

**DRILL LOG—CORNUDAS MOUNTAINS, CHESS DRAW, OTERO COUNTY, NEW MEXICO**

HOLE NUMBER   1   DATE STARTED  09/10/2020  COMPLETED  12/03/2020  LOGGED BY  HD and EO  **CORE** CUTTINGS

LOCATION (UTM) \_\_\_\_\_ COLAR ELEVATION \_\_\_\_\_ ft WEATHER \_\_\_\_\_

BOX NUMBER \_\_\_\_\_ INCLINATION \_\_\_\_\_ BEARING \_\_\_\_\_ SOP 17 DEVIATION FROM SOP  Everything logged wet 

COMMENTS  All missing intervals correspond to missing core, modified by VTM to correlate with mapped geology at the surface (6/4/22) 

Depth	% Recovery/ size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
10-31	-----	Plag hbl syenite	Rusty tan to brown, minor grey to dark gray with mottling and occasional black ox	Porphyritic	Moderately to heavily weathered with FeO and clay development, more FeO in fractures, some CO <sub>3</sub> in fractures as thin veinlets 1-2mm wide	-----	Moderately fractured, mostly sub horizontal, occasional sub vertical FeO filled fracture 1/ft Light	-----	Plag is 1- 4mm long, tabular, euhedral to subhedral		Feldspars transitioning into clay, mafic minerals like hbl oxidizing	-----	Massive	-----	-----
32- 36.5	-----	Plag hbl syenite	Light grey to greenish grey, rusty brown in some fractures	Porphyritic	Minor weathering, feldspars are chalky, FeO limited to fractures	-----	2 ft long sub vertical FeO filled fracture from 34.3 to 36.5	-----	Hbl phenocry sts 1- 4mm equant to elongate and generally euhedral		Black to dark green hbl (?)	-----	Massive	-----	-----
36.6- 43.5	-----	Plag hbl syenite	Rusty tan to brown, minor grey to dark grey, occasional black ox	Porphyritic	Moderately weathered with FeO and clay development, more FeO in fractures	-----	Slightly fractured, mostly sub horizontal, FeO filled 1/ft Light	-----	Plag is 1- 4mm long, tabular, euhedral to subhedral		Feldspars transitioning into clay, mafic minerals like hbl oxidizing	-----	Massive	-----	-----
43.6- 68.8	-----	Plag hbl syenite	Light grey to greenish gray to dark mottled grey, locally tan to brown	Porphyritic	Minor weathering, feldspars are chalky, FeO limited to and surrounding fractures mostly at top of interval	-----	Sub horizontal to ~45°, FeO filled 6/25 ft	-----	Hbl phenocry sts 1- 4mm equant to elongate and generally euhedral		Black to dark green hbl (?)	-----	Massive	-----	-----

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68.9- 71.5	-----	Plag hbl syenite	Light grey to greenish gray to dark mottled grey, locally tan	Porphyritic	Minor weathering, feldspars chalky, FeO limited to fractures, oxidizing sulfides in sub vertical fracture	-----	Prominent sub vertical fracture along length of interval with 1 sub horizontal fracture with intense FeO	-----	Hbl phenocry sts 1- 4mm equant to elongate and generally euhedral		Black to dark green hbl (?), 3 mm blebs of a sulfide in sub vertical fracture that is oxidizing black to grey	-----	Massive	-----	-----
71.6- 78.5	-----	Plag hbl syenite	Light grey to greenish gray to dark mottled grey, locally tan to brown with patchy yellow and black spots in fracture	Porphyritic	Light to moderate weathering, chalky feldspars, FeO developed within proximity to horizontal fractures, oxidizing sulfides present in sub vertical fracture	-----	1.75 ft subvertical fracture, sub horizontal fracture with intense FeO, 1mm fractures healed with dark grey material	-----	Hbl phenocry sts 1- 4mm equant to elongate and generally euhedral		Black to dark green hbl (?), 3 mm blebs of a sulfide in sub vertical fracture that is oxidizing black to grey, MnO dendrites in sub vertical fracture	Intense FeO calcite at depth 75.4, 1.75 cm xenolith at depth 74.8	Massive	-----	-----
78.6- 87	-----	Plag hbl syenite	Rusty tan to brown, minor grey to dark grey, back ox	Porphyritic	Light to moderate FeO development, chalky feldspars, more intense FeO and calcite in sub horizontal fractures	-----	Around 2/ft	-----	-----		MnO dendrites seen associated with fractures	Liesegang banding from FeO more apparent in this interval, 2cm xenolith at depth 85.1	Massive	-----	-----
88- 99.5	95%	Plag hbl syenite	Rusty tan 2.5Y 6/6	Porphyritic	Minor FeO spotting and veining	Fracture	Light 2/ft Sub horizontal	5.5	Phenocry sts subangul ar to subround ed, 1- 4mm		Plag, trace hbl	Small calcite vug with 2mm crystal, minor FeO spotting, some dark gray veins that discolored surrounding core	Massive		

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99.6- 109	75%	Plag hbl syenite	Dark gray green, no codes match	Porphyritic	Localized high FeO concentrated along fractures with minor calcite	Fracture	Heavy 8/ft Decreases to 2/ft for depths 105-'09 Sub horizontal	5	Plag subangul ar to subround ed, hbl is subangul ar to subround ed, green is angular to subangul ar	Plag: 1- 4mm, Hbl: 1-3mm, Green mineral: 3-20mm	Plag, trace hbl, altered green mineral, trace MnO	Altered green mineral throughout, hbl better defined and larger, weathering highly concentrated, core looks split-alters recovery	Massive		
110- 112	95%	Plag hbl syenite	Dark brown red	Porphyritic	Moderate to high FeO on fractures, veins, and throughout core	Fracture	Light 3/ft Fractures along veins, sub horizontal	4	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Plag 1- 4mm, hbl 1-4mm, green mineral 1- 5mm	Trace hbl, altered green mineral, plag	Green mineral possibly weathered hbl, large light tan mineral at depth 110, clay development	Massive		
113- 123.5	95%	Plag hbl syenite	Dark gray green	Porphyritic	No FeO	Fracture	Ligt 2/ft Sub horizontal	5.5	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Plag 1- 4mm, green mineral 1- 5mm, hbl 1-2mm	Trace hbl, altered green mineral, plag, trace MnO	Hbl can be more defined, green mineral has interesting structure 188 (xenolith of altered nepheline?) scratched by finger, dark grey vein brecciates core	Massive		
123.6 -127	95%	Plag hbl syenite	Dark brown gray	Porphyritic	Moderate FeO and clay development	Fracture	Light 3/ft Sub horizontal, can fracture along veins	4	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Trace hbl, altered green mineral, plag	Hbl not as defined, green mineral not very prevalent, large tan mineral similar to one at depth 110	Massive		

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128- 134.4	95%	Plag hbl syenite	Dark gray- green with lighter veins of gray green	Porphyritic	No FeO development	Fracture	Light 2/ft Sub horizontal	5.5	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Trace hbl, altered green mineral, plag	2 xenoliths both greater than 40 mm that are very soft and scratched by fingernail, white green with small, tabular shapes mimicking crystal growth, some small very dark and thin gray veins	Massive		
134.5 - 143.7	95%	Plag hbl syenite	Dark gray- green	Porphyritic	Minor FeO spotting throughout core, small 1mm blobs	Fracture	Light 3/ft Subhorizontal	5.5	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Trace hbl, altered green mineral, plag	Large 50mm xenolith, minor very thin gray fracturing depth 137	Massive		
143.8 - 146.7	95%	Plag hbl syenite	Dark gray brown to light gray green	Porphyritic	Minor FeO spotting	Fracture	Light 2/ft Sub horizontal	4-6, variable with depth	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Trace hbl, plag, altered green mineral	5-10mm dark gray vein brecciated core, cuts across by another plag(?) vein, large vein offset in multiple areas, altered green mineral is crumbly and much softer than previous depths, color highly variable with sharp contacts	Massive		
146.8 - 155.5	65%	Plag hbl syenite	Dark rust brown to dark gray brown	Porphyritic	Light to moderate FeO, some banding, clay development	Fracture	Moderate 6/ft Sub horizontal	5.5	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Trace hbl, plag, altered green mineral, trace manganese oxide growing in fractures and on side of core, trace calcite banding	Small 10 mm xenolith associated with clay development	Massive		

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155.6 -163	95%	Plag hbl syenite	Mottled light tan gray-green to dark gray-green	Porphyritic	Heavy, isolated FeO depth 161- 162, little to none elsewhere	Fracture	Light 2/ft Sub horizontal	5	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Trace hbl, plag, altered green mineral	30 mm xenolith cut across by thin dark gray vein with FeO, minor calcite, mineralogical contact at 163 similar to depth 145, matrix is light tan gray with hematized minerals	Massive		
164- 176.8	95%	Plag hbl syenite	Mottled light tan green-gray to dark brown gray	Porphyritic	Trace FeO spotting on fractures of some core	Fracture	Light 3/ft Sub horizontal	5	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Trace hbl, plag, altered green minerals	Multiple calcite and thin dark gray veins cutting across unusual mineral at depth 132, 10mm dark gray brecciated vein, 5mm clasts in center close together with little to none on the outside, clasts decrease in size outward, rounded to subrounded with bright red clast not seen before	Massive		
176.9 -191	95%	Plag hbl syenite	Mottled primarily dark brown gray, light green gray	Porphyritic	Trace FeO spotting, prevalent FeO along fracture at depth 191	Fracture	Light 3/ft Sub horizontal	4	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Trace hbl, plag, altered green mineral, trace unknown black mineral	4-20 mm xenoliths throughout, area at depth 188 with white gray matrix and black, 4mm minerals that are subrounded and roughly circular, similar structure at depth 173	Massive		
192- 195.8	95%	Plag hbl syenite	Light green gray to dark green gray	Porphyritic	FeO along dark gray vein and other fractures, moderate to heavy throughout	Fracture	Moderate 4/ft Sub horizontal	4.5	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, green mineral 1- 5mm, plag 1-4mm	Calcite, plag, altered green mineral, trace hbl	10mm thick crystallized calcite vein perpendicular to core, 60mm dark gray vein that brecciated clast and contains 2 lenses, calcite and other fluid movement visible because of unusual structures	Massive		

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195.9 -213	95%	Plag hbl syenite	Dark gray brown to light gray	Porphyritic	Little to none, some of the phenocrysts appear to be weathered	Fracture	5/ft Moderate Sub horizontal	4	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, plag 1-4mm, green 1- 10mm	Plag, trace hbl, altered green mineral	Minor, thin dark gray veining, small spotting of oxidized mineral or areas at depth	Massive		
214- 220.1	95%	Plag hbl syenite	Light green gray	Porphyritic	Patches of heavy FeO at depth, concentrated along fractures	Fracture	4/ft Moderate Sub horizontal	4.5	Plag/hbl is subangul ar to subround ed, Green is angular to subangul ar	Hbl 1- 2mm, plag 1-4mm, green 1- 5mm	Plag, trace hbl, minor altered green mineral	Depth 214 has area of different lithology, medium gray rounded phenocrysts in light, tan gray euhedral matrix, dark gray brecciated veins at depth	Massive		
220.2 - 224.8	95%	Plag hbl syenite	Light gray green	Porphyritic	FeO concentrated along fractures in moderate amounts	Fracture	4/ft Moderate Sub horizontal	4.5	Plag/hbl subangul ar to subround ed, Altered green angular to subangul ar	Hbl 1- 2mm, plag 1-4mm, altered green 1- 5mm	Plag, trace hbl, minor altered green mineral	Trace green staining-likely chlorite, sharp contact with area of subrounded to subangular dark gray phenocrysts and light gray phenocrysts in tan gray matrix, poorly sorted	Massive		
224.9 - 249.2	95%	Plag hbl syenite	Light gray green	Porphyritic	Minor FeO along some fractures	Fracture	3/ft Light Sub horizontal	6	Plag/hbl subangul ar to subround ed, Altered green angular to subangul ar	Hbl 1- 2mm, plag 1-4mm, altered green 1- 15mm	Plag, trace hbl, altered green mineral	Multiple large xenoliths around 40mm, light tan gray matrix with dark gray growth that is subrounded, minor very thin, dark gray veining	Massive		
249.3 - 259.4	95%	Plag hbl syenite	Light gray, little to no greenish color	Porphyritic	Moderate to heavy FeO in some of the angled fractures	Fracture	4/ft Moderate Increases with depth Sub horizontal	4.5	Plag/hbl is subangul ar to subround ed	Hbl 1-2mm Plag 1- 4mm	Plag, trace hbl	Contact between core and area of phenocryst, much smaller phenocryst, dark gradual vein ringing core at end of depth, marks contacts between two colors	Massive		

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259.5 - 267.5	60%	Plag hbl syenite	Light tan gray	Porphyritic	Little to no FeO, areas with pyrite look oxidized around the pyrite	Fracture	8/ft Heavy Sub horizontal	4	Plag/hbl is subangular to subrounded, pyrite appears to be in small cubes	Hbl 1-2mm, plag 1-3mm	Plag, trace hbl, trace sulfide likely pyrite	Phenocryst poor area, few plag crystals with more matrix, hbl harder to spot, sulfide growth along fractures with small 1mm cubes, roughly 80% groundmass	Massive		
267.6 - 275.5	95%	Plag hbl syenite	Light gray-green	Porphyritic	No FeO	Fracture	2/ft Light Angled	4.5	Plag/hbl is subangular to subrounded, altered green is angular to subangular	Hbl 1-2m, plag 1-5mm, altered green 1-3mm	Plag, trace hbl, trace metallic mineral, trace altered green mineral	Transition to phenocryst rich area marked by dark brown-gray vein that is brecciated and tapered in color, some smaller dark gray veining, trace metallic mineral in a fracture start of interval	Massive		
275.6 -287	95%	Plag hbl syenite	Dark brown gray, mottled dark gray green	Porphyritic	FeO spotting along some of the faces	Fracture	3/ft Light, decreases with depth Mix between sub horizontal and angled	4	Plag/hbl is subangular to subrounded, weathered brown is tabular, subrounded	Hbl 1-2mm, plag 1-7mm, weathered brown 1-3mm	Small, light tan weathered phenocrysts in minor amounts, trace hbl, plag, metallic mineral in weathered phenocrysts, possibly pyrite	Dark brown fine gray matrix in areas that are mottled, plag minerals in this area show reaction and/or growth rims, phenocryst core 10mm vein, core darker around black veins that altered surrounding core, scratched by fingernail	Massive		
288-293	95%	Plag hbl syenite	Light tan-gray-green	Porphyritic	No FeO	Fracture	2/ft Light Subhorizontal	4	Plag/hbl is subangular to subrounded, weathered brown is tabular, subrounded	Hbl 1-2mm, plag 1-7mm, weathered brown 1-3mm	Minor tan weathered mineral, trace hbl, plag, possibly trace pyrite	Plag poor, reaction rims, 5mm thick complete vein discolors surrounding core, small 5mm calcite vugs sparsely dispersed, tabular mineral pseudo-aligned parallel to core	Massive		

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294-297.6	95%	Plag hbl syenite	Mottled tan gray to gray	Porphyritic	No FeO	Fracture	2/ft Light Subhorizontal	4	Plag/hbl subangular to angular	Hbl 1-2mm, plag 1-7mm	Plag, trace hbl	45 mm white and gray growth phenocryst, shows sharp contact between characteristics of previous interval to plag rich area, thin gray veining, 25mm area with 1-2mm plag, shows areas of fluid movement	Massive		
297.7-306	95%	Plag hbl syenite	Gray	Porphyritic	No FeO	Fracture	Moderate 6/ft Subhorizontal	4.5	Plag/hbl subangular to subrounded, green is subangular	Hbl 1-2mm, plag 1-7mm, green 1-5mm	Trace hbl, plag, trace altered green mineral	Some thin black veining, 5mm black phenocrysts (no luster or crystal faces), can have uncommon phenocryst poor areas	Massive		
307-325.3	95%	Plag hbl syenite	Mottled gray to light green-gray	Porphyritic	Little to no FeO, some spotting at depth 315	Fracture	Light 3/ft Sub horizontal	4.5	Plag/hbl subangular to subrounded	Hbl 1-2mm, plag 1-7mm	Trace hbl, plag	Prevalent dark gray veining, lighter areas tend to have fewer plag phenocrysts, around these veins and especially at depth 315 plag seems to have preferred orientation	Massive		
325.4-334.7	95%	Plag hbl syenite	Mottled gray to dark gray-green	Porphyritic	No FeO	Fracture	Light 2/ft Subhorizontal	4.5	Plag/hbl subangular to subrounded	Hbl 1-2mm, plag 1-5mm	Trace hbl, plag	Slightly fewer plag phenocrysts, large 10 cm thick vein dominantly light tan with subangular clasts that are moderately sorted, matrix appears euhedral and clastic, additional light tan-gray vein with fewer clasts, cut across by dark gray vein that discolored surrounding areas, gray veining throughout, generally small 1-2mm that discolors surrounding core	Massive		
334.8-349.5	95%	Plag hbl syenite	Mottled gray and gray green	Porphyritic	No FeO	Fracture	3/ft Light Subhorizontal	5	Plag/hbl subangular to subrounded	Hbl 1-2mm, plag 1-5mm	Trace hbl, plag	5 mm thick gray vein that is slightly brecciated found after depth 345 with thinner offshoots, 35mm light gray xenolith at depth 333, multiple 20-30mm clasts that appear zoned	Massive		



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349.6-364	95%	Plag hbl syenite	Mottled light gray and green gray	Porphyritic	No FeO	Fracture	3/ft Light Subhorizontal	4.5	Plag/hbl subangular to subrounded	Hbl 1-2mm, plag 1-5mm	Trace hbl, plag	Plag finer grained, not as phenocryst rich, thin black veining on some of core, some unidentified phenocrysts that can display zoning	Massive		
365-366	95%	Plag hbl syenite	Light gray to green-gray, patches of tan	Porphyritic	No FeO	Fracture	3/ft Light Subhorizontal	4.5	Plag/hbl subangular to subrounded	Hbl 1-2mm, plag 1-5mm	Trace hbl, plag	Transition zone of plag rich to plag poor, marked by multiple white and gray veins cutting light brown, grainy brecciated areas with zoned and unknown phenocrysts	Massive		
367-375	95%	Plag hbl syenite	Gray to light gray brown	Porphyritic	No FeO	Fracture	Highly variable in orientation and concentration	4	Plag/hbl subangular to subrounded, tan is tabular	Hbl 102mm, brown 1-4mm, plag 1-10mm	Trace hbl, plag, trace calcite, trace weathered tan	Phenocryst poor but large plag crystals, calcite vugs, dark gray veining throughout, area of light gray-tan Brecciation that is moderately sorted, zoned phenocrysts, cross cut by gray veins and marks transition, well sorted with little to no phenocrysts in some areas	Massive		
376-384.5	95%	Plag hbl syenite	Very light tan-gray	Porphyritic	Heavy at end of interval, veining and discoloration, core broke along vein	Fracture	4/ft Light Subhorizontal Variable, decreases with depth	4	Plag/hbl is subangular to subrounded	Plag 1-4mm, hbl 1mm	Trace hbl, minor plag	Very phenocryst poor, plag is small and unequally distributed, some dark, thin gray veining, occasional dark gray-black phenocrysts around 5mm that are subrounded, 2 cavities in rock where one is weathered and the other is missing	Massive		
384.6-391	95%	Plag hbl syenite	Tan gray-white with some mottled light gray	Porphyritic	Minor, light FeO veining	Fracture	2/ft Light Subhorizontal	4	Plag/hbl is subangular to subrounded	Plag 1-4mm, hbl 1mm	Trace hbl, plag	35mm white and gray xenolith depth 386, thin gray green veining throughout, larger unknown phenocryst that has zoning, mottling almost looks like preserved fluid movement	Massive		
392-401.3	95%	Plag syenite hbl	Light to dark, mottled gray	Porphyritic	3mm thick FeO vein with surrounding staining, no FeO development elsewhere	Fracture	3/ft Light Subhorizontal	5.5	Plag/hbl is subangular to subrounded, often tabular	Plag 1-5mm, hbl 1-2mm	Plag, trace hbl	Fractured faces of core can be crumbly and soft, brecciated thin gray veining throughout, large 12 cm gray phenocryst with possible flow banding around it, mafic 1-5mm phenocrysts	Massive		

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401.4 - 410.6	95%	Plag hbl syenite	Light to dark mottled gray	Porphyritic	No FeO	Fracture	Uncountable, intense, and all orientations Some areas of few fractures	5	Plag/hbl is subangular to subrounded, often tabular	Plag 1-5mm, hbl 1-2mm	Plag, trace hbl	Similar to core above in phenocrysts and veining, highly fractured, less plag	Massive		
410.7 - 419.3	60%	Plag hbl syenite	Light gray	Porphyritic	No FeO	Fracture	>8/ft Intense Sub horizontal	5	Plag/hbl is subangular to subrounded, often tabular	Plag 1-5mm, hbl 1-2mm	Trace pyrite (1mm zone) minor plag, trace hbl	Plag around or less than 5%, end of interval has calcite phenocrysts with reaction rims that are euhedral, subangular, subrounded, and 5-15mm large, fine grained mafic phenocrysts that are 10mm, subangular, fewer of these than the calcite	Massive		
419.4 - 448.7	95%	Fine grained volcanic breccia	Light tan gray to gray	Clastic	Some mafic xenoliths might have FeO development, but none elsewhere	Fracture	3/ft Light Increases with depth Mostly subhorizontal with some slanted or vertical	5.5	Plag subrounded to rounded, calcite subrounded, mafic subangular, brecciated subangular	Plag 1-2mm, calcite 5-40mm, mafic 3-50mm, brecciated 30mm	Trace plag, trace hbl, minor calcite	Plag poor, multiple xenoliths including calcite, mafic, and brecciated, possible slickenlines depth 440, thin 1mm gray-brown to gray veining throughout that parallels calcite, calcite xenoliths have reaction rims	Massive		
448.8 - 457	50%	Fine grained volcanic breccia	Light tan gray	Clastic	No FeO	Fracture	Variable, decreases with depth Subhorizontal	3	Plag subrounded, tabular, calcite subangular to subrounded, mafic subangular, brecciated subangular	Plag 1-22, calcite 5-100mm, mafic 5-40mm, brecciated 10mm	Trace plag, trace hbl, minor calcite	Prevalent calcite xenoliths especially at depth, some mafic and brecciated ones, prevalent veining throughout with sudden increase at end of interval that are brown-green, thin, and brecciated, can have calcite interior, brecciated xenolith cut by vein	Massive		

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458-475.0	90%	Fine grained volcanic breccia	Light tan gray	Clastic	No FeO, oxidized sulfide at depth 462.5	Fracture	Variable, light to intense that decreases slightly with depth, all orientations	4	Plag subrounded, calcite subangular to subrounded, mafic subangular, brecciated subangular	Plag 1-2mm, calcite 5-30mm, mafic 5-45mm, brecciated 30 cm, light zoned 5-10mm	Trace sulfide, minor calcite, trace plag	Slickenlines possible at depth 469, 17cm dike that is moderately sorted with a light tan-brown matrix and subrounded volcanic clasts, cut by dark brown-black veins, discontinuous green-brown veining throughout core, calcite xenoliths are zoned, , multiple clasts include calcite, dark mafic, brecciated, and light brown zoned, core poorly sorted overall	Massive		
475.1-498	95%	Fine grained volcanic breccia	Light tan gray	Clastic	No FeO	Fracture	3-5ft, light to moderate, dominantly angled fractures	4	Plag subrounded, calcite subangular to subrounded, mafic subangular, brecciated subangular	Plag 1-2mm, calcite 5-40mm, mafic 5-45mm, brecciated 10mm, light zoned 5-30mm	Minor calcite, trace plag	Fewer xenoliths than previous interval, strong slickenlines at depth 492.8 with calcite growth on face, evidence of faulting/light slickenlines throughout interval, mafic phenocrysts decreases with depth, poorly sorted, matrix dominant	Massive		
499-504.5	50%	Fine grained volcanic breccia	Light tan gray	Clastic	No FeO	Fracture	>8/ft Intense Sub horizontal	4	Plag subrounded, calcite subangular to subrounded, mafic subangular	Plag 1-2mm, calcite 5-20mm, mafic 1-5mm, light zoned 1-5mm,	Minor calcite, trace plag	Split core, black interior calcite with white zoning on the outside, faint evidence of faulting or movement throughout on faces, small thin greenish-gray veining throughout, pyrite at depth 503	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
504.6-524	95%	Fine grained volcanic breccia	Light tan gray	Clastic	No FeO	Fracture	Variable 3->5 ft, light to intense, all orientations	4	Plag subrounded, calcite subangular to subrounded, mafic subangular, brecciated subangular	Plag 1-2mm, calcite 5-80mm, mafic 5-10mm, light zone 5-15mm, brecciated 5-50mm	Minor calcite, trace plag	Slickenlines common on slanted fractures, multiple very large (>5cm) calcite xenoliths, green-brown gray brecciated veining 507.8	Massive		
525-546	95%	Fine-grained volcanic	Light gray to light tan gray	Porphyritic	None, some red orange clay on faces	Fracture	3/ft Light Mostly subhorizontal	4	Plag subrounded, tan zoned subangular to subrounded, mafic subangular to subrounded, calcite subangular to subrounded	Plag 1-2mm, tan zoned 5-25mm, mafic 20mm, calcite 5-10mm	Trace plag, trace calcite	Dominantly small mafic clasts, overall clast poor (<5%), many of the non mafics have calcite reaction rims, thin gray veining throughout	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/weathering	Structure/orientation	Fractures/fracture frequency	Rock strength/hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
546-554	55%	Fine grained volcanic breccia	Light tan gray	Porphyritic	Sulfide staining surrounding veins, no FeO	Fracture	Intensely fractured, decreases with depth	6	Plag subrounded, tan zoned subangular to subrounded, mafic subangular to subrounded, calcite subangular to subrounded, Brecciated subangular	Plag 1-2mm, tan zoned 5-10mm, mafic 5-15mm, calcite 5-15mm, brecciated 10mm	Trace plag, trace calcite	Sulfide staining throughout, always around gray 5mm thick veins, very fine-grained mafic clasts in matrix, very little plag and almost none at depth	Massive		
555-563	95%	Fine grained volcanic breccia	Mottled light tan-gray	Porphyritic	Minor sulfide staining depth 558, no FeO	Fracture	2/ft Light Mostly subhorizontal	6	Tan zoned subangular to subrounded, calcite round to angular, brecciated subangular	Tan zoned 5-20mm, calcite 1-70mm, brecciated 20mm	Calcite, trace pyrite, trace plag	Highly brecciated with dark gray calcite clasts, some crystalline calcite between clasts, very poorly sorted with highly variable concentration of clasts throughout core, calcite can look mottled black and white with lighter colored veins, light tan-green veining throughout	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
564-579	95%	Fine grained volcanic breccia	Mottled light to dark tan-gray	Porphyritic	Minor sulfide staining depth 572, no FeO	Fracture	3/ft Light Mostly subhorizontal	6	Tan zoned subangular to subrounded, calcite angular to rounded, mafic subangular to subrounded, brecciated subangular to subrounded	Tan zoned 5-40mm, calcite 1-50mm, mafic 1-5mm, brecciated 10-35mm	Calcite, trace plag	Flow banding depths 564, 566-567, and 576-579, occurs in poorly sorted areas with calcite and tan zoned clasts, green gray and dark gray veining throughout those areas, rest of core is poorly sorted with multiple clasts, can be cut by 2mm calcite veins that also cut through calcite clasts	Massive		
580-591	95%	Fine grained volcanic breccia	Mottled gray brown to gray	Porphyritic	No FeO	Fracture	2/ft Light Subhorizontal	6	Tan zoned subangular to subrounded, calcite angular to rounded, mafic subangular to subrounded, brecciated subangular to subrounded	Tan zoned 5-10mm, calcite 1-50mm, mafic 5mm, brecciated 10-20mm	Minor calcite, plag	580 marks contact with above interval-poorly sorted calcite and other phenocrysts with some flow banding-to no calcite or flow banding, mostly plag with some brecciated clasts and dark gray mottling with thin veining of same color	Massive		
592-649	95%	Plag hbl syenite	Light gray	Porphyritic	No FeO	Fracture	3/ft Light Mostly subhorizontal	5.5	Plag subangular to subrounded	Plag 1-5mm	Trace calcite, trace hbl, plag	Core incredibly uniform, depth 621 has calcite growth on face/fracture 20mm thick, somewhat botryoidal with orange and gray coloring, rust brown staining around calcite, think gray veining throughout rest of core	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/weathering	Structure/orientation	Fractures/fracture frequency	Rock strength/hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
650-660.7	50% (sampled)	Breccia	Mottled gray, black, and light green	Brecciated	No FeO	Fracture	5/ft Moderate Subhorizontal	3	Plag subangular to subrounded, black is angular	Plag 1-5mm, black 1-20mm	Minor plag	Sharp contact, brecciated and poorly sorted with black clasts that fizz under HCl but not calcite, banding patterns throughout, clast supported	Massive		
660.8 - 669.8	60% (sampled)	Syenite to sandstone	Dark gray-black	Fine-grained sedimentary	No FeO	Fracture	8/ft Intense Decreases with depth to 3/ft Sub horizontal	3	Plag subangular to subrounded	Plag 1-2mm	Trace plag, calcite	Brecciated with syenite at start of interval, transitions to dark gray-black core with thin 2mm black veins and discontinuous white calcite veins, matrix fine grained and can have luster	Massive		
669.9 - 687	60% (Sampled)	Fine grained sedimentary, likely shale	Dark gray to black	Microcrystalline	None	Fracture	Variable 2/ft to uncountable Variable orientations	3	No phenocrysts	-----	Calcite	Coarsely crystalline calcite visible start of interval, white veins tend to be made of the coarsely crystalline calcite, veining and mottling of core increases with depth and can appear brecciated	Massive		
688-692	95%	Volcanic porphyry breccia	Light gray matrix, dark gray clasts	Porphyritic	Chloritization at beginning of interval	Fracture	2/ft Light Subhorizontal	3	Mafic subangular to subrounded	Mafic 2-3mm	Minor calcite	Sharp contact with previous interval, very little calcite and not brecciated with that calcium carbonate material, clast dominant but not clast supported, mafic clasts, some black veining, chloritization at start of interval, softness suggests clay development	Massive		
693-695.2	95%	Breccia	Mottled white and black	Clast supported	Minor chloritization of clasts throughout interval	Fracture	2/ft Light Subhorizontal	3	Mafic angular, sedimentary angular to subangular, volcanic subangular	Mafic 5-15mm, sedimentary 5-30mm, volcanic 5-15mm	Minor calcite	Sharp contact with volcanic interval, brecciated with volcanic and sedimentary rocks sedimentary clasts usually larger, very poorly sorted, start of the interval is completely black with well sorted clasts	Massive		
695.3 - 706.5	50% (sampled)	Fine grained sedimentary, likely shale	Dark gray to black	Microcrystalline	None	Fracture	7/ft Moderate Subhorizontal	4	No phenocrysts	-----	Calcite	Sharp contact with brecciated interval that is not HCl reactive, stylolite depths 700 to 705, discontinuous spotty white calcite veins that can be crystalline	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
706.6 -712	90%	Fine grained sedimentary, likely shale and marble	Dark gray, mottled black and white	Microcryst alline	None	Fracture	4/ft Light Subhorizontal, some angled	Marble 4 Black 5	No phenocrysts	-----	Calcium carbonate	Stylolite on some of core, marble and white veining throughout, black portion of core at depth 710 that does not react to HCl with hardness 8, sharp and gradational contacts between lithology changes	Massive		
713-719.5	45% (sampled)	Breccia	Mottled gray and dirty tan-white	Clast supported	Minor chloritization throughout	Fracture	7/ft Moderate Subhorizontal	4	Marble angular to subangular, mafic angular	Marble 2-20mm, mafic 2-10mm	Calcium carbonate	Poorly sorted, marble brecciated by volcanic intrusion with mafic clasts	Massive		
719.6 -726.3	95%	Breccia	Many various shades of gray and gray-green	Clast supported	Moderate chloritization throughout	Fracture	2/ft Light Subhorizontal	3	Marble angular to subangular, mafic angular to subangular	Marble 5-70mm, mafic 5-50mm	Calcium carbonate	Highly brecciated marble by volcanic intrusion, poorly sorted, many clasts, chloritization most common about marble clasts, softness could indicate clay development	Massive		
726.4 -731	95%	Plag hbl syenite	Light gray to gray green	Porphyritic	Moderate chloritization throughout	Fracture	2/ft Light Horizontal	3	Marble subangular to subrounded, chlorite replaced subangular to subrounded, mafic subangular	Marble 30mm, chlorite replaced 5-10mm, mafic 5-10mm	Plag, trace calcium carbonate	End of the marble breccia, no sharp contact, mafic and tan zoned clasts, chloritization more pronounced around those tan clasts, a couple black phenocrysts appear to be altering to chlorite	Massive		
732-745.2	95%	Plag hbl syenite	Gray green	Porphyritic	Minor chloritization throughout	Fracture	3/ft Light Horizontal	5	Plag subangular to subrounded, chloritized subrounded, mafic angular to subangular, tan zoned subrounded	Plag 2-5mm, chloritized 5-20mm, mafic 5-10mm, tan zoned 10mm	Plag, trace hbl	Brown rusty 1mm veining on some of core, slightly discolors surrounding core to light tan	Massive		



Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/weathering	Structure/orientation	Fractures/fracture frequency	Rock strength/hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
745.3 - 764.3	80% (sampled)	Plag hbl syenite	Mottled gray green to patchy areas of light tan or gray	Porphyritic	Minor to moderate chloritization throughout, heavy around specific clasts	Fracture	3/ft Light Horizontal	5	Plag subangular to subrounded, chloritized subrounded, mafic angular to subangular, tan zoned subrounded	Plag 2-5mm, chloritized 50mm, mafic 5-20mm, tan zoned 10-30mm	Plag, trace hbl	Core mottled and not uniform in color, areas of high chloritization, white tan flows and veins, thin dark gray-brown veins towards end of interval, almost as if the matrix composition mixed or changed with formation	Massive		
764.4 - 780.5	95%	Plag hbl syenite	Mottled gray green with light tan	Porphyritic	Minor chloritization throughout	Fracture	2/ft Light Subhorizontal	6	Plag subangular to subrounded, mafic angular to subangular, chloritized subrounded	Plag 2-5mm, mafic 5mm, chloritized 5mm	Plag, trace hbl	Gray green color often but not always centered around dark brown-gray or tan veins scattered throughout core, 778-779 very phenocryst poor area, no contact or cannot see because of how core is split, dominantly plag phenocrysts with little of everything else	Massive		
780.6 - 802.5	90% (sampled)	Plag hbl syenite	Mottled dark brown maroon with light to dark gray green	Porphyritic	Minor to moderate chloritization throughout	Fracture	3/ft Light Subhorizontal	5	Plag subangular to subrounded	Plag 2-5mm	Plag, trace hbl	10cm mafic clast depth 781 with hematized mineral clasts within, dark brown-red mottling throughout with sharp contacts with gray-green areas, very visible and unweathered euhedral minerals 1-3mm throughout core, likely hbl, dark gray 1-2mm veining throughout	Massive		
802.6 - 807.7	75% (sampled)	Plag hbl syenite	Light gray to gray with black dike	Porphyritic	Moderate chloritization around some clasts	Fracture	4/ft Light Subhorizontal	4	Mafic angular to subangular, tan angular, plag/hbl subangular to subrounded	Mafic 5-15mm, tan 2-5mm, plag 2-5mm, hbl 1-2mm	Plag, trace hbl	Brecciated mafic dike 50 cm long, moderately sorted with small 1-2mm red, tan, and gray clasts, does not appear to brecciate syenite	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/weathering	Structure/orientation	Fractures/fracture frequency	Rock strength/hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
807.8 -820	95%	Plag hbl syenite	Light gray to gray	Porphyritic	None	Fracture	3/ft Light Subhorizontal	4	Mafic angular to subangular, qtz subrounded, plag/hbl subangular to subrounded	Mafic 2-10mm, qtz 5-10mm, plag 2-5mm, hbl 1-2mm	Trace hbl, trace qtz, plag	Depth 810.5 white-tan cluster of clasts where syenite is the matrix, small crystal vugs 2mm and hardness of 8 suggests fine-grained qtz, remainder of interval contains small clasts of same material in the syenite	Massive		
821-825.5	95%	Plag hbl syenite	Gray	Porphyritic	Trace chloritization around certain clasts	Fracture	8/ft Heavy All orientations	5	Mafic angular to subangular, qtz subrounded, plag/hbl subangular to subrounded	Mafic 2-10mm, qtz 5-40mm, plag 2-5mm, hbl 1-2mm	Trace hbl, trace qtz, plag	Slickenlines throughout interval on angled fractures, still contains qtz clasts but amount decreases with depth	Massive		
825.6 - 840.5	95%	Plag hbl syenite	Light gray brown to gray	Porphyritic	Some plag appears to be chloritized and appears to be weathered and green	Fracture	3/ft Light Sub horizontal	3	Mafic angular to subangular, qtz subrounded, plag/hbl subangular to subrounded	Mafic 2-15mm, qtz 5-25mm, plag 2-5mm, hbl 1-2mm	Trace qtz, plag	Very few qtz clasts throughout, one has weathered into a vug, 1-2mm dark gray veining throughout, plag clearly grew over the veining in multiple areas, slightly more plag rich than previous interval, very few mafic phenocrysts	Massive		
840.6 - 850.4	95%	Plag hbl syenite	Light gray brown to gray	Porphyritic	Spotty oxidized sulfides throughout, chloritization in concentrated areas	Fracture	2/ft Light Subhorizontal	4	Mafic angular to subangular, plag/hbl subangular to subrounded	Mafic 2-15mm, plag 2-5mm, hbl 1-2mm	Trace pyrite, plag, trace hbl	Sudden increase in mafic clasts at start of interval, very dark black and vein like in some areas, 40mm chloritized clast with angular, long, and tabular plag, large dark tan-gray clast cut by dark gray vein that continues on to core	Massive		



**DRILL LOG—CORNUDAS MOUNTAINS, CHESS DRAW, OTERO COUNTY, NEW MEXICO**

HOLE NUMBER   2   DATE STARTED  12/03/2020  COMPLETED  03/01/2021  LOGGED BY  HD  **CORE** CUTTINGS

LOCATION (UTM) \_\_\_\_\_ COLAR ELEVATION \_\_\_\_\_ ft WEATHER \_\_\_\_\_

BOX NUMBER \_\_\_\_\_ INCLINATION \_\_\_\_\_ BEARING \_\_\_\_\_ SOP 17 DEVIATION FROM SOP \_\_\_\_\_

COMMENTS  Everything logged wet. All missing intervals correspond to missing core, modified by VTM to correlate with mapped geology at the surface (6/4/22) 

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
40-55.5	60% (Sampled)	Plag syenite	Rusty orange-tan	Porphyritic	Heavily weathered, oxidized	Fracture	Variable Light to intense All orientations	3	Plag is tabular, angular to subangular	Plag 2-10mm	Trace manganese oxide, trace calcium carbonate, plag	Plag concentration decreases sharply with depth, bands of increased weathering/oxidation can have 1-2mm calcium carbonate veins within, plag phenocrysts very tabular, softness suggests clay development	Massive		
55.6-67.8	60% (Sampled)	Shale with orange fine-grained lithology, possibly siltstone	Dark gray black with rusty orange stripes and veining	Microclastic	Rusty orange appears to be weathered, oxidation, softness suggests clay development	Fracture	>6/ft Moderate to intense All orientations	<2	Breccia clasts angular to subangular	Breccia clasts 1-15mm	Trace manganese oxide, felsic volcanics	2 areas of similar brecciation, matrix supported, moderately to well sorted with angular to subangular clasts, most clasts are the same rusty orange color, sharp contact with shale, very lightly brecciated the shale	Massive		
67.9-69	50% (Sampled)	Breccia	Rusty orange matrix, gray-blue clasts	Matrix supported	Color could indicated weathering and oxidation, softness suggests clay development	Fracture	5/ft Moderate Subhorizontal	3	Breccia clasts angular to subangular	Breccia clasts 2-15mm	Felsic volcanics	Brecciated area, matrix similar to above but clasts are not, clasts are often rectangular to square like in shape with sharp edges and limbs and very uniform, clasts can be zoned, appear felsic, and moderately sorted	Massive		
70-78.5	70%	Syenite	Medium orange brown	Porphyritic	Phenocrysts appear weathered, color could suggest oxidation	Fracture	5/ft Moderate Subhorizontal	4	Plag subangular to subrounded	Plag 2-5mm	Trace manganese oxide, plag	Start of interval very poor recovery and intensely fractured, remainder has vesicular texture with no mineral growth in vesicles that I could see, vesicles too uniformed and rounded to be weathered mineral, small weathered phenocrysts elsewhere, likely plag	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
78.6-99	80% (Sampled)	Syenite	Medium orange brown	Porphyritic	Phenocrysts appear weathered, color could suggest oxidation	Fracture	4/ft Light Subhorizontal, more angled with depth	4	Plag subangular to subrounded	Plag 2-5mm	Trace manganese oxide, plag	Matrix feels grainier and has very light luster when compared to syenite previously seen, plag concentration slightly decreases with depth, lower contact brecciated with shale, contact is gradual with clasts of syenite in shale, generally poorly sorted, clast size decreases with depth	Massive		
100-113	70%	Shale, lightly effervescent	Dark gray-black	Microclastic	None	Fracture	Increases to intensely with depth All orientations	<2	Clasts angular to subangular	2-15mm	Felsic volcanic material	Multiple dikes, can be gradational or make sharp contacts, gradational has 2-5mm tan to tan-brown clasts dispersed throughout shale with no matrix color change, dike at 105 that brecciated shale, very few clasts, dike at depths 107-109 very poorly sorted with angular to subangular clasts tan, tan-brown and tan gray in color, clasts follow defined vein but disperse into shale gradually	Massive		
114-115.5	95%	Intruded, brecciated shale, lightly effervescent	Gray mottled dirty white	Microclastic	None	Fracture	2/ft Light Angled	2.5	Clasts angular to subangular	2-60mm	Felsic volcanic material	Felsitic dike brecciated shale around contacts, generally white, tan, and gray clasts in dark gray matrix, poorly sorted with angular to subangular clasts, clast dominant around 80%, three clasts appear to be zoned	Massive		
115.6-137	95%	Shale, lightly effervescent	Dark gray-black	Microclastic	Trace pyrite oxidized in very small amounts	Fracture	Heavily to intensely fractured All orientations	<2	-----	-----	Trace pyrite	Faint fine gray striations/banding throughout interval, usually parallel each other and fracture pattern, very small <1mm flakes of pyrite grow on those veins, fizz slightly with HCl, slickenlines depth 128, very minor brecciated depth 133.5	Massive		
138-139	95%	Shale, lightly effervescent	Dark gray black	Microclastic	None	Fracture	None	<2	Clasts subangular to subrounded	2-10mm	Felsic volcanic material	Shale intruded by felsic dike, dark grey matrix, moderately sorted with subangular to subrounded clasts that are tan to gray, shale brecciated slightly, sharp contact	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
140-185.1	90% (sampled)	Shale, lightly effervescent	Dark gray-black	Microclastic	Trace pyrite oxidized in very small amounts	Fracture	Moderate to intense, decreases with depth All orientations	<2	-----	-----	Trace pyrite	Faint fine gray striations/banding throughout, usually parallel each other and fracture pattern, veins offset depth 142 in multiple areas, trace pyrite growth on veins, slickenlines depth 142.8	Massive		
185.2 - 186.7	95%	Breccia	Dark gray mottled with white and tan clasts	Matrix supported	None	Fracture	3/ft Light Subhorizontal	Matrix 4 Clasts vary	Clasts angular to rounded	Clasts 2-25mm	Felsic volcanics	Very clast heavy, poorly sorted, wide variety of clasts with all ranges of sizes and colors, all variations of rounding as well, dominantly light colored clasts	Massive		
186.8 - 193.5	50% (Sampled)	Fine-grained volcanic, reminds me of ash	Light tan gray	Aphanitic	Oxidized pyrite	Fracture	6/ft Moderate Mostly subhorizontal, some angled	3.5	Calcite clasts are square shape	Calcite 1-5mm	Trace pyrite, trace calcite	Calcite has definite cleavage, material brecciated into shale at both contacts, matrix felsic and very fine, small pyrite flakes throughout, slickenlines at lower contact, flow banding near lower contact around zoned tan-red areas of similar composition, similar smaller banding throughout interval, very sharp contacts with shale	Massive		
193.6 - 199.1	95%	Shale, lightly effervescent	Dark gray black	Microclastic	None	Fracture	5/ft Moderate Angled and subhorizontal	<2	Clasts angular to subangular	Clasts 1-40mm	Felsic volcanics	Slickenlines on ends of angled fractures, areas of brecciate throughout, matrix supported but clast heavy, very poorly sorted, many different clast types that appear to be dominantly felsic, also can be zoned, sharp contact with shale, aspects very similar to breccia in depths 185.2-186.7	Massive		
199.2 - 225	90% (Sampled)	Shale, slightly effervescent	Dark gray black	Microclastic	None	Fracture	Light to intense, variable All orientations	<3 for both shale and felsic dikes	-----	-----	Felsic volcanics	Dominantly shale, sharp contact with dikes scattered throughout, brecciated shale but no clasts, dirty white gray, appears almost fluid like, dark gray matrix breccia at depth 202, poorly sorted, gray and tan angular to subangular clasts	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
226-233.1	95%	syenite	Dirty gray tan-white mottled with dark rust brown and black	Aphanitic	Oxidized sulfides throughout, decreases with depth	Fracture	3/ft Light Subhorizontal	6	-----	----	Felsic volcanics	Dominantly dirty white-gray dike, oxidized iron sulfides staining throughout, no clasts but brecciated shale at upper contact, areas of tan zoned blobs surrounded by the felsic material, inclusions of dark gray black material that does not fizz with HCl, dark gray veining throughout that the oxidized sulfides follow.	Massive		
233.2 - 249.6	75% (Sampled)	Volcanic breccia	Dark gray brown matrix, gray, tan, and red clasts	Matrix supported	Very slight weathering and chloritization of certain clasts	Fracture	Light to moderate Variable All orientations	4	Clasts dominantly angular to subangular clasts, some subrounded	Clasts 2-70mm	Felsic volcanics 80% clast 20% matrix	Very poorly sorted, wide variety of clasts that are dominantly felsic with few mafic ones, more intermediate clasts can be zoned, bright large brick-red clasts with phenocrysts, slickenlines with calcite veneer/polish on slanted fracture at start of depth 239	Massive		
249.7 -258	70% (Sampled)	Volcanic breccia	Dark gray-black mottled with dark gray-brown	Matrix supported	None	Fracture	Light to Intense Variable All orientations	<3	Clasts dominantly angular to subangular clasts, some subrounded	Clasts 2-40mm	Felsic volcanics 75% clasts 25% matrix (Considering just the brecciated areas and not the interval as a whole)	Overall clast size and concentration decreases from above, much of core dominated by brown grainy portions that are broken/altered by dark gray black material, appears as if there was fluid movement for both portions or possibly shear on the brown grain material, volcanic breccia interspersed throughout, concentration decreases sharply with depth	Massive		
259-288	95%	Volcanic breccia	Dark gray brown matrix, gray, tan, and red clasts	Matrix supported	None	Fracture	3/ft Light Subhorizontal to angled	<3	Clasts dominantly angular to subangular, some subrounded	Clasts 2-50mm	Felsic volcanics, plag possible 45% Clast 55% Matrix	Overall small clasts dominant, poorly to moderately sorted, dominantly felsic clasts, tan to gray black and brick red, depth 284 has sharp contact with a gray brown matrix and tabular 3-7mm angular phenocrysts, possibly plag	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
289-304	85% (Sampled)	Volcanic breccia	Dark gray brown matrix, gray, tan, and red clasts	Matrix supported	None	Fracture	2/ft Light Mostly subhorizontal	<3	Clasts dominantly angular to subangular, some subrounded	Clasts 2-60mm	Felsic volcanics 75% clasts 25% matrix	Clast poor area end of 291 and start of 292, looks almost like an intrusion and contains slickenlines, very poorly sorted with many large clasts, depth 294.2 clast poor with some tan zoned clasts interspersed in white-tan matrix, has sharp contact	Massive		
305-319.5	95%	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	3/ft Light Subhorizontal	Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	Clasts 2mm-11cm	Felsic volcanics, shale 85% clast 15% matrix	High amount of very large clasts, very poorly sorted, dark gray-black clasts prevalent and fizz HCl (likely shale) 20 to 60mm in size and angular, other clasts can be zoned	Massive		
319.6 - 333.3	95%	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	3/ft Light Subhorizontal	Matrix 4 Clasts >4 Area of no clasts 5	Clasts angular to subangular, some subrounded	Clasts 2mm-50mm	Felsic volcanics 40% clast 60% matrix	Areas of absolutely no clasts that have sharp contact with breccia, grainy gray and appears similar to matrix, moderately to well sorted with clasts ranging from 2mm to 15mm, depths 323-326 clast concentration increases (80-20) as does size, similar structure also at depth 332	Massive		
333.4 - 371.5	90% (Sampled)	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized, oxidized sulfides	Fracture	3/ft Light Most subhorizontal, some angled	Matrix 4.5 Clast >4.5	Clasts angular to subangular, some subrounded	Clasts 2mm-50mm	Felsic volcanics, sulfides 40% clast 60% matrix	Start of depth 334 has slickenlines and discolored/stained core possibly from the oxidized sulfides, rust-orange spotting throughout and only on specific clasts, clast to matrix percentage starts off 35-65 and well sorted, with depth goes to 70-30 poorly sorted with larger clasts	Massive		



Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
371.6 -390	95%	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized, others appear to be softer than fingernail and crumbly	Fracture	2/ft Light Subhorizontal	Matrix 4 Clasts >4.5	Clasts angular to subangular, some subrounded	Clasts 2mm-55mm	Felsic volcanics 45% clast 55% matrix	Some clasts appear to be trachytic, others intermediate in color are zoned, poorly sorted overall, thin gray black veining at depths 379-380 that goes around clasts clearly in matrix, end of 382 has well sorted area with clasts 1-2mm, light green clasts can have mineral growth with red and orange areas throughout	Massive		
391-400.6	70% (Sampled or problems drilling)	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	3/ft Light Subhorizontal	Matrix 4 Clasts>4 Light gray 4	Clasts angular to subangular, some subrounded	Clasts 1mm-45mm	Trace calcite, felsic volcanics	Start of interval is shale with 3mm calcite vein with 4mm vug, small crystals elsewhere along where vein fractured, volcanic breccia sorted slightly better than previous interval, smaller average size of clasts, intervals with dark gray fine matrix that is very well sorted with 1-2mm clasts and sharp contact, end of interval has differently sized core that is clast supported (90-10) of all the same light gray lined clasts, poorly sorted and dominantly angular and elongate, matrix interspersed with fine rust red clay, contacts missing	Massive		
400.7 - 412.1	70% Sampled	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	3/ft Light Subhorizontal	Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	1mm-70mm	Trace qtz, felsic volcanics 60% matrix, 40% clast	Poorly sorted, variety of types and colors of clasts but dominantly felsic, variety of some clasts are zoned, small 3mm creamy white vein of likely qtz-no HCl reaction at depth 404, largest clast 70mm but average large clast is around 30mm	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
412.2-425	95%	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	3/ft Light All orientations	Syenite 7 Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	1mm-55mm	Trace calcite, felsic volcanics 55% matrix 45% clast	2 syenite dikes. Dike 1 is gray green, 2-5mm plag generally tabular with varying levels of weathering. Dike 2 is tan green, fewer plag but still 2-5mm varying levels of weathering with 2mm light gray veining throughout. Volcanic breccia poorly sorted, variety of clasts where some are zoned, no evidence of syenite, coarsely crystalline calcite depth 420	Massive		
426-448.7	95%	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	3/ft Light Subhorizontal Some angled	Matrix 4 Clast >4 Large clast 7.5 Minerals within 4	Clasts angular to subangular, some subrounded	1mm-45mm	Felsic volcanics 55% matrix 45% clast	Poorly sorted, some clasts appear to have mineral growth within while others are zoned, very large 15cm clast with poorly sorted 2-10mm block to angular tabular clasts in light gray-brown matrix, sharp contact with breccia	Massive		
448.8-458.5	55% (Sampled)	Volcanic breccia	Dark gray brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be light chloritized	Fracture	7/ft Moderate Subhorizontal	Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	1mm-50mm	Felsic volcanics 60% matrix 40% clast	Start of interval has area with very few clasts though small amount of 1-2mm clasts around rim, generally sharp contact with rest of breccia, poorly sorted, clasts can be zoned or have mineral growth, clasts generally smaller this interval	Massive		
458.6-499	95%	Volcanic breccia	Gray-brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	3/ft Light All orientations Fracture frequency increases slightly with depth	Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	2mm-10cm	Felsic volcanics, trace calcite 55% matrix 45% clast	Very large clasts depths 464, 479, 487, and 507 greater than 10cm, some of those clasts appear trachytic with mineral growth of possibly plag, others are fine grained mafic, all with sharp contact with breccia, other clasts can be zoned and have crystal growth within of possibly hbl, depth 459 has plate of calcite not attached to core	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
500-527.3	75% Sampled	Volcanic breccia	Gray-brown matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	3/ft Light All orientations	Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	2mm-7mm	Felsic volcanics 55% matrix 45% clast	Crystalline calcite and covering visible on some of split core, clasts can be zoned or have mineral growth, creamy white veining depths 507 and 520	Massive		
527.4 - 544.8	95%	Volcanic breccia	Dark gray brown slightly green matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	2/ft Light Dominantly subhorizontal, some angled	Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	2mm-12cm	Felsic volcanics 70% matrix 30% clast	Sharp contrast between matrix color and marked decrease in clast concentration, composition and color of clasts appear comparable to previous depths though, fewer small clasts with slightly better sorting but still poor, largest clast size 11 cm but not characteristic, larger clasts average 55m	Massive		
544.9 - 571	90% Sampled	Volcanic breccia	Dark gray brown slightly green matrix, gray, brown, tan, red, black clasts	Matrix supported	Very few clasts appear to be lightly chloritized	Fracture	2/ft Light Subhorizontal	Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	2mm-10cm	Felsic volcanics 70% matrix 30% clast	Poorly sorted, some areas moderately sorted with lack of larger clasts, small area in 556 that is clast supported, clasts can be zoned, large clasts are felsitic, sorting better with depth	Massive		
572-578	95%	Syenite	Light tan	Porphyritic	Chloritization possible on xenoliths	Fracture	2/ft Light Subhorizontal	4	Xenoliths subrounded, plagioclase tabular and subrounded	Plagioclase 1-2mm, xenoliths 5mm-10cm	Plagioclase, unknown xenolith	Syenite with very small 1-2mm minor amounts of plagioclase, 3 xenoliths depths 574-576, xenoliths are similar to clasts seen in volcanic breccia, contain brown, dark gray portions in light green matrix, cut across by calcite vein, medium red-brown discoloration towards end of depth	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
579-602.4	85%	Syenite and volcanic breccia	Syenite light tan-gray, breccia dark gray brown matrix with multicolor clasts	Porphyritic and matrix supported	Very few clasts appear lightly chloritized	Fracture	2/ft Light Subhorizontal	Syenite 6 Matrix 4 Clasts >4	Plag tabular and subangular, clasts angular to subangular, some subrounded	Plag 2-10mm, clasts 2-80mm	Plag, felsic volcanics 70% matrix 30% clast	Poorly to moderately sorted volcanic breccia interspersed with syenite dike, sorting is moderate with lack of large clasts, clasts can be zoned, syenite sharp contact with breccia, high ~50% concentration of plag crystals that can be well defined	Massive		
602.5 - 611.5	95%	Syenite	Light tan gray	Porphyritic	None	Fracture	3/ft Light Subhorizontal	6.5	Plag tabular, subrounded	2mm-8mm	Plag, trace pyrite	Plag concentration decreases slightly with depth, sharp contact with breccia, 3-10mm vugs filled with calcite crystals, 25mm massive calcite crystal within core depth 605, trace pyrite 602.8 on 1mm calcite crystals	Massive		
611.6 -620	95%	Volcanic breccia	Gray brown matrix, tan, red, brown, gray, clasts	Matrix supported	Very few clasts appear slightly chloritized	Fracture	Variable with depth 3-8/ft All orientations	Matrix 4 Clast>4	Clasts angular to subangular, some subrounded	2mm-11cm	Felsic volcanics, trace pyrite	Poorly sorted, large felsic clasts, clasts can be zoned, most fractured volcanic breccia so far but variable with depth, fractures break clasts, 1mm dispersed pyrite at end of interval	Massive		
621-627	95%	Volcanic breccia	Gray brown matrix, tan, red, brown, gray, clasts	Clast supported	Very few clasts appear slightly chloritized	Fracture	3/ft Light Subhorizontal	Matrix 4 Clast>4	Clasts angular to subangular, some subrounded	2-80mm	Felsic volcanics, trace pyrite 80%clast 20%matrix	Clast to matrix composition increases sharply, moderately sorted, decreases with depth, clast size increases slightly with depths, clasts can be zoned, dominantly felsic	Massive		
628-635	90%	Dark gray black shale	Carbonaceous shale	Microcrystalline	None	Fracture	Intense, uncountable, increases with depth	<2	Clasts angular to subangular, some subrounded	2mm-10mm	Trace pyrite, trace felsic volcanics	Gradual contact between volcanic breccia and carbonaceous shale, evidence of faulting on multiple faces, pyrite throughout, new lithology that brecciated the volcanic breccia, depth 634 contains felsic portion, calcite veining interspersed throughout, 1-2mm veinlets that often run parallel to core, some appear almost stylolitic, volcanic breccia well sorted	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
636-642.3	95%	Dark gray black mottled rusty to tan brown shale	Carbonaceous shale, sandstone	Microcrystalline, clastic	None	Fracture	3/ft Light Subhorizontal	<2	----	----	Trace pyrite, trace calcite	Carbonaceous shale cut by sandstone, soft sediment deformation or microfaulting, small areas of brecciated vein at depth 629, 4mm calcite vein depth 636	Massive		
642.4 - 653.7	60% (Sampled)	Volcanic breccia	Gray brown matrix, tan, red, white, gray, black clasts	Matrix supported	None	Fracture	3/ft Light Subhorizontal	Matrix 4 Clasts >4	Clasts angular to subangular, some subrounded	2mm-30mm	Trace pyrite, felsic volcanics 35% clast 65% matrix	Sharp contact with previous interval, moderately sorted, trace pyrite scattered throughout, no very large clasts, some clasts can be zoned	Massive		
653.8 - 655.8	95%	Carbonaceous shale and sandstone	Dark gray black	Microcrystalline and clastic	None	Fracture	Intensely fractured, uncountable	<2	-----	----	-----	Scarce, spotty, and various minor discontinuous brecciation, calcite veining and portions throughout, sandstone with depth	Massive		
655.9 - 667.4	95%	Carbonaceous shale and sandstone	Dark gray black with mottled gray tan	Microcrystalline and clastic	None	Fracture	2/ft Light Mostly subhorizontal	4	----	----	Trace pyrite	Primarily sandstone broken by veins of shale whose concentration decreases with depth, distinctive gray black 2mm vein cut and displaced in multiple areas, perhaps microfaulting (?)	Massive		
667.5 - 672.5	95%	Carbonaceous shale and sandstone	Dark gray black mottled with gray tan	Microcrystalline and clastic	None	Fracture	8/ft Intense Decreases slightly with depth, all orientations	<2	-----	-----	-----	Evidence of faulting throughout, spotty, minor discontinuous areas of brecciation, clasts 1-2mm and well sorted and subrounded, sandstone still present but not as concentrated and appears to have larger clasts	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/weathering	Structure/orientation	Fractures/fracture frequency	Rock strength/hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
672.6 - 691.5	85% (sampled)	Carbonaceous shale and sandstone	Dark gray mottled with light tan gray	Microcrystal line and clastic	None	Fracture	3/ft Light Subhorizontal, angled at start of interval	Black <2	Plag tabular and subrounded	Plag 1-3mm	Trace pyrite, plag	Carbonaceous shale brecciated the felsite, felsite contains mineral likely plag, shale can be interbedded with sandstone in thin veins or clasts, spotty, small, discontinuous areas of minor brecciated, clasts appear to be felsic volcanic that are 1-2mm, well sorted, subangular to angular, plag or felsite can be zoned, massive calcite depth 678, felsite can have thin 1mm dark gray and rusty tan veins	Massive		
691.6 - 697.7	95%	Carbonaceous shale, sandstone	Dark gray black mottled gray tan	Microcrystal line, clastic	None	Fracture	4/ft Light All orientations, decreases with depth	Black <2 Breccia >4	Clasts angular to subangular, some subrounded	2-30mm	Felsic volcanics	Interval dominantly shale mottled by sandstone, volcanic breccia clast supported, poorly sorted with angular to subangular clasts that also brecciated shale, clasts seem dominantly felsic with some zoned clasts, matrix is dark gray, gradual contacts	Massive		
697.8 -709	75% (Sampled)	Carbonaceous shale, sandstone	Dark gray black mottled gray tan	Microcrystal line, clastic	None	Fracture	3/ft Light All orientations	Black <2	-----	-----	-----	Shale, shale and sandstone can be parallel banded with each other, faint striations depths 705	Massive		
710-721.2	95%	Carbonaceous shale, sandstone, syenite dike	Dark gray black mottled with dirty white tan	Microcrystal line, porphyritic, phaneritic	None	Fracture	3/ft Light Subhorizontal	Shale <2 Felsite 3.5	Breccia is angular to subangular	Breccia is 2-5mm	Trace calcite, felsite volcanics	Felsite brecciated the shale in multiple areas, generally has sharp contact, small 1-3mm clasts in portions of felsite appear elongated and stretched, rusty brown faint veining throughout felsite with no set pattern, rest of interval is shale mixed with sandstone, dominantly shale, trace calcite spots and thin veins depth 708	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
721.3-730	95%	Carbonaceous shale, sandstone	Dark gray black mottled with dark tan gray	Microcrystalline, clastic	Oxidized pyrite	Fracture	2/ft Light Subhorizontal	Shale <2 Sandstone 3.5	-----	-----	Trace pyrite	Shale interbedded with sandstone, two lithologies can parallel each other or appear broken up and almost clastic with clearly defined borders, likely faulted or metamorphosed or altered in some way, sandstone dominated (65%), spots of subrounded 5-7mm blobs of pyrite on top of core	Massive		
731-749	95%	Carbonaceous shale, sandstone	Dark gray black mottled with dark gray tan	Microcrystalline, clastic	None	Fracture	Intense >8/ft All orientations	Shale <2 Sandstone 3.5 Breccia 4	Breccia angular to subangular	Breccia 1-25mm	Trace calcite, trace felsic volcanics	Small matrix supported volcanic breccia, 65% clast, dominantly shale with sharp decreases in sandstone, two lithologies dominantly parallel each other, faint but clear, thin striations found on many core faces, small blobs and veining of calcite throughout, sharp increase in sandstone 749	Massive		
750-764.5	80% (Sampled)	Carbonaceous shale, sandstone, syenite	Dark gray mottled with dark gray tan and dirty gray-tan felsite	Microcrystalline, clastic, aphanitic	None	Fracture	Intense >8/ft All orientations	Shale <2 Sandstone 3.5	Breccia angular to subangular	Breccia 1-3mm	Trace calcite, trace felsic volcanics	Small faint areas depths 757-758 of 10cm volcanic breccias, matrix supported, small thin veinlets and blobs of calcite in very trace amounts, sharp contact between shale and felsite, felsite can be veined with shale and rusty brown, faint striations on some faces, shale and sandstone can parallel, shale dominant	Massive		
764.6-777	95%	Carbonaceous shale, sandstone, syenite	Dark gray black mottled with dark gray tan, syenite is light to tan gray	Microcrystalline, clastic, porphyritic	None	Fracture	5/ft Moderate All orientations	Shale<2 Sandstone 3.5 Syenite 4	Plag tabular, subangular to subrounded	Plag 1-2mm	Trace plag	Syenite is fairly plag poor, contains multiple 5-10mm rounded xenoliths, amount of sandstone decreases with depth, two lithologies can parallel each other and can be almost clastic, can be offset by fractures and 1mm black veins, faint striations on some faces	Massive		





**DRILL LOG—CORNUDAS MOUNTAINS, CHESS DRAW, OTERO COUNTY, NEW MEXICO**

HOLE NUMBER   3   DATE STARTED  03/03/2021  COMPLETED  05/05/2021  LOGGED BY  HD  **CORE** CUTTINGS

LOCATION (UTM) \_\_\_\_\_ COLAR ELEVATION \_\_\_\_\_ ft WEATHER \_\_\_\_\_

BOX NUMBER \_\_\_\_\_ INCLINATION \_\_\_\_\_ BEARING \_\_\_\_\_ SOP 17 DEVIATION FROM SOP \_\_\_\_\_

COMMENTS  Everything logged wet. All missing intervals correspond to missing core, modified by VTM to correlate with mapped geology at the surface (6/4/22) 

Depth	% Recovery/ size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
54.3- 65.5	90%	Siltstone to fine sandstone	Rusty orange tan to dark gray tan	Clastic	Calcite veining, spotting, and vugs throughout, concentrations increases with depth	Fracture	Intensely, uncountable, and variable Decreases with depth All orientations	Brown 2 Gray 4	-----	-----	Calcite	Calcite alteration and crystallization throughout, no sharp contact between the two lithologies but siltstone can be striped with sandstone, fractures decreases sharply with depth, too fine grained to discern clast composition but qtz likely	Massive		
65.6- 72	90%	Siltstone	Orange to dark red- brown with some gray dark gray	Clastic	Moderate calcite veining, spotting, and alteration at start of interval	Fracture	Intensely, uncountable Increases with depth All orientations	Red <2 Brown gray 3	-----	-----	Trace calcite	No sharp contact between color change, heavily fractured, has some limestone towards end but fractures make it difficult to discern where	Massive		
73- 79	95%	Limestone	Dark gray with white- tan calcite and inclusions	Clastic	Calcite spotting, veining, vugs, and crystals throughout	Fracture	6/ft Moderate All orientations Decreases with depth	4	----	----	Minor calcite	Core starts off vuggy with many of them appearing stretched and elongated, calcite can brecciate core later interval, core has discoloration similar to color of sandstone in many areas as veins and spots, depth 76.9 appears to be brecciated by it, poorly sorted and angular 2- 7mm clasts, interbedding increases with depth	Massive		
80- 96	95%	Sandstone	Rusty gray tan	Clastic	Thin 1-2mm minor, discontinuous calcite veining throughout	Fracture	Variable >5/ft, moderate All orientations	3	----	----	Trace calcite, trace manganese oxide	Calcite veining decreases with depth, color not homogenous, core can have small portions of gray, redder tan, black from manganese oxide, at end of interval core is much softer, siltier, and displays reddish, angled veining	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
97-99.2	95%	Limestone and fine sandstone	Gray mottled with rusty tan red	Clastic	Calcite veining and vugs throughout	Fracture	2/ft Light Angled	Limestone 4 Rusty tan 4	----	----	Calcite	Calcite veining and vugs throughout that can brecciate core, almost appears as if sandstone or rusty-tan brown veining brecciated limestone as well, 20mm wide siltstone portion at end of interval, rusty tan veining is prevalent throughout, possibly an altered contact between sandstone and limestone?	Massive		
99.3-111	85% (Sampled)	Fine sandstone	Rusty orange tan	Clastic	Minor 1mm discontinuous calcite veining throughout	Fracture	3/ft Light Angled	3	----	----	Trace calcite, trace manganese oxide	Calcite veining sharply increased at depth, brecciated sandstone and there is a vug, black staining throughout possibly from manganese oxide	Massive		
112-124	95%	Fine sandstone	Rusty orange tan with dark red and black	Clastic	Oxidized iron mineral on outside of core, minor calcite veining and crystallization	Fracture	5/ft Moderate Slightly variable frequency All orientations	3	Oxidized iron subrounded to rounded	Oxidized iron 2-6mm	Trace oxidized iron mineral, minor calcite	Color and mineral change from previous depth, core can have dark red discoloration and bands, core also lightens to a tannish gray, can also have thin reddish veining cut and offset by calcite veining, discoloration often parallel each other at angle to core	Massive		
125-130	95%	Limestone, sandstone, and siltstone	Rusty orange tan with dark to gray and dark red brown	Clastic	Trace discontinuous 1mm calcite veins and spotting throughout	Fracture	3/ft Light Variable frequency All orientations	Siltstone 2 Sandstone 3 Limestone 3	----	----	Trace manganese oxide, trace calcite, trace manganese oxide	Alternating bands of the 3 lithologies, contacts can be obscured by fracturing or appear gradational, parallel banding of dark red brown at angle to core at end of interval	Massive		
131-137	90%	Shale(?)	Dark gray black	Microcrystalline	1mm discontinuous trace calcite veining and spotting with vugs	Fracture	Uncountable Intensely All orientations	4	----	----	Trace calcite	Darker, slightly harder than limestone previously seen, start of interval marks gradational transition with the previous interval's sandstone, incredibly fractured into small pieces, size of pieces slightly decrease with depth	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/weathering	Structure/orientation	Fractures/fracture frequency	Rock strength/hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
138-146.5	95%	Fine sandstone	Rusty orange tan with thin red-brown and black parallel veining	Clastic	None	Fracture	Intensely >8/ft All orientations	3	----	----	----	Thin dark red-brown and black banding throughout at angle to core, end of interval contains red brown siltstone	Massive		
146.6-155	55%	Siltstone	Medium gray intersperse with sparse red-brown	Clastic	None	Fracture	Uncountable Intensely fractured Decreases with depth All orientations	6	----	----	----	Sharp lithology and color change, fine-grained highly fractured lithology as if the source of sediment changed, could have been interbedded with dark red brown siltstone but fractures make it difficult to tell, powdery in some places	Massive		
156-166	95%	Fine sandstone, some siltstone	Rusty orange tan banded with dark brown red and gray	Clastic	None	Fracture	4/ft Light Variable frequency All orientations	3	----	----	----	Transition back to sandstone, previous lithology appears to be interbedded until depth 158 with sandstone and dark red-brown siltstone, core can be parallel banded with red and gray black, not very homogenous	Massive		
167-185.2	90%	Very fine sandstone and limestone	Rusty tan brown, dark tan gray, and gray	Clastic	Calcite veining, spotting, and vugs throughout	Fracture	Variable Light to intensely/uncountable All orientations	Sandstone 3 Limestone 5	----	----	Calcite, qtz or plag	1mm elongate qtz or plag crystals that do not fizz with HCl present in sandstone, preferred orientation, 10mm layer of maroon-brown siltstone separating sand and limestone, limestone is almost 'dirty', dark gray interspersed with gray-brown, highly fractured, jagged, and vesicular, end of interval is sandstone with lighter layering, layers offset by prevalent calcite veining	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/weathering	Structure/orientation	Fractures/fracture frequency	Rock strength/hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
185.3-200	85%	Very fine sandstone and limestone	Tannish red-gray and dark gray	Clastic	Trace calcite veining, spotting, and vugs throughout	Fracture	Variable Light to intensely/uncountable All orientations	Sandstone 3 Limestone 5	----	----	Trace calcite	Very fine sandstone bordering on siltstone with 1-2mm thick bands of maroon-brown siltstone, limestone (maybe dolostone?) that fizzes lightly, sparsely with HCl, at end of interval the limestone is brecciated in the sandstone, angular and poorly sorted, 3-35mm	Massive		
201-204	40% (Sampled)	Limestone	Dark gray brown	Clastic	Trace calcite veining and vugs	Fracture	Intensely, uncountable All orientations	4	----	----	Trace calcite	Highly fractured and sampled limestone, brown could be from contamination of other lithology but fracturing and lack of material make it impossible to tell, high response to HCl despite coloration	Massive		
205-212	90%	Siltstone and limestone	Mottled gray-brown and tan	Clastic	Minor calcite veining and vugs	Fracture	Variable Moderate to intense/uncountable All orientations	Siltstone 2 Limestone 4	----	----	Trace calcite	After 207, limestone is brecciated, angular and often rectangular clasts 5-40mm, appears as if siltstone has weathered out in some areas, clast and matrix supported dependent on depth, fractures decrease with depth, thin areas of maroon-brown siltstone	Massive		
240-242	95%	Clean limestone, very fine sandstone	Medium gray and rusty tan-brown	Clastic	Calcite veining throughout	Fracture	3/ft Light Subhorizontal and shallow angled	Sandstone 4 Limestone 4	----	----	Trace calcite	Cleanest limestone yet with constant color, strong effervescence, limestone broken up, veined, and brecciated by sandstone, 2-30mm clasts generally subangular to subrounded, clast supported, limestone can also be brecciated by crystalline calcite at start of interval, calcite can be in direct contact with sandstone and no limestone with a couple feet	Massive		
243-256	90% (sampled)	Very fine sandstone	Rusty tan-brown	Clastic	None	Fracture	3/ft Light All orientations	5	----	----	Trace calcite, trace manganese oxide	55mm subrounded limestone clast near end of interval, some sparks, uncommon, faintly darker banding present, some gray mottling that could be more manganese oxide	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
257-268.8	95%	Siltstone and limestone	Rusty tan-brown, maroon-brown, and dark-gray brown	Clastic	None	Fracture	Variable Light to intense/uncountable All orientations	Siltstone 2 Limestone 4	----	----	Trace calcite	Rusty brown-tan is siltstone this interval with similar grain size to maroon-brown siltstone, sharp contacts between lithologies, siltstone can slightly brecciate limestone, 2-5mm clasts, angular, clast supported	Massive		
268.9-277	95%	Sandstone, siltstone, and limestone	Rusty tan-brown, light gray, and dark gray-brown	Clastic	Trace calcite vugs and veins	Fracture	4/ft Light Subhorizontal	Sandstone 4 Limestone 4 Siltstone 2	----	----	Trace calcite	Mostly very fine sandstone interbedded with limestone, dark gray lithology depth 275 is very uniform, fine grained, does not fizz with HCl, sandstone has isolated 5mm or 40mm subangular clasts of limestone and lenses of siltstone, sharp and gradational contacts	Massive		
278-291	95%	Very fine sandstone	Rusty tan brown mottled with gray, maroon-red, and black	Clastic	Trace calcite veining and vugs	Fracture	3/ft Light Subhorizontal	Sandstone 4	----	----	Trace calcite	Sandstone contains light gray unit that could be new lithology but difficult to tell, fine grained and does not fizz with HCl and brecciated near end of interval, most calcite concentrated nearby but not always, core can have siltstone veins and lenses of maroon-brown, rest of core is mottled by dark gray structures and veining, core not very uniform	Massive		
292-301.2	80% (Sampled)	Very fine sandstone and limestone	Rusty ran brown and dark gray brown	Clastic	Calcite vug at start of interval	Fracture	Variable Light to intense and uncountable All orientations	Limestone 5.5 Sandstone 4	----	----	Trace calcite, trace manganese oxide	Gray lithology does not fizz with HCl but contains calcite veins and vugs, very fine grained, so it could be dolomite(?), sharp contact with the sandstone, can have 5mm maroon-brown areas of silt, grain size of rusty orange sandstone decreases with depth, almost to silt	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
301.3 - 309.4	95%	Siltstone and limestone	Rusty tan brown and dark gray brown	Clastic	None	Fracture	Variable Light to intense and uncountable All orientations	Limestone 5.5 Siltstone 2	----	----	----	Limestone grades into siltstone, starts gradually with faint silty veining before sharply contacting around depth 305, siltstone contains 2-50mm angular to subangular clasts of the limestone, limestone concentration decreases slightly with depth until end of interval where it grades back into limestone with faint rusty veining	Massive		
309.5 - 311.8	95%	Siltstone and very fine sandstone	Rusty-orange tan	Clastic	None	Fracture	Variable Light to intense All orientation	Siltstone 2 Sandstone 4	----	----	Trace manganese oxide	Grain size increases slightly with depth, difficult to tell where siltstone ends and sandstone begins but color does not change, sandstone veined with darker and paler orange, can clearly have lenses of siltstone at depth, single polished piece of core with faint striations possibly from faulting	Massive		
311.9 - 319	95%	Siltstone, very fine sandstone, and limestone	Rusty orange tan to dark gray brown	Clastic	Minor calcite veining and crystallization for half of interval	Fracture	Variable but averages 3/ft All orientations	Siltstone 2 Sandstone 4	----	----	Trace calcite	Transfers immediately into siltstone with 2mm-15cm clasts of limestone, poorly sorted, calcite vugs only in limestone along with veining, concentration decreases sharply with depth until interval is dominantly siltstone with a couple 45mm subrounded clasts, all sandstone at end of interval	Massive		
320-324	95%	Siltstone	Dark to medium gray brown	Clastic	Some areas contain minor 1mm calcite crystals on certain faces	Fracture	Intensely and uncountable All orientations	2 and 3	----	----	Trace calcite	Dark gray brown is silty, not very well lithified, and at the beginning of interval. Material at end of interval is better lithified, harder, and lighter in color, very fine grained, and contains calcite but does not effervesce. Fractures and silt contamination makes core very difficult to log	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
325-330	95%	Very fine sandstone, siltstone, and minor limestone	Rusty orange tan, maroon brown, and gray brown	Clastic	Minor calcite veining and spotty on limestone	Fracture	Around 5/ft Moderate All orientations	Siltstone 2 Sandstone 4 Limestone 6	----	----	Trace calcite	Dominantly sandstone with interspersed lenses or veins of maroon-brown siltstone, limestone possible because of calcite vugs but it is harder, does not always fizz with HCl, and lithologies have sharp contacts especially between siltstone and sandstone	Massive		
331-334	95%	Limestone and very fine sandstone	Gray brown with some tan	Clastic	Trace calcite veining and vugs	Fracture	Around 4/ft Light All orientations	Sandstone 4 Limestone 5	----	----	Trace calcite	Sandstone intermixed with limestone and possible different lithology that is fine-grained, gray-black, no HCl reaction. Sandstone	Massive		
335-345	95%	Very fine sandstone and siltstone	Gray brown and tan	Clastic	Trace calcite veining	Fracture	4/ft Light Increase with depth Shallow angles	4	----	----	Trace calcite, trace manganese oxide	Sandstone interbedded and brecciated gray lithology that is 4.5 hardness, not reactive with HCl, and fine grained. 2-50mm clasts angular to subangular, brecciation decreases with depth, 3mm areas thick of maroon red siltstone, gray lithology dominant at depth, could be dolomite	Massive		
346-352.2	90%	Siltstone, dolomite	Rusty tan orange	Clastic	Trace calcite veining	Fracture	Variable Light to intense All orientations	Siltstone 2 Dolomite 5	----	----	Trace calcite	Dominantly siltstone contains 2-30mm often rectangular, angular to subangular clasts of dolomite noted in previous interval, also contains small area of just that lithology with calcite	Massive		
352.3-356	45% (Sampled)	syenite dike, very fine sandstone	Spotted gray-brown, rusty tan orange	Aphanitic, clastic	None	Fracture	Intensely fractured All orientations	4	Elongate, oval Subrounded to rounded	1-3mm	Plag	Felsite dike with possibly plag, grains show distinct orientation and appear elongated or stretched, can appear layered with very slight color changes, additional dike at end of interval that is separated by sandstone, slightly redder in color than other dike with grains rounded rather than elongated	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
357-366.2	95%	Very fine sandstone, siltstone, and limestone	Rusty tan-orange and dark gray-brown	Clastic	Minor calcite veining	Fracture	4/ft Light Mostly subhorizontal with shallow angles	Sandstone 4 Siltstone 2 Limestone 2	----	----	Trace calcite	Starts off as fairly uniform sandstone, siltstone brecciates limestone, 2-50mm angular to subangular clasts, brecciation decreases with depth, more uniform and sharper contacts after depth 362.2, gray could be dolomite since it does not always fizz with HCl	Massive		
366.3 - 380.8	95%	Limestone and very fine sandstone	Rusty orange tan and light to medium gray-brown	Clastic	Trace calcite vugs and spotting	Fracture	3/ft Light Mostly subhorizontal	Limestone 6 Sandstone 4	----	----	Trace calcite	Starts off as fairly uniform limestone, maybe dolomite, highly fractured area before transitioning into sandstone that brecciated limestone, 2-40mm angular to subangular clasts, some siltstone towards the beginning of the interval that can be uniform and lightly brecciated	Massive		
380.9 - 398.5	90%	phonolite	Medium gray-brown with light brown mottling	Aphanitic	Trace calcite veining and spotting	Fracture	Intensely, variable, uncountable All orientations	5	----	----	Trace calcite	Dominantly very fine grained intermediate to mafic dike, very homogenous, 2mm lense of reddish tan siltstone, dike can be brecciated by tannish brown sandstone, poorly sorted 2mm-15mm angular clasts, matrix supported	Massive		
416-417	65%	Dolomitic limestone, siltstone, very fine grained sandstone	Gray mottled with light tan	Clastic	Trace calcite veining and spotting	Fracture	Intensely, uncountable, decreases slightly with depth All orientations	7	----	----	Trace calcite	Can be slightly brecciated by massive calcite in 100mm wide areas and 2mm veins, can contain veining of lighter gray color that brecciates core and appears to be very similar except for color, could contain minor clay	Massive		



Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
418-454	65%	Dolomitic limestone, siltstone, fine grained sandstone	Gray mottled with light tan	Clastic	Trace calcite veining and spotting	Fracture	Intensely, uncountable, variable All orientations	Limestone 6 Siltstone 2 Sandstone 3	----	----	Trace calcite	Intermixed limestone and dominantly siltstone, limestone has vugs with 5mm calcite crystals at start, limestone can be brecciated by siltstone, both clast and matrix supported, poorly sorted, angular, siltstone tends to be more fractured, can have sharp contacts with limestone but difficult to determine between siltstone and sandstone	Massive		
457-480.5	90%	phonolite, siltstone, minor fine grained sandstone	Tannish brown and medium gray	Aphanitic, clastic	Trace calcite veining and spotting	Fracture	6/ft to intensely Uncountable at start Frequency decreases slightly with depth All orientations	Siltstone 2 Sandstone 3 Mafite 5	----	----	Trace calcite	Transitions to fine sandstone at depth 473, color lightens slightly, interval starts highly fractured but decreased in intensity, mafite tends to be more fractured, siltstone brecciated mafite at some of the contacts, matrix supported, poorly supported, 2-25mm angular, mafite can have minor spotting of calcite and vesicular texture	Massive		
480.6-499	95%	Mafite, minor siltstone	Medium gray streaked with tannish brown	Aphanitic, clastic	Trace calcite veining and spotting	Fracture	5/ft to intensely Uncountable Decreases with depth	Mafite 4 Siltstone 2	----	----	Trace calcite	Sharp, sudden decrease in sandstone, dominantly fine grained mafite dike, start of interval has preferentially elongated calcite ovals, end of interval has more of siltstone but difficult to tell if it is part of the core or contamination or staining, presence of calcite crystals 5mm at depth	Massive		
500-514.5	90% (Sampled)	Very fine sandstone	Tannish brown	Clastic	None	Fracture	5/ft Moderate Increases slightly with depth Subhorizontal	3	----	----	-----	Dominantly fine sandstone, some siltstone (<5%) of same color, difficult to distinguish, rather homogenous, some darker portions or bands of possible manganese oxide or change in sediment, hardness tools scratch but leave some of the metal until hardness 8	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
514.6 - 521.5	95%	Fine sandstone	Maroon brown with tannish brown	Clastic	None	Fracture	4/ft Light Increases slightly with depth All orientations	Red 3 Tan 3	----	----	----	Grain size does not change, just color with sharp contacts but can grade in one area, maroon-brown veined with tan brown, looks almost brecciated, poorly sorted, clast supported, angular, interval towards end only has tannish sandstone	Massive		
521.6 - 540	95%	Fine sandstone, dolomitic limestone, minor siltstone	Tannish brown and medium gray brown	Clastic	Trace calcite veining and spotting	Fracture	5/ft Moderate Subhorizontal	Brown 4 Tan 3	----	----	Trace calcite	Primarily fine sandstone, limestone possible in middle of interval because of presence of calcite and color changes but difficult to tell, siltstone scattered throughout with no color change, limestone darker gray brown, sandstone can have thin banding	Massive		
541-548	95%	Dolomitic limestone, minor sandstone	Medium to dark gray brown	Clastic	Trace calcite veining and spotting	Fracture	4/ft Light Subhorizontal	Limestone 5 Sandstone 3	----	----	Trace calcite	Interval mostly dolomitic limestone, contains graded portions of sandstone, limestone contains small vugs and calcite veining in trace amounts, sandstone darker gray brown that previously seen	Massive		
549-581.6	95%	Very fine sandstone, siltstone, and minor dolomitic limestone	Tannish brown, light tan, maroon-brown, and medium brown-gray	Clastic	Minor calcite veining and spotting	Fracture	5/ft Moderate Mostly subhorizontal	Sand 3 Silt 2 Limestone 5	----	----	Trace calcite	Start of interval sandstone is pure white gray, transitions into maroon-brown with no change in grain size, siltstone at end of interval is more heavily fractured than other intervals, limestone can be lightly brecciated by surrounding sandstone, angular, poorly sorted, 20mm clasts, clast supported	Massive		
581.7 - 585	95%	Limestone ?	Dark gray mottled with tannish brown	Clastic	Minor calcite veining and spotting	Fracture	4/ft Light Increases sharply with depth Subhorizontal	5	----	----	Minor calcite	Fine grained lithology makes it difficult to tell if it is limestone or mafite, calcite veining and spotting led me to decide limestone, starts to transition into very fine sandstone at end of interval where fracture intensity increases sharply to uncountable	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
586-597	95%	Felsite, very fine sandstone	Light gray to light gray brown	Aphanitic, clastic	Sandstone might be lightly hematized	Fracture	7/ft Moderate All orientations	Felsite 4 Sandstone 3	Tabular	2-4mm	Trace plag	Color of core lightens considerably when compared with previous interval, dominantly fine grained, 6 inch interval of the tannish brown very fine sandstone, felsite brecciated sandstone further down, matrix supported, poorly sorted, 2-10mm clasts, angular, felsite has rectangular, angular, tabular inclusions of possibly plag	Massive		
598-602.5	60% Sampled	Felsite and mafite	Light to dark gray	Aphanitic	None	Fracture	Intense, uncountable All orientations	Mafite 3 Felsite 4	----	----	----	Interval begins as mafite before transitioning into felsite, mafite has some powdery white discolorations on some of the faces, tends to be more fractured than felsite	Massive		
612-620	95%	syenite, phonolite, volcanic breccia	Mottled gray and light gray brown	Aphanitic, clast supported	None	Fracture	Variable 3/ft to 8/ft Light to intense All orientations	4	----	----	Minor calcite	Starts off as mafite with 6in portion of volcanic breccia, transitions to highly, darkly and thinly veined felsite. Last 4 ft is the volcanic breccia, contains felsic and mafic clasts cemented with calcite in some areas throughout, looks as if the mafite makes the clasts and the more felsic material the matrix, clast supported, poorly sorted, angular 2-30mm, calcite cuts across both, 2 vugs with clear calcite crystallization	Massive		
621-629	45% (Sampled)	syenite, phonolite	Dark gray and light gray brown	Aphanitic	None	Fracture	6/ft Moderate All orientations	Felsite 4 Mafite 3	----	----	----	More felsite than mafite, mafite in 2 areas contains residual volcanic breccia with smaller clasts, felsite can be veined by dark gray big or thin veins that can even brecciate the felsite in some areas, fracture frequency does not include sampled core	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
630-649	80% (sampled)	syenite and volcanic breccia	Dark gray and light brown gray	Aphanitic	None	Fracture	Variable Light to intense All orientations	Felsite 3 Breccia 6	----	----	Minor calcite, minor plag possible	Felsite looks almost trachytic with tabular, lighter colored growths that could possibly be plag, can be slightly more rounded in shape and no preferred orientation, well defined yellowish calcite crystals near end of interval, breccia 20% clast and dominantly mafic, clasts not as defined but clast supported, angular, 2-20mm, includes some calcite	Massive		
650-683	95% (Sampled)	Volcanic breccia with syenite, phonolite	Light brown-gray to dark gray with mottled gray and white	Clast supported, Aphanitic	Secondary calcite veining, crystallization, and vugs	Fracture	Variable Light to intensely, uncountable All orientations	4 and greater	Angular to subangular	Clasts 2-40mm	Minor calcite Clast 80% Matrix 20%	All of interval contains assorted breccia, syenite at start with larger clasts, clast size decreases and concentration increases with depth, dominantly light tan-gray, fine-grained clasts in darker, gray and more mafic matrix, calcite throughout, changes color from orange-brown to clear to gray, clearly overlies both clast and matrix, poorly sorted	Massive		
684-706	75%	syenite, phonolite	Medium gray-brown and dark gray	Aphanitic	Minor calcite veining, vugs, and crystallization	Fracture	Variable Moderate to intensely, uncountable All orientations	Mafite 4 Felsite 4	----	----	Calcite	Starts off as mafite before transitioning to felsite, both containing veining, vugs, calcite crystallization, felsite slightly variable in color with thin, darker banding and veining, making it appear almost brecciated, calcite increases with depth	Massive		
707-722	90%	syenite	Medium tan-brown	Aphanitic	Minor calcite veining, vugs, and crystallization	Fracture	Variable Light to intensely, uncountable All orientations	3	----	----	Calcite	Felsite brecciated and cemented by calcite, poorly sorted, clast supported, 2-15mm, angular to subangular, calcite can be vuggy and crystalline, clast size and matrix concentration decrease with depth, felsite softens and crumbles with depth	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
723-728.5	90%	syenite, phonolite	Medium and dark gray with brown orange discoloration	Aphanitic	Trace calcite veining and crystallization	Fracture	Variable Light to intensely, uncountable All orientations	Felsite 7 Mafite 7	----	----	Trace calcite	Transition between mafite and felsite, most of core has this browning-orange staining on faces, could be clay alterations, leftover siliciclastic, contamination, different source of fluid (unlikely)	Massive		
728.6-730 741.5-750.5	95%	phonolite	Dark gray with some orange brown	Aphanitic	Minor calcite veining, vugs, and crystallization	Fracture	6/ft Moderate Subhorizontal	4	----	----	Minor calcite	Dominantly mafite, can be brecciated by calcite, clast supported, poorly sorted, angular 2-10mm, calcite can be white, gray or orangish, some of core contains same discoloration noted above, also contains 40mm thick portion of soft orange-brown lithology or xenolith with sharp contact, scratched by fingernail in some areas	Massive		
750.6-757	35%	syenite	Orange-brown and gray	Aphanitic	Minor calcite veining, vugs, and crystallization	Fracture	Variable Uncountable, intense All orientations	6	----	----	Minor calcite	Brown-orange coloring prevalent and over-powering, decreases with depth, no features and very fine appearance make it difficult to know cause and lithology of the coloration, can appear to sharply contact and segregate from felsite, most of core is missing both from sampling and recovery	Massive		
758-772	85%	Phonolite	Medium to dark gray with orange-brown	Aphanitic	Trace calcite veining, vugs, and crystallization	Fracture	Variable Uncountable, intense All orientations	4	----	----	Trace calcite	Start of interval is clean, unaltered mafite, proceeds to have more of that orange-brown coloration and trace calcite veining, color lightens after 767, calcite can be clear, white, or orange	Massive		
773-775.5	80%	phonolite	Dark orange-gray	Aphanitic	None	Fracture	Variable Uncountable, intense All orientations	4	----	----	----	Highly fractured Mafite with prevalent orange-brown start of interval core is soft and crumbly like siltstone, fracture intensity makes it difficult to tell more	Massive		

Depth	% Recovery/size of core/RDQ	Lithology	Color	Texture	Alteration/ weathering	Structure/ orientation	Fractures/fracture frequency	Rock strength/ hardness	Phenocryst shape	Phenocryst size	Mineralogy	Comments	Fabric	Geiger counter response (anomalous)	UV response (SW and LW)
775.6 -799 (end)	85%	Phonolite	Medium dark gray with orange brown	Aphanitic	Trace calcite veining, vugs, and crystallization	Fracture	Variable Light to intense, uncountable All orientations	4	----	----	Trace calcite	Clean Mafite at end, middle of interval can be lightly brecciated by orange tan, clast supported, poorly sorted, 2-30mm and generally faint, core can appear vesicular/glassy textured throughout sometimes with calcite growth	Massive		