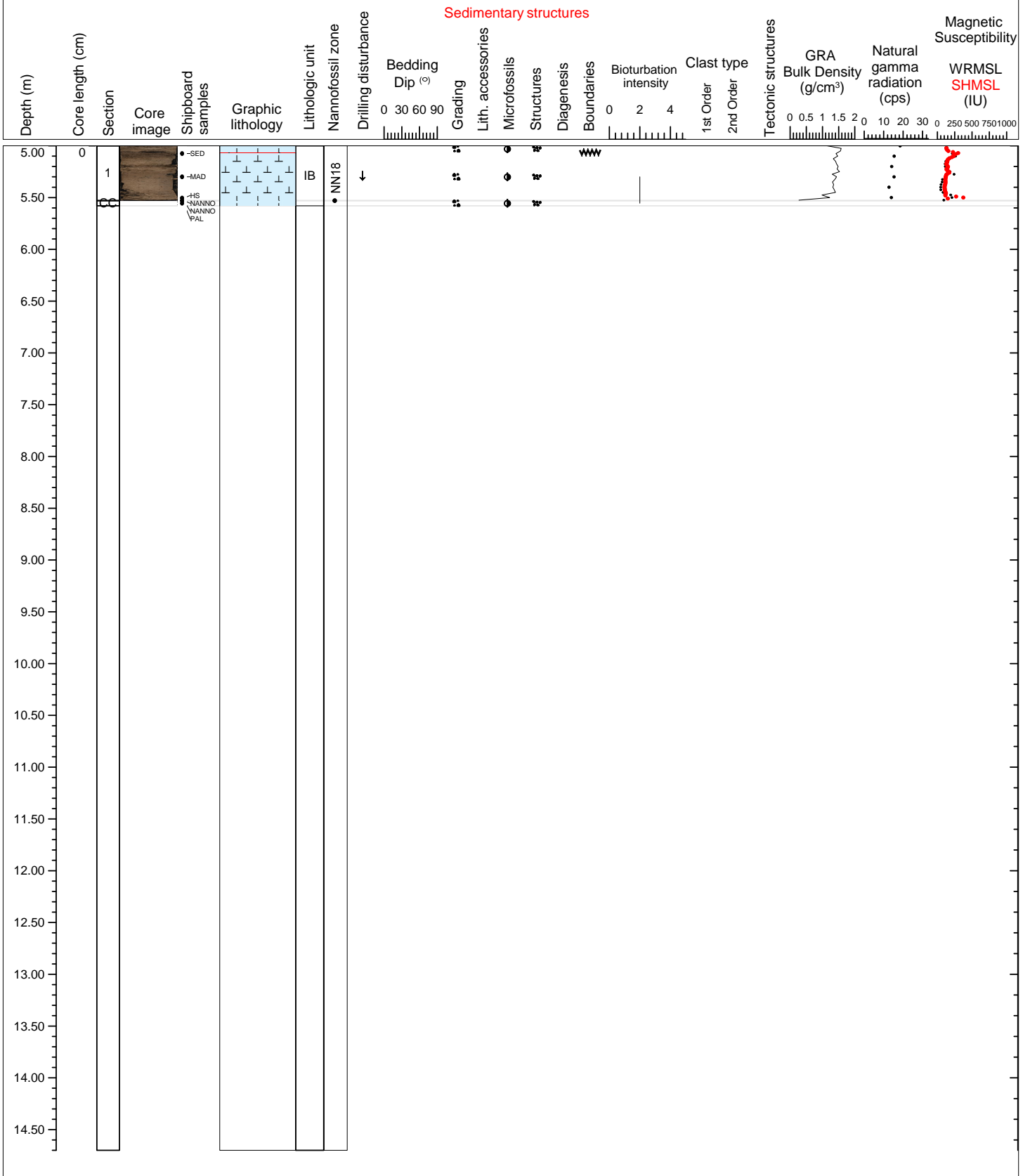




Hole 352 - U1441A Core 2R, Interval 5-14.7 m (CSF-A)

A pale silty nannofossil ooze with one disrupted black ash layer.

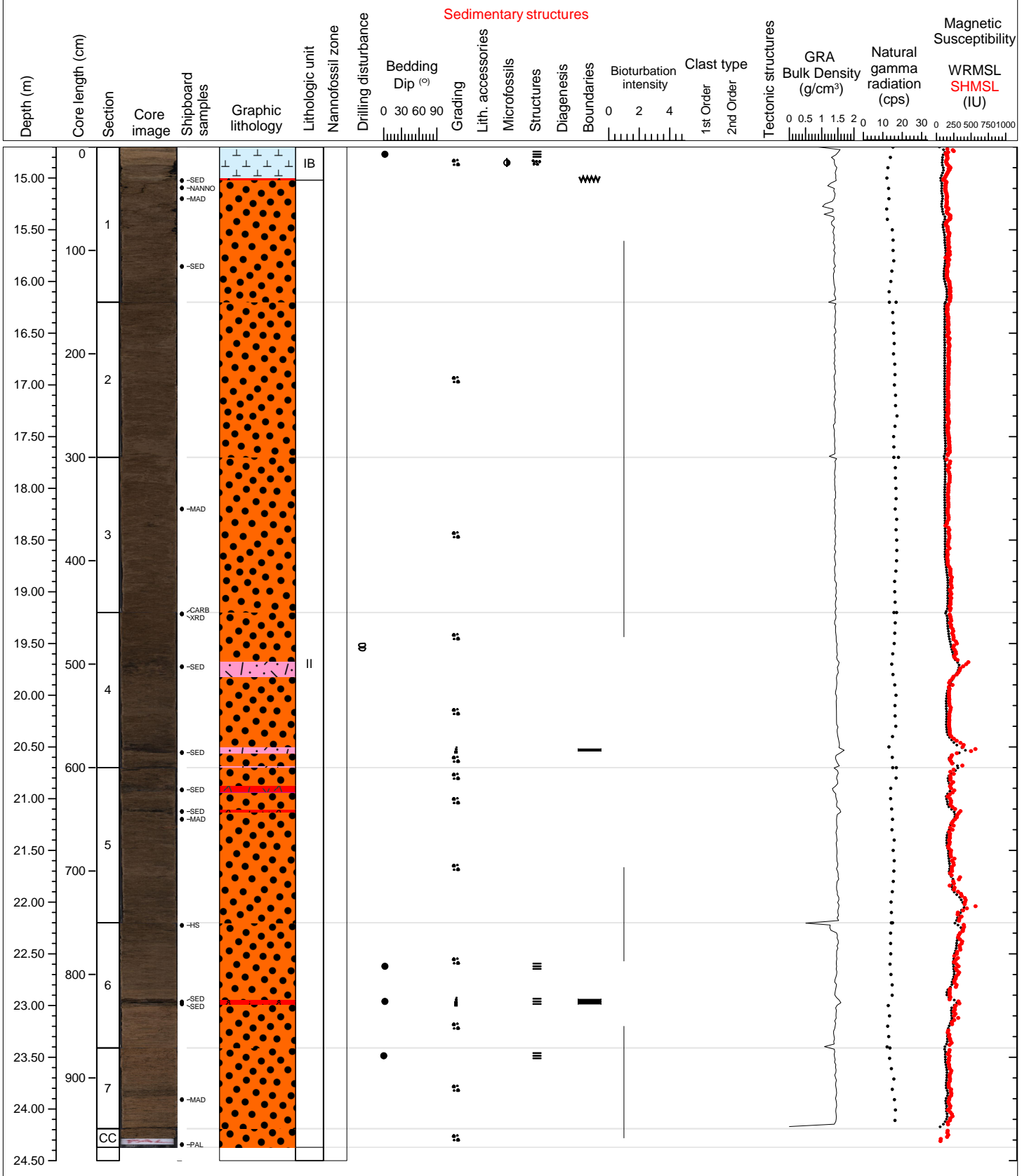
Depth Drilled (DSF), 14.7 : Bottom Depth Recovered, Curated Depth (CSF-A), 5.58, Recovery: 6%



Hole 352 - U1441A Core 3R, Interval 14.7-24.5 m (CSF-A)

Pale silty nannofossil ooze in the upper part of Section 1. A sharp change marks the transition to brown muddy breccia-conglomerate that contains angular to rounded volcanic clasts (mm size) and some randomly distributed rounded pumice clasts (cm-size). Six discrete ash layers and one fine lapilli layer are intercalated within the background sediment.

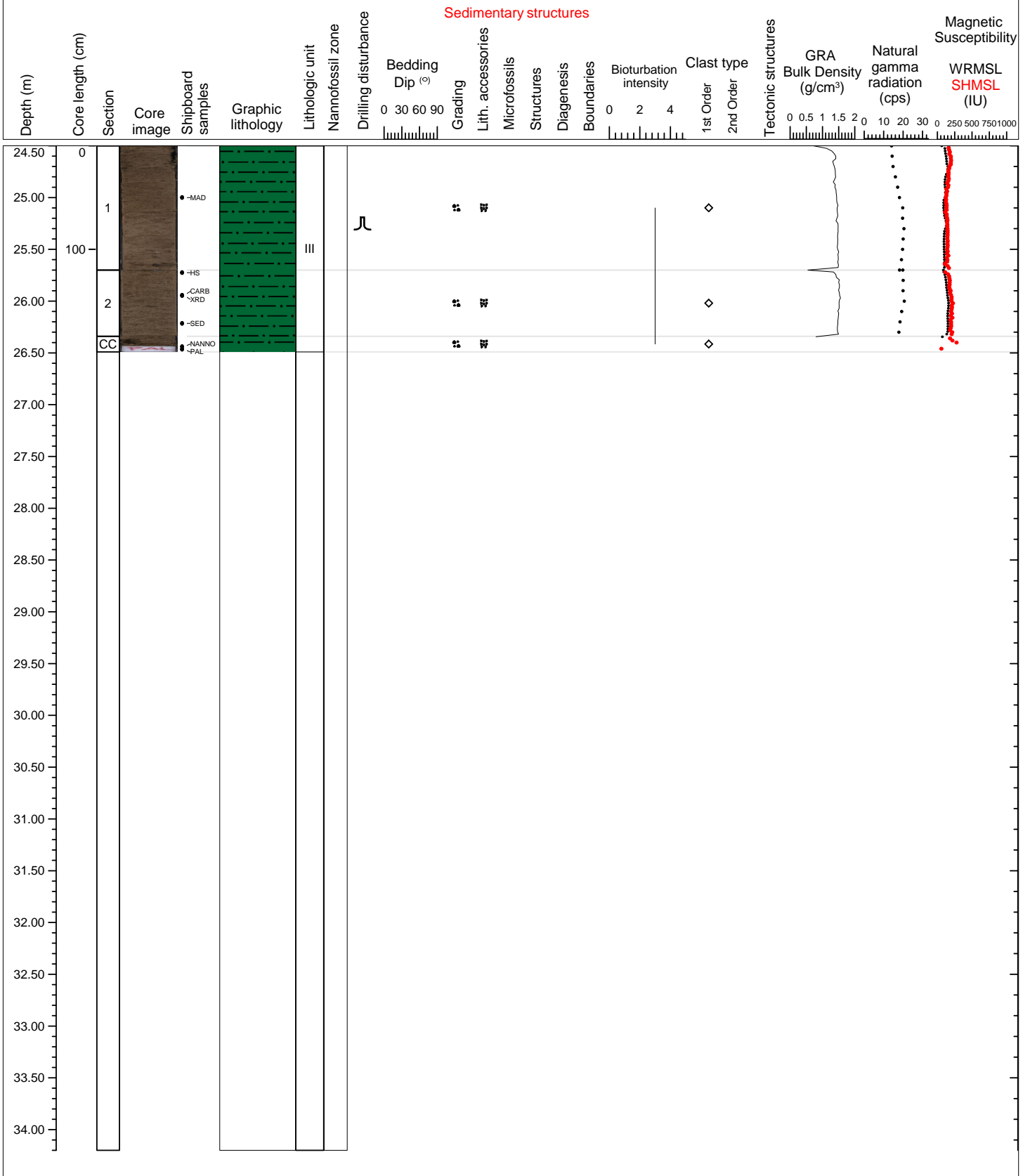
Depth Drilled (DSF), 24.5 : Bottom Depth Recovered, Curated Depth (CSF-A), 24.37, Recovery: 99%



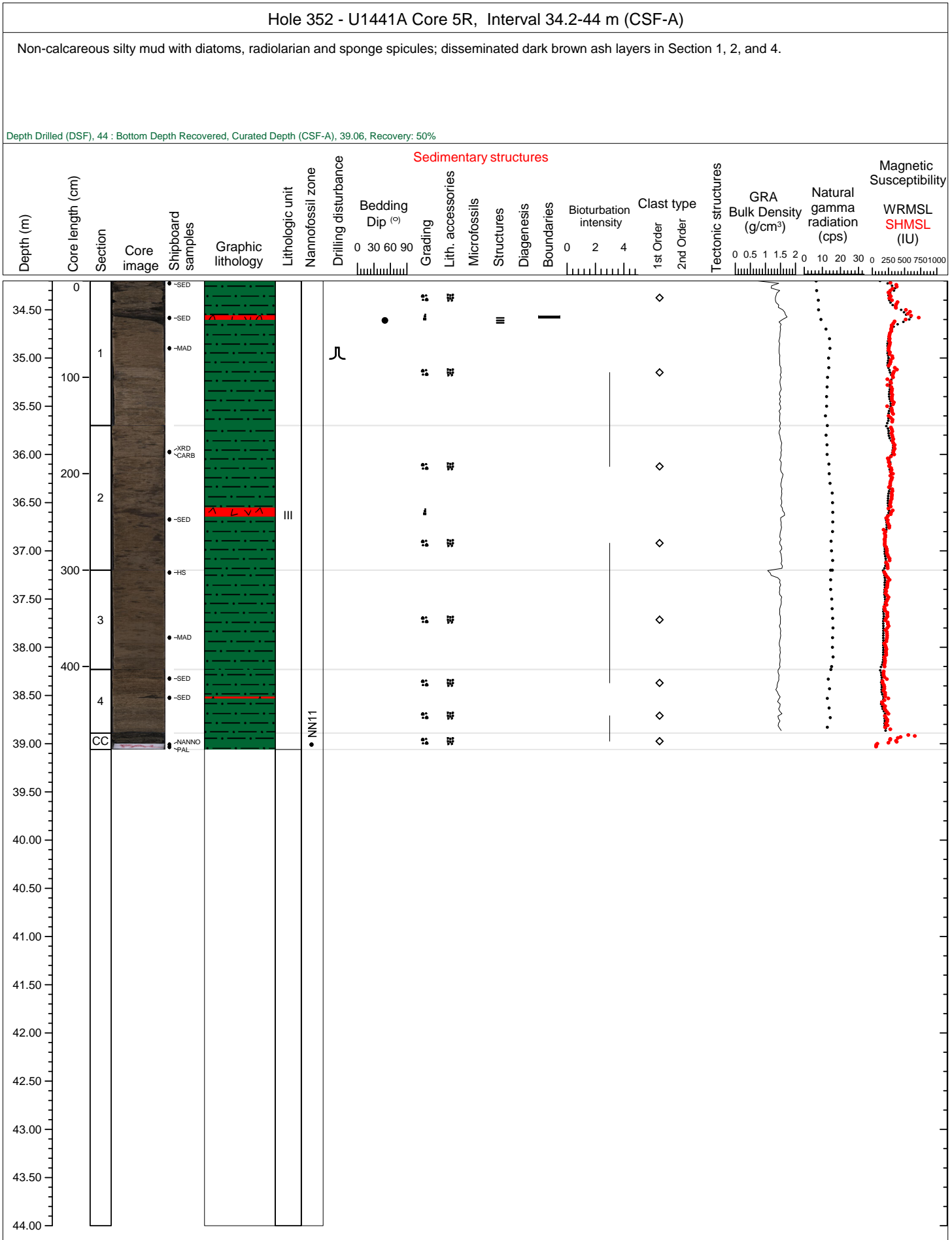
Hole 352 - U1441A Core 4R, Interval 24.5-34.2 m (CSF-A)

Non-calcareous silty mud with diatoms, radiolarian and sponge spicules; some scattered cm-sized pumice clasts.

Depth Drilled (DSF), 34.2 : Bottom Depth Recovered, Curated Depth (CSF-A), 26.49, Recovery: 21%



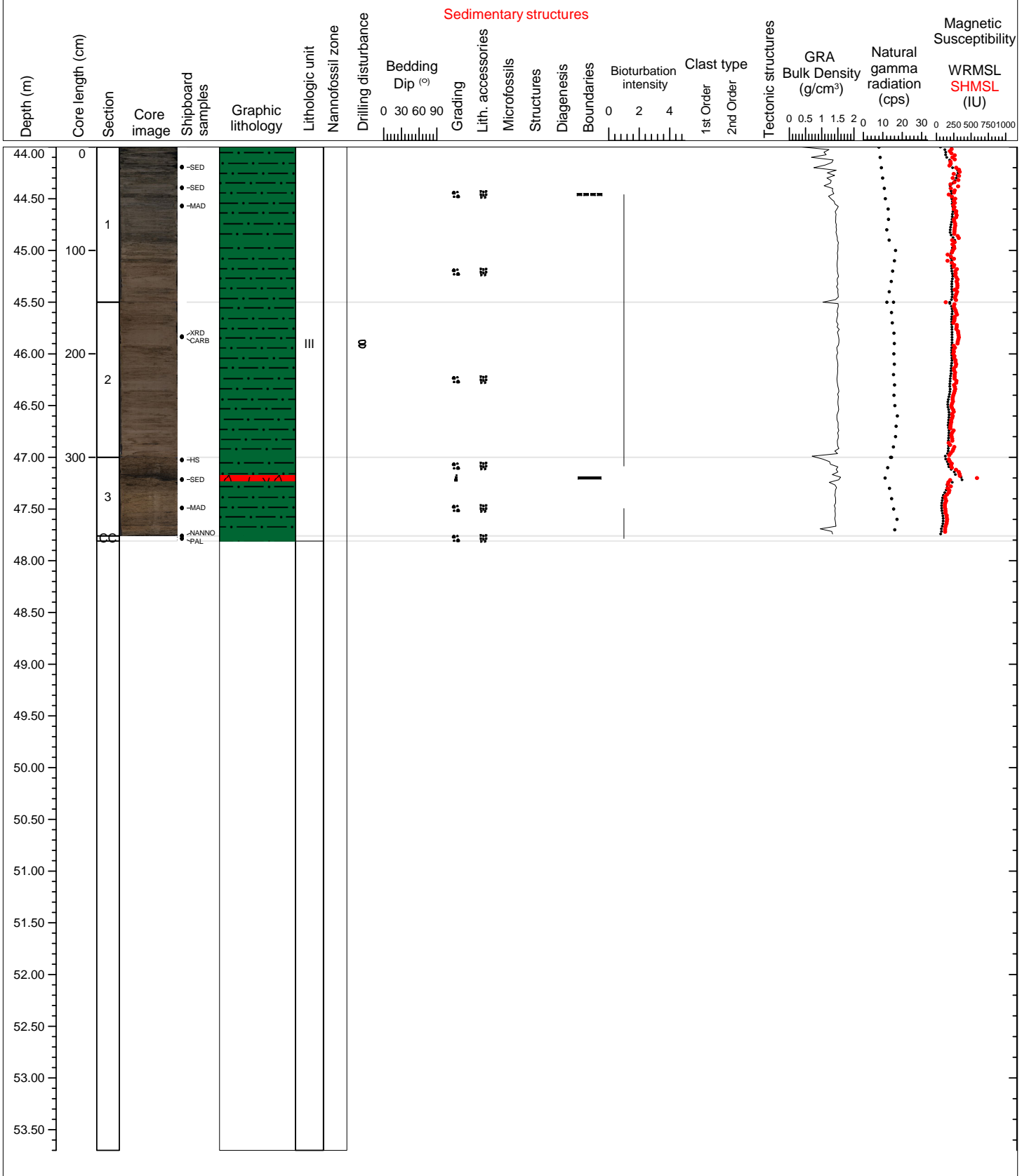




Hole 352 - U1441A Core 6R, Interval 44-53.7 m (CSF-A)

The upper part of the core in Section 1 is olive gray mud with scattered pumice clasts up to 2 cm in size. There is then a downward gradation into more pinkish gray mud, again with scattered pumice clasts. Section 3 down to and including the core catcher is made up of identical material, other than for a thin, graded ash layer in Section 3. Moderate core disturbance throughout the core is suggested by the disrupted nature of the basal contact of the ash layer.

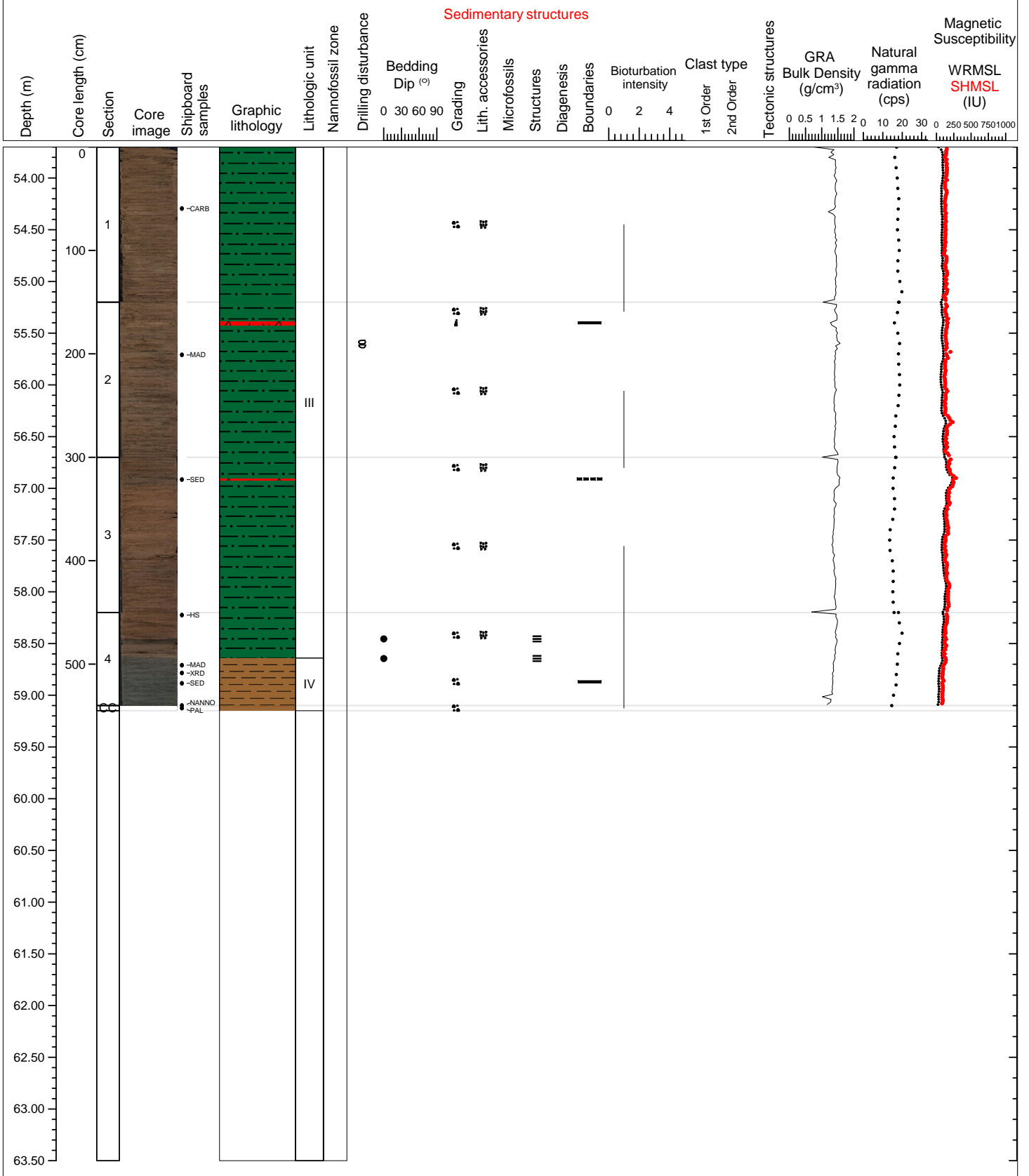
Depth Drilled (DSF), 53.7 : Bottom Depth Recovered, Curated Depth (CSF-A), 47.81, Recovery: 39%



Hole 352 - U1441A Core 7R, Interval 53.7-63.5 m (CSF-A)

Most of the core is a simple continuation of the pinkish silty mud with scattered pumice clasts, as seen in Core 6. However, the pumice becomes less abundant and smaller in size downwards. The upper part of Section 2 includes a several centimeter-thick lithified layer of ash (more lithified than above.) Midway through Section 4 there is an abrupt change to a greenish color and a slight decrease in grain size. Pumice fragments are now absent.

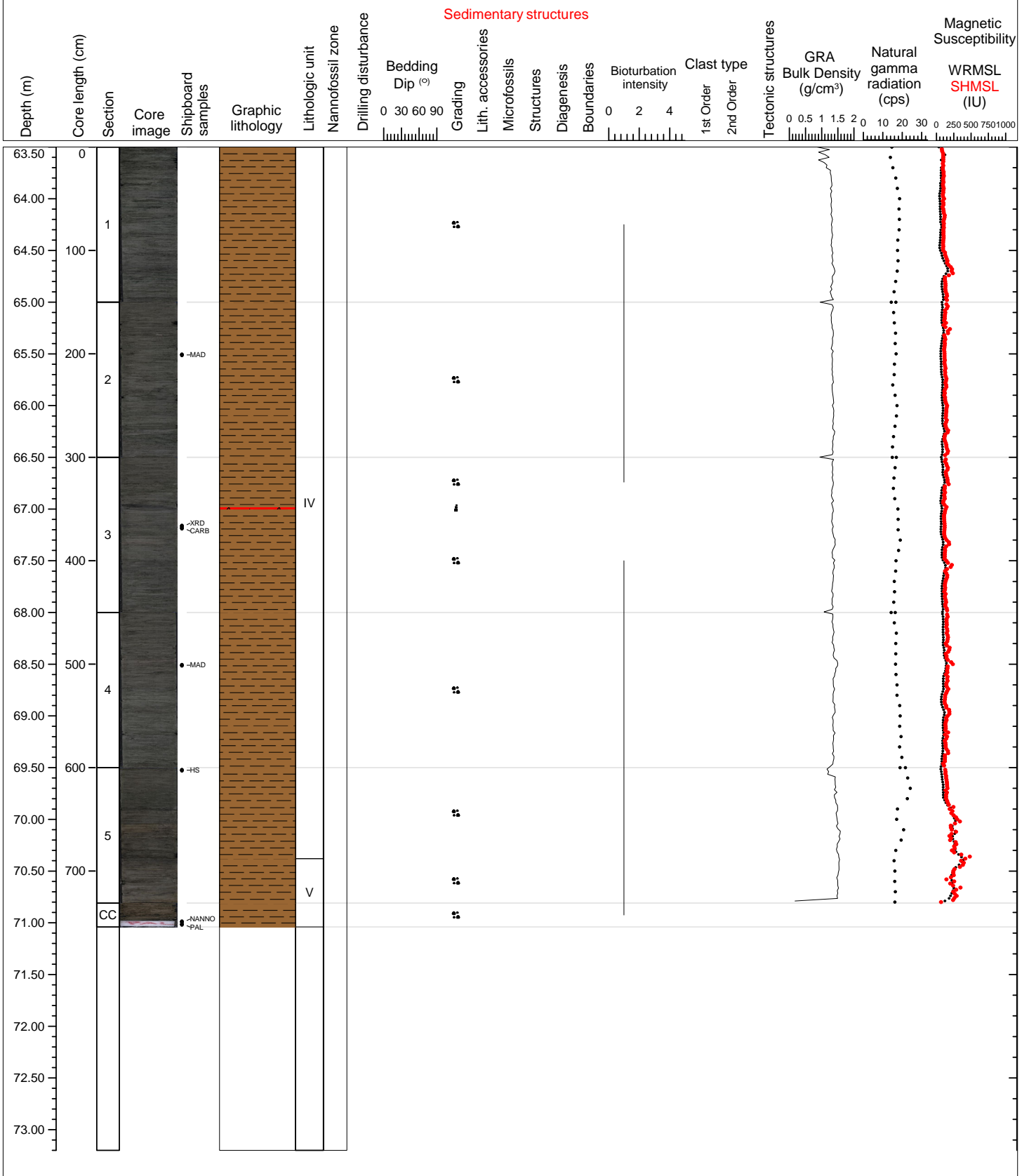
Depth Drilled (DSF), 63.5 : Bottom Depth Recovered, Curated Depth (CSF-A), 59.15, Recovery: 56%



Hole 352 - U1441A Core 8R, Interval 63.5-73.2 m (CSF-A)

The core is dominated by a continuation of the greenish gray silty mud as seen in the previous core. There is a return to scattered pumice clasts (up to several centimeters in size.) A thin relatively fine-grained ash layer is present in Section 2. Within Section 3 to the base of the core there is a subtle change to a slightly more grayish color. Bioturbation and core disturbance are modest.

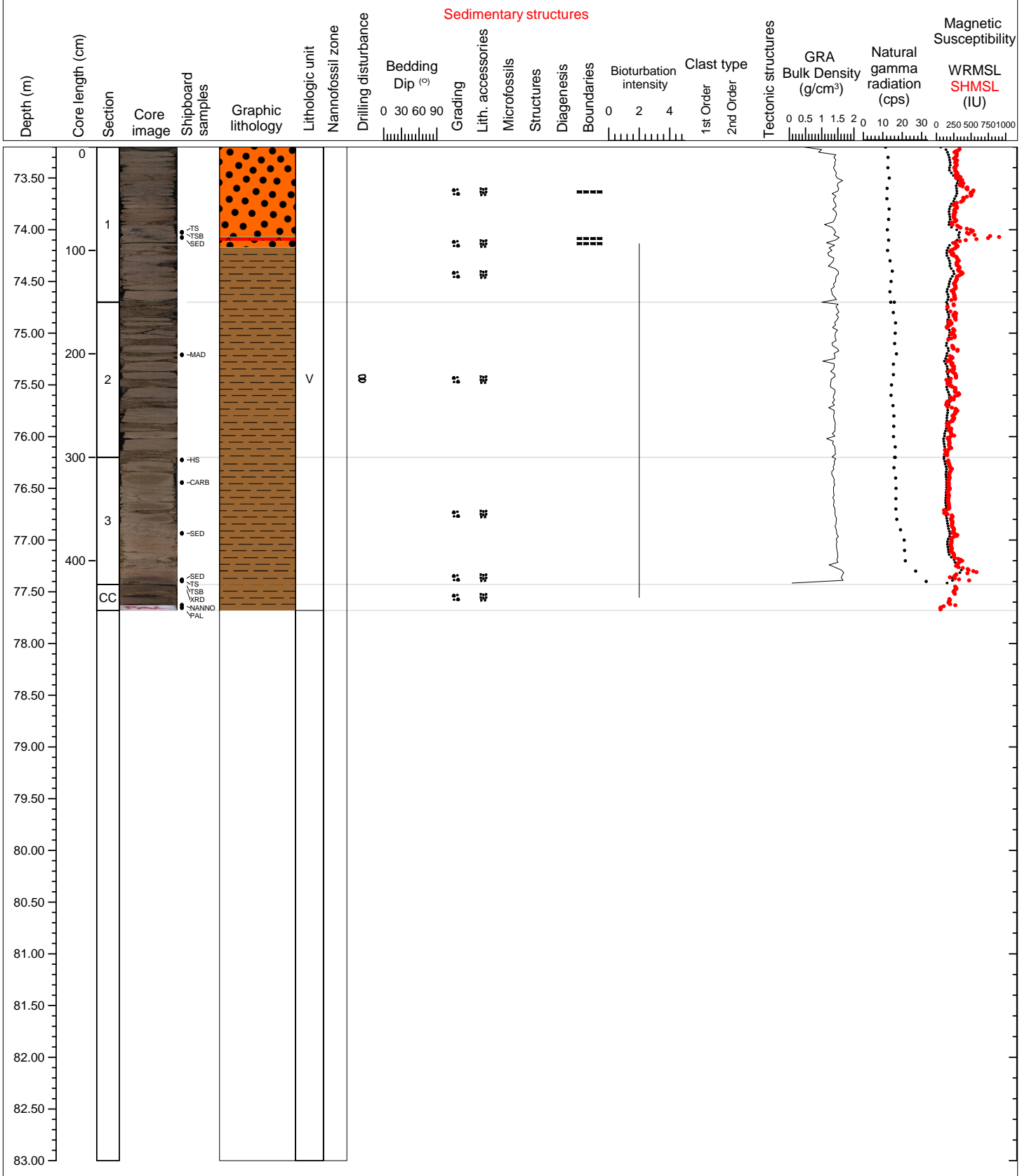
Depth Drilled (DSF), 73.2 : Bottom Depth Recovered, Curated Depth (CSF-A), 71.04, Recovery: 78%

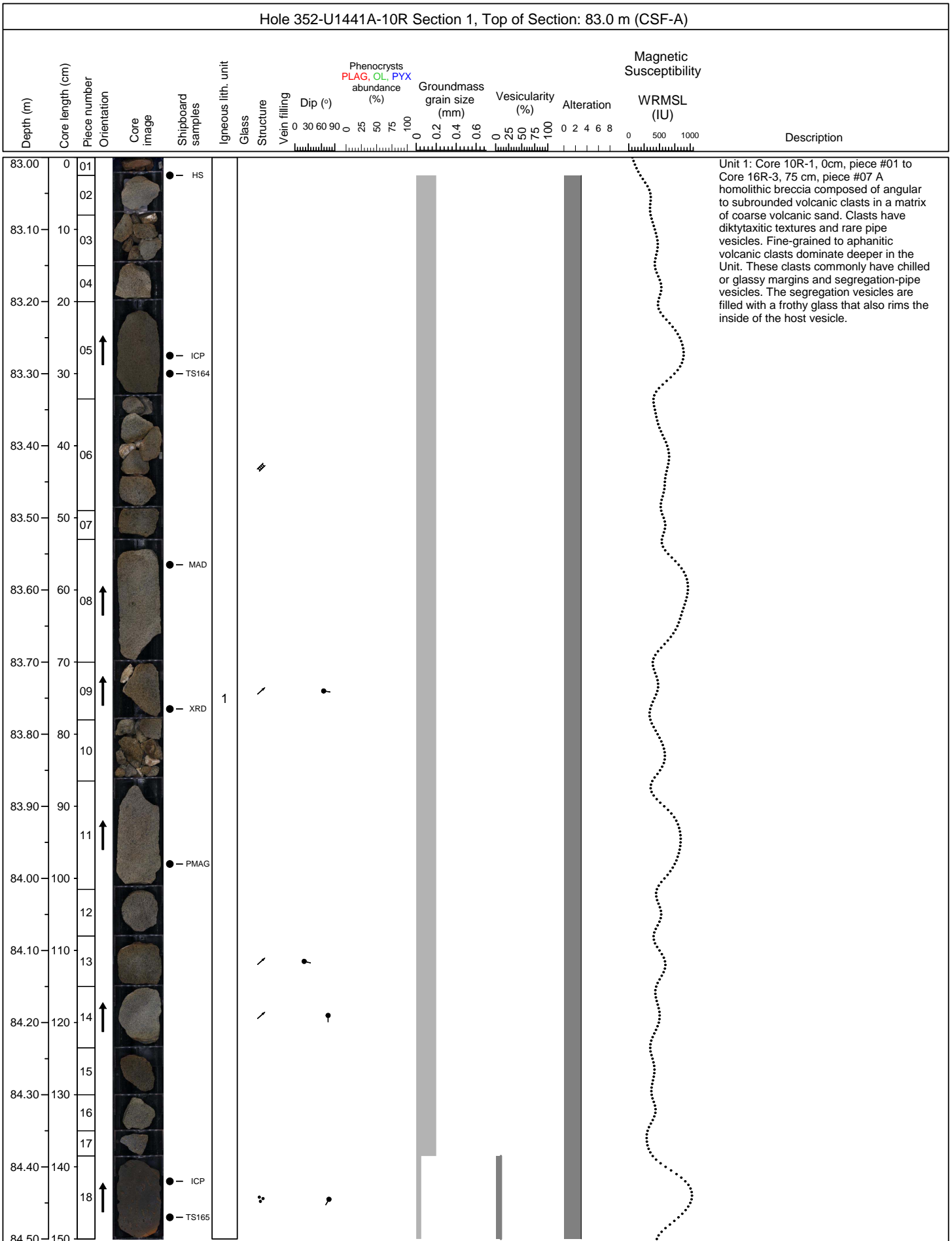


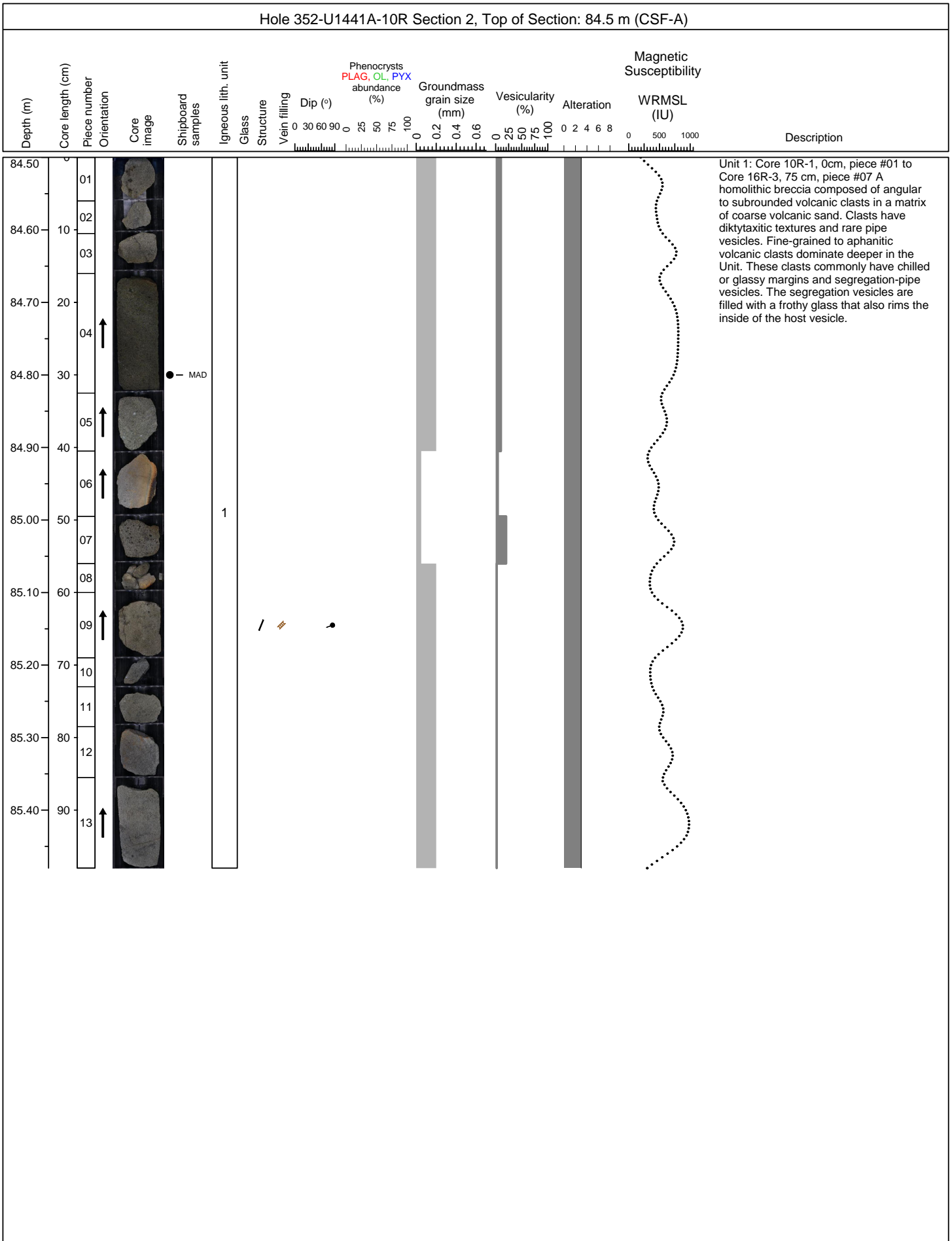
Hole 352 - U1441A Core 9R, Interval 73.2-83 m (CSF-A)

The core begins with silty fine conglomerate (gravel), which is poorly sorted and dispersed through clay. The sediment is consolidated but not lithified. Moderate bioturbation is evident. The sediment does not react to dilute HCl. Pale colored pumice grains are scattered throughout. In the lower part of Section 1 the sediment becomes finer grained and more clayey, but without a color change. This clayey sediment persists to the lower part of Section 3, where it becomes distinctly darker but still clay-rich. Pale colored pumice is common in the mid part of Section 3. The lowermost dark interval in Section 3 and the core catcher includes pumice clasts and a sub-rounded pebble of altered, fine-grained volcanic material (hyaloclastite?), coated with black manganese oxide.

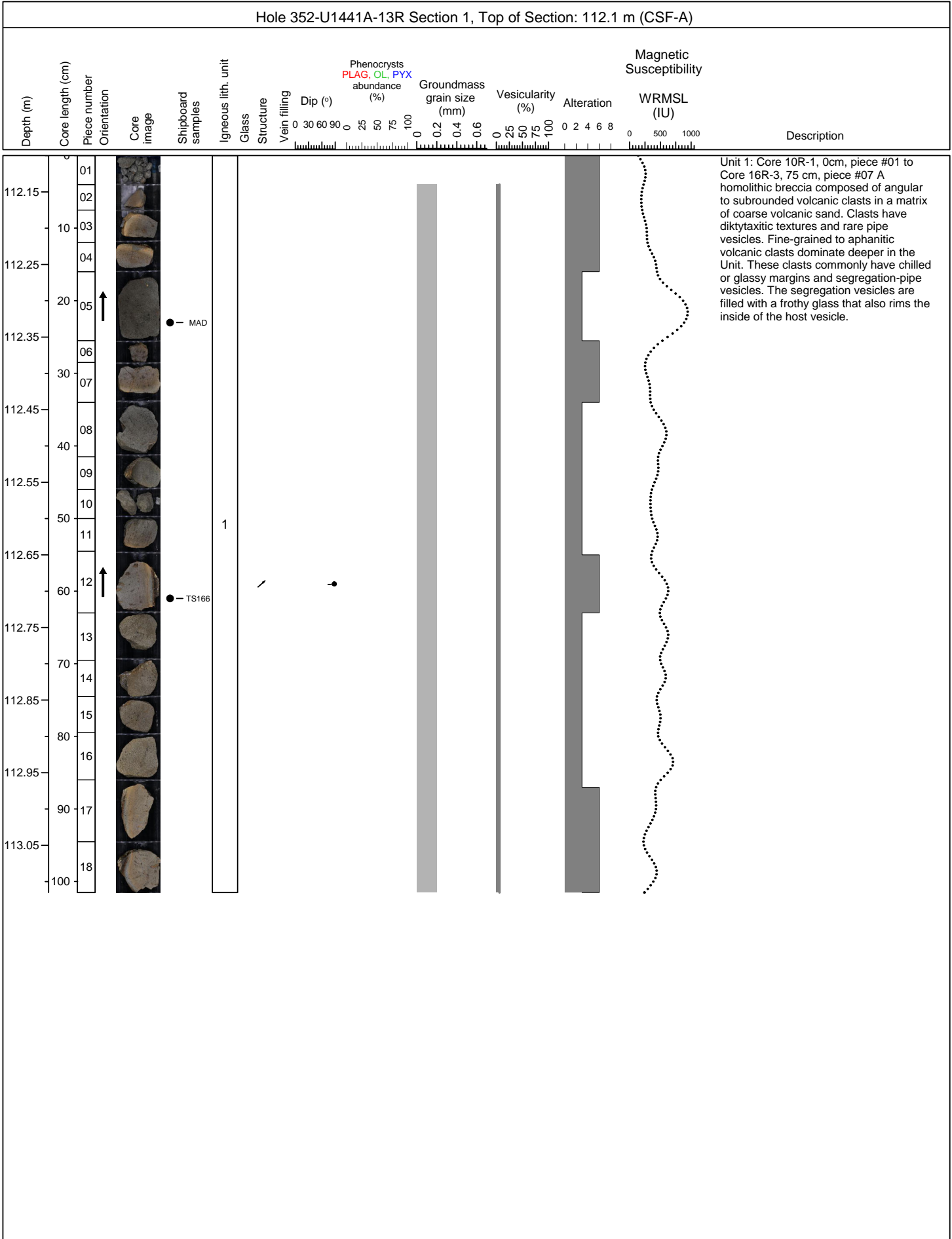
Depth Drilled (DSF), 83 : Bottom Depth Recovered, Curated Depth (CSF-A), 77.68, Recovery: 46%



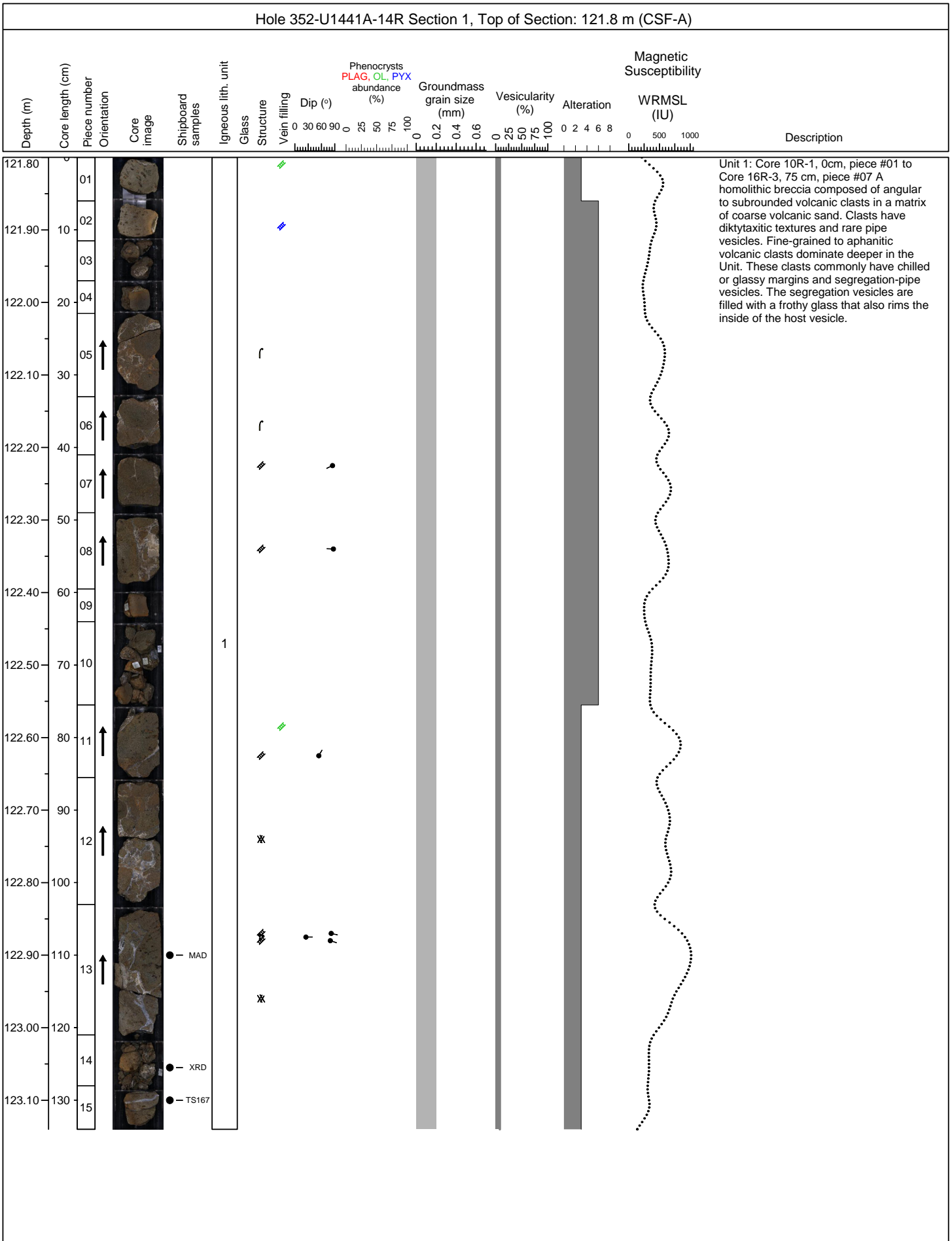


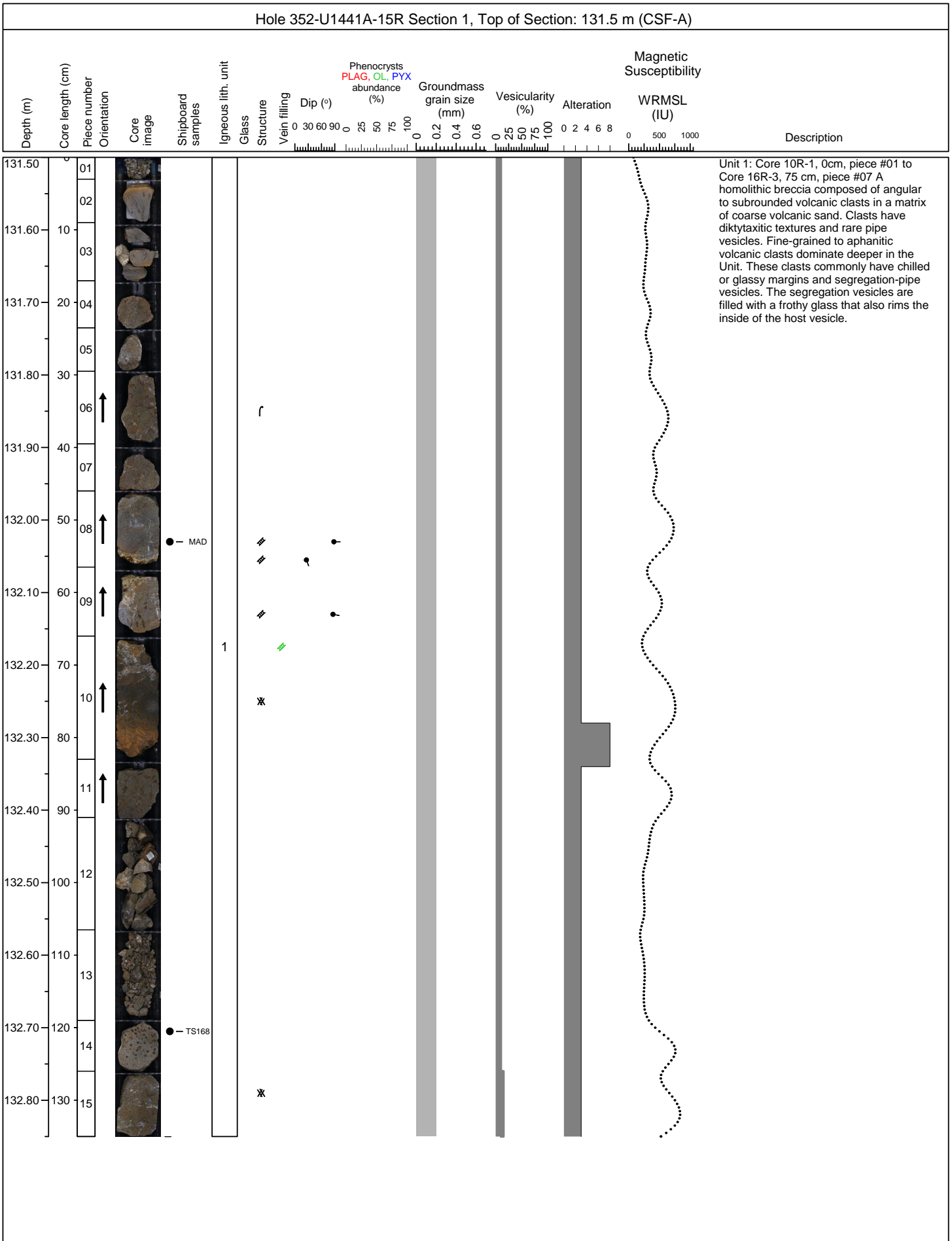


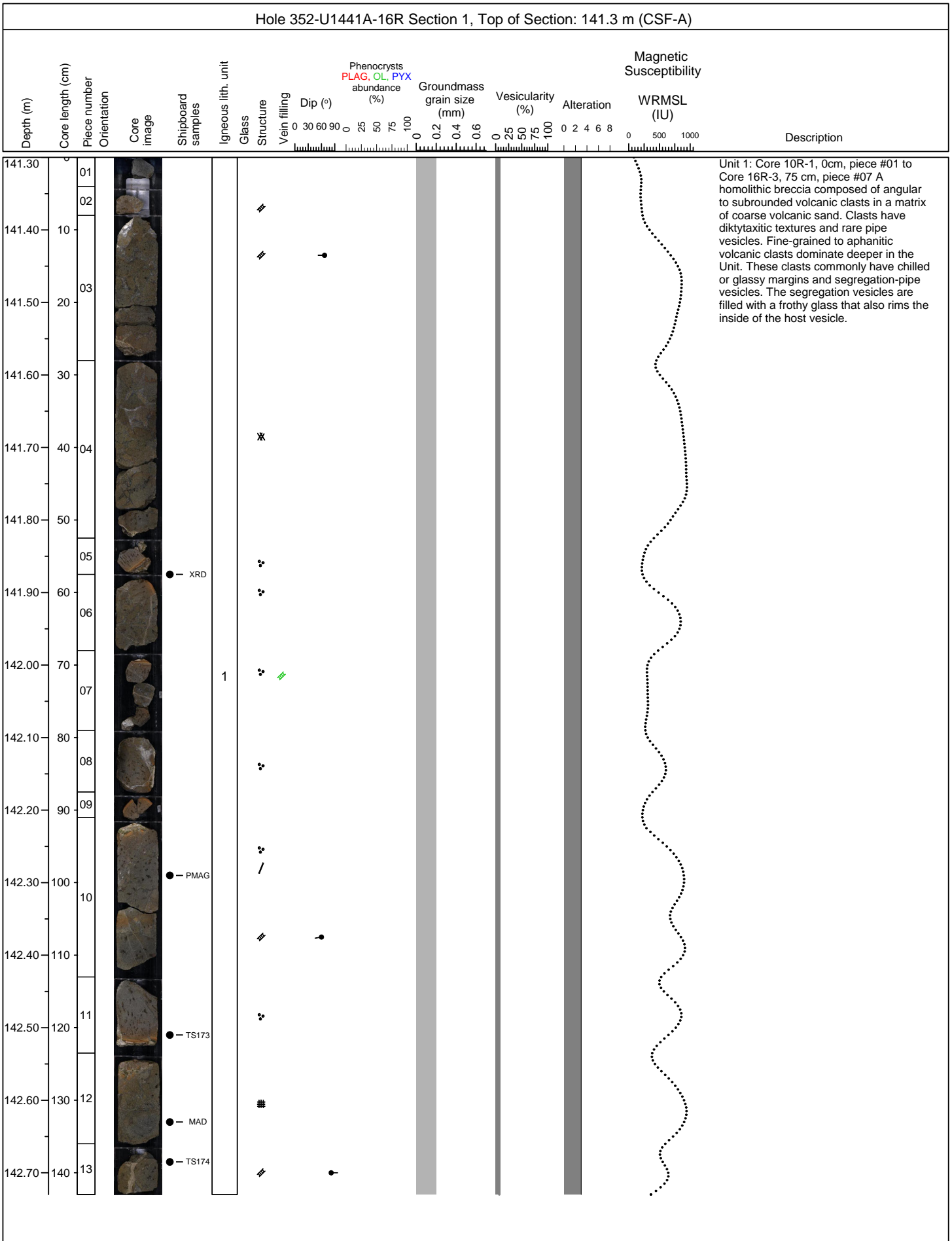
U1441A-10R-CC, U1441A-11R, and U1441A-12R NO RECOVERY

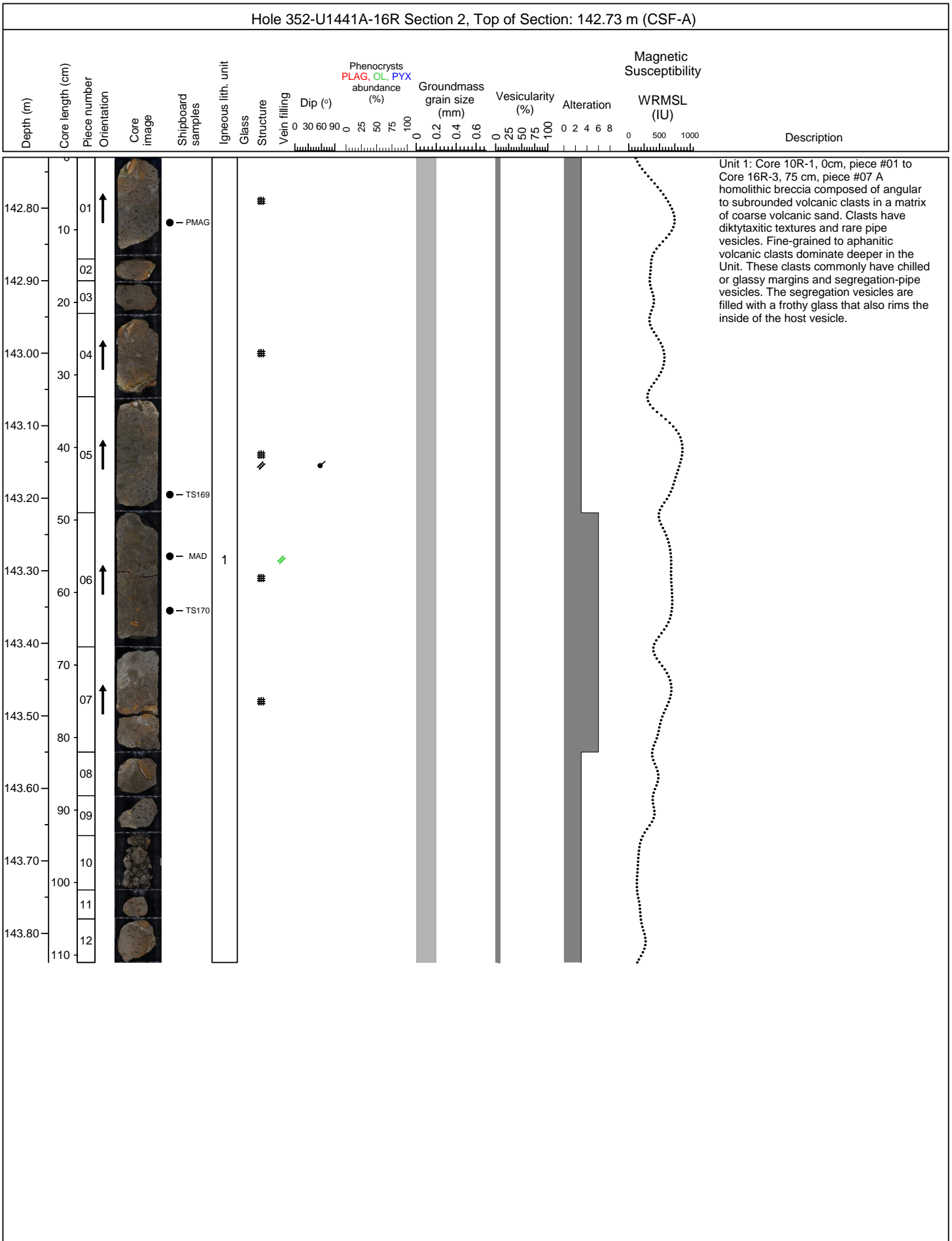


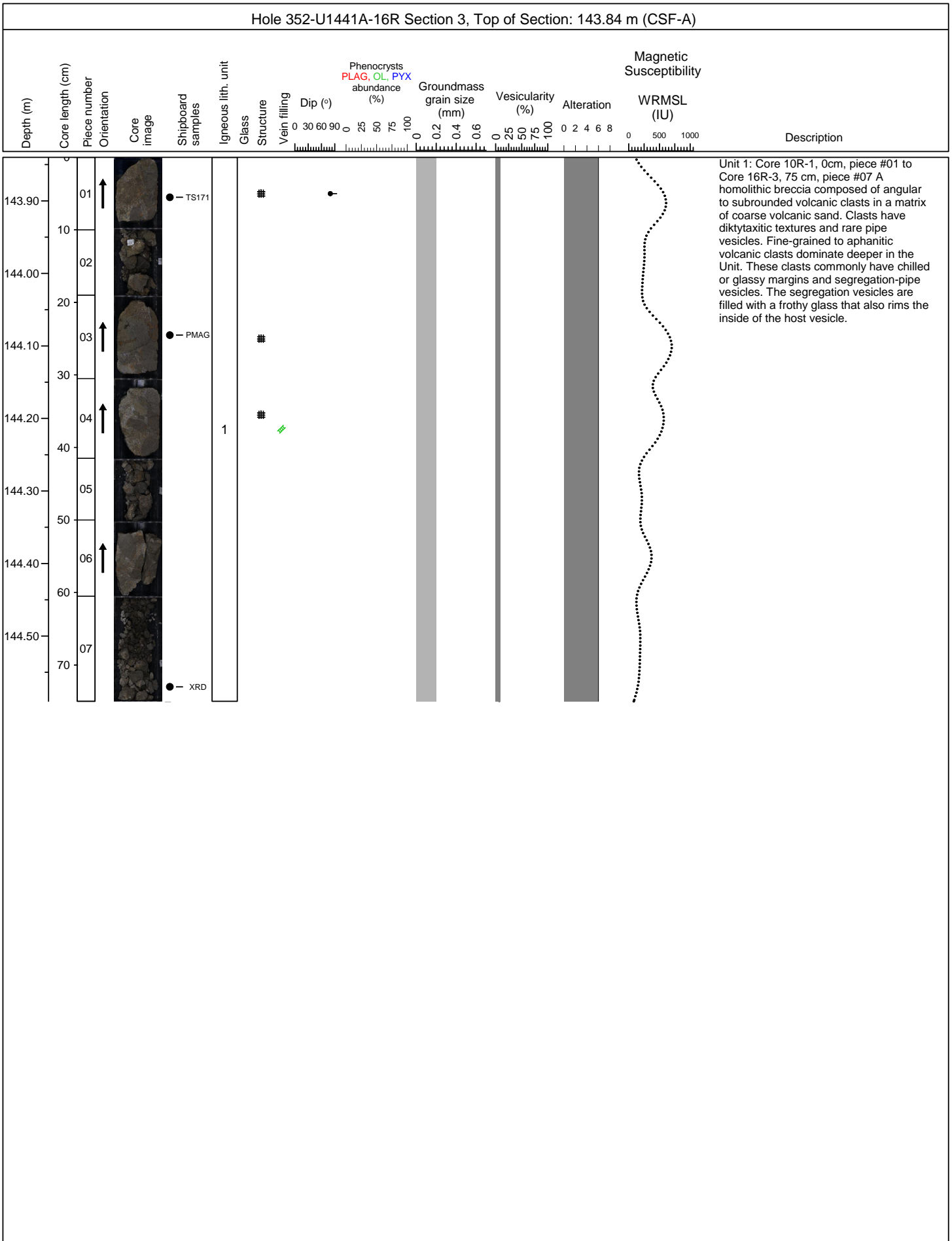


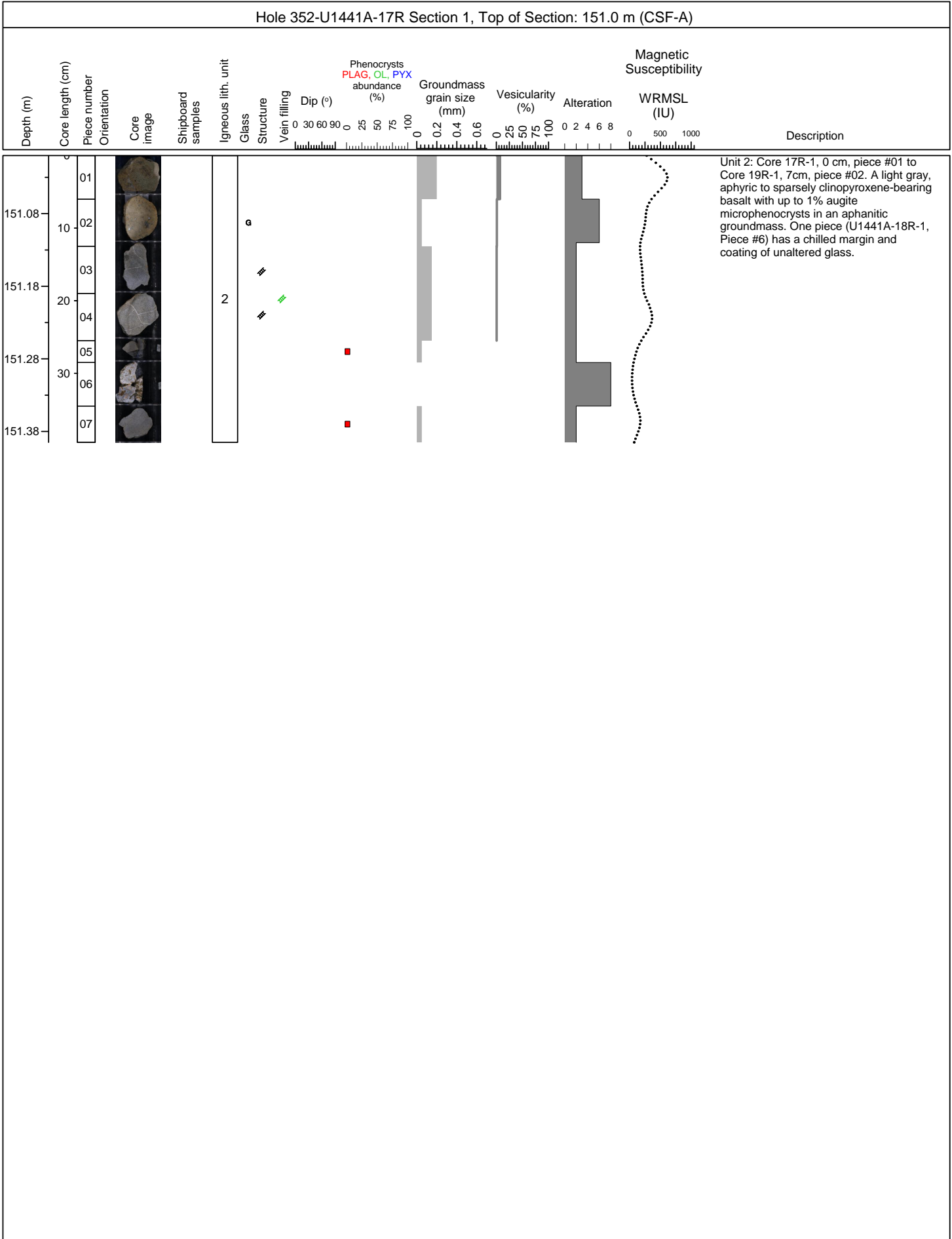


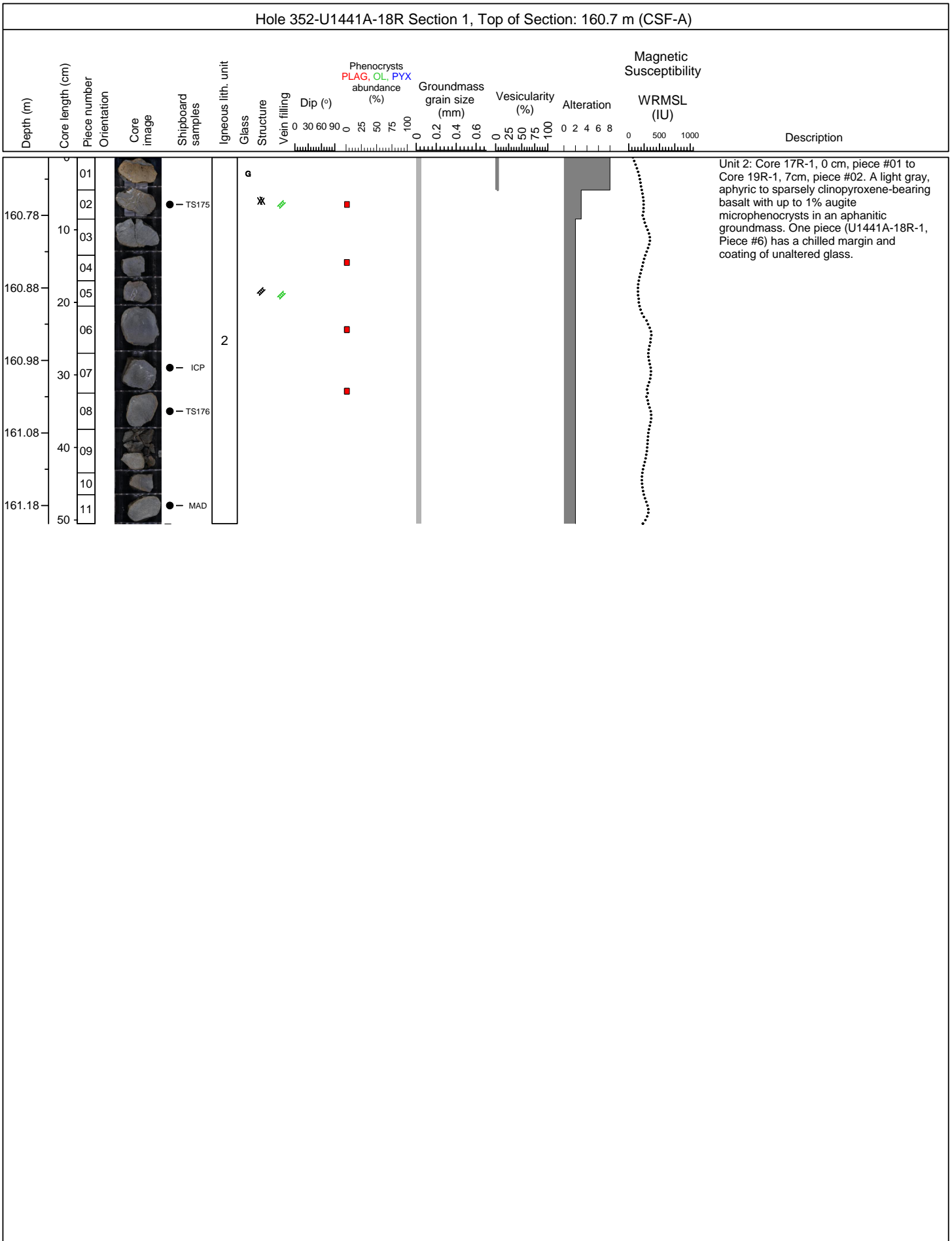


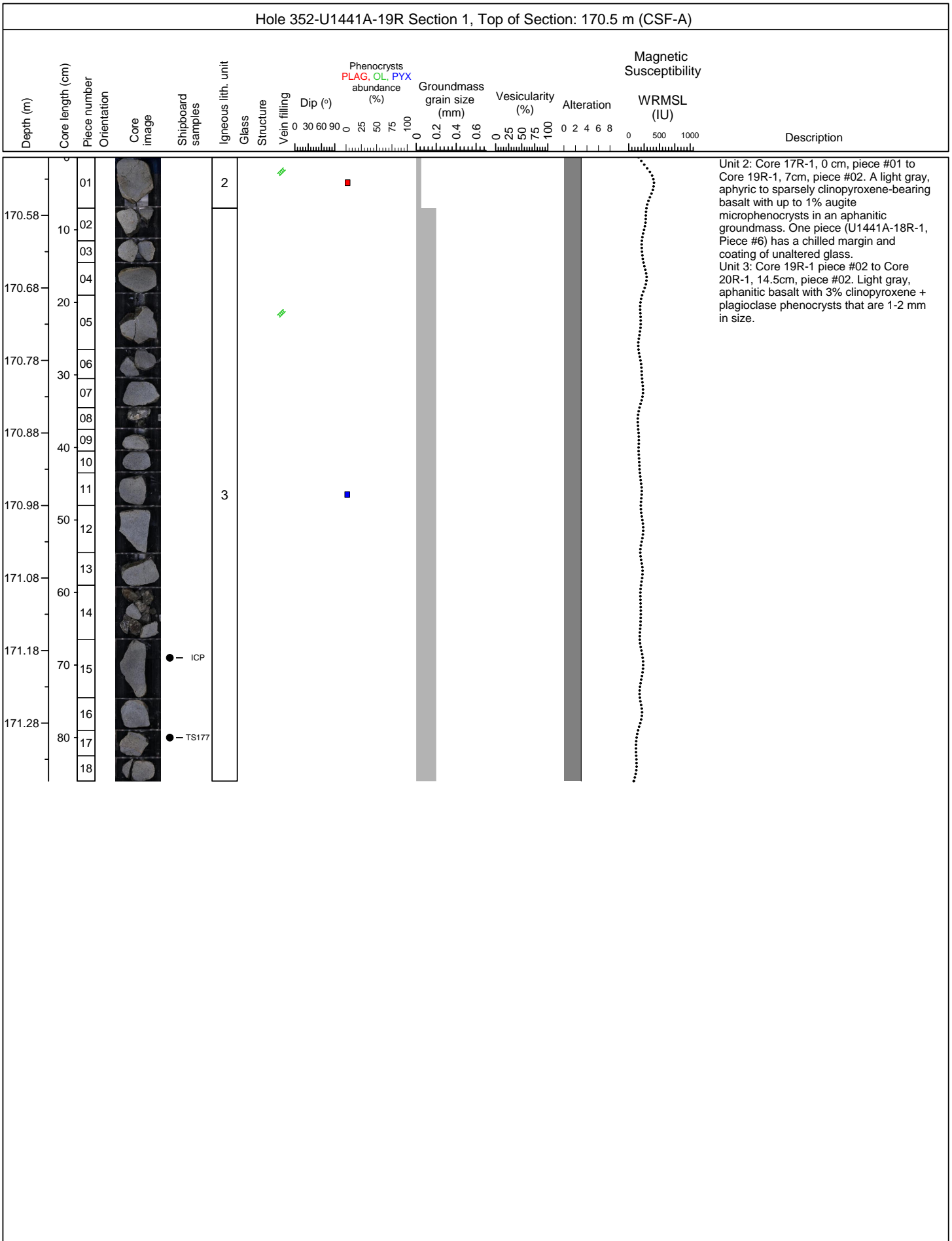




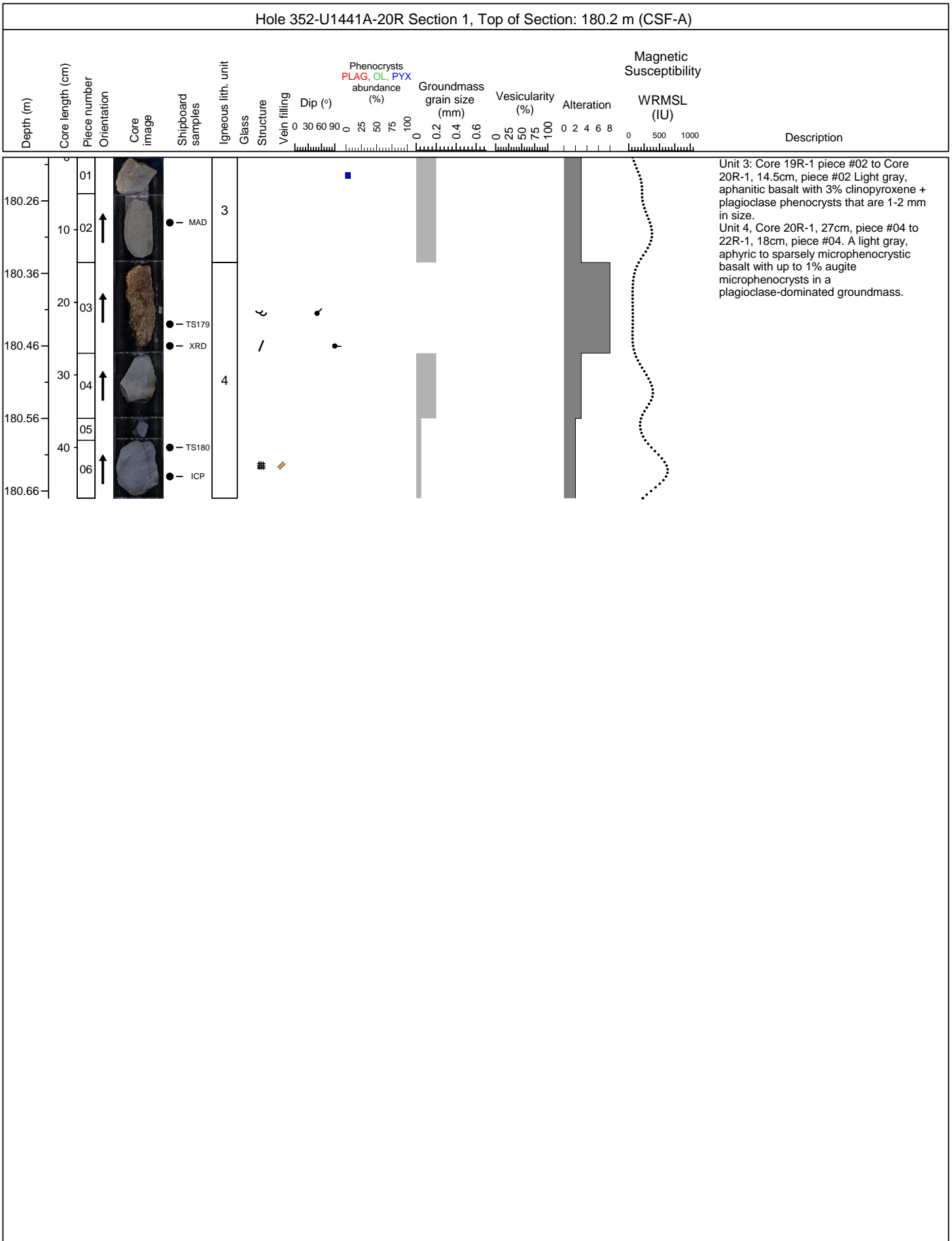


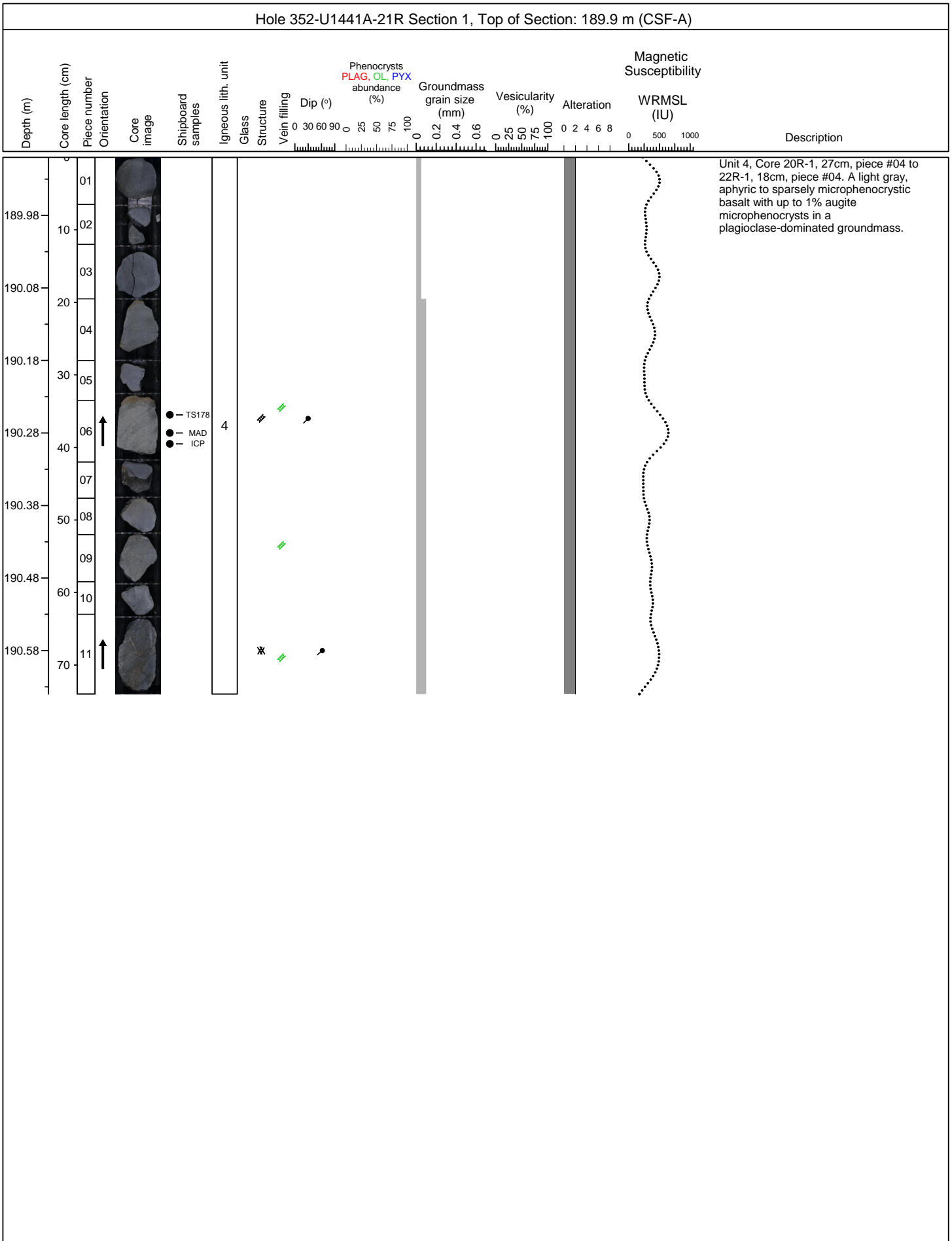


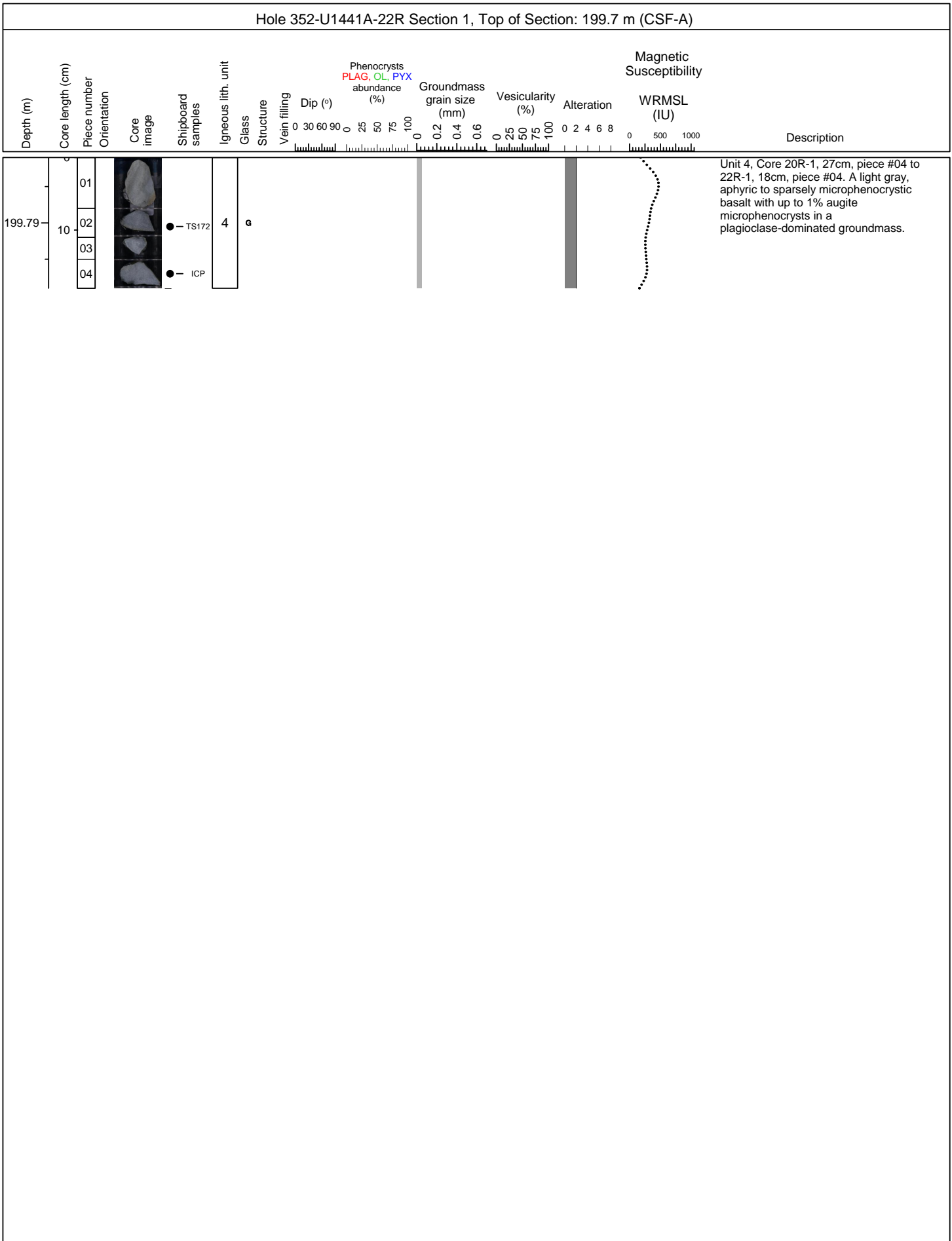












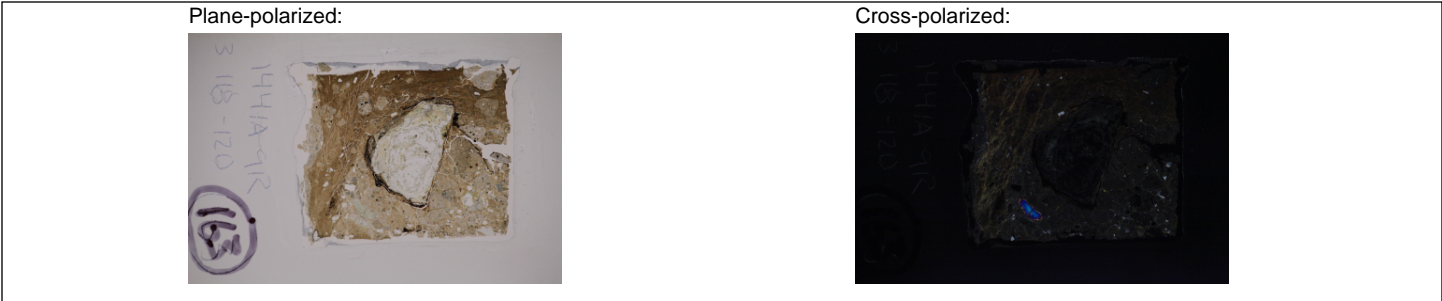


|  |                       |
|--|-----------------------|
| THIN SECTION LABEL ID: <b>352-U1441A-9R-1-W 81/84-TSB-TS_162</b>               | Thin section no.: 162 |
| Unit/Subunit:  | Piece no.: Observer:  |
| Thin section summary: Sedimentary breccia containing crystal and lithic clasts |                       |



| MICROSTRUCTURES |                       |          |               |                    |
|-----------------|-----------------------|----------|---------------|--------------------|
| Microstructure  | Mag. fabric intensity | CPF type | CPF intensity | Structure comments |
|                 | isotropic             |          |               | zeolite vein       |

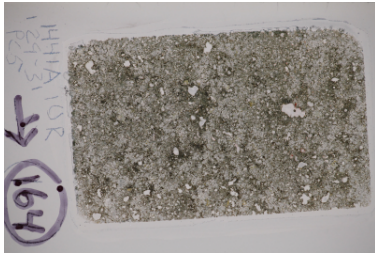
|   |   |                   |     |
|---|---|-------------------|-----|
| THIN SECTION LABEL ID:  | <b>352-U1441A-9R-3-W 118/120-TSB-TS_163</b> | Thin section no.: | 163 |
| Unit/Subunit:   | Piece no.:                                  | Observer:         |     |
| Thin section summary: Sedimentary breccia with clasts of basalt and plagioclase crystal fragments |   |                   |     |



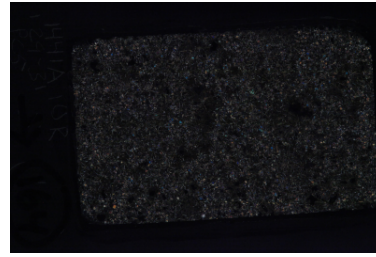
| <b>MICROSTRUCTURES</b> |                       |          |               |                                 |
|------------------------|-----------------------|----------|---------------|---------------------------------|
| Microstructure         | Mag. fabric intensity | CPF type | CPF intensity | Structure comments              |
|                        | isotropic             |          |               | mechanical twins in plagioclase |

THIN SECTION LABEL ID: **352-U1441A-10R-1-W 29/31-TSB-TS\_164** Thin section no.: 164  
 Unit/Subunit: 1 Piece no.: #05 Observer: tc  
 Thin section summary: Varitextured basalt, containing intersertal and intergranular groundmass

Plane-polarized:



Cross-polarized:

**PRIMARY (IGNEOUS) MINERALOGY**

LITHOLOGY: aphyric basalt lava

|                  |                          |                      |              |
|------------------|--------------------------|----------------------|--------------|
| Texture 1:       | intergranular subophitic | Texture 2:           | intersertal  |
| Avg. grain size: | microcrystalline         | Grain size distrib.: | varitextured |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments                                   |
|-------------------|-----------|-------------------|---------|--|
| Plagioclase       | 25        | 0.25              | tabular |  |
| Clinopyroxene     | 20        | 0.2               | blocky  | does not include quench cpx in mesostasis. |
| Mesostasis        | 25        |                   |         | Quenched intergrowth of cpx and plag       |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments                       |
|--------------|----------|---------------|----------------|--|
| 5            | 80       | irregular     | 0.4            | Does not include diktytaxitic vesicles |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments   |
|----------------|-----------------------|----------|---------------|----------------------|
|                | isotropic             |          |               | acicular plagioclase |

**SECONDARY (ALTERATION) MINERALOGY**

Total alteration in rock, bulk estimate (%): 40

Groundmass original [%]: 25 Groundmass altered [%]: 40 Groundmass alt. intensity: moderate

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 20            |               | 25          |       | 30    |
| Altered [%]    |         | 5             |               | 5           |       | 100   |
| Clay minerals  |         | 5             |               |             |       |       |
| Zeolite        |         |               |               | 5           |       |       |

|                        |   |                   |     |
|------------------------|---|-------------------|-----|
| THIN SECTION LABEL ID: | <b>352-U1441A-10R-1-W 145/149-TSB-TS_165</b>  | Thin section no.: | 165 |
| Unit/Subunit:          | 1   | Piece no.:        | #18 |
|                        |   | Observer:         | jp  |
| Thin section summary:  | Highly altered basalt with elongate pipe vesicles and sparse cpx microphenocrysts in a groundmass of altered plagioclase and cpx. |                   |     |

**PRIMARY (IGNEOUS) MINERALOGY**

LITHOLOGY: sparsely augite phyric basalt lava

|                  |                  |                      |                |
|------------------|------------------|----------------------|----------------|
| Texture 1:       | microporphyritic | Texture 2:           | vesicular      |
| Avg. grain size: | microcrystalline | Grain size distrib.: | inequigranular |

| Phenocrysts   | % present | Average size [mm] | Habit  | Comments   |
|---------------|-----------|-------------------|--------|--|
| Clinopyroxene | 2         | 0.4               | blocky | sometimes occur in large glomerocrysts of 1mm size |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments   |
|-------------------|-----------|-------------------|---------|--|
| Plagioclase       | 55        | 0.2               | tabular | random orientation. much replaced to clays                                 |
| Clinopyroxene     | 43        | 0.2               | blocky  | very altered   |
| Fe Ti oxide       |           |                   |         | some small <0.1mm size oxide blebs visible in RL. Not enough to warrant 1% |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments   |
|--------------|----------|---------------|----------------|--|
| 35           | 50       | elongate      | 2              | bimodal size distribution. about 10 large elongate pipe vesicles. Groundmass contains evenly distributed round spherical vesicles of small 0.1-0.2 mm size |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments                              |
|----------------|-----------------------|----------|---------------|---|
|                | moderate              |          |               | magmatic foliation marked by plagioclase grains |

**SECONDARY (ALTERATION) MINERALOGY**

Alteration domain name: matrix Domain no.: 1 Domain rel. abundance [%]: 90

Total alteration in rock, bulk estimate (%): 55

Groundmass original [%]: 40 Groundmass altered [%]: 50 Groundmass alt. intensity: moderate



| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 25            |               | 35          |       |       |
| Altered [%]    |         | 5             |               | 90          |       |       |
| Clay minerals  |         | 5             |               |             |       |       |
| Zeolite        |         |               |               | 90          |       |       |

Alteration domain name: ovoid Domain no.: 2 Domain rel. abundance [%]: 10

Total alteration in rock, bulk estimate (%): 55

Groundmass original [%]: 80 Groundmass altered [%]: 100 Groundmass alt. intensity: complete

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         |               |               | 20          |       |       |
| Altered [%]    |         |               |               | 100         |       |       |
| Zeolite        |         |               |               | 100         |       |       |

|                        |  |                   |     |
|------------------------|--|-------------------|-----|
| THIN SECTION LABEL ID: | <b>352-U1441A-13R-1-W 60/62-TSB-TS_166</b>   | Thin section no.: | 166 |
| Unit/Subunit:          | 1  | Piece no.:        | #12 |
|                        |  | Observer:         | tc  |
| Thin section summary:  | basalt pillow rim, highly altered with some augite phenocrysts and devitrified glass |                   |     |



**PRIMARY (IGNEOUS) MINERALOGY**

**LITHOLOGY:** sparsely augite phyric basalt glass

|                  |                   |                      |                  |
|------------------|-------------------|----------------------|------------------|
| Texture 1:       | vitrophyric       | Texture 2:           | microporphyritic |
| Avg. grain size: | cryptocrystalline | Grain size distrib.: | inequigranular   |

| Phenocrysts   | % present | Average size [mm] | Habit  | Comments |
|---------------|-----------|-------------------|--------|----------|
| Clinopyroxene | 2         | 0.3               | blocky | fresh    |

| Groundmass phases | % present | Average size (mm) | Habit  | Comments                          |
|-------------------|-----------|-------------------|--------|-----------------------------------|
| Clinopyroxene     | 10        | 0.2               | blocky |                                   |
| Mesostasis        | 44        |                   |        | completely replaced in felty mass |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments |
|--------------|----------|---------------|----------------|------------------|
| 15           | 5        | irregular     | 0.2            |                  |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments          |
|----------------|-----------------------|----------|---------------|-----------------------------|
|                | isotropic             |          |               | partially devitrified glass |

**SECONDARY (ALTERATION) MINERALOGY**

Total alteration in rock, bulk estimate (%): 85

Groundmass original [%]: 45      Groundmass altered [%]: 100      Groundmass alt. intensity: complete

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 10            |               |             |       | 45    |
| Altered [%]    |         | 30            |               |             |       | 70    |
| Clay minerals  |         | 30            |               |             |       |       |

THIN SECTION LABEL ID: **352-U1441A-14R-1-W 129/131-TSB-TS\_167** Thin section no.: 167  
 Unit/Subunit: 1 Piece no.: #15 Observer: tc  
 Thin section summary: highly altered basalt, with few unaltered augite. Contains a large calcite vein.



**PRIMARY (IGNEOUS) MINERALOGY**

**LITHOLOGY:** sparsely augite bearing basalt lava

|                  |                  |                      |              |
|------------------|------------------|----------------------|--------------|
| Texture 1:       | microporphyritic | Texture 2:           | felty        |
| Avg. grain size: | microcrystalline | Grain size distrib.: | equigranular |

| Phenocrysts   | % present | Average size [mm] | Habit   | Comments |
|---------------|-----------|-------------------|---------|----------|
| Clinopyroxene | 1         | 0.3               | tabular |          |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments  |
|-------------------|-----------|-------------------|---------|---|
| Plagioclase       | 35        | 0.3               | tabular | completely altered                              |
| Clinopyroxene     | 15        | 0.3               | blocky  |   |
| Mesostasis        | 49        |                   |         | completely replaced to felty clay-rich material |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments |
|--------------|----------|---------------|----------------|------------------|
| 20           | 10       | rounded       | 0.5            |                  |

**VEINS**

| Vein           | Thickness [cm] | Boundary                  | Generation | Vein comment |
|----------------|----------------|---------------------------|------------|--------------|
| composite vein | 0.1            | sharp boundary or contact |            |              |

| Vein           | Thickness [cm] | Boundary                  | Generation | Vein comment |
|----------------|----------------|---------------------------|------------|--------------|
| composite vein | 0.3            | sharp boundary or contact |            |              |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type            | CPF intensity | Structure comments |
|----------------|-----------------------|---------------------|---------------|--------------------|
|                |                       | undulose extinction |               |                    |

**SECONDARY (ALTERATION) MINERALOGY**

Total alteration in rock, bulk estimate (%): 90

Groundmass original [%]: 50

Groundmass altered [%]: 100

Groundmass alt. intensity: complete

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 15            |               | 35          |       |       |
| Altered [%]    |         | 30            |               | 100         |       |       |
| Clay minerals  |         | 30            |               |             |       |       |
| Zeolite        |         |               |               | 100         |       |       |

THIN SECTION LABEL ID: **352-U1441A-15R-1-W 120/121-TSB-TS\_168**

Thin section no.: 168

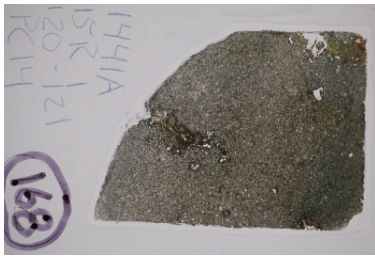
Unit/Subunit: 1

Piece no.: #14

Observer: tc

Thin section summary: highly vesicular altered aphyric basalt.

Plane-polarized:



Cross-polarized:

**PRIMARY (IGNEOUS) MINERALOGY**

LITHOLOGY: sparsely augite bearing basalt lava

|                  |                  |                      |              |
|------------------|------------------|----------------------|--------------|
| Texture 1:       | microporphyritic | Texture 2:           |              |
| Avg. grain size: | microcrystalline | Grain size distrib.: | equigranular |

| Phenocrysts   | % present | Average size [mm] | Habit   | Comments |
|---------------|-----------|-------------------|---------|----------|
| Clinopyroxene | 2         | 0.3               | tabular |          |

| Groundmass phases | % present | Average size (mm) | Habit     | Comments |
|-------------------|-----------|-------------------|-----------|----------|
| Plagioclase       | 35        | 0.2               | tabular   |          |
| Clinopyroxene     | 15        | 0.1               | prismatic |          |
| Mesostasis        | 48        |                   |           |          |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments |
|--------------|----------|---------------|----------------|------------------|
| 15           | 10       | irregular     | 0.2            |                  |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments                  |
|----------------|-----------------------|----------|---------------|-------------------------------------|
|                | moderate              |          |               | moderate SPO marked by aligned plag |

**SECONDARY (ALTERATION) MINERALOGY**

Total alteration in rock, bulk estimate (%): 70

Groundmass original [%]: 50

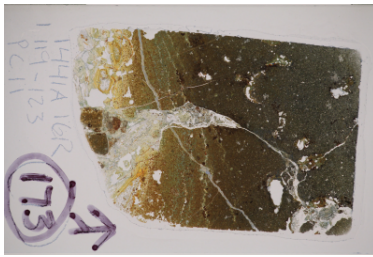
Groundmass altered [%]: 100

Groundmass alt. intensity: complete

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 15            |               | 35          |       |       |
| Altered [%]    |         | 15            |               | 50          |       |       |
| Clay minerals  |         | 15            |               |             |       |       |
| Zeolite        |         |               |               | 50          |       |       |

THIN SECTION LABEL ID: **352-U1441A-16R-1-W 119/123-TSB-TS\_173** Thin section no.: 173  
 Unit/Subunit: 1 Piece no.: #11 Observer: ks  
 Thin section summary: glassy chilled margin of aphyric pillow basalt, highly altered; glass are all palagonitized

Plane-polarized:



Cross-polarized:

**PRIMARY (IGNEOUS) MINERALOGY**

LITHOLOGY: aphyric basalt lava

|                  |                   |                      |              |
|------------------|-------------------|----------------------|--------------|
| Texture 1:       | glassy matrix     | Texture 2:           | vitrophyric  |
| Avg. grain size: | cryptocrystalline | Grain size distrib.: | equigranular |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments                         |
|-------------------|-----------|-------------------|---------|----------------------------------|
| Plagioclase       | 5         | 0.2               | tabular | 0.2mm glomerocrystic plagioclase |
| Clinopyroxene     | 10        | 0.05              | blocky  | some 0.2 mm microphenocrysts     |
| Mesostasis        | 65        |                   |         |                                  |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments    |
|--------------|----------|---------------|----------------|---------------------|
| 7            | 60       | elongate      | 1              | filled with zeolite |

**VEINS**

| Vein           | Thickness [cm] | Boundary                  | Generation | Vein comment |
|----------------|----------------|---------------------------|------------|--------------|
| composite vein | 0.2            | sharp boundary or contact |            |              |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments |
|----------------|-----------------------|----------|---------------|--------------------|
|                | isotropic             |          |               |                    |

**SECONDARY (ALTERATION) MINERALOGY**

Total alteration in rock, bulk estimate (%): 90

Groundmass original [%]: 65      Groundmass altered [%]: 100      Groundmass alt. intensity: complete

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 10            |               | 5           |       | 20    |
| Altered [%]    |         | 20            |               | 80          |       | 100   |
| Chlorite       |         | 10            |               | 20          |       |       |
| Clay minerals  |         | 10            |               |             |       | 20    |
| Zeolite        |         |               |               | 60          |       | 20    |
| Carbonate      |         |               |               |             |       | 10    |

|  |                       |
|--|-----------------------|
| THIN SECTION LABEL ID: <b>352-U1441A-16R-1-W 137/140-TSB-TS_174</b>                    | Thin section no.: 174 |
| Unit/Subunit: 1  | Piece no.: #13        |
| Observer: Marie  |                       |
| Thin section summary: Altered aphyric basalt cut by a large cataclastic carbonate vein |                       |



**PRIMARY (IGNEOUS) MINERALOGY**

|                     |               |             |   |                            |    |
|---------------------|---------------|-------------|---|----------------------------|----|
| Sample domain name: | vein material | Domain no.: | 2 | Domain rel. abundance [%]: | 35 |
| Sample domain name: | mafic lava    | Domain no.: | 1 | Domain rel. abundance [%]: | 65 |

**LITHOLOGY:** aphyric basalt lava

|                  |                    |                      |              |
|------------------|--------------------|----------------------|--------------|
| Texture 1:       | subhedral granular | Texture 2:           |              |
| Avg. grain size: | cryptocrystalline  | Grain size distrib.: | equigranular |

| Phenocrysts   | % present | Average size [mm] | Habit  | Comments |
|---------------|-----------|-------------------|--------|----------|
| Clinopyroxene | 1         | 0.2               | blocky |          |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments                  |
|-------------------|-----------|-------------------|---------|---------------------------|
| Plagioclase       | 40        | 0.05              | tabular |                           |
| Clinopyroxene     | 25        | 0.05              | tabular |                           |
| Mesostasis        | 34        |                   |         | quench cpx + plag + glass |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments |
|--------------|----------|---------------|----------------|------------------|
| 3            | 10       | subrounded    | 0.2            |                  |

**VEINS**

| Vein           | Thickness [cm] | Boundary                  | Generation | Vein comment     |
|----------------|----------------|---------------------------|------------|------------------|
| composite vein | 0.8            | sharp boundary or contact |            | Cataclastic vein |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments     |
|----------------|-----------------------|----------|---------------|------------------------|
|                | isotropic             |          |               | very fine calcite vein |



**SECONDARY (ALTERATION) MINERALOGY**

Total alteration in rock, bulk estimate (%): 55

Groundmass original [%]: 35

Groundmass altered [%]: 70

Groundmass alt. intensity: high

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 25            |               | 40          |       |       |
| Altered [%]    |         | 20            |               | 60          |       |       |
| Clay minerals  |         | 20            |               | 20          |       |       |
| Chlorite       |         |               |               | 40          |       |       |

|  |                       |
|--|-----------------------|
| THIN SECTION LABEL ID: <b>352-U1441A-16R-2-W 61/64-TSB-TS_170</b>                            | Thin section no.: 170 |
| Unit/Subunit: 1  | Piece no.: #06        |
| Observer: ks   |                       |
| Thin section summary: breccia, containing aphyric and glassy basaltic clasts, highly altered |                       |



|                                     |                       |                          |                       |                                   |    |
|-------------------------------------|-----------------------|--------------------------|-----------------------|-----------------------------------|----|
| <b>PRIMARY (IGNEOUS) MINERALOGY</b> |                       |                          |                       |                                   |    |
| <b>Sample domain name:</b>          | <b>mafic lava</b>     | <b>Domain no.:</b>       | 1                     | <b>Domain rel. abundance [%]:</b> | 50 |
| <b>LITHOLOGY:</b> aphyric           |                       |                          |                       |                                   |    |
| Texture 1:                          | intersertal           | Texture 2:               | intergranular         |                                   |    |
| Avg. grain size:                    | microcrystalline      | Grain size distrib.:     | equigranular          |                                   |    |
| <b>Groundmass phases</b>            | <b>% present</b>      | <b>Average size (mm)</b> | <b>Habit</b>          | <b>Comments</b>                   |    |
| Plagioclase                         | 20                    | 0.2                      | tabular               |                                   |    |
| Clinopyroxene                       | 20                    | 0.2                      | blocky                |                                   |    |
| Mesostasis                          | 60                    |                          |                       |                                   |    |
| <b>Vesicles [%]</b>                 | <b>% Filled</b>       | <b>Vesicle shape</b>     | <b>Avg. size [mm]</b> | <b>Vesicle comments</b>           |    |
| 3                                   | 10                    | subrounded               | 0.2                   |                                   |    |
| <b>Sample domain name:</b>          | <b>breccia matrix</b> | <b>Domain no.:</b>       | 2                     | <b>Domain rel. abundance [%]:</b> | 40 |
| <b>LITHOLOGY:</b> breccia           |                       |                          |                       |                                   |    |
| <b>Sample domain name:</b>          | <b>glass</b>          | <b>Domain no.:</b>       | 3                     | <b>Domain rel. abundance [%]:</b> | 10 |
| <b>LITHOLOGY:</b> aphyric           |                       |                          |                       |                                   |    |
| Texture 1:                          | glassy matrix         | Texture 2:               |                       |                                   |    |
| Avg. grain size:                    | cryptocrystalline     | Grain size distrib.:     |                       |                                   |    |
| <b>Groundmass phases</b>            | <b>% present</b>      | <b>Average size (mm)</b> | <b>Habit</b>          | <b>Comments</b>                   |    |
| Mesostasis                          | 100                   |                          |                       |                                   |    |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments |
|----------------|-----------------------|----------|---------------|--------------------|
|                | isotropic             |          |               | breccia            |

**SECONDARY (ALTERATION) MINERALOGY**

Alteration domain name: volcanic clast, mafic Domain no.: 1 Domain rel. abundance [%]: 60

Total alteration in rock, bulk estimate (%): 70

Groundmass original [%]: 55 Groundmass altered [%]: 60 Groundmass alt. intensity: moderate

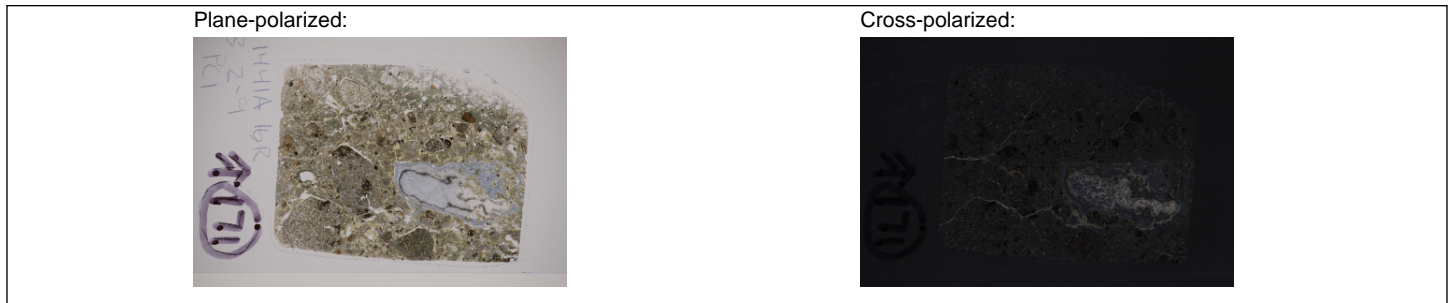
| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 15            |               | 15          |       | 15    |
| Altered [%]    |         | 30            |               | 50          |       | 100   |
| Clay minerals  |         | 30            |               |             |       |       |
| Zeolite        |         |               |               | 50          |       | 100   |

Alteration domain name: Breccia matrix Domain no.: 2 Domain rel. abundance [%]: 40

Total alteration in rock, bulk estimate (%): 70

Groundmass original [%]: 100 Groundmass altered [%]: 100 Groundmass alt. intensity: complete

THIN SECTION LABEL ID: **352-U1441A-16R-3-W 2/9-TSB-TS\_171** Thin section no.: 171  
 Unit/Subunit: 1 Piece no.: #01 Observer: ks  
 Thin section summary: Breccia, containing aphyric and glassy basaltic clasts, highly altered and some are oxidized



**PRIMARY (IGNEOUS) MINERALOGY**

Sample domain name: **mafic lava** Domain no.: 1 Domain rel. abundance [%]: 20

LITHOLOGY: **aphyric basalt clast**

|                  |                  |                      |               |
|------------------|------------------|----------------------|---------------|
| Texture 1:       | intersertal      | Texture 2:           | intergranular |
| Avg. grain size: | microcrystalline | Grain size distrib.: | equigranular  |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments |
|-------------------|-----------|-------------------|---------|----------|
| Plagioclase       | 20        | 0.2               | tabular |          |
| Clinopyroxene     | 20        | 0.2               | blocky  |          |
| Mesostasis        | 60        |                   |         |          |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments |
|--------------|----------|---------------|----------------|------------------|
| 1            | 10       | subrounded    | 0.2            | filled with clay |

Sample domain name: **breccia matrix** Domain no.: 2 Domain rel. abundance [%]: 50

LITHOLOGY: **breccia**

Sample domain name: **glass** Domain no.: 3 Domain rel. abundance [%]: 30

LITHOLOGY: **aphyric basalt clast**

|                  |                   |                      |  |
|------------------|-------------------|----------------------|--|
| Texture 1:       | glassy matrix     | Texture 2:           |  |
| Avg. grain size: | cryptocrystalline | Grain size distrib.: |  |

| Groundmass phases | % present | Average size (mm) | Habit | Comments |
|-------------------|-----------|-------------------|-------|----------|
| Mesostasis        | 100       |                   |       |          |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type       | CPF intensity | Structure comments                     |
|----------------|-----------------------|----------------|---------------|--|
|                | isotropic             | ultramylonitic |               | coarse grained, recrystallized calcite |

**SECONDARY (ALTERATION) MINERALOGY**

Alteration domain name: volcanic clast, mafic Domain no.: 1 Domain rel. abundance [%]: 50

Total alteration in rock, bulk estimate (%): 85

Groundmass original [%]: 55 Groundmass altered [%]: 80 Groundmass alt. intensity: high

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 15            |               | 15          |       | 15    |
| Altered [%]    |         | 30            |               | 60          |       | 100   |
| Clay minerals  |         | 30            |               |             |       |       |
| Zeolite        |         |               |               | 60          |       | 70    |

Alteration domain name: Breccia matrix Domain no.: 2 Domain rel. abundance [%]: 50

Total alteration in rock, bulk estimate (%): 85

Groundmass original [%]: 100 Groundmass altered [%]: 100 Groundmass alt. intensity: complete

THIN SECTION LABEL ID: **352-U1441A-18R-1-W 5/8-TSB-TS\_175**

Thin section no.: 175

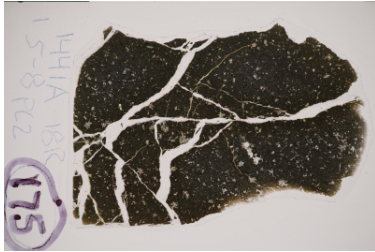
Unit/Subunit: 2

Piece no.: #02

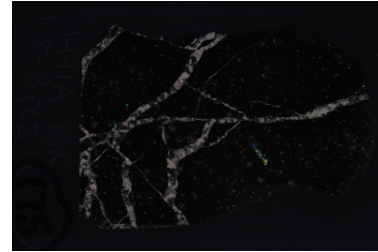
Observer: ks

Thin section summary: sparsely augite-plagioclase bearing basalt with glomerocrystic texture; network vein of calcite

Plane-polarized:



Cross-polarized:

**PRIMARY (IGNEOUS) MINERALOGY****LITHOLOGY:** sparsely plagioclase-augite bearing basalt lava

|                  |                   |                      |                |
|------------------|-------------------|----------------------|----------------|
| Texture 1:       | intersertal       | Texture 2:           | vitrophyric    |
| Avg. grain size: | cryptocrystalline | Grain size distrib.: | inequigranular |

| Phenocrysts   | % present | Average size [mm] | Habit     | Comments       |
|---------------|-----------|-------------------|-----------|----------------|
| Plagioclase   | 0.3       | 0.4               | tabular   | glomerocrystic |
| Clinopyroxene | 0.5       | 0.4               | prismatic | glomerocrystic |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments    |
|-------------------|-----------|-------------------|---------|-------------|
| Plagioclase       | 3         | 0.2               | tabular | spherulite  |
| Clinopyroxene     | 5         | 0.2               | blocky  | spherulitic |
| Mesostasis        | 91.2      |                   |         |             |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments |
|--------------|----------|---------------|----------------|------------------|
| 1            | 100      | rounded       | 0.1            | filled with clay |

**VEINS**

| Vein           | Thickness [cm] | Boundary                  | Generation | Vein comment                           |
|----------------|----------------|---------------------------|------------|--|
| composite vein | 0.1            | sharp boundary or contact |            | polycrystalline carbonate vein network |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type            | CPF intensity | Structure comments   |
|----------------|-----------------------|---------------------|---------------|----------------------|
|                | isotropic             | undulose extinction |               | calcite vein network |

**SECONDARY (ALTERATION) MINERALOGY**

Total alteration in rock, bulk estimate (%): 90

Groundmass original [%]: 92

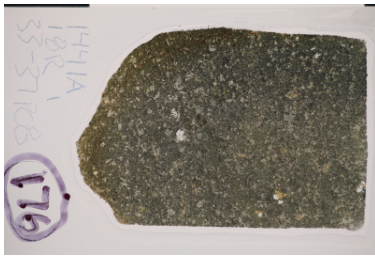
Groundmass altered [%]: 100

Groundmass alt. intensity: complete

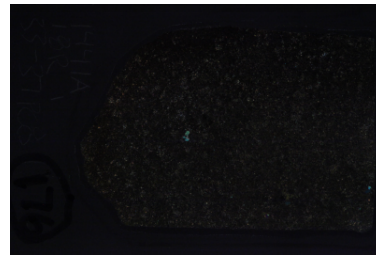
| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 5             |               | 3           |       |       |
| Altered [%]    |         | 20            |               | 50          |       |       |
| Chlorite       |         | 10            |               | 10          |       |       |
| Clay minerals  |         | 10            |               | 10          |       |       |
| Zeolite        |         |               |               | 30          |       |       |

THIN SECTION LABEL ID: **352-U1441A-18R-1-W 33/37-TSB-TS\_176** Thin section no.: 176  
 Unit/Subunit: 2 Piece no.: #08 Observer: jp  
 Thin section summary: Aphyric basaltic lava with felty plagioclase groundmass highly altered

Plane-polarized:



Cross-polarized:

**PRIMARY (IGNEOUS) MINERALOGY**

LITHOLOGY: sparsely augite bearing basalt lava

|                  |                  |                      |              |
|------------------|------------------|----------------------|--------------|
| Texture 1:       | intersertal      | Texture 2:           | felty        |
| Avg. grain size: | microcrystalline | Grain size distrib.: | equigranular |

| Phenocrysts   | % present | Average size [mm] | Habit  | Comments |
|---------------|-----------|-------------------|--------|----------|
| Clinopyroxene | 2         | 0.7               | blocky |          |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments                                      |
|-------------------|-----------|-------------------|---------|---|
| Plagioclase       | 53        | 0.2               | tabular | much replaced to clays (higher birefringence) |
| Clinopyroxene     | 25        | 0.2               | blocky  | altered                                       |
| Mesostasis        | 20        |                   |         |   |

| Vesicles [%] | % Filled | Vesicle shape | Avg. size [mm] | Vesicle comments |
|--------------|----------|---------------|----------------|------------------|
| 2            | 10       | rounded       | 0.1            |                  |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments |
|----------------|-----------------------|----------|---------------|--------------------|
|                | isotropic             |          |               |                    |

**SECONDARY (ALTERATION) MINERALOGY**

Alteration domain name: Fresh basalt Domain no.: 1 Domain rel. abundance [%]: 95

Total alteration in rock, bulk estimate (%): 25

Groundmass original [%]: 20 Groundmass altered [%]: 30 Groundmass alt. intensity: moderate



| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 25            |               | 55          |       |       |
| Altered [%]    |         | 10            |               | 20          |       |       |
| Clay minerals  |         | 10            |               | 10          |       |       |
| Chlorite       |         |               |               | 10          |       |       |

Alteration domain name: Altered border Domain no.: 2 Domain rel. abundance [%]: 5

Total alteration in rock, bulk estimate (%): 25

Groundmass original [%]: 20 Groundmass altered [%]: 70 Groundmass alt. intensity: high

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 25            |               | 55          |       |       |
| Altered [%]    |         | 20            |               | 50          |       |       |
| Clay minerals  |         | 20            |               | 20          |       |       |
| Chlorite       |         |               |               | 30          |       |       |

THIN SECTION LABEL ID: **352-U1441A-19R-1-W 79/81-TSB-TS\_177**

Thin section no.: 177

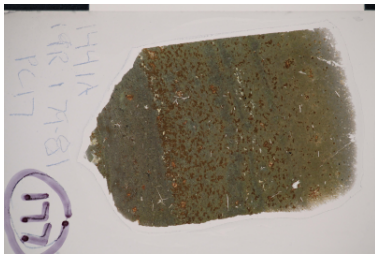
Unit/Subunit: 3

Piece no.: #17

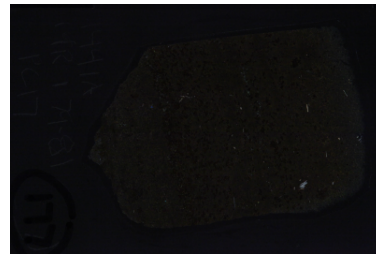
Observer: tc

Thin section summary: hypohaline basalt with large altered phenocrysts of plagioclase and augite. Microlitic plagioclase are trachytic.

Plane-polarized:



Cross-polarized:

**PRIMARY (IGNEOUS) MINERALOGY****LITHOLOGY:** moderately augite phyric basalt glass

|                  |                  |                      |                |
|------------------|------------------|----------------------|----------------|
| Texture 1:       | hypohaline       | Texture 2:           | trachytic      |
| Avg. grain size: | microcrystalline | Grain size distrib.: | inequigranular |

| Phenocrysts   | % present | Average size [mm] | Habit     | Comments               |
|---------------|-----------|-------------------|-----------|------------------------|
| Plagioclase   | 2         | 0.5               | tabular   |                        |
| Clinopyroxene | 3         | 0.3               | prismatic | altered to orange clay |
| Spinel        | 0.5       | 0.2               | prismatic | associated with cpx    |

| Groundmass phases | % present | Average size (mm) | Habit     | Comments                           |
|-------------------|-----------|-------------------|-----------|------------------------------------|
| Plagioclase       | 35        | 0.2               | tabular   | in places forming microlites       |
| Clinopyroxene     | 15        | 0.2               | acicular  | completely altered to felty masses |
| Mesostasis        | 20        |                   |           | orange colour                      |
| Spinel            |           | 0.2               | prismatic |                                    |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments          |
|----------------|-----------------------|----------|---------------|-----------------------------|
|                | strong                |          |               | SPO of acicular plagioclase |

**SECONDARY (ALTERATION) MINERALOGY**

Alteration domain name: Altered Basalt

Domain no.: 1

Domain rel. abundance [%]: 70

Total alteration in rock, bulk estimate (%): 70

Groundmass original [%]: 50

Groundmass altered [%]: 100

Groundmass alt. intensity: complete

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 15            |               | 35          | 0.5   |       |
| Altered [%]    |         | 10            |               | 30          | 0     |       |
| Chlorite       |         | 10            |               | 30          |       |       |

Alteration domain name: Oxidized zone

Domain no.: 2

Domain rel. abundance [%]: 30

Total alteration in rock, bulk estimate (%): 70

Groundmass original [%]: 50

Groundmass altered [%]: 100

Groundmass alt. intensity: complete

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 15            |               | 35          | 0.5   |       |
| Altered [%]    |         | 100           |               | 60          | 0     |       |
| Chlorite       |         | 70            |               | 30          |       |       |
| Clay minerals  |         | 30            |               | 10          |       |       |
| Zeolite        |         |               |               | 20          |       |       |

THIN SECTION LABEL ID: **352-U1441A-20R-1-W 39/41-TSB-TS\_180** Thin section no.: 180  
 Unit/Subunit: 4 Piece no.: #06 Observer: jp  
 Thin section summary: Vitrophyric lava with microphenocrystic glomerocrysts of plagioclase and cpx in completely devitrified glass

Plane-polarized:



Cross-polarized:

**PRIMARY (IGNEOUS) MINERALOGY**

**LITHOLOGY:** sparsely plagioclase bearing basalt glass

|                  |                   |                      |                |
|------------------|-------------------|----------------------|----------------|
| Texture 1:       | microporphyritic  | Texture 2:           | vitrophyric    |
| Avg. grain size: | cryptocrystalline | Grain size distrib.: | inequigranular |

| Phenocrysts | % present | Average size [mm] | Habit   | Comments       |
|-------------|-----------|-------------------|---------|----------------|
| Plagioclase | 1         | 0.4               | tabular | glomerocrystic |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments  |
|-------------------|-----------|-------------------|---------|---|
| Plagioclase       | 10        | 0.2               | tabular | in places associated with cpx in microglomerocrysts |
| Clinopyroxene     | 8         | 0.1               | blocky  |   |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments |
|----------------|-----------------------|----------|---------------|--------------------|
|                | isotropic             |          |               |                    |

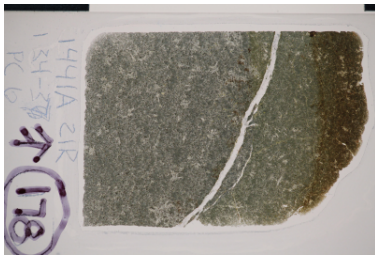
**SECONDARY (ALTERATION) MINERALOGY**

Total alteration in rock, bulk estimate (%): 85

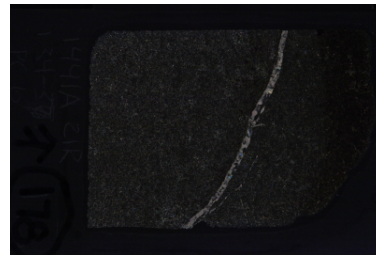
| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 10            |               | 10          |       | 80    |
| Altered [%]    |         | 20            |               | 50          |       | 100   |
| Chlorite       |         | 20            |               | 30          |       |       |
| Zeolite        |         |               |               | 20          |       | 45    |
| Clay minerals  |         |               |               |             |       | 50    |

THIN SECTION LABEL ID: **352-U1441A-21R-1-W 34/37-TSB-TS\_178** Thin section no.: 178  
 Unit/Subunit: 4 Piece no.: #06 Observer: tc  
 Thin section summary: intergranular aphyric basalt, with variable plagioclase grain size

Plane-polarized:



Cross-polarized:

**PRIMARY (IGNEOUS) MINERALOGY**

LITHOLOGY: aphyric basalt lava

|                  |                  |                      |             |
|------------------|------------------|----------------------|-------------|
| Texture 1:       | intergranular    | Texture 2:           | intersertal |
| Avg. grain size: | microcrystalline | Grain size distrib.: | seriate     |

| Groundmass phases | % present | Average size (mm) | Habit     | Comments |
|-------------------|-----------|-------------------|-----------|----------|
| Plagioclase       | 50        | 0.3               | tabular   |          |
| Clinopyroxene     | 20        | 0.3               | prismatic |          |
| Mesostasis        | 30        |                   |           |          |

**VEINS**

| Vein           | Thickness [cm] | Boundary                  | Generation | Vein comment                   |
|----------------|----------------|---------------------------|------------|--------------------------------|
| composite vein | 0.2            | sharp boundary or contact |            | Polycrystalline carbonate vein |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type            | CPF intensity | Structure comments           |
|----------------|-----------------------|---------------------|---------------|------------------------------|
|                | isotropic             | undulose extinction |               | type 1 twins in calcite vein |

**SECONDARY (ALTERATION) MINERALOGY**

Alteration domain name: Fresh basalt Domain no.: 1 Domain rel. abundance [%]: 90

Total alteration in rock, bulk estimate (%): 15

Groundmass original [%]: 30 Groundmass altered [%]: 15 Groundmass alt. intensity: slight

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 20            |               | 50          |       |       |
| Altered [%]    |         | 5             |               | 5           |       |       |
| Chlorite       |         | 5             |               | 5           |       |       |

Alteration domain name: Altered border

Domain no.: 2

Domain rel. abundance [%]: 10

Total alteration in rock, bulk estimate (%): 15

Groundmass original [%]: 30

Groundmass altered [%]: 90

Groundmass alt. intensity: high

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 20            |               | 50          |       |       |
| Altered [%]    |         | 20            |               | 50          |       |       |
| Amph., green   |         | 10            |               |             |       |       |
| Chlorite       |         | 10            |               | 50          |       |       |

THIN SECTION LABEL ID: **352-U1441A-22R-1-W 8/11-TSB-TS\_172** Thin section no.: 172  
 Unit/Subunit: 4 Piece no.: #02 Observer: tc  
 Thin section summary: altered augite and plagioclase phenocryst in an aligned feldspar-rich matrix



**PRIMARY (IGNEOUS) MINERALOGY**

**LITHOLOGY:** sparsely plagioclase-augite bearing basalt lava

|                  |                  |                      |                |
|------------------|------------------|----------------------|----------------|
| Texture 1:       | intersertal      | Texture 2:           | trachytic      |
| Avg. grain size: | microcrystalline | Grain size distrib.: | inequigranular |

| Phenocrysts   | % present | Average size [mm] | Habit     | Comments           |
|---------------|-----------|-------------------|-----------|--------------------|
| Plagioclase   | 1         | 0.4               | tabular   | centres altered    |
| Clinopyroxene | 1         | 0.3               | prismatic | completely altered |

| Groundmass phases | % present | Average size (mm) | Habit   | Comments            |
|-------------------|-----------|-------------------|---------|---------------------|
| Plagioclase       | 40        | 0.2               | tabular |                     |
| Clinopyroxene     | 15        | 0.2               | blocky  | partially altered   |
| Mesostasis        | 43        |                   |         | completely replaced |

**MICROSTRUCTURES**

| Microstructure | Mag. fabric intensity | CPF type | CPF intensity | Structure comments          |
|----------------|-----------------------|----------|---------------|-----------------------------|
|                | isotropic             |          |               | SPO of acicular plagioclase |

**SECONDARY (ALTERATION) MINERALOGY**

Alteration domain name: Fresh basalt Domain no.: 1 Domain rel. abundance [%]: 95

Total alteration in rock, bulk estimate (%): 5

Groundmass original [%]: 45 Groundmass altered [%]: 5 Groundmass alt. intensity: slight

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 15            |               | 40          |       |       |
| Altered [%]    |         | 5             |               | 5           |       |       |
| Amph., green   |         | 5             |               |             |       |       |
| Zeolite        |         |               |               | 5           |       |       |

Alteration domain name: Altered border Domain no.: 2 Domain rel. abundance [%]: 5

Total alteration in rock, bulk estimate (%): 5

Groundmass original [%]: 45 Groundmass altered [%]: 20 Groundmass alt. intensity: slight

| Phenocryst --> | Olivine | Clinopyroxene | Orthopyroxene | Plagioclase | Oxide | Glass |
|----------------|---------|---------------|---------------|-------------|-------|-------|
| Original [%]   |         | 15            |               | 40          |       |       |
| Altered [%]    |         | 5             |               | 5           |       |       |
| Amph., green   |         | 5             |               |             |       |       |
| Zeolite        |         |               |               | 5           |       |       |