LOG Moodus 1000' BOX# 88 INTERVAL 857.9' - 867.8'

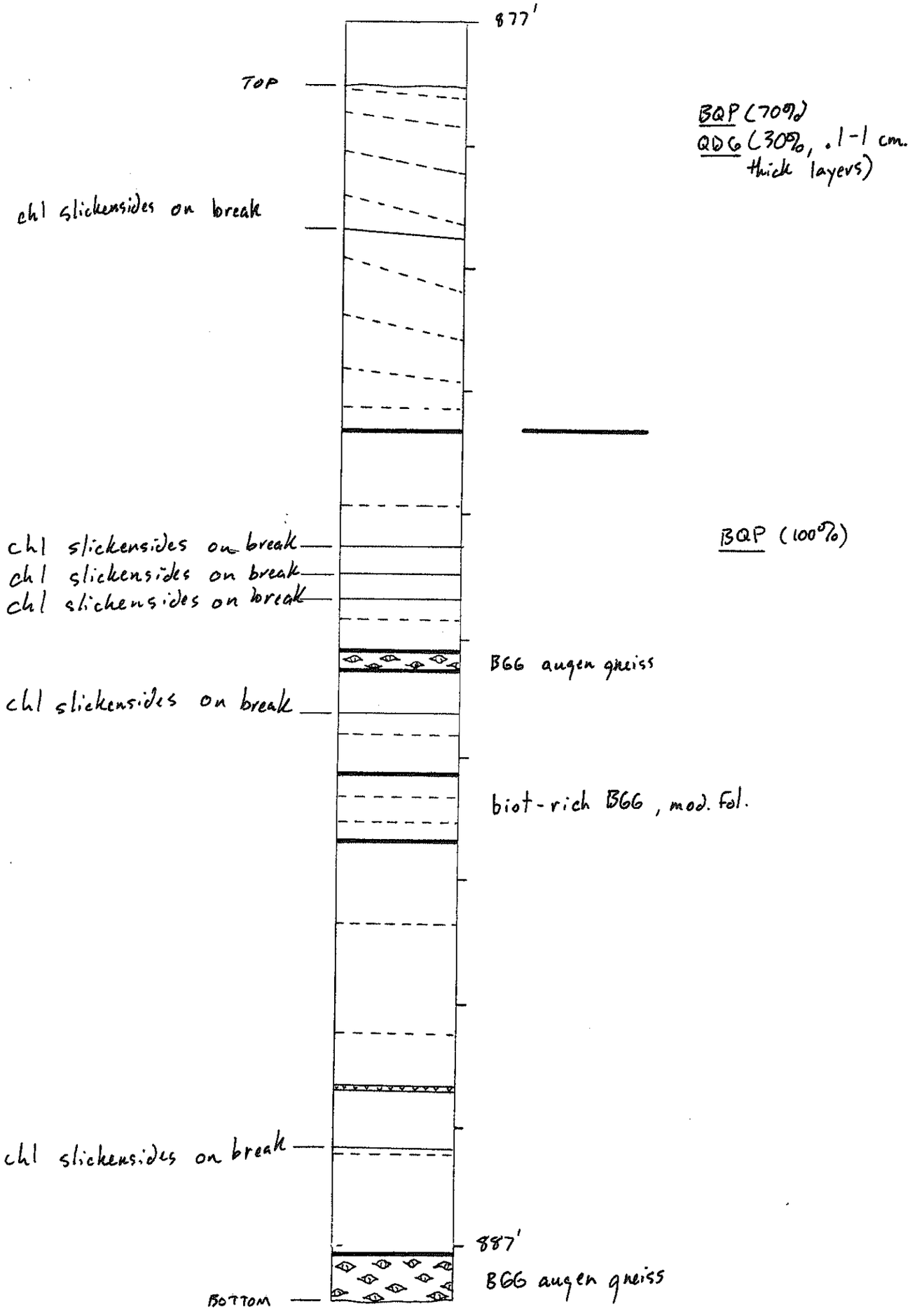


CORE LOG Moodys 1000' BOX# 89 INTERVAL 867.8' - 877.5'

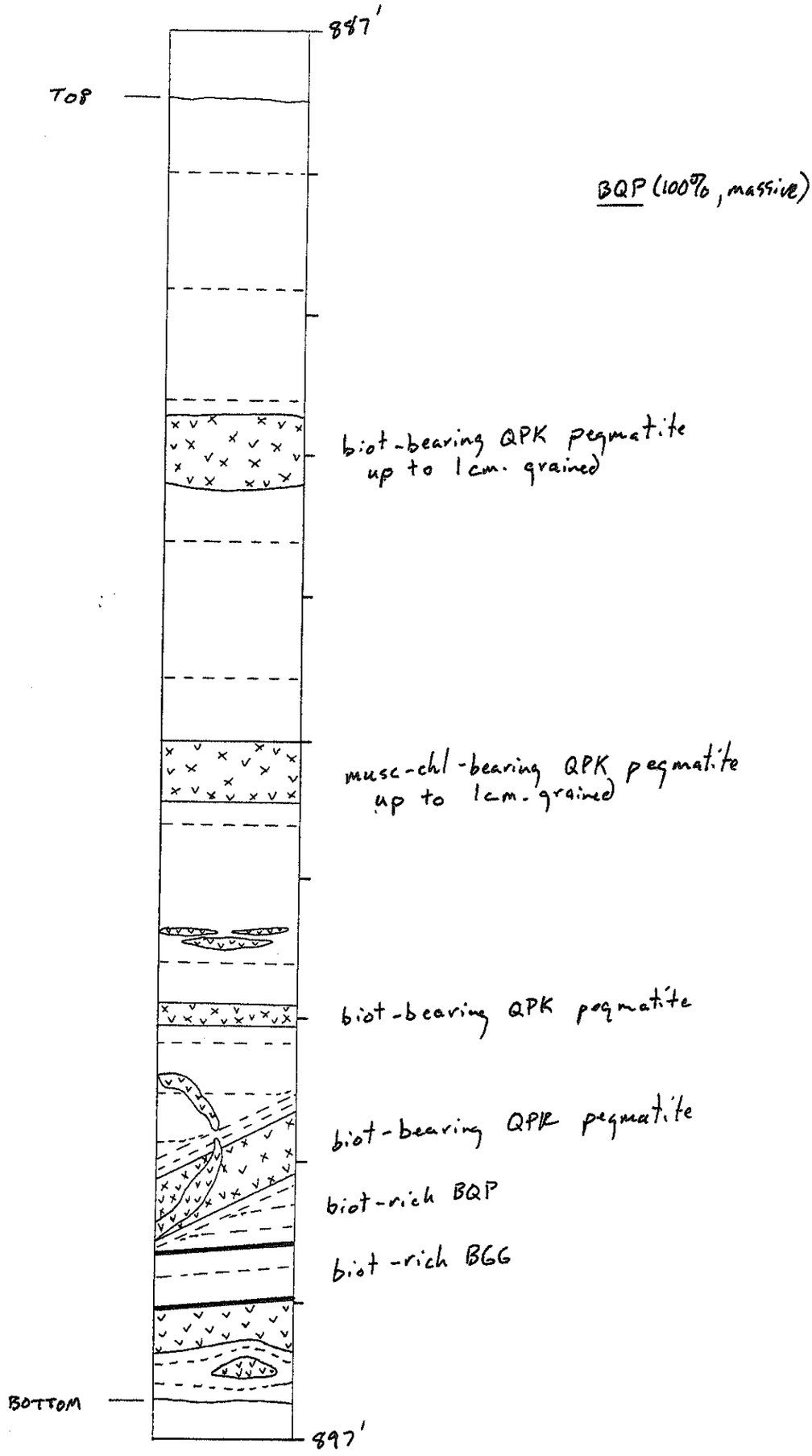


BQP (60%)
QDG (40%, .1-1 cm. thick layers)
Both lithologies are scapolitic

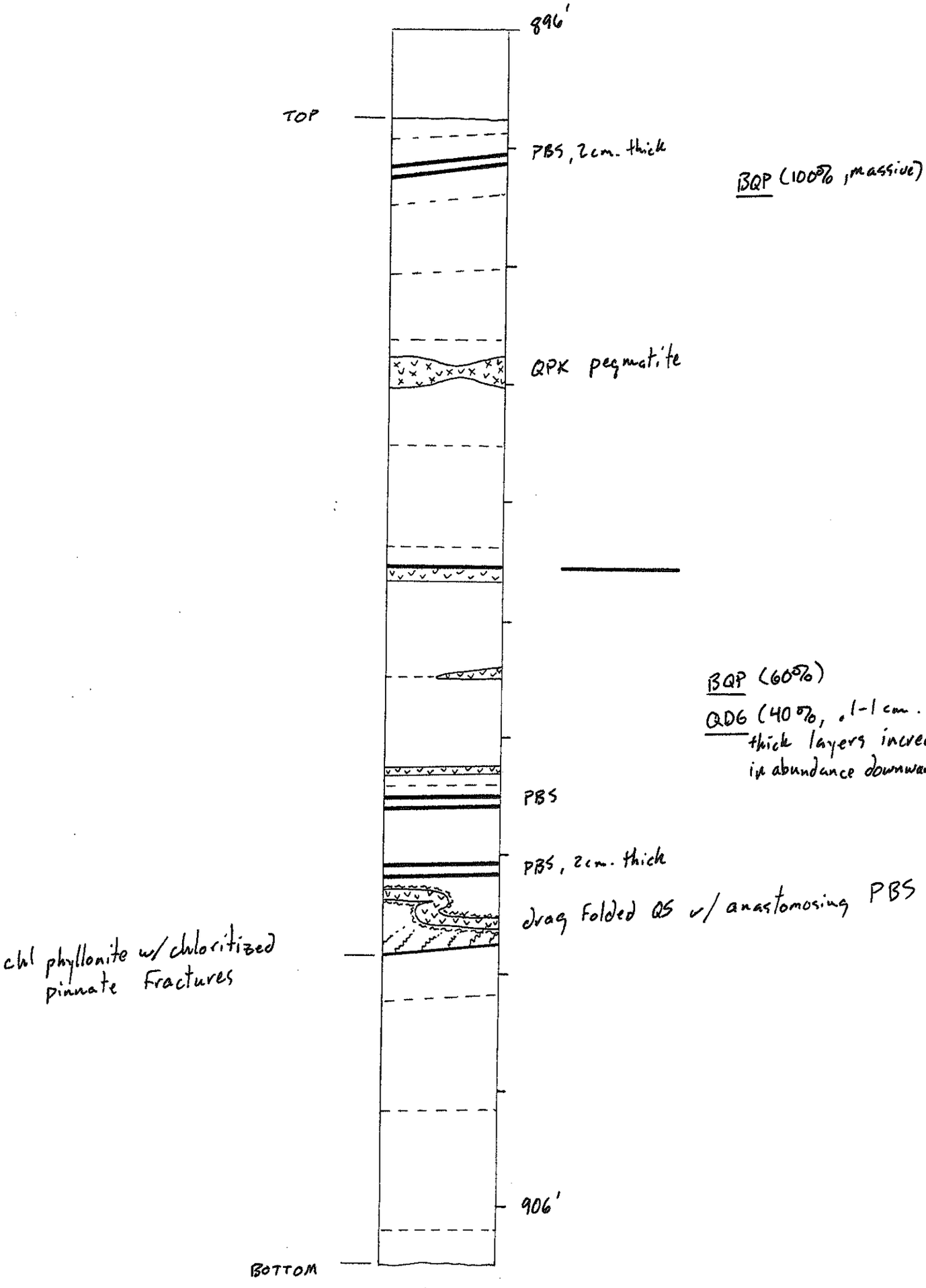
CORE LOG Moodus 1000' BOX# 90 INTERVAL 877.5'-887.4'



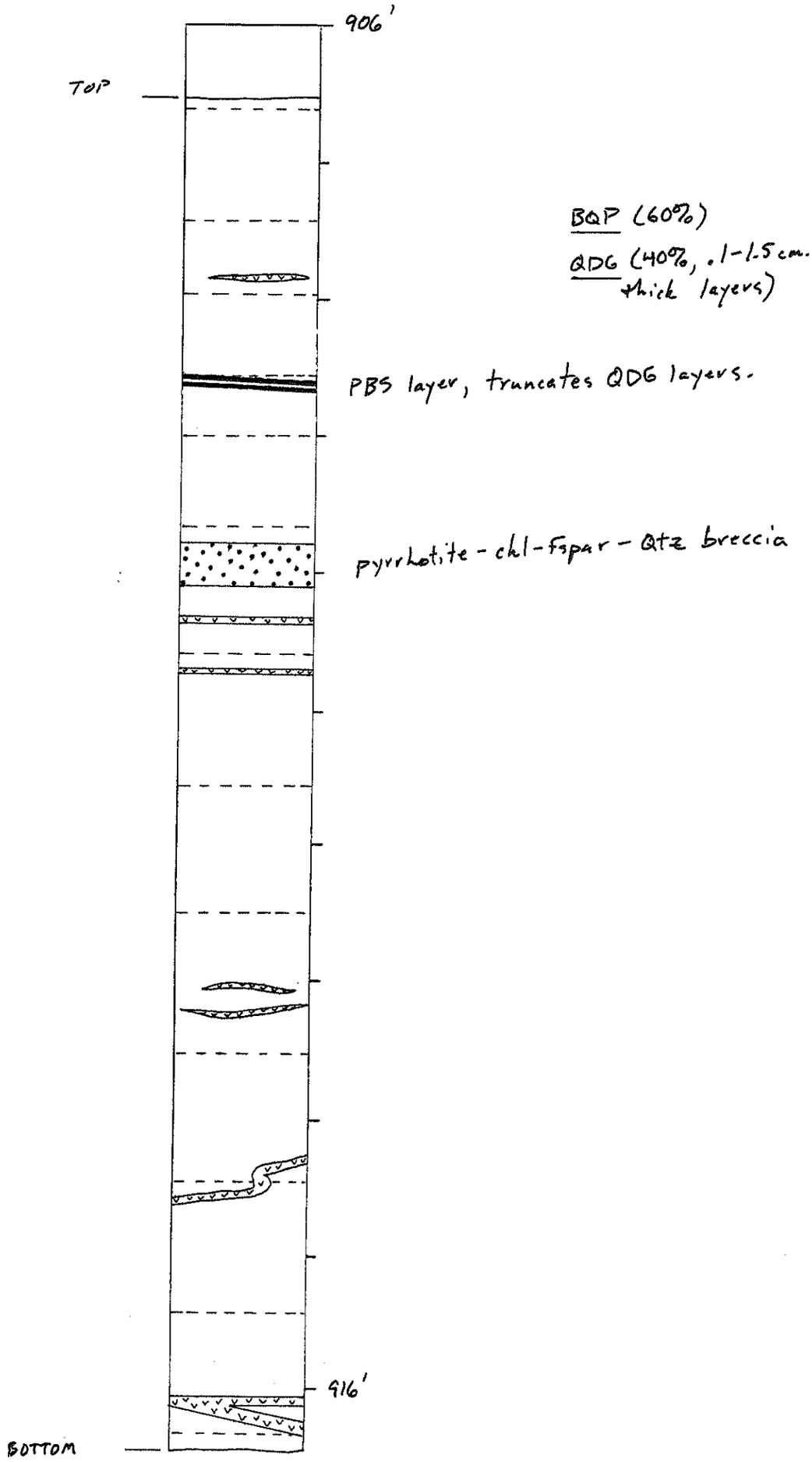
CORE LOG Moodus 1000' BOX# 91 INTERVAL 887.4' - 896.7'



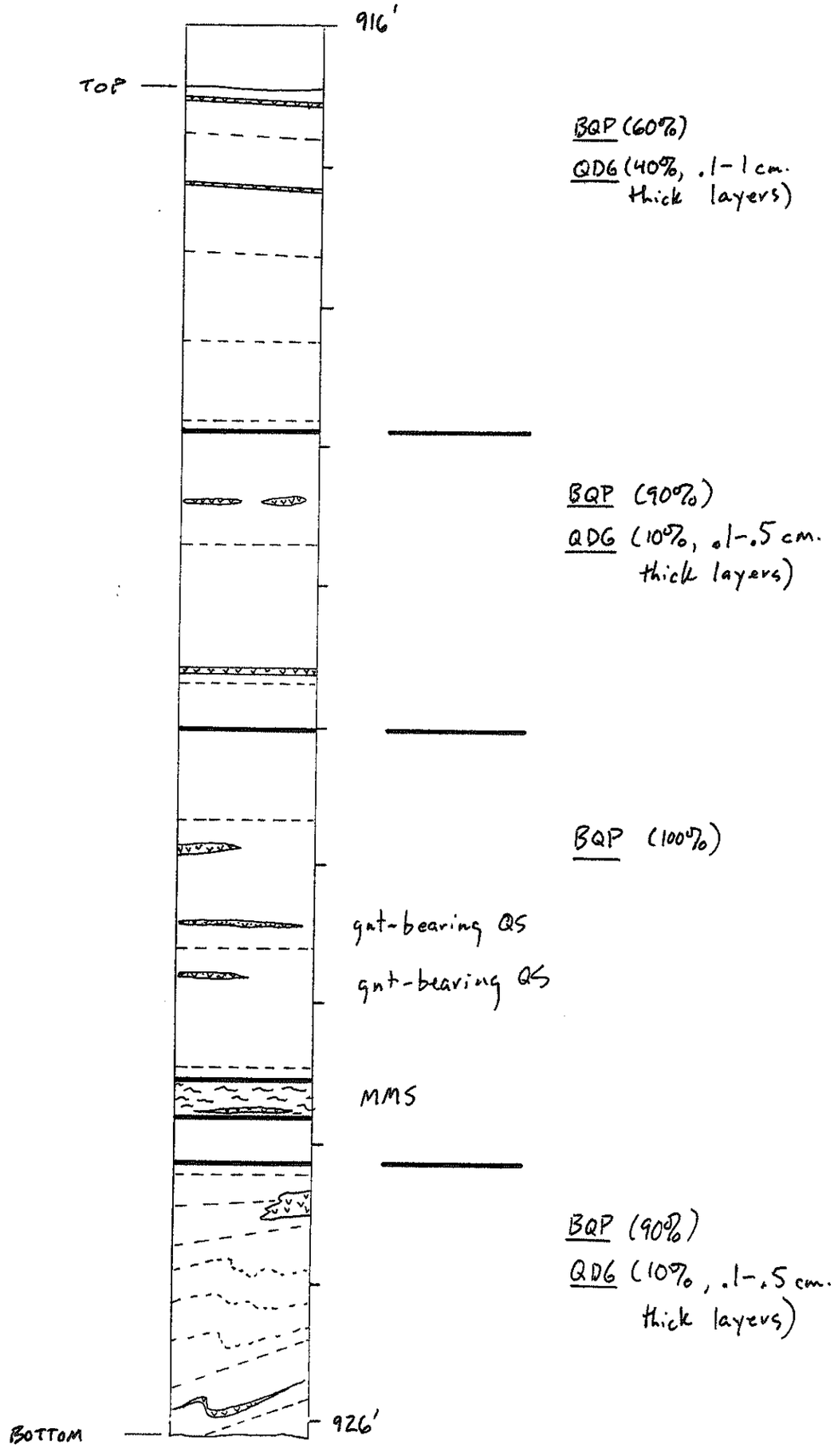
CORE LOG Moodus 1000' BOX# 92 INTERVAL 896.7' - 906.5'



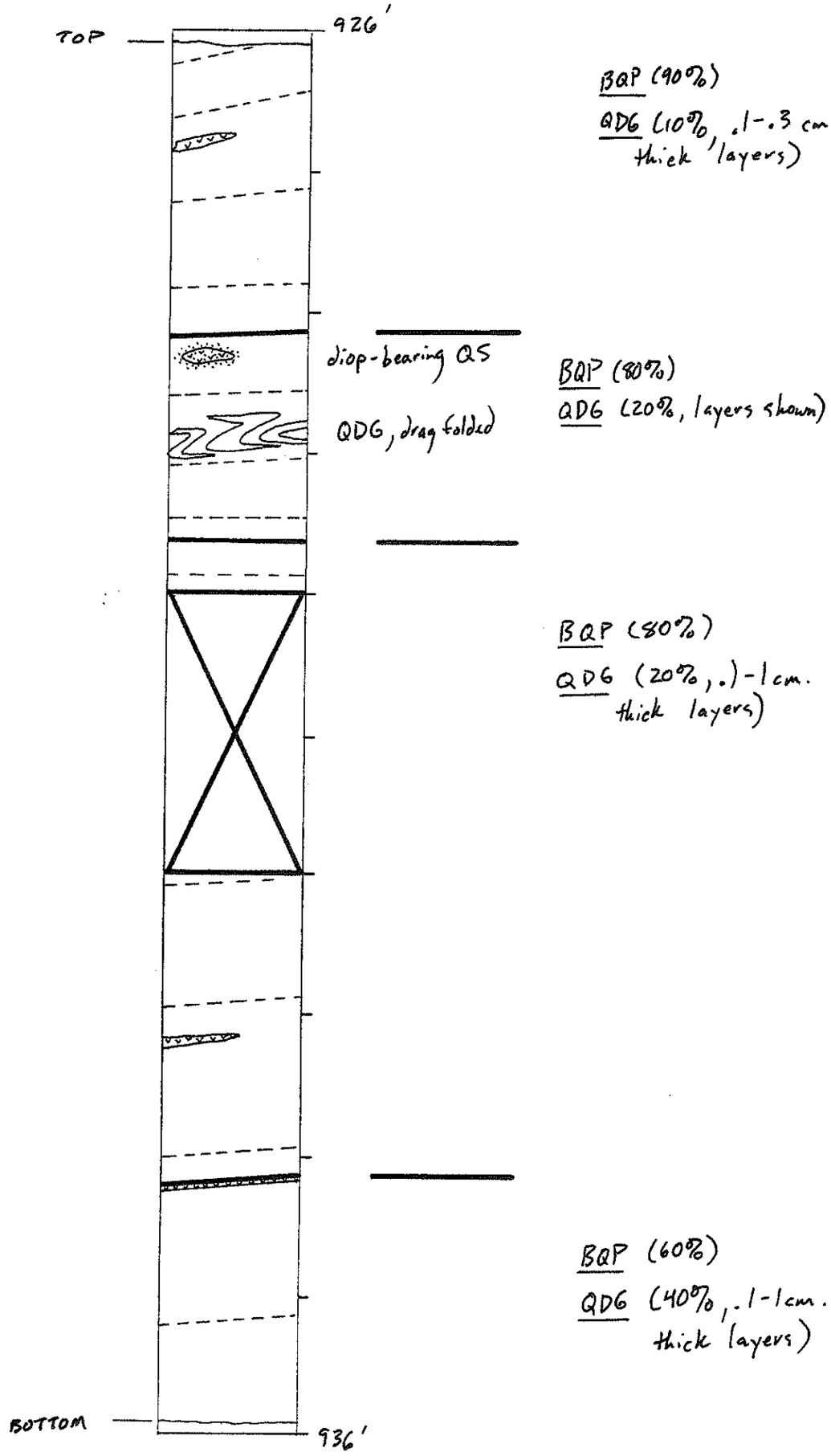
CORE LOG Moodus 1000' BOX# 93 INTERVAL 906.5'-916.4'



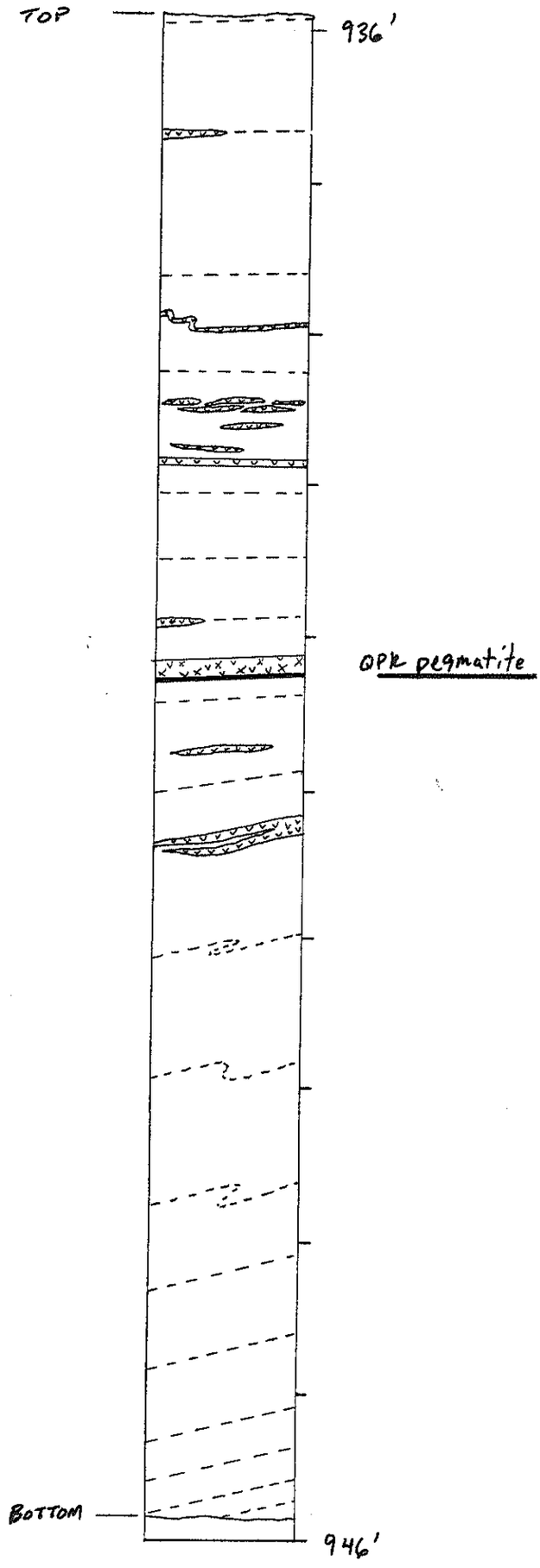
CORE LOG Moodus 1000' BOX# 94 INTERVAL 916.4' - 926.1'



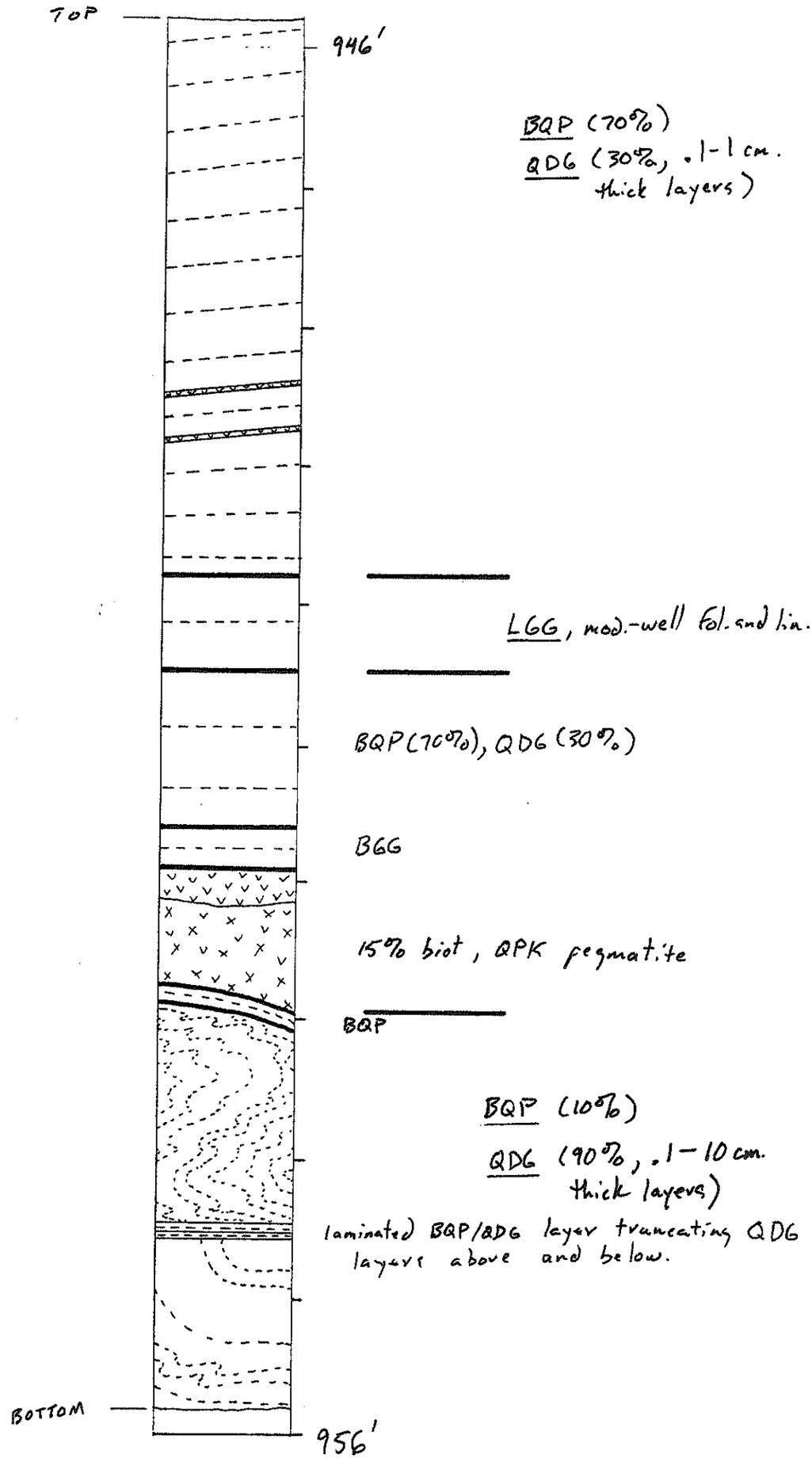
CORE LOG Moodus 1000' BOX# 95 INTERVAL 926.1' - 935.9'



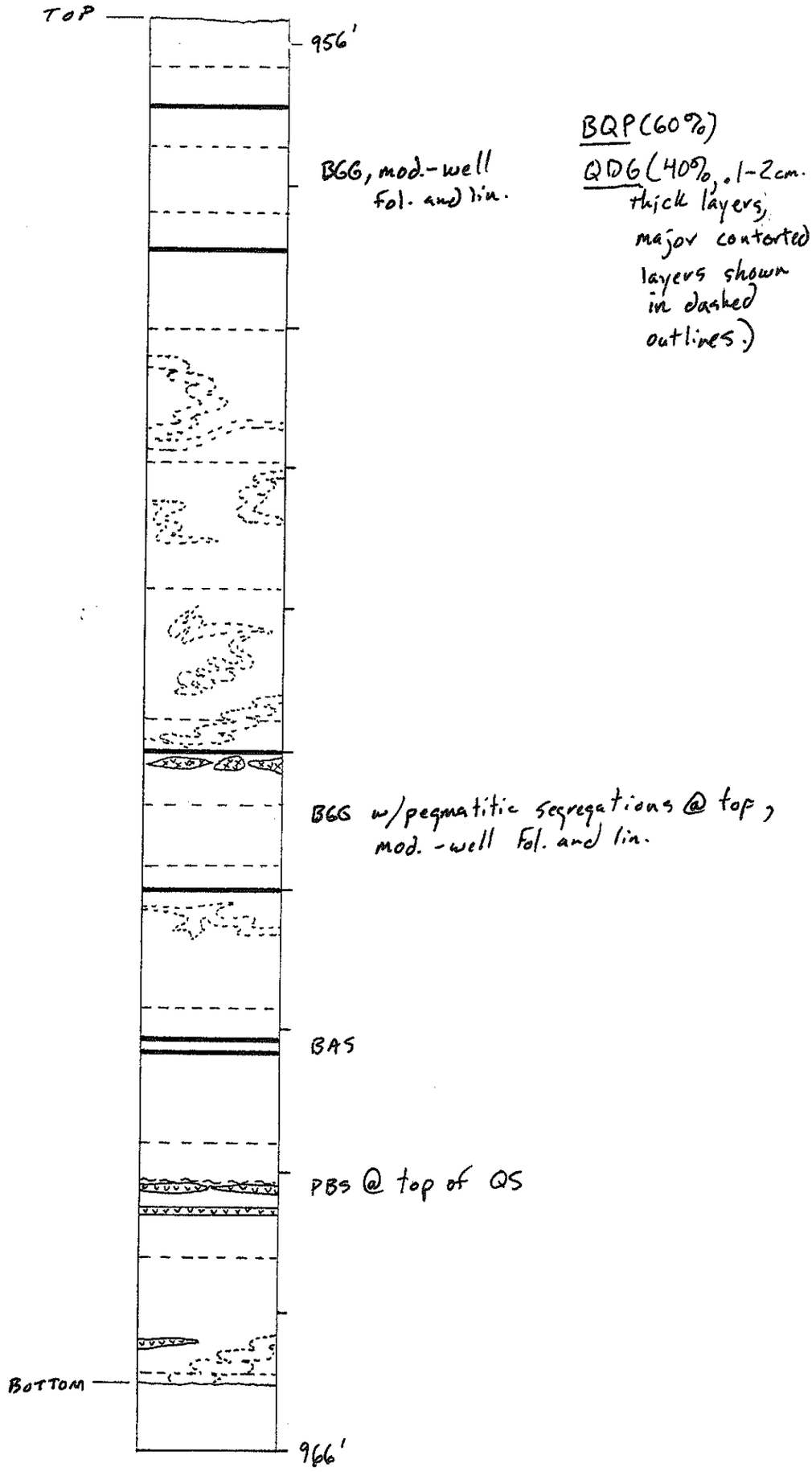
CORE LOG Moodus 1000' BOX# 96 INTERVAL 935.9'-945.8'



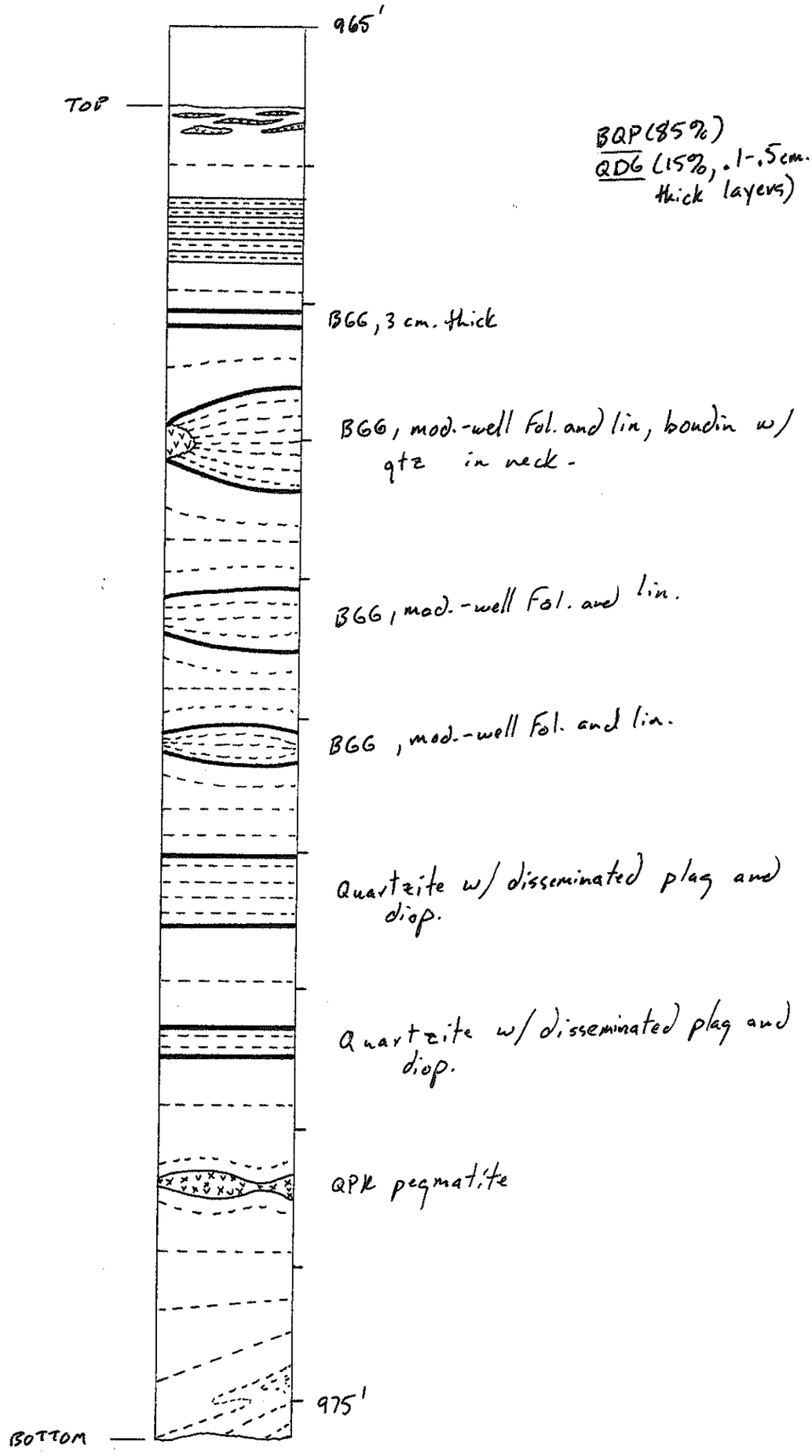
CORE LOG Moodus 1000' BOX# 97 INTERVAL 945.8'-955.8'



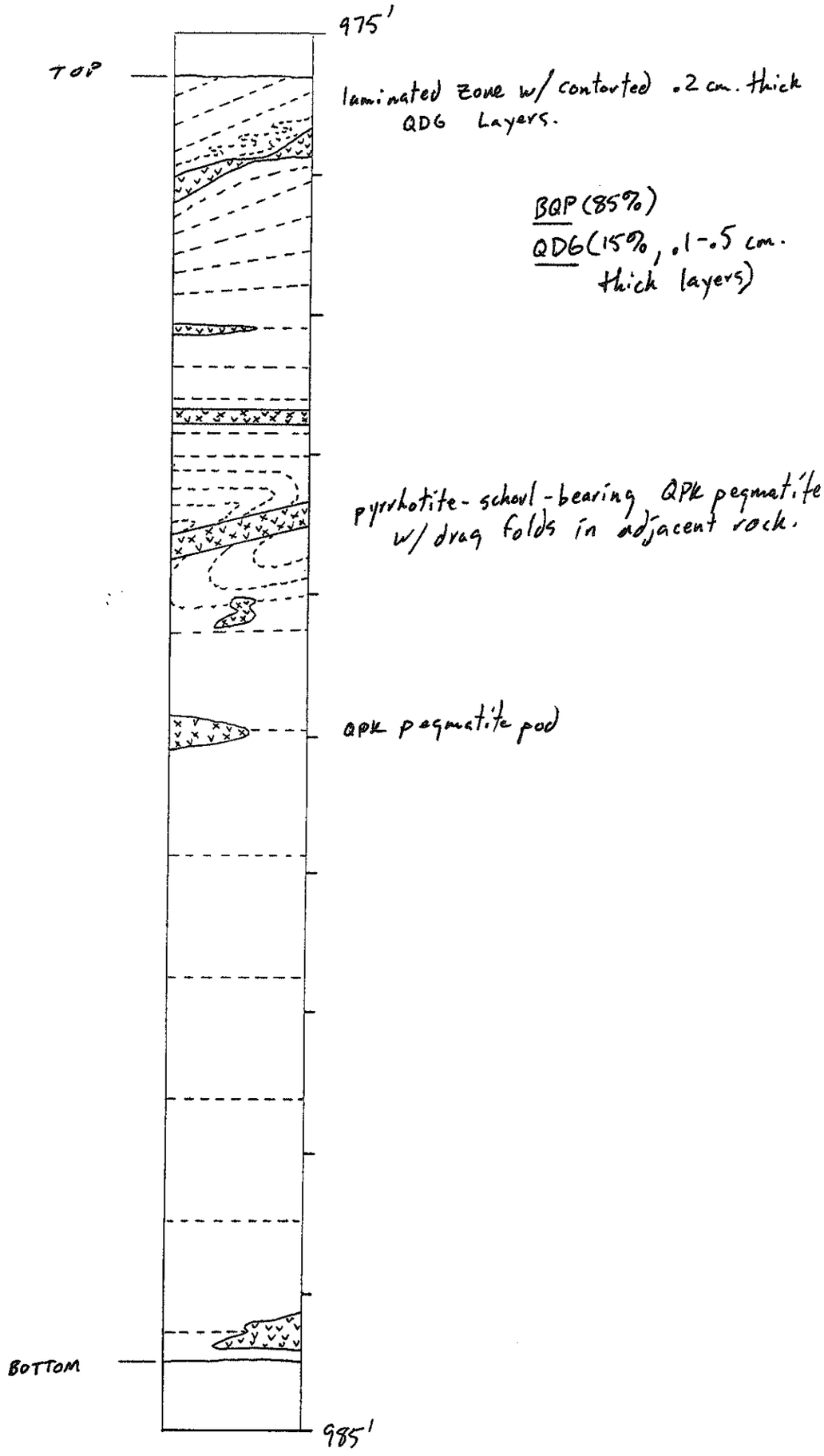
CORE LOG Moodus 1000' BOX# 98 INTERVAL 955.8'-965.6'



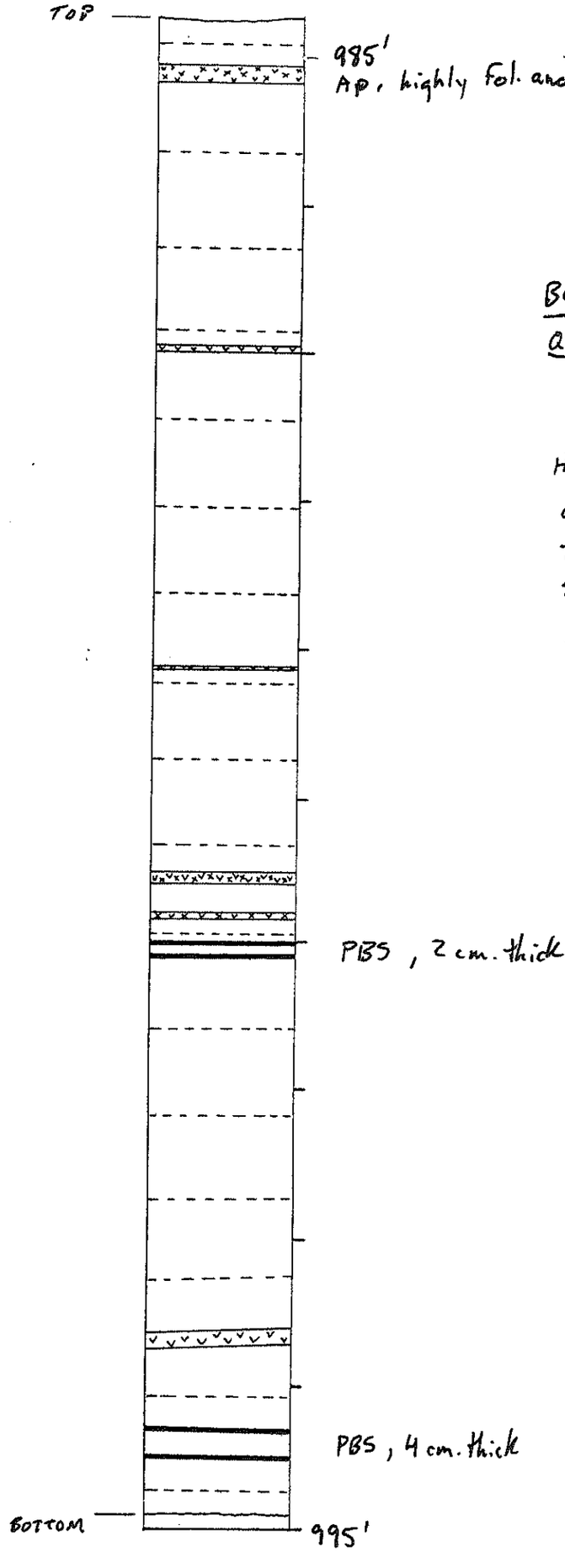
CORE LOG Moodus 1000' BOX# 99 INTERVAL 965.6'-975.3'



CORE LOG Moodus 1000' BOX# 100 INTERVAL 975.3' - 984.5'



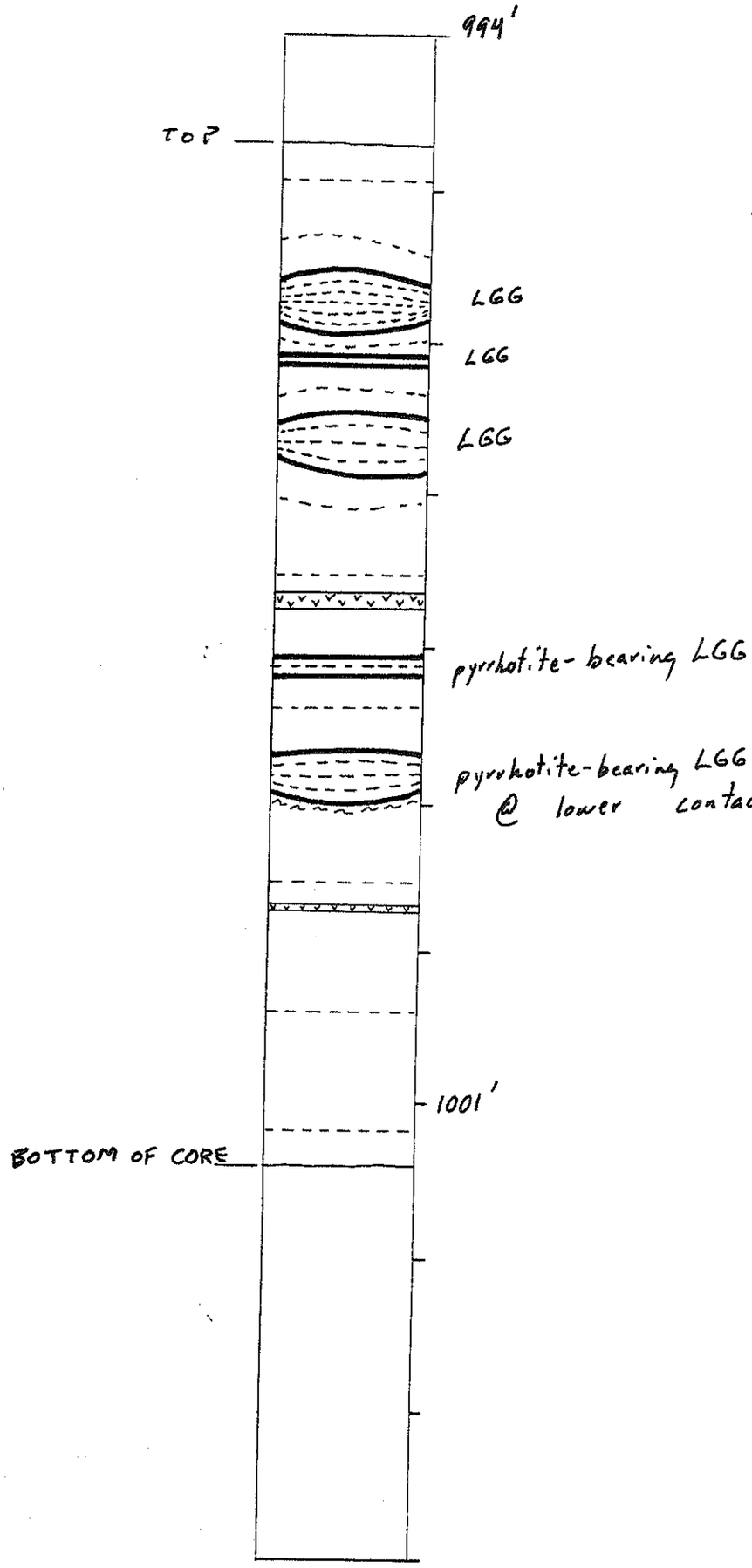
CORE LOG Moodus 1000' BOX# 101 INTERVAL 984.5' - 994.7'



BQP (80%)
QDG (20%, less than or equal .2 cm. thick layers)

Highly foliated nature of both lithologies, and thinness of QDG layers suggest this is a highly deformed section.

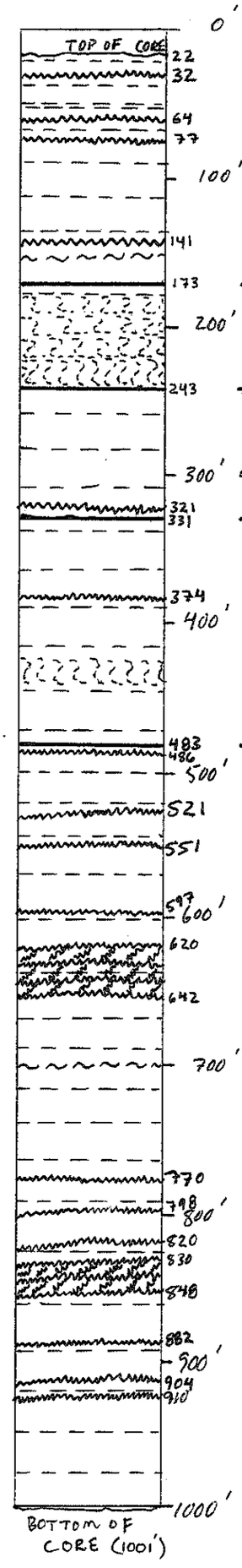
CORE LOG Meadus 1000' BOX# 102 INTERVAL 994.7'-1001.3'



BQP (80%)
QDG (20%, less than or equal .2 cm. thick layers).
Rocks of similar character to those in box 101.

CORE LOG MOODUS #1 BOX# — INTERVAL Summary of core

~~~ — chloritic Fractures except where noted as breccia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