NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

DESCRIPTION, CLASSIFICATION, AND INVENTORY OF 151 APOLLO 16 RAKE SAMPLES FROM THE LM AREA AND STATION 5

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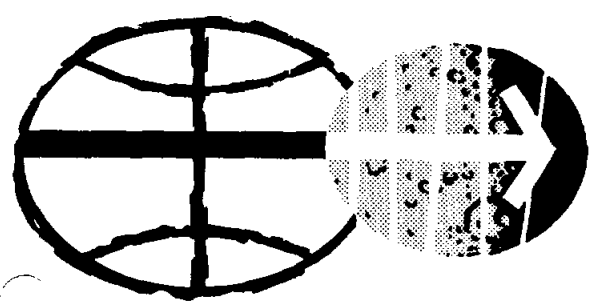

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS
December 1972

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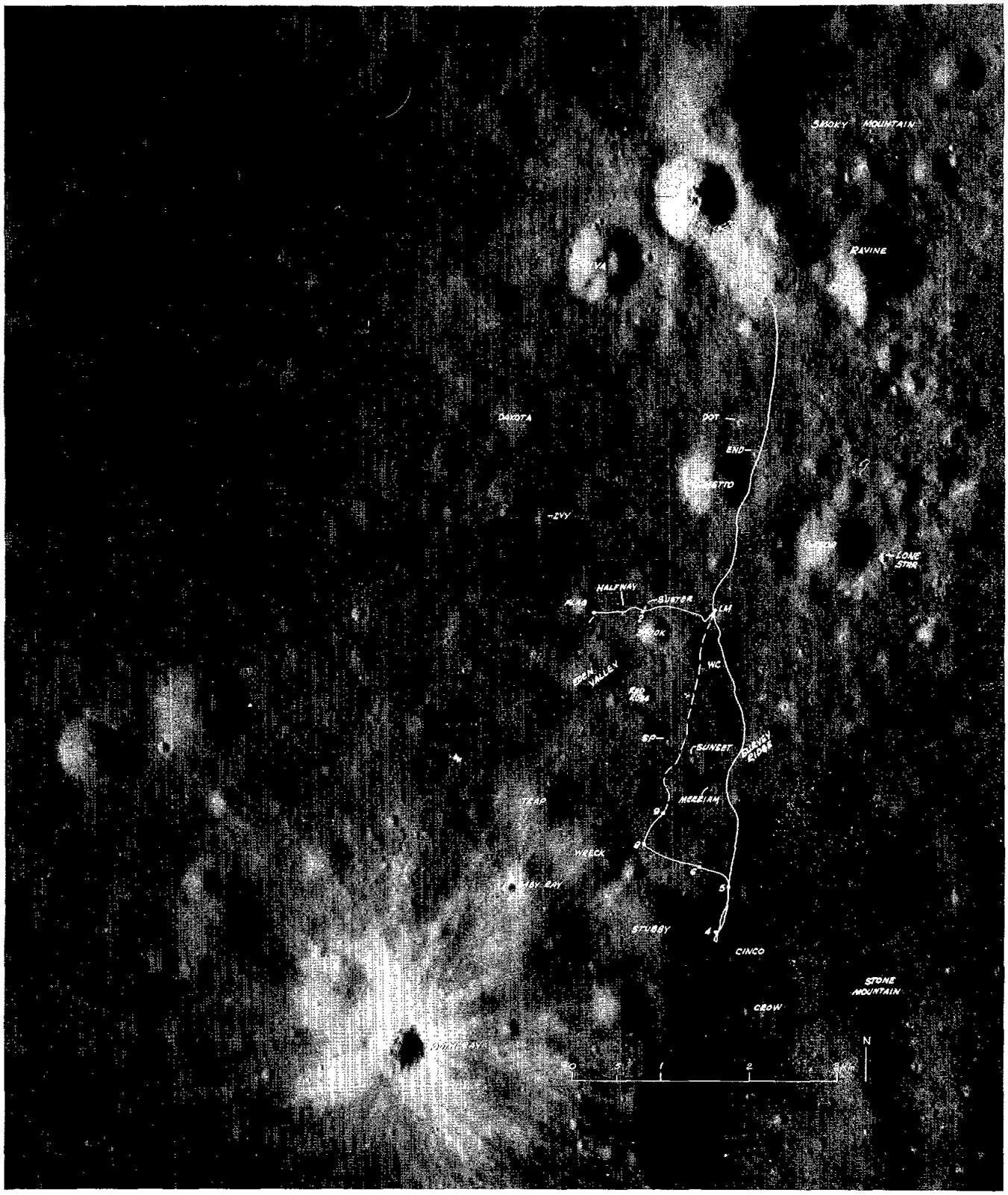
Contents

Abstract

One hundred fifty-one Apollo 16 rake samples from the LM area and station 5 were studied macroscopically and with the aid of a stereomicroscope, while still in the nitrogen cabinet containers in the Lunar Receiving Laboratory, Manned Spacecraft Center, Houston, Texas. The rocks are described and classified into 8 groups, namely anorthosites (20); troctolitic and noritic crystalline rocks (apparently igneous) (3); gray, fine-grained crystalline rocks (18); gray vesicular glass (usually devitrified), with clasts of anorthosite or plagioclase (20); glassy agglutinates (6); gray and white microbreccias and breccias (33); soil clods (37); and brownish soil breccias (14). Classification of certain individual rocks is often difficult because they grade from one type into the other. Hence, detailed microscopic study in thin section, combined with bulk and mineral analysis will be necessary for a more definite classification of certain rocks.

1. Introduction

In the present report, descriptions and classifications of 151 Apollo 16 rake samples from the LM area and station 5 are presented. The purpose of this study is to provide a preliminary classification of the rake samples, based on macroscopic and stereomicroscopic study of the rocks while they were still in the nitrogen cabinets at the Lunar Receiving Laboratory, Manned Spacecraft Center, Houston, Texas, in an attempt to provide a petrologic basis for further allocations of rake samples to Principal Investigators working in various scientific disciplines. Furthermore, this preliminary classification should aid these Principal Investigators in interpreting their analytical data before more detailed mineralogic, petrologic, and bulk chemical data are available.


SMOKY MOUNTAIN
RAVINE
IVA
DAKOTA
POT
END
ZYY
LONE STAR
HALFWAY
SUMTER
LM
WC
SUNSET
DUNLEY RIDGE
MERRIAM
TRAP
WRECK
BAY
STUBBY
CINCO
STONE MOUNTAIN
CROW
N
0
1
2
3 Km

The classification proposed here closely follows that established by the Preliminary Examination Team for these rocks. However, modifications were made, both in regard to the classification principle as well as the classification of individual rocks. Since macroscopic and stereomicroscopic study of these rocks was performed while the samples were still in the nitrogen cabinets only limited sample access was available, and the classification proposed here is by necessity preliminary. Detailed mineralogic, petrologic, and chemical studies will commence when these samples are allocated and may prompt modifications in this classification. However, it is believed that the basic classification of these rocks into 8 groups is realistic and will be maintained, in principle, even after more detailed work.

2. Sample locations

The samples studied here are from two collection sites, namely the LM area (60000 numbering sequence) and station 5 (65000 (numbering sequence). The specific locations of these stations in relation to the other sampling sites and major morphological features in the vicinity of the landing site are shown in Fig. 1.

3. Classification

3.1. General characterization

The 151 rock samples were classified on the basis of macroscopic and stereomicroscopic studies of the textures and mineral contents. This classification is therefore limited by the resolution of the stereomicroscope and by the difficulties encountered in accurately identifying minerals. On the basis of texture and mineral content, the rake samples

were divided into 8 groups. These are anorthosites (20) (group 1); troctolitic and noritic crystalline rocks (apparently igneous) (3) (group 2); gray, fine-grained crystalline rocks (18) (group 3); gray vesicular glass (usually devitrified), with clasts of anorthosite or plagioclase (20) (group 4); glassy agglutinates (6) (group 5); gray and white microbreccias and breccias (33) (group 6); soil clods (37) (group 7); and brownish soil breccias (14) (group 8). A general characterization of the 8 rock groups is given below.

3.1.1. Anorthosites (20) (group 1)

60515, 60516, 60517, 60518, 60519, 60618, 60619, 60628, 60629, 65325, 65326, 65327, 65328, 65329, 65335, 65336, 65359, 65759, 65766, 65789.

Almost all anorthosites have at least 98% feldspar, with mafic minerals occurring only as tiny specks, too small to be identifiable conclusively in the stereomicroscope. Clear feldspar crystals larger than 2 mm are often present, but only as islands in finely comminuted material; all rocks have been shocked. Many have crusts of dark glass on one or more surfaces.

60618 has vesicles (?) in some parts, and some of these appear to be lined with metal. The rock immediately surrounding the vesicles is darker. 65359 has gray clots that are possibly foreign clasts or re-crystallized feldspar or glass. 65759 and 65766 appear to be clasts of anorthosite broken out of breccias

3.1.2. Troctolitic and noritic crystalline rocks (apparently igneous) (3) (group 2)

60635, 65785, 65795

60635 is a very vuggy, fine-grained rock. The mafic mineral that

makes up 10% of the rock is probably pyroxene and is also very fine-grained.

65785: Most of the rock appears to be fine-grained and plagioclase-rich, but there is one area with olivine and red spinel poikilitically enclosed in plagioclase.

65795: This is a troctolitic anorthosite or troctolite, fairly coarse (grain size about 0.2-0.4 mm) with about 10% olivine. There is also about 2% of an orange brown phase which is probably pyroxene, and some opaques. Shock effects do not appear to be severe.

3.1.3. Gray, fine-grained crystalline rocks (18) (group 3)

A. Tough

(i) With "clasts" of plagioclase

60525, 60527, 60615, 60616, 60617, 60636, 65357, 65358

(ii) without "clasts" of plagioclase

60526, 60626, 60627, 65777, 65778, 65779

B. Friable

60625, 65365

C. Vuggy, with plagioclase and anorthosite clasts

60667, 60675

All rocks of this group have a gray fine-grained crystalline matrix which usually has a marbled appearance, with irregular patches of white material (undoubtedly plagioclase) surrounded by gray or slightly brownish material. Many of the specimens are encrusted with gray, vesicular glass (group 4). Rocks of this group do not appear to be primary igneous rocks, but may have formed by recrystallization of either (or both) the gray vesicular glass (group 4) or some kind of microbreccia (possibly group 6).

Rocks of subgroups A (i) contain clear plagioclase clasts, sometimes 2 mm or larger, but there are usually only a few such clasts.

Rocks of subgroup A (ii) appear to lack plagioclase "clasts" but are otherwise similar to A (i).

Rocks of subgroup B are also similar to A (i) but appear to be friable. 65365 has plagioclase clasts, 60625 does not.

Rocks of subgroup C are somewhat darker than those of group A and B and have a very rough, irregular surface and many vugs. For these particular rocks, origin by recrystallization from the gray vesicular glass (group 4) seems most likely.

3.1.4. Gray vesicular glass (usually devitrified), with clasts of anorthosite or plagioclase (20) (group 4)

60528, 60529, 60645, 60646, 60647, 60648, 60649, 60655, 60665, 60666, 60668, 60669, 60677, 60678, 60679, 65348, 65349, 65355, 65356, 65366.

All of these rocks are vesicular, most with 10% or more vesicles, and all contain white clasts. Some also contain clasts of microbreccias or gray, fine-grained crystalline rocks. The degree of devitrification varies; parts of some specimens are shiny and translucent (glassy) whereas others are completely devitrified with grain sizes approaching 0.1 mm. In some of the latter rocks, interlocking laths (of plagioclase?) can be seen on the walls of vesicles.

65366 consists of flakes of glass which once covered an anorthosite specimen. The flakes are about 1-2 mm thick and usually have anorthosite adhering to one surface. They are not as vesicular as most of the other rocks in this group.

3.1.5. Glassy agglutinates (6) (group 5)

65585, 65586, 65587, 65767, 65776, 65788

Rocks of this group are vesicular glass fragments, highly irregular in shape (ropy, blobby, etc.) which have apparently incorporated clasts of

various kinds. Their color is sometimes yellow-greenish and they may be melted and vitrified brown soil.

3.1.6. Gray and white microbreccias and breccias (33) (group 6)

A. Clasts of both plagioclase and gray crystalline rock.

60535, 60639, 60656, 60676, 65337, 65338, 65339, 65345, 65346, 65347, 65715, 65716, 65717, 65718, 65719, 65725, 65726, 65727, 65728, 65729, 65735, 65736, 65737, 65738, 65739.

B. Clasts primarily of plagioclase or anorthosite

60657, 60658, 60659, 65757, 65758, 65765, 65786, 65787

These are friable to coherent rocks, with clast sizes ranging from microbreccia (<1.0 mm) to fine breccia (>1.0 mm). The matrix appears to be finely granulated clast material (i.e., mostly feldspar). In most rocks, the clasts are almost exclusively anorthosite, plagioclase crystals, gray fine-grained crystalline rocks, and sometimes gray vesicular glass. Other kinds of clasts, such as green spherules and yellow mafic silicate grains are sparse. The matrix is gray and most clasts are white, giving a salt and pepper appearance.

60639 has a basalt clast (the only basaltic rock found in the rake samples studied here).

65337 has greater variety of clasts than most, including spherules, olivine (?), and pyroxene (?) grains.

65728 has blue-green and red clasts, possibly grains of mafic silicates.

3.1.7. Soil clods (37) (group 7)

65515,65516, 65517, 65518, 65519, 65525, 65526, 65527, 65528, 65529, 65535, 65536, 65537, 65538, 65539, 65545, 65546, 65547, 65548, 65549, 65555, 65556, 65557, 65558, 65559, 65565, 65566, 65567, 65568, 65569, 65575, 65576, 65577, 65578, 65579, 65588, 65755.

These rocks are friable (to disintegrated) clods of orange to yellowish brown soil, with a fine (< 0.05 mm), remarkably uniform grain size. A few clasts are sometimes present.

65529 has several spherules.

65536 has one spherule.

65575 has some crystalline clasts.

65579 has a clast of gray glass.

65755 has several kinds of clasts.

3.1.8. Brownish soil breccias (14) (group 8)

60637, 60638, 65745, 65746, 65747, 65748, 65749, 65756, 65768, 65769, 65775, 65925, 65926, 65927.

These breccias are generally friable. They contain clasts that are similar to those in group 6 breccias; i.e., anorthosite and plagioclase and gray, fine-grained crystalline rocks, plus occasionally other types of clasts. However, the matrix of these rocks appears to be the same type of brownish soil that is in the clods (group 7), perhaps somewhat recrystallized. Some rocks are coated with glass similar to that in the glassy agglutinates (group 5).

3.2 ROCK DESCRIPTION

3.2.1 Anorthosites (Group I)

Generic No.: 60515,0
Rock Type: Anorthosite

Weight (g): 16.74
Dimensions (cm): 3 x 2.5 x 7
Color (fresh): White (N9)
Shape: Rounded
Variability: None
Coherence: intergranular - moderately coherent
fracturing - few
Fabric/texture: Isotropic/fine granular, sugary
Cavities (%): None
Surface: Granulated
Zap pits: Few to many, depending upon location. Often lined by black or colored glass.

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99		Very fine		Appears finely comminuted.
Mafic minerals	Dark	1		See comments below (1)		

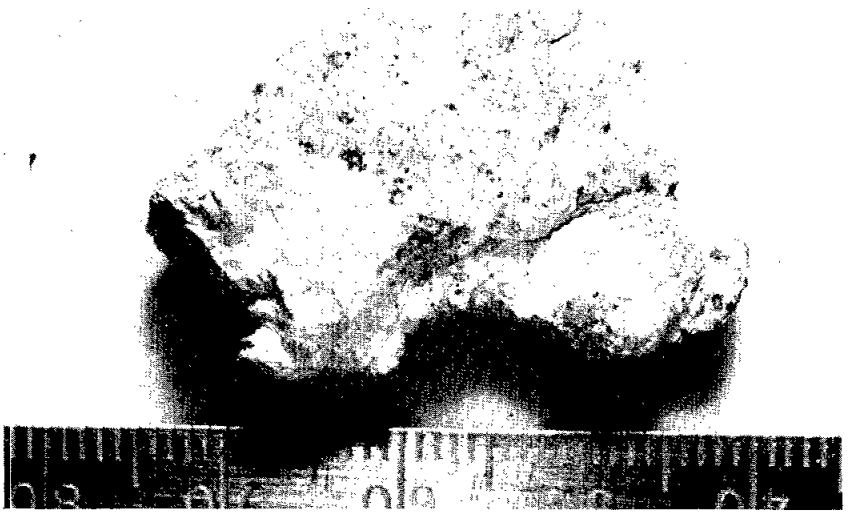
Special Features: (1) Mafic minerals usually occur as tiny (<0.05 mm) grains scattered throughout the plagioclase. The exact mineralogical character cannot be determined under the binocular microscope, except that small amounts of opaques appear to be present.

Generic No.: 60516,0
Rock Type: Anorthosite

Weight (g): 7.91
Dimensions (cm): 3.2 x 2.0 x 1.5; 0.4 and 0.3 - two flakes
Color (fresh): White (N9)
Shape: Subangular to rounded
Variability: None
Coherence: intergranular - moderately coherent
fracturing - few
Fabric/texture: Isotropic/inequigranular, sugary
Cavities (%): None
Surface: Granular to irregular
Zap pits: Few to many, depending upon location on rock. Often black or colored glass lining.

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99	Irreg	Up to 2 mm		Some large crystals, but mostly finely comminuted.
Mafic minerals	Dark	1	See comments below (1)			

Special Features: (1) Mafic minerals usually occur as tiny (<0.05 mm) grains scattered throughout the plagioclase. The exact mineralogical character cannot be determined under the binocular microscope, except that small amounts of opaques appear to be present.

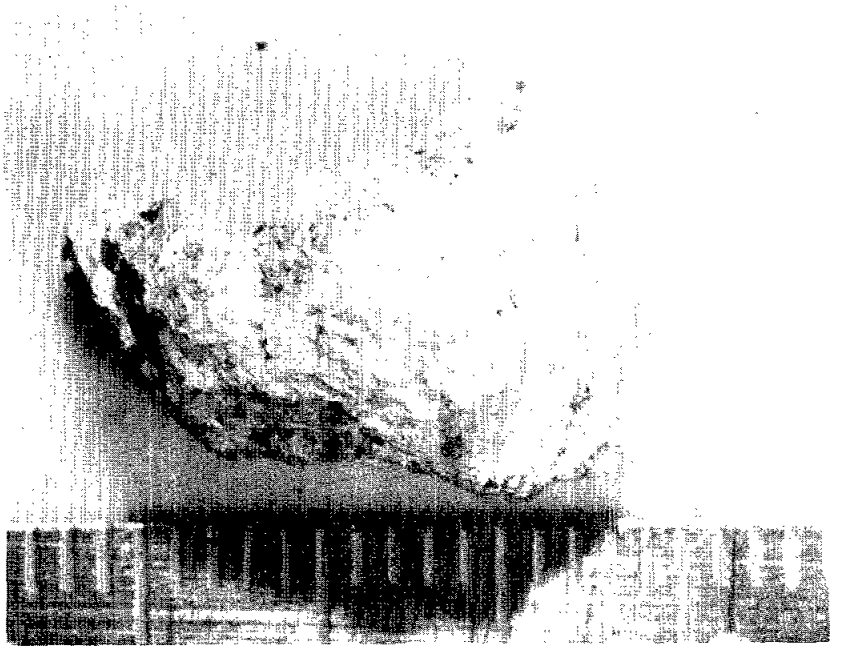


Generic No.: 60517,0
Rock Type: Anorthosite

Weight (g): 1.23
Dimensions (cm): 1.6 x 1.1 x 0.7
Color (fresh): White (N9)
Shape: Subangular
Variability: None
Coherence: intergranular - moderately coherent
fracturing - few
Fabric/texture: Isotropic/fine granular; sugary
Cavities (%): None
Surface: Granulated
Zap pits: Few to many, depending upon which face of rock is studied. Often, zap pits are lined by black or colored glass

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99		Very fine		Appears finely comminuted
Mafic minerals	Dark	1		See comments below (1)		

Special Features: (1) Mafic minerals usually occur as tiny (<0.05 mm) grains scattered throughout the plagioclase. The exact mineralogical character cannot be determined under the binocular microscope, except that small amounts of opaques appear to be present.

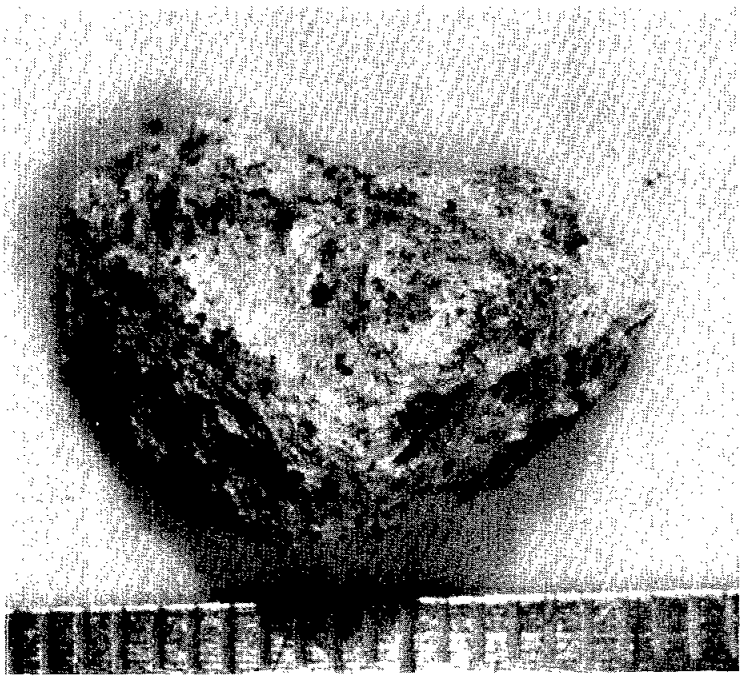


Generic No.: 60518,0
Rock Type: Anorthosite

Weight (g): 1.12
Dimensions (cm): 1.5 x 1.1 x 0.6
Color (fresh): White (N9)
Shape: Subangular
Variability: None
Coherence: intergranular - moderately coherent
fracturing - few
Fabric/texture: Isotropic/fine granular, sugary
Cavities (%): None
Surface: Granulated
Zap pits: Few; often with black or colored glass lining

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99		Very fine		Appears finely comminuted
Mafic minerals	Dark	1		See comments below (1)		

Special Features: (1) Mafic minerals usually occur as tiny (<0.05 mm) grains scattered throughout the plagioclase. The exact mineralogical character cannot be determined under the binocular microscope, except that small amounts of opaques appear to be present.

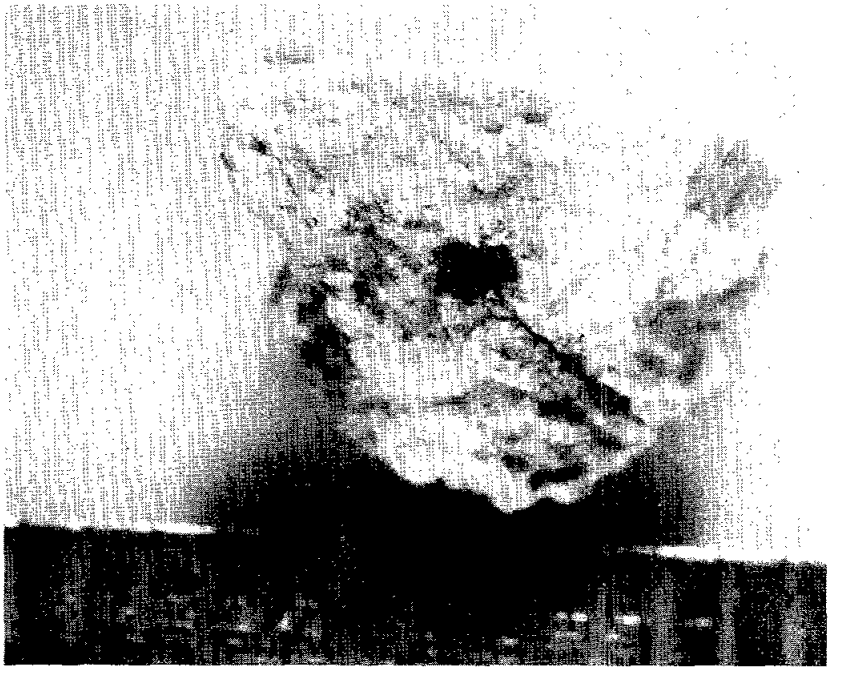


Generic No.: 60519,0
Rock Type: Anorthosite

Weight (g): 0.50
Dimensions (cm): 0.8 x 0.5 x 0.5
0.8 x 0.4 x 0.4
Color (fresh): White (N9)
Shape: Subangular
Variability: None
Coherence: intergranular - moderately coherent
fracturing - few
Fabric/texture: Isotropic; fine granular; sugary
Cavities (%): None
Surface: Granulated
Zap pits: Few; often with black or colored glass lining

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99		Very fine		Appears finely comminuted
Mafic minerals	Dark	1		See comments below (1)		

Special Features: (1) Mafic minerals usually occur as tiny (<0.05 mm) grains scattered throughout the plagioclase. The exact mineralogical character cannot be determined under the binocular microscope, except that small amounts of opaques appear to be present.



60618

Generic No.: 60618,0
Rock Type: Anorthosite (brecciated)

Weight (g): 21.67
Dimensions (cm): 4.0 x 2.3 x 1.5
2.4 x 1.8 x 0.5
1.8 x 1.2 x 0.3
Color (fresh): Light gray (N7)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Breccia. Large plagioclase crystals (often >0.5 cm) embedded in fine-grained plagioclase matrix.
Cavities (%): Few (<5%). Some localized cavities, with apparent metallic lining. Some cavities have pink to lavender crystals. Vesicles.
Zap pits: Few. Glass lined by white, clear, gray glass. Some have dark glass.

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	Clear	99	Angular	Extreme		
Pink to lavender phase		<0.1	Crystals	<0.02		Perhaps spinel
Nickel-iron	Dark	<0.1	Irreg	<0.02		Perhaps nickel-iron
Splash metal	Lining cavities, or streaky on surface					

Special Features: Several round cavities, maximum 4 mm in diameter to <0.05 mm, have smooth interiors and sometimes appear to be lined by metal. They are highly localized in certain parts of the rock. Where the cavities are located, the color of the surrounding rock is darker (medium gray). Beady areas of splash glass occur.

Generic No.: 60619,0
Rock Type: Anorthosite

Weight (g): 28.0
Dimensions (cm): 3.5 x 2.8 x 2.0
Color (fresh): Light gray (N7) to very light gray (N5)
Shape: Rounded
Variability: None
Coherence: intergranular - coherent
fracturing - very few
Fabric/texture: Isotropic. Equigranular, sugary
Cavities (%): None
Surface: Granulated
Zap pits: Few to many depending upon location. Some are glass lined (clear or dark), others are not.

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	Clear to very light gray	99+		<1.0		
Opaques	Dark	<0.1				

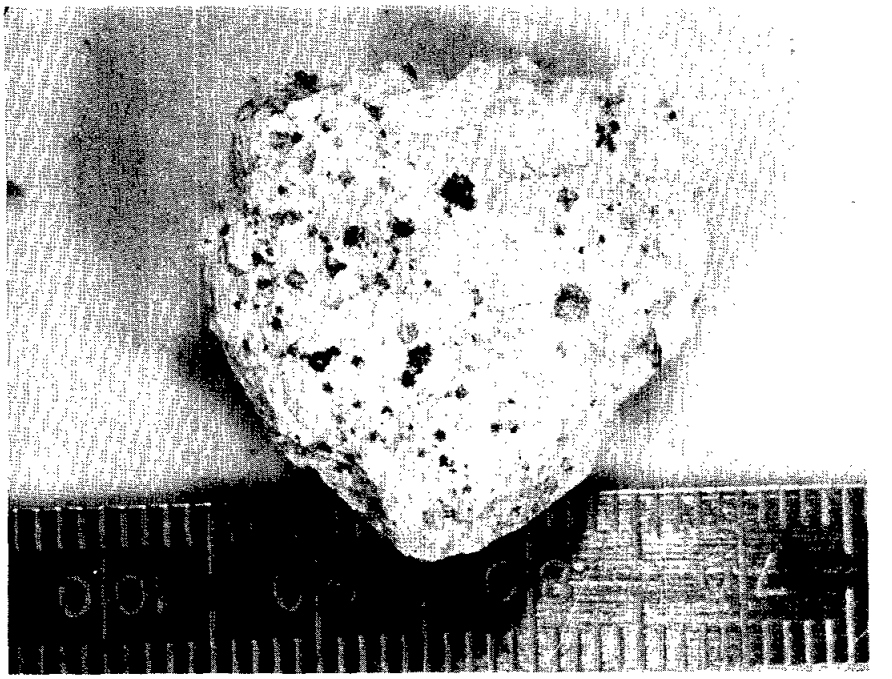
Special Features: Has an area of splash glass (brownish-black); largest is ~4 mm in diameter.

Generic No.: 60628,0
Rock Type: Anorthosite

Weight (g): 6.86
Dimensions (cm): 2.5 x 2.2 x 1.2
Color (fresh): White (N9)
Shape: Subangular
Variability: None
Coherence: intergranular - friable to coherent, crushed
fracturing - very few
Fabric/texture: Isotropic, crushed
Cavities (%): None
Surface: Granulated
Zap pits: Many, on one side only. Splash glass (medium gray to clear) occurs on the same side

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99+	Irreg	Highly variable		

Special Features: Some of the plagioclase crystals are clear, whereas others are milky.

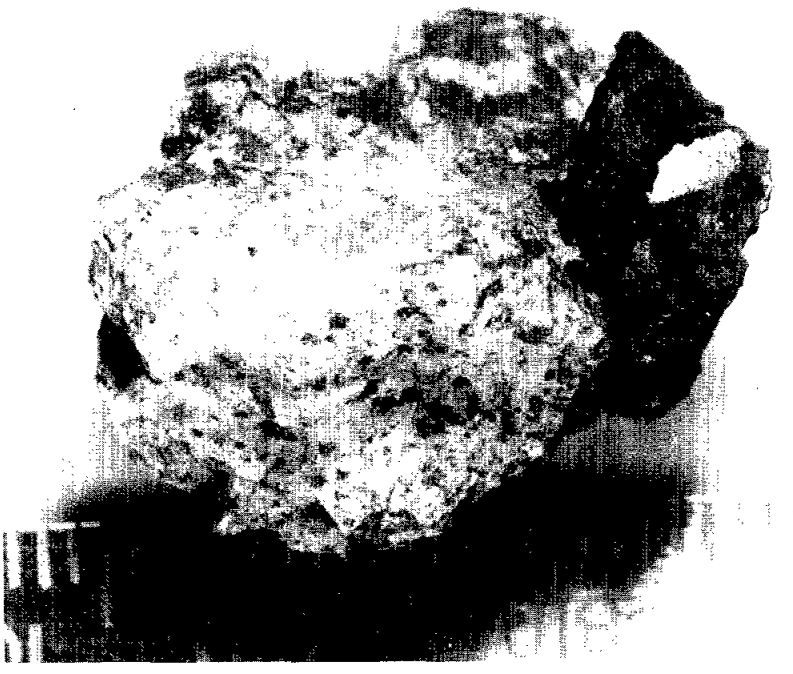


Generic No.: 60629,0
Rock Type: Anorthosite

Weight (g): 4.92
Dimensions (cm): 2.3 x 2.0 x 1.1
Color (fresh): White (N9)
Shape: Subangular
Variability: Yes. One side of the anorthosite has attached devitrified glass (medium dark gray, N4)
Coherence: intergranular - coherent
fracturing - few
Fabric/texture: Isotropic, sugary
Cavities (%): None, but some in the glass
Surface: Granulated
Zap pits: Many, lined by clear to dark greenish-gray glass.

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99+		Extremely fine-grained		
Glass	Medium dark gray (N4)	99+				

Special Features: This rock is 4/5 anorthosite, and, at one end, it has attached devitrified glass (1/5) which in turn contains inclusions of anorthosite.

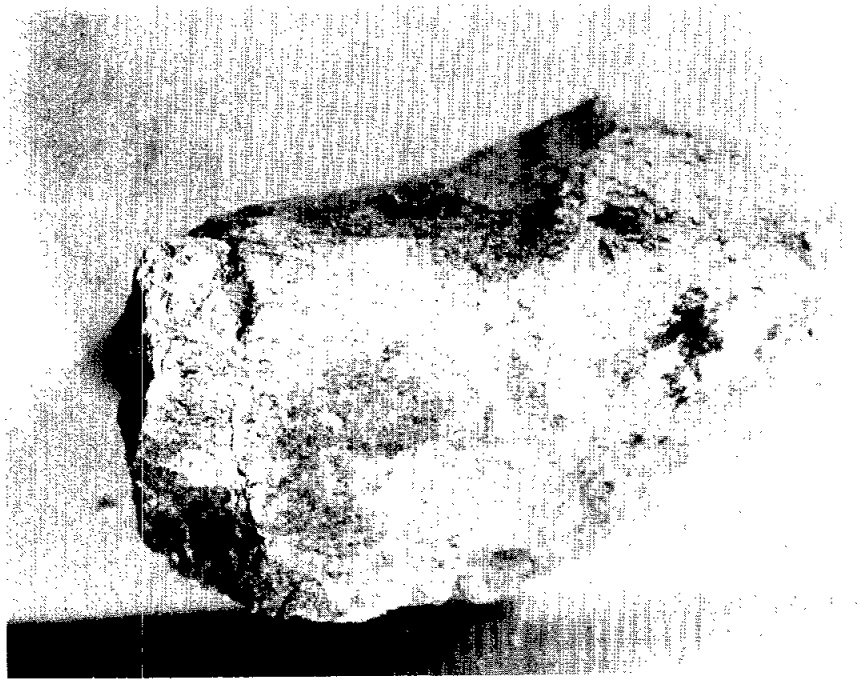


Generic No.: 65325
Rock Type: Anorthosite

Weight (g): 67.84
Dimensions (cm): 6.7 x 4.8 x 3.0
Color (fresh): White (N9)
Shape: Subrounded
Variability: None for bulk of rock: some crust present (1)
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/Inequigranular (powdery to granular)
Cavities (%): None
Surface: Granular - irregular (anorthosite), smooth (glass crust)
Zap pits: Few (many lined with dark glass)

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99	Irreg	~1	Up to 2	Many clear grains as islands in finely comminuted plagioclase
Maf. Sil.	Dark	1-	?	<.05		Tiny grains dispersed throughout rock
Opaque	Metallic	<0.1	Irreg	<.05		Probably Fe-Ni or troilite

Special Features: (1) A partial crust of dark brown glass on one surface.



65326

Generic No.: 65326
Rock Type: Anorthosite

Weight (g): 36.40
Dimensions (cm): 4.2 x 2.8 x 2.5
Color (fresh): Very light gray (N8)
Shape: Subrounded
Variability: Little or none
Coherence: intergranular - moderately friable
fracturing - few
Fabric/texture: Isotropic/inequig (powdery to granular)
Cavities (%): None
Surface: Granulated to irregular.
Zap pits: Very few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	90-95	Irreg	~1 mm	Up to 2	Many clear grains as islands in finely comminuted plagioclase
Gray "clasts"	Light gray (N7)	5-10	Irreg	~5	1 to 10	Probably not mafic silicate, though part could be. Some areas are definitely recrystallized plagioclase.
Maf. sil.	Dark	<1	?	<0.05		
Opaque	Metallic	<0.01	Irreg	<0.05		Probably nickel-iron

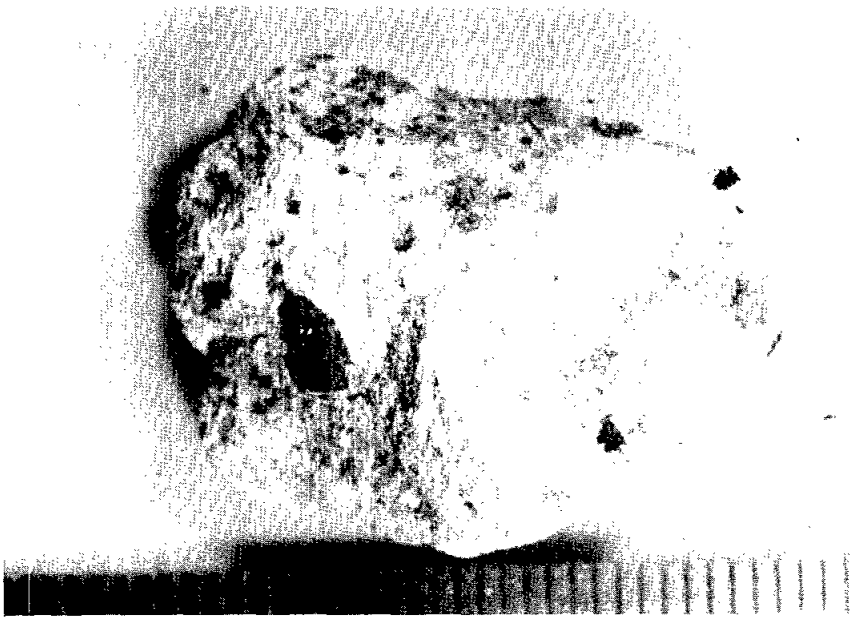
Special Features: A few slickensides. Note small patches of orange dust or powdery material on one face.

Generic No.: 65327
Rock Type: Anorthosite

Weight (g): 6.97
Dimensions (cm): 2.6 x 2.0 x 1.3
Color (fresh): White (N9)
Shape: Subrounded
Variability: None (see [1])
Coherence: intergranular - friable, coherent
fracturing - few
Fabric/texture: Isotropic inequigran (powdery to granular)
Cavities (%): None
Surface: Granular - irregular
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Size (mm) Range	Comments
Plagioclase	White	99+	Irreg	~1	Up to 1.5	Clear grains as islands in finely comminuted plagioclase
Maf. Sil.	Honey yellow	< 1	Irreg	< 0.1	Up to 0.2	Very few recognizable crystals (larger ones). Tiny grains are extremely sparse
Opaque	Metallic	< 0.1	Irreg	< 0.05		Nickel-iron

Special Features: (1) One or two small areas of dark glass crust.

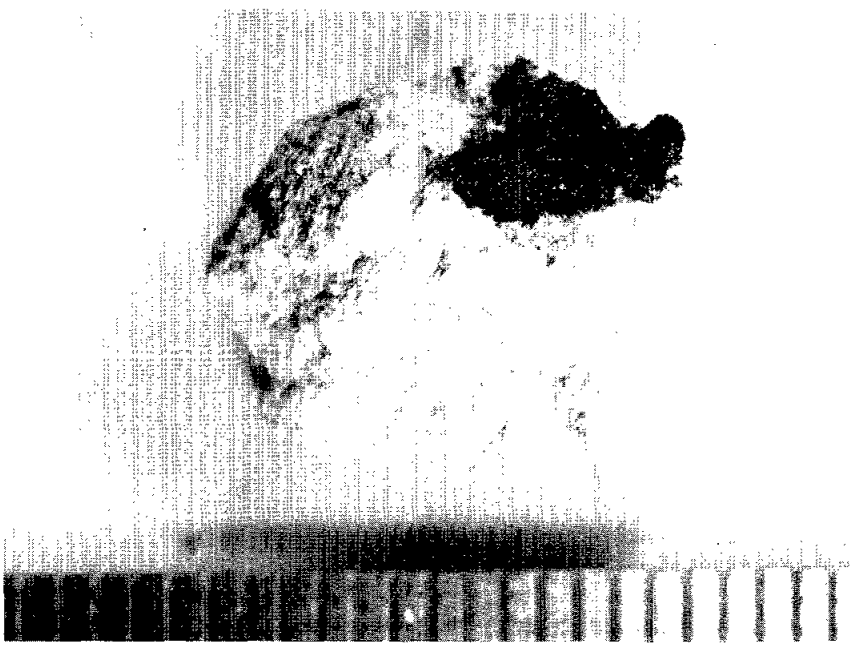


Generic No.: 65328
Rock Type: Anorthosite

Weight (g): 1.28
Dimensions (cm): 1.2 x 1.1 x 0.5
Color (fresh): White (N9)
Shape: Subrounded
Variability: None in anorthosite (see [1]).
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic inequigran (powdery to granular)
Cavities (%): None
Surface: Irregular - granulated
Zap pits: Very few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99.0+	Irreg	~1	Up to 2	Clear grains as islands in finely comminuted plagioclase.
Maf. Sil.	Dark	1-	?	<0.05		All or almost all present as tiny included grains
Opaque	Metallic	<0.1	Irreg	<0.05		Probably nickel-iron

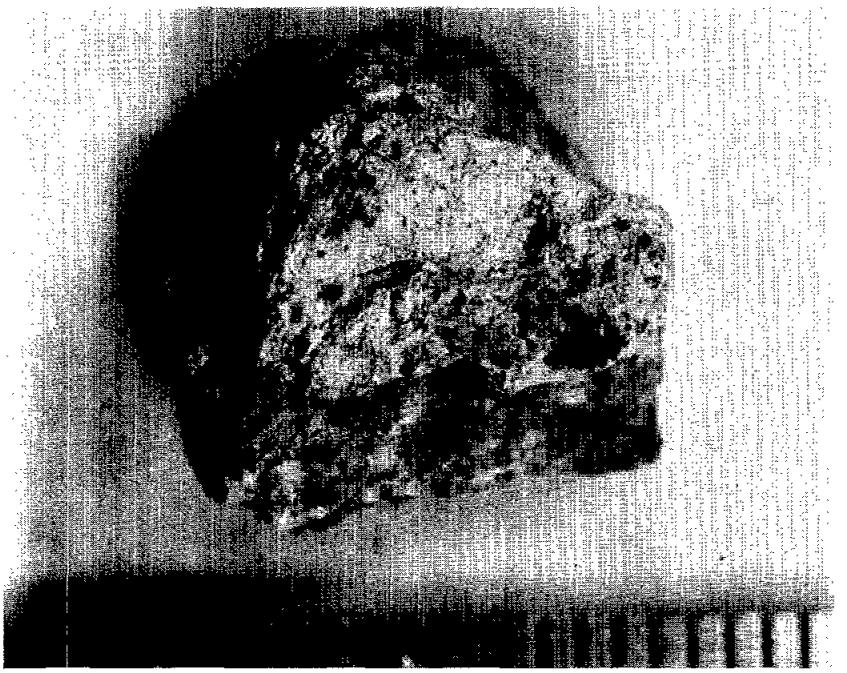
Special Features: (1) Dark glass crust present on one face.



Generic No.: 65329
Rock Type: Anorthosite

Weight (g): 1.92
Dimensions (cm): Anorthosite
Color (fresh): White (N9) to very light gray (N8)
Shape: Subangular
Variability: None
Coherence: intergranular - friable
fracturing - few, some penetrative
Fabric/texture: Isotropic/inequigranular (powdery to granular)
Cavities (%): None
Surface: Irregular to granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	98+	Irreg	∿1	Up to 2	Clear grains as islands in finely comminuted plagioclase
Maf. silicate	Dark	2-	?	< 0.05		

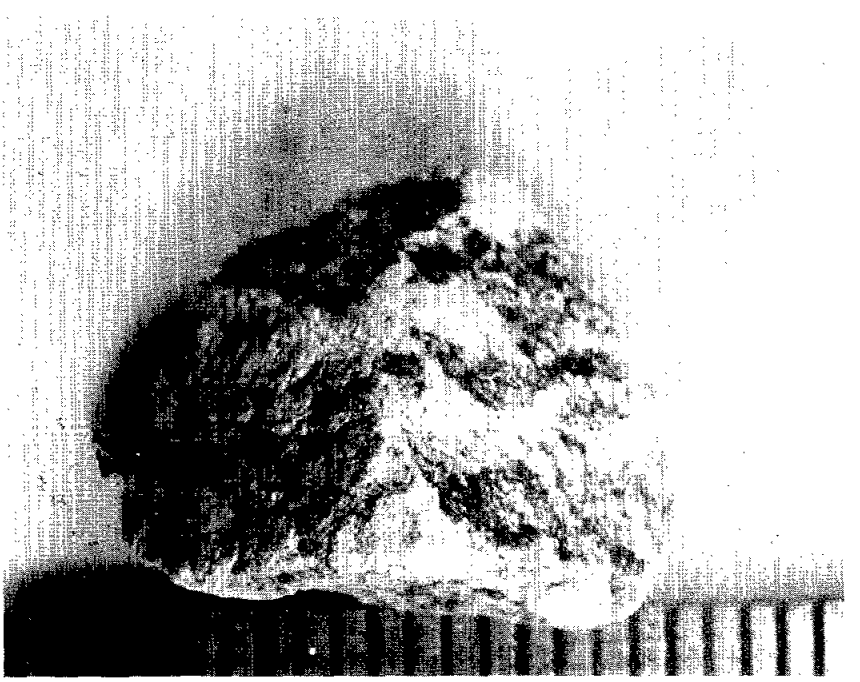


Generic No.: 65335
Rock Type: Anorthosite

Weight (g): 1.63
Dimensions (cm): 1.4 x 1.2 x 1.0
Color (fresh): White (N9) to light gray (N7)
Shape: Rounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/inequigran (powdery to granular)
Cavities (%): None
Surface: Irregular - granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99	Irreg	∿ 1		Clear grains as islands in finely comminuted plagioclase
Maf. Sil.	Dark	1	?	< 0.05		

Special Features: This specimen is abraded and covered with some dust, so that minor constituents are difficult to pick out.

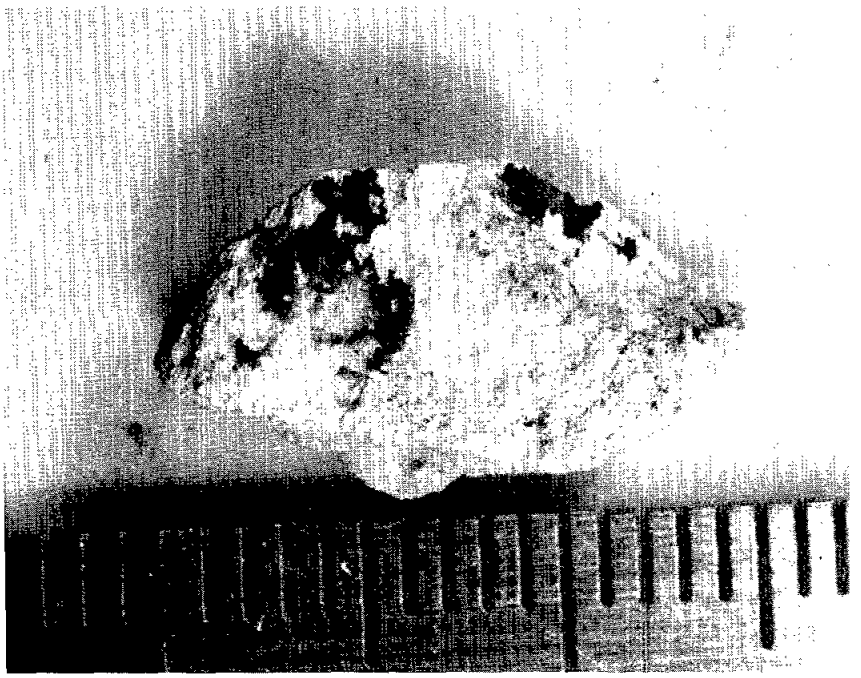


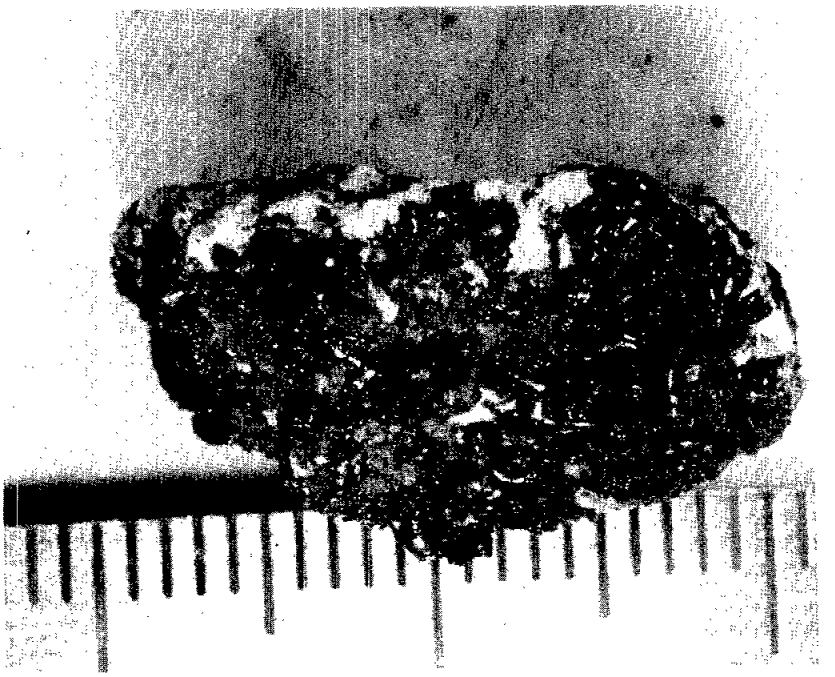
Generic No.: 65336
Rock Type: Anorthosite

Weight (g): 0.60
Dimensions (cm): 1.5 x 0.8 x 0.4
Color (fresh): White
Shape: Subangular
Variability: None (see [1])
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/inequigranular (powdery to granular)
Cavities (%): None
Surface: Irregular to granulated
Zap pits: Very few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99	Irreg	∿1		Clear grains as islands in finely comminuted plagioclase
Maf. sil.	Dark	1	?	<0.05		

Special Features: (1) Some dark glass or very large zap pits on surface.





65359

Generic No.: 65359
Rock Type: Anorthosite with gray clots

Weight (g): 2.53
Dimensions (cm): 1.8 x 1.1 x 1.0
Color (fresh): White (N9) to medium light gray (N6)
Shape: Subrounded
Variability: Yes
Coherence: intergranular - coherent - friable
fracturing - few
Fabric/texture: Isotropic/granular - powdery
Cavities (%): None
Surface: Granulated
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	95+	Irreg	1		
Dark clots (small)	Medium dark gray	3?				
Gray clot (large)	Medium light gray	2	Rounded, broken	3x5		Only one visible

Special Features: This rock appears to be mainly anorthosite, but it contains gray to dark gray clots of varying size. Some of the small, dark ones may be mafic silicates. One large (3 x 5 mm) gray clot appears to be finely crystalline and has hackly fracture. It is gray but could be mostly feldspar. One surface is covered with dark, bubbly highly reflective glass. This appears to have intruded the anorthosite in some areas. Also near this surface are some rusty (orange) areas (small veins, etc.).

Generic No.: 65759,0
Rock Type: Plagioclase clast

Weight (g): 3.11
Dimensions (cm): 2.1 x 1.4 x 0.8
Color (fresh): Very light gray (N8)
Shape: Subangular
Variability: None
Coherence: intergranular - coherent
fracturing - some
Fabric/texture: Isotropic. One large plagioclase clast, brecciated
Cavities (%): None
Surface: Beady splash glass drops on surface
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99				
Matrix	Gray	1				
Glass	Dark	< 0.1				

Special Features: This is probably a large anorthosite clast broken out of a gray and white breccia, similar to 65758,0. A yellow-brown limonite or lawrencite stain of considerable size is present.

Generic No.: 65766,0
Rock Type: Plagioclase clast

Weight (g): 1.01
Dimensions (cm): 1.8 x 1.0 x 0.5
0.9 x 0.9 x 0.5
Color (fresh): White (N9) to medium light gray
Shape: Subangular
Variability: None
Coherence: intergranular - coherent
fracturing - few
Fabric/texture: Isotropic. Clast of plagioclase
Cavities (%): None
Surface; Irregular, somewhat sugary in places
Zap pits: Few, glass lined (colorless)

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	98				
Soil, Matrix		2				

Special Features: This rock consists of two plagioclase clasts (two fragments) that have attached minute amounts of soil and very little of what appears to be gray matrix material. These rocks may represent plagioclase clasts broken out of a gray and white breccia. In places, reddish-brown, small spots and grains (?) are observed.

Generic No.: 65789
Rock Type: Anorthosite

Weight (g): 12.24
Dimensions (cm): 3.5 x 2.2 x 1.5
Color (fresh): White (N9) to very light gray (N8)
Shape: Blocky, subangular
Variability: None (see [1])
Coherence: intergranular - moderately coherent
fracturing - few
Fabric/texture: Isotropic, inequigranular (granular to powdery)
Cavities (%): None
Surface: Granulated
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	99+	Variable	∿1		Clear crystals as islands in finely comminuted plagioclase
Maf. sil.	Dark	<0.5				Some very tiny grains included in plagioclase

Special Features: (1) One small patch of brown glass.

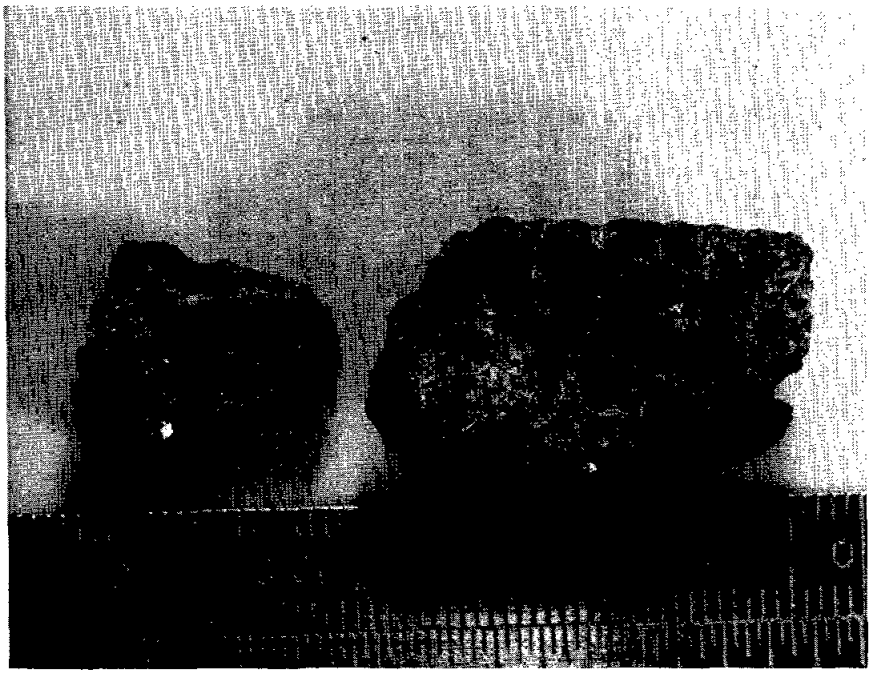
3.2.2 Troctolitic and noritic crystalline rocks (apparently igneous) (Group 2)

Generic No.: 60635,0
Rock Type: Noritic anorthosite

Weight (g): 15.05
Dimensions (cm): 3.3 x 2.4 x 1.7
2.0 x 1.4 x 0.7
Color (fresh): Medium light gray (N6)
Shape: Subrounded to subangular
Variability: None
Coherence: intergranular - tough
fracturing - few (very)
Fabric/texture: Isotropic/ophitic
Cavities (%): Vugs (35%)
Surface: Irregular
Zap pits: Very few

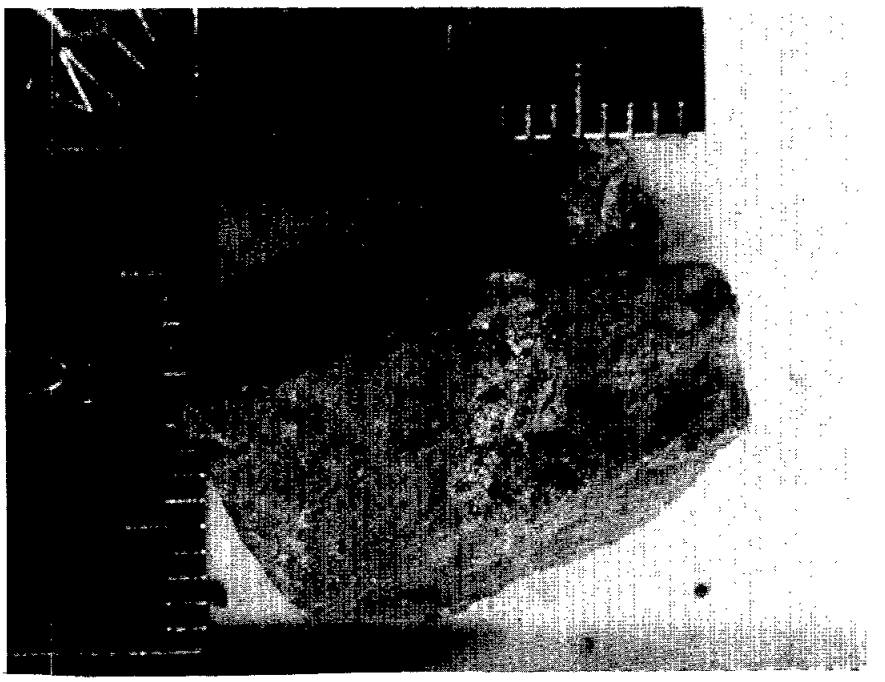
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	Clear	90+	Laths	1.0	<3.0	
Mafics	Dark	10-	Irreg		<0.02	Probably pyroxene

Special



Generic No.: 65785,0
Rock Type: Fine-grained, plagioclase rich with troctolitic areas

Weight (g): 5.16
Dimensions (cm): 2.1 x 1.5 x 1.2
Color (fresh): Light gray (N7)
Shape: Subangular
Variability: Certain parts of the rock appear somewhat coarser grained than others.
Coherence: intergranular - tough to coherent
fracturing - few
Fabric/texture: Isotropic
Cavities (%): None
Surface: Smooth to granulated
Zap pits: None
Special Features: This specimen consists of a fine-grained feldspar-rich main mass with which is associated a troctolite area, consisting of feldspar (<4 mm), olivine (yellow)(<1 mm), and spinel (red) (<1 mm) (comparatively coarser grained).

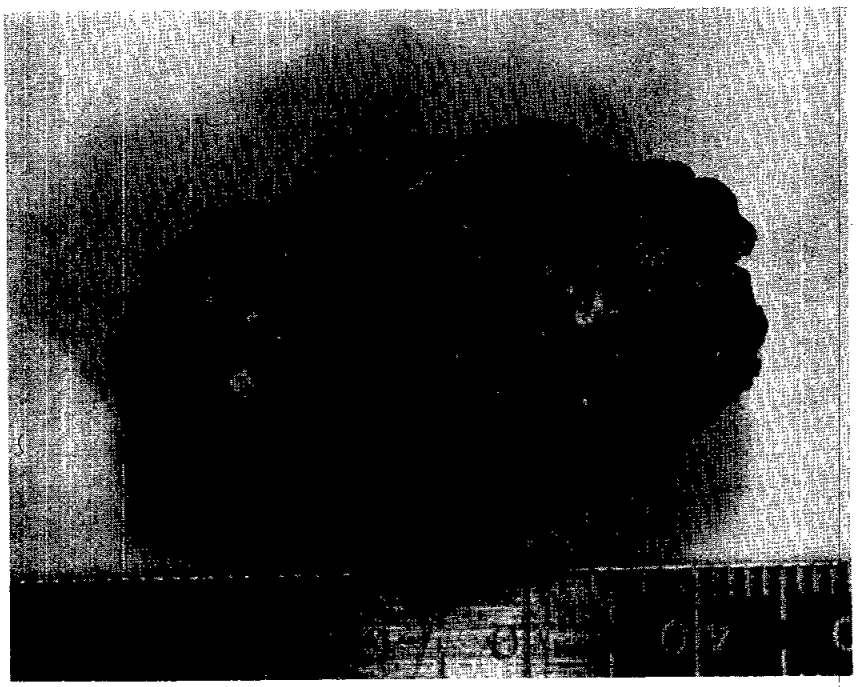


Generic No.: 65795
Rock Type: Troctolitic anorthosite

Weight (g): 6.84
Dimensions (cm): 2.0 x 1.9 x 1.5
Color (fresh): Very light gray (N8) to medium light gray (N6)
Shape: Rounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/equigranular
Cavities (%): Possibly a few vugs
Surface: Granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	90+	Sub-hedral	0.4		Elongation usually about 2/1
Maf. sil.	Yellow	10-	Irreg	0.4		Probably olivine
Maf. sil.	Orange brown	2		0.2		Probably pyroxene, but possibly spinel
Opaque	Black	3	Rounded	0.1		

3.2.3 Gray, fine-grained crystalline rocks (Group 3)



60525

Generic No.: 60525,0
Rock Type: Gray, tough, fine-grained crystalline rock, with clasts

Weight (g): 12.84
Dimensions (cm): 3.7 x 2.1 x 1.5
Color (fresh): Medium gray (N5)
Shape: Rounded
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic; very fine-grained, tough matrix containing several white and two or three yellow clasts.
Cavities (%): Very few (< 1%) lined with plagioclase crystals
Surface: Granulated
Zap pits: Few; often lined by colored (brown) glass

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Medium dark gray (N4)	95	---	<0.05		Marbled with white material
Plagioclase	White (N9)	5	Irreg to round	Up to 2.0		Probably clasts
Mafic silicate	Yellow	<1	Irreg to round	Up to 1.0		Probably clasts
Maf. sil. or oxide	Red to orange	<0.1	Angular	<0.1		Apparently oxidized metal or sulfide or lawrencite

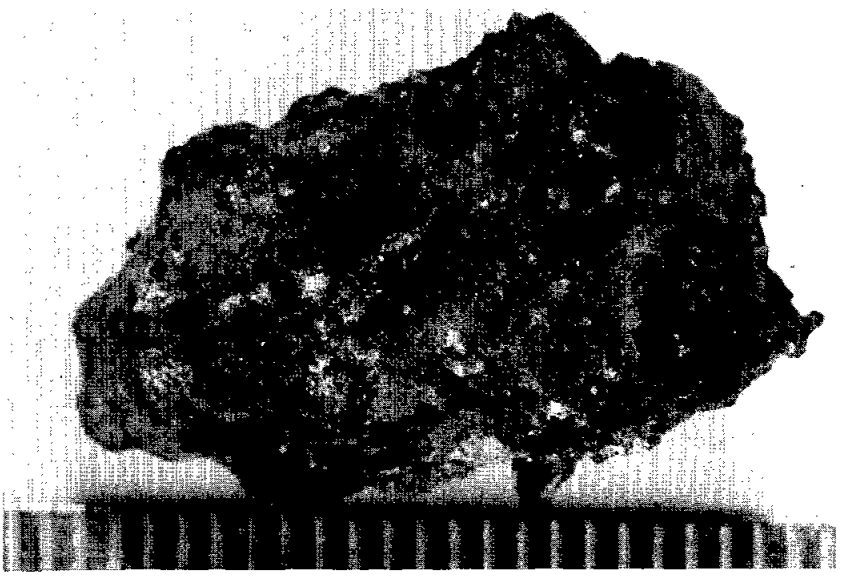
Special Features: This is a highly recrystallized rock. Examination under the stereo microscope does not allow us to decide whether the parent material was a microbreccia (more likely) or an igneous rock.

Generic No.: 60527,0
Rock Type: Gray, tough, fine-grained crystalline rock

Weight (g): 7.36
Dimensions (cm): 2.0 x 1.3 x 1.3
1.5 x 1.4 x 1.2
Color (fresh): Medium gray (N5)
Shape: Irregular (see [1])
Variability: See (1)
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic. Extremely fine-grained tough rock of marbled appearance (see [1])
Cavities (%): Very few, very small vugs
Surface: Smooth to hackly (see [1])
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix						
(a)	White	50	Irreg	<0.05		Probably plagioclase
(b)	Dark	50	Irreg	<0.05		
Plagioclase	White	<0.1	Irreg	0.7		One clast

Special Features: (1) Both rocks are rectangular with rather smooth and flat faces and are partially covered by a thick rind of glassy, highly vesicular material that is partly recrystallized. This rock has a marbled texture, consisting of 50% white material in irregular patches <0.05 mm in diameter that are surrounded by dark material. The rock and its texture is similar to 60526,0, but it is even finer-grained. The rind (glassy, partly recrystallized) occasionally contains white clasts of plagioclase.



60615

Generic No.: 60615,0
Rock Type: Gray, tough, fine-grained crystalline rock (I)

Weight (g): 32.97
Dimensions (cm): 4.3 x 2.8 x 2.3
Color (fresh): Medium light gray (N6)
Shape: Subrounded
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic; very fine-grained, tough matrix of light-dark marbled texture; sometimes sugary.
Cavities (%): 10% vugs, some of which reach large dimensions (up to 13 mm in diameter); some are smoothly lined, non-glassy. Others are irregularly lined, with sugary crystals.
Surface: Irregular to granulated
Zap pits: Few to many, depending upon location. Often lined by dark or colored glass (greenish-gray).

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix						
(a)	White	50	Irreg	<0.1		Probably plagioclase
(b)	Dark	50	Irreg	<0.1		
Plagioclase	White	1	Angular	<1.0		A few clasts

Special Features: (I) This rock contains only few white clasts, probably of plagioclase (<1%). Millimeter - sized areas of splash glass, a few microns thick and usually dark in color (olive-black), are observed on one side of the rock (3 areas). This rock has a marbled texture, consisting of 50% white material in irregular patches <0.1 mm in diameter that are surrounded by dark material. The nature of the parent material (microbreccia vs. igneous) cannot be identified under the stereo microscope. NOTE: This rock is not as tough as the type example of this group (e.g., 60616).

60616

Generic No.: 60616,0
Rock Type: Gray, tough, fine-grained crystalline rock (1)

Weight (g): 3.40
Dimensions (cm): 1.6 x 1.4 x 1.2
Color (fresh): Medium gray (N5)
Shape: Angular to subangular
Variability: None
Coherence: intergranular - tough (very)
fracturing - few
Fabric/texture: Isotropic; extremely fine-grained, tough matrix of light-dark marbled texture.
Cavities (%): A few tiny vugs (<0.2 mm)
Surface: Smooth to hackly. Blocky, has flat, smooth faces
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix						
(a)	White	50	Irreg	<0.05		Probably plagioclase
(b)	Dark	50	Irreg	<0.05		
Plagioclase	Very light gray	1	Angular	<3.0		A few clasts
Opaques	Dark	0.1				

Special Features: (1) This rock has only few clasts of white to light gray (N8) color (plagioclase, up to 3 mm in diameter). This rock has a marbled texture, consisting of 50% white material in irregular patches <0.05 mm in diameter that are surrounded by dark material. Extremely tough and fine-grained rock, considered to be the toughest of the group. The nature of parent material (microbreccia vs. igneous) cannot be identified under the stereo microscope.

60617

Generic No.: 60617,0
Rock Type: Gray, tough, fine-grained crystalline rock, with clasts

Weight (g): 2.77
Dimensions (cm): 1.8 x 1.3 x 1.0
Color (fresh): Medium gray (N5)
Shape: Subangular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic; fine-grained, tough matrix of light-dark marbled texture.
Cavities (%): Few (from 3 mm to 0.05 mm)
Surface: Granulated
Zap pits: Few, some are lined by dark and colored glass

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix						
(a)	White	45+	Irreg	<0.1		Probably plagioclase
(b)	Dark (grayish black)	45+	Irreg	<0.1		
Plagioclase	White	10-	Angular	<1.0		Probably plagioclase
Opaques	Dark	0.1				

Special Features: Millimeter-sized areas of splash glass of dark color are observed. The rock has a marbled texture of white material surrounded by dark material. The nature of the parent material (microbreccia vs. igneous) cannot be identified under the stereo microscope.

Generic No.: 60636,0
Rock Type: Gray, tough, fine-grained crystalline rock

Weight (g): 35.65
Dimensions (cm): 4.2 x 2.8 x 2.2
Color (fresh): Medium light gray (N6)
Shape: Subangular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Extremely fine-grained, with incrustations of minerals in vugs, and large yellowish crystals <3 mm in diameter.
Cavities (%): Few, but very vuggy.
Surface: Highly irregular
Zap pits: Few, some splash glass.

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Medium light gray	95+		Extremely fine-grained and dense		
Yellow crystals		4-			< 3 mm	

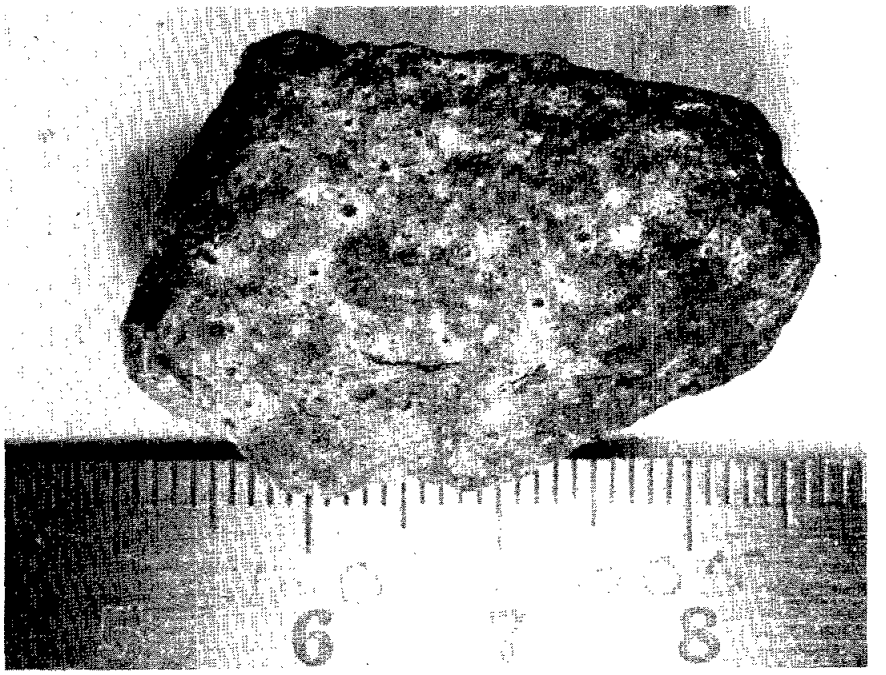
Special Features: This rock is extremely fine-grained, with larger crystals in the matrix. Vugs are full of small crystals that should be studied separately.

Generic No.: 65357
Rock Type: Gray fine-grained crystalline rock

Dimensions (cm): 3.5 x 2.1 x 1.6
Color (fresh): Medium light gray to light gray (N6-N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - coherent
fracturing - few
Fabric/texture: Isotropic/equigranular(?)
Cavities (%): None
Surface: Granulated to hackly
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	50-60			To 0.5	One or two "clasts" up to 2 mm.
Maf. sil.	Yellow yellow-brown	30-40			To 0.5	
Opaques	Dark	<10			<0.1	In patches and streaks, most appears very fine

Special Features: Marbled texture. Coarser than most in this group.



Generic No.: 65358
Rock Type: Gray fine-grained crystalline rock

Weight (g): 7.02
Dimensions (cm): 2.8 x 1.7 x 1.1
Color (fresh): Medium light gray (N6)
Shape: Subangular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic/equigranular to porphyritic
Cavities (%): 2% vugs
Surface: Hackly
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	10	Irreg	~1		
Dark clots	Medium dark gray	5(?)	Irreg/ angular	<0.5		These may be maf. sil. or some may be plagioclase
Groundmass or matrix	Medium light gray					(1)

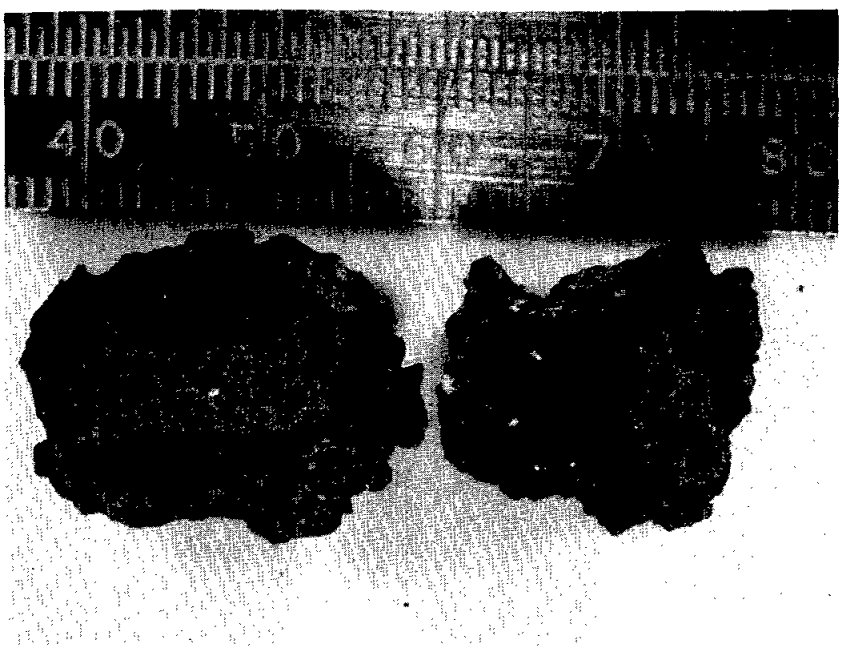
Special Features: (1) The groundmass is too fine to distinguish minerals, except for plagioclase which is surely present. Other component(s) are gray. Marbled texture.

Generic No.: 60526,0
Rock Type: Gray, tough, fine-grained crystalline rock without clasts

Weight (g): 8.42
Dimensions (cm): 2.2 x 2.0 x 1.2
Color (fresh): Medium light gray (N6)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic; very fine-grained tough rock of marbled appearance
Cavities (%): Very few very small vugs
Surface: Smooth to hackly
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix						
(a)	White	50	Irreg	<0.1		Probably plagioclase
(b)	Dark	50	Irreg	<0.1		

Special Features: This rock has a marbled texture, consisting of 50% white material in irregular particles <0.1 mm in diameter that are surrounded by dark material. Some of the dark material occasionally tends toward a brownish tint. This rock is similar to 60525,0, but lacks the clasts and is somewhat coarser. Also, it's surface is smoother than that of 60525,0. The nature of the parent material (microbreccia vs. igneous rock) cannot be identified under the stereomicroscope.

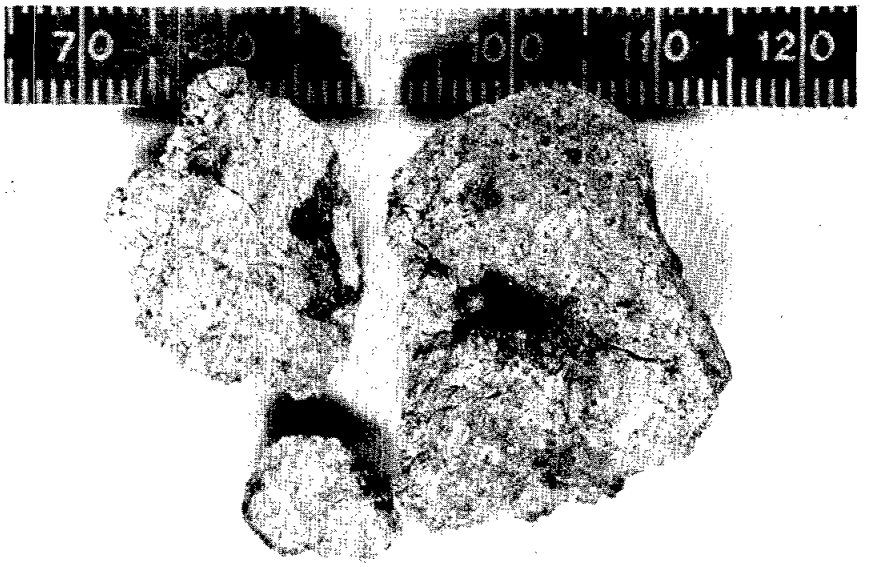


Generic No.: 60626,0
Rock Type: Gray, fine-grained crystalline

Weight (g): 15.87
Dimensions (cm): 3.1 x 2.9 x 1.4
2.6 x 1.8 x 1.2
1.3 x 0.8 x 0.4
Color (fresh): Light gray (N7) to medium light gray (N6)
Shape: Subrounded
Variability: None
Coherence: intergranular - coherent
fracturing - many, particularly in medium-sized specimen
Fabric/texture: Isotropic to weakly laminated in places; apparently shocked
Cavities (%): None in rock, but cavities are within glass that occurs in depressions
Surface: Granulated
Zap pits: Very few. Glass lined. Certain areas have many zap pits

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix						
(a)	White	70	Irreg	<0.02		Probably plagioclase
(b)	Dark	30	Irreg	<0.02		
Rusty spots						Perhaps oxidized lawrencite or limonite

Special Features: The rock is marbled - textured, with light material surrounded by dark material. Very fine grained. The rock contains exposed veins of glass that are black to green (dark yellow-green) (106Y4/4).



Generic No.: 60627,0
Rock Type: Gray, fine-grained crystalline rock

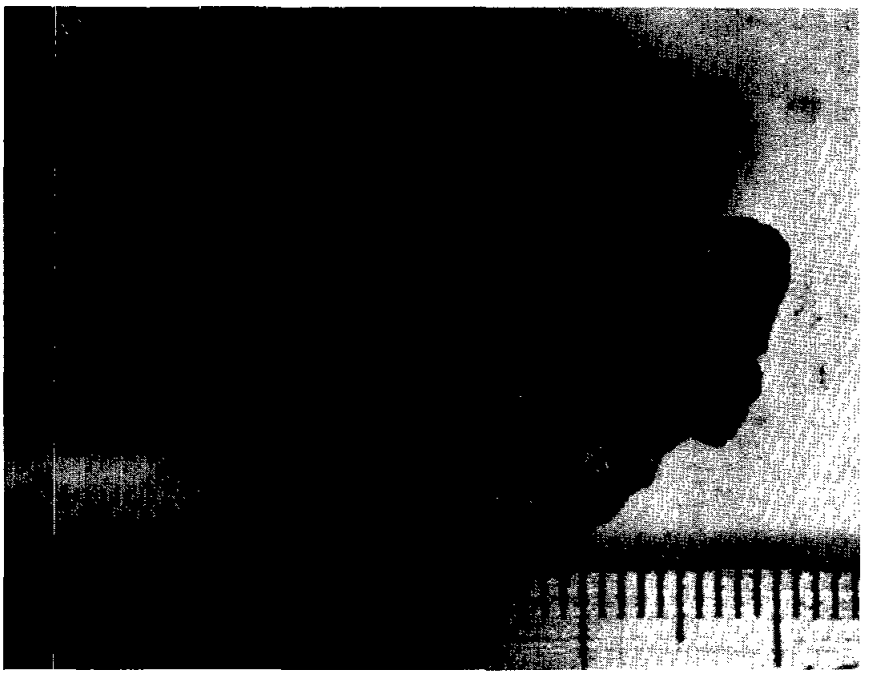
Weight (g): 12.09
Dimensions (cm): 3.2 x 2.3 x 1.1
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - coherent
fracturing - few
Fabric/texture: Isotropic. Very fine-grained; marbled
Cavities (%): None
Surface: Smooth
Zap pits: Many, often glass lined.

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix						
(a)	White	90+	Irreg	<0.1		Probably plagioclase
(b)	Dark	10-	Irreg			
Metal	Dark	<1				

Special Features: Splash glass (olive gray) occurs. This is a very fine-grained rock of marbled texture. It is similar to rock 60625,0.

Generic No.: 65777,0
Rock Type: Gray, tough, fine-grained crystalline rock

Weight (g): 16.53
Dimensions (cm): 3.3 x 2.4 x 1.1
Color (fresh): Light gray (N7)
Shape: Subangular
Variability: None
Coherence: intergranular - very tough
fracturing - few
Fabric/texture: Isotropic. Extremely fine-grained, crystalline rock with marbled (white-gray) appearance
Cavities (%): Extremely few
Surface: Granulated to smooth
Zap pits: Few. Some splash glass is observed. Zap pits are lined by clear to medium dark gray glass.
Special Features: This is one of the extremely fine-grained crystalline rocks, with a marbled texture too fine to identify phase. The ratio of light to dark is about 50:50. A few metal beads were observed on the surface.



Generic No.: 65778,0
Rock Type: Gray coherent crystalline rock

Weight (g): 12.22
Dimensions (cm): 2.9 x 2.0 x 1.1
Color (fresh): Light gray (N7)
Shape: Subangular
Variability: None
Coherence: intergranular - coherent
fracturing - few
Fabric/texture: Isotropic. Crystalline with marbled texture (relatively coarse in comparison to 65777).
Cavities (%): Few
Surface: Smooth to granulated
Zap pits: Many
Special Features: This is a relatively dense crystalline rock of pronounced light and dark (marbled) texture. The light material is surrounded by the dark. This rock may represent a recrystallized breccia transitional to the gray, tough, fine-grained crystalline rock (e.g., 65777,0).

Generic No.: 65779,0
Rock Type: Gray, tough, fine-grained crystalline rock

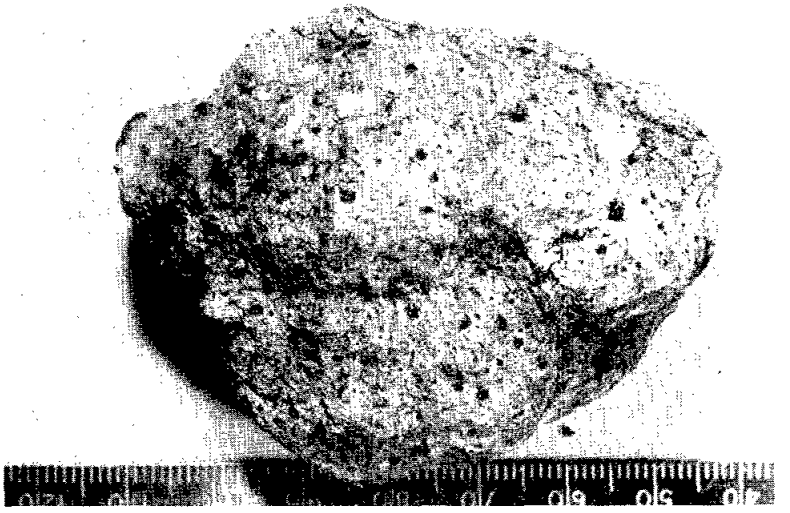
Weight (g): 12.71
Dimensions (cm): 2.6 x 2.3 x 1.5
Color (fresh): Very light gray (N8) to light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Gray fine-grained crystalline rock with marbled texture
Cavities (%): None
Surface: Smooth to granular
Zap pits: It has a 4 mm diameter zap crater of dark greenish gray glass
Special Features: This rock has rusty spots (lawrencite-limonite(?)) all over.

Generic No.: 60625,0
Rock Type: Gray, friable, fine-grained, crystalline rock.

Weight (g): 117.0
Dimensions (cm): 6.8 x 5.7 x 3.5
Color (fresh): Light gray (N7)
Shape: Rounded
Variability: None
Coherence: intergranular - friable
fracturing - very few
Fabric/texture: Isotropic. Extremely fine-grained (1).
Cavities (%): None
Surface: Smooth. In certain areas, glassy veins are exposed
Zap pits: Very many. Should be studied by someone like Horz interested in zap pits. Long exposure is indicated. Glass-lined clear to medium gray. Some without glass.

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	90+		Extremely fine		Identification ambiguous
Mafics	Dark	10-	Questionable			May be finely crushed plagioclase
Brown mineral, opaque	Resembles limonite or oxidized lawrencite					Probably Ni-Fe and sulfide (2)

Special Features: (1) This is an extremely fine-grained rock that is friable. Areas of grayish-black splash glass are present. (2) A brownish mineral resembling limonite was observed in several areas. May be lawrencite oxidized by traces of oxygen in the nitrogen cabinet. This rock should be dated.

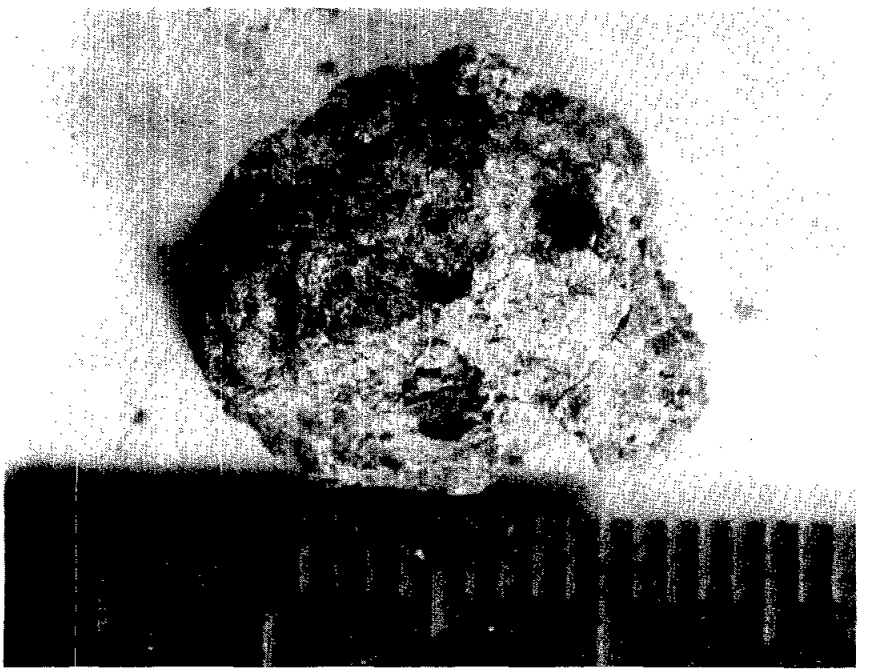


Generic No.: 65365
Rock Type: Gray fine-grained, friable crystalline rock

Weight (g): 2.16
Dimensions (cm): 1.6 x 1.1 x 1.1
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/equigranular
Cavities (%): None
Surface: Granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	<5	Irreg	∿1		Few clasts
Gray clots	Medium light gray	5	Angular			Fine grained crystalline

Special Features: Most of the rock appears to be finely comminuted, and only a few larger plagioclase crystals remain. It is not possible to identify mafic minerals or even estimate proportions because of fine grain size. Possibly a shocked version of the gray, tough crystalline rock.

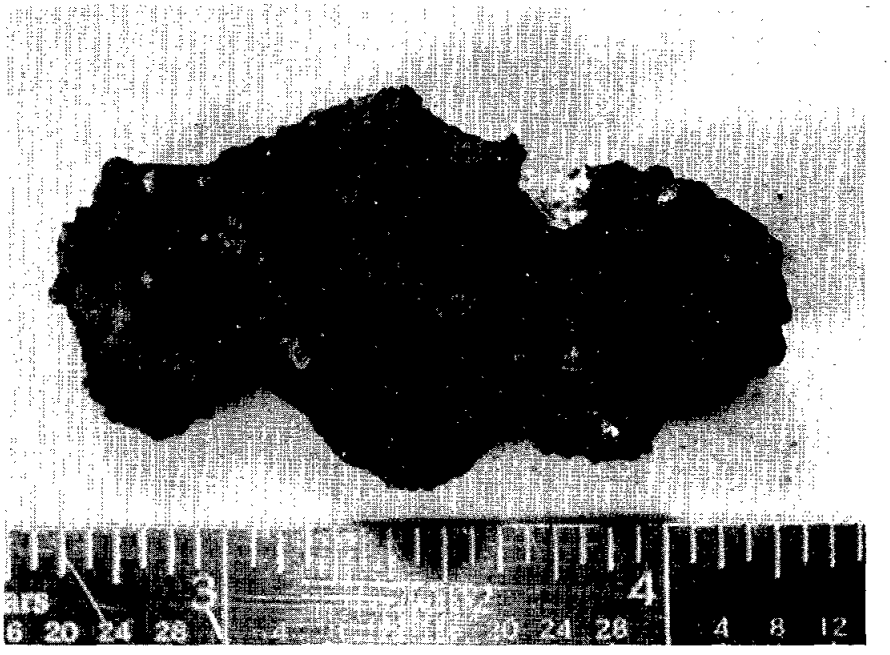


Generic No.: 60667,0
Rock Type: Gray, tough, crystalline vuggy rock with clasts

Weight (g): 7.66
Dimensions (cm): 4.0 x 2.4 x 0.8
Color (fresh): Medium gray (N5)
Shape: Subangular
Variability: None
Coherence: intergranular - tough
fracturing - few (very)
Fabric/texture: Isotropic. Extremely fine-grained crystalline rock with white clasts and feldspar crystals.
Cavities (%): Many vugs
Surface: Very rough
Zap pits: Very few; some splash glass in certain places

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Crystalline matrix		90				
Plagioclase and anorthosite	Clear white	10		<0.5		
Opaques						Probably metal and sulfide

Special Features: This is a gray, tough, crystalline rock with many clasts (white). It is different from other members of this group in that it has many vugs. It contains a 0.5 cm anorthosite breccia clast.



Generic No.: 60675,0
Rock Type: Gray, tough, crystalline vuggy rock, with clasts.

Weight (g): 1.30
Dimensions (cm): 1.8 x 1.1 x 0.5
Color (fresh): Medium dark gray (N4)
Shape: Subangular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Very fine crystalline (extremely vuggy).
Cavities (%): Many vugs
Surface: Smooth to rough
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray, fine-crystalline matrix		85				
Plagioclase and anorthosite		15	Irreg	<4.0		

Special Features: This is a gray, tough, crystalline, vuggy rock simi ar to 60667. It may actually represent the most recrystallized form of the gray, devitrified glass. It contains both clear plagioclase crystals as well as anorthosite inclusions.

3.2.4 Gray vesicular glass (usually devitrified), with clasts of anorthosite or plagioclase (Group 4).

Generic No.: 60528,0
Rock Type: Gray, vesicular glass, devitrified

Weight (g): 2.94
Dimensions (cm): 2.0 x 1.2 x 1.3
Color (fresh): Medium gray (N5) to medium dark gray (N4)
Shape: Very irregular
Variability: None
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic; highly vesicular, partly devitrified glass
Cavities (%): Many vesicles (10-20%)
Surface: Mostly smooth to irregular
Zap pits: Very few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Glass	Dark gray	95+				Mostly devitrified
Plagioclase	White	5-	Irreg	0.5	<1.5	Probably clasts (1)
Mafic silicate	Brown	<0.1	Irreg		~1.0	Probably pyroxene clast

Special Features: (1) It is often difficult to distinguish between true plagioclase clasts that are enclosed in the glass, and white dust covering parts of the surface. Specimen 60528,0 resembles the partly devitrified glass rind covering rock 60527,0.

Generic No.: 60529,0
Rock Type: Gray, vesicular glass, devitrified

Weight (g): 1.24
Dimensions (cm): 1.2 x 1.3 x 1.1
Color (fresh): Medium dark gray (N4)
Shape: Rounded on one side, otherwise irregular
Variability: None
Coherence: intergranular - tough
fracturing - very few
Fabric/texture: Isotropic; vesicular, largely devitrified glass
Cavities (%): 10% vesicles
Surface: Mostly smooth
Zap pits: Very few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Glass	Dark gray	98+				Mostly devitrified
Plagioclase	White	2-	Irreg	<0.5		Probably clasts

Special Features: This material is highly devitrified to the point that the beginning of a marblec, light-dark texture, can be seen. The wall of one vesicle is lined by small dendritic crystals.

Generic No.: 60645,0
Rock Type: Gray vesicular glass, devitrified, with white clasts

Weight (g): 33.5
Dimensions (cm): 4.2 x 3.4 x 3.4
Color (fresh): Medium gray (N5)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic; devitrified, vesicular glass with white anorthosite clasts
Cavities (%): Highly vesicular
Surface: Irregular
Zap pits: Few, glass lined

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass	Medium gray	95				
Plagioclase	White	5	Variable	<6.0		Clasts

Generic No.: 60646,0
Rock Type: Gray vesicular glass devitrified, with white clasts

Weight (g): 3.39
Dimensions (cm): 2.2 x 1.5 x 1.4
Color (fresh): Medium gray (N5)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic. Devitrified, vesicular glass with white anorthosite clasts
Cavities (%): Highly vesicular
Surface: Irregular
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass	Medium gray	95+				
Plagioclase	White	5-	Variable	<1.0		Clasts

Generic No.: 60647,0
Rock Type: Gray, vesicular glass, devitrified, with white clasts

Weight (g): 1.76
Dimensions (cm): 2.2 x 1.4 x 1.0
Color (fresh): Medium gray (N5)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic. Devitrified, vesicular glass with white and gray clasts
Cavities (%): Highly vesicular
Surface: Irregular
Zap pits: Few

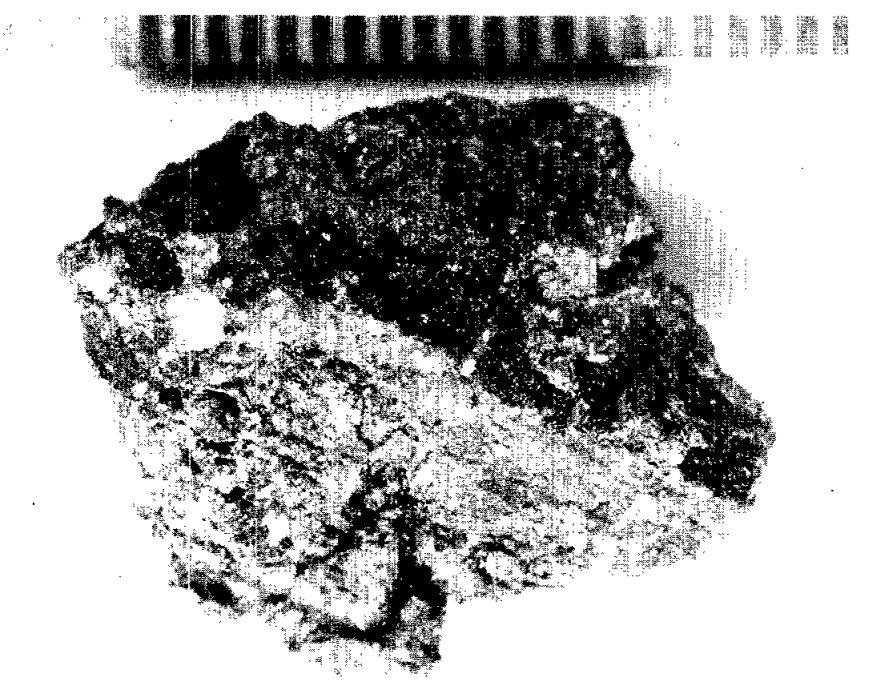
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass	Medium gray	80				
Plagioclase	White	5	Irreg		<4.0	Clasts
Gray, tough crystalline rock fragments	Gray	15	Irreg		<9.0	Clasts

Generic No.: 60648,0
Rock Type: Gray, vesicular glass devitrified, with white clasts

Weight (g): 2.84
Dimensions (cm): 2.2 x 1.8 x 0.6
Color (fresh): Medium gray (N5)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic. Devitrified, slightly vesicular glass, with white clasts
Cavities (%): Less vesicular than others in this group
Surface: Irregular
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass matrix	Medium gray	65				
Plagioclase	White	35	Subrounded inclusions		<3.0	Clasts

Special Features: Devitrified, slightly vesicular glass, with white clasts. Has a salt and pepper appearance. One side has shiny glass. Also, slickenside.



Generic No.: 60649,0
Rock Type: Gray, vesicular, glass. Devitrified, with white clasts

Weight (g): 1.03
Dimensions (cm): 1.5 x 1.0 x 0.5
Color (fresh): Medium gray (N5)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic. Devitrified, slightly vesicular glass with white clasts
Cavities (%): Less vesicular than others in this group
Surface: Irregular
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass matrix	Medium gray	65				
Plagioclase	White	35	Sub-rounded inclusions	<1.0		Clasts

Special Features: Devitrified, slightly vesicular glass with white clasts. Has a salt and pepper appearance.

Generic No.: 60655,0
Rock Type: Gray, vesicular glass, devitrified, with white clasts

Weight (g): 8.63
Dimensions (cm): 2.4 x 2.0 x 1.5
Color (fresh): Medium gray (N5)
Shape: Subangular
Variability: Yes, there is a bit more fresher glass on one side of the rock than on the others.
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Devitrified, vesicular glass, with white clasts
Cavities (%): 15% vesicles
Surface: Irregular
Zap pits: Few; glass lined

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass matrix	Medium gray	75+				
Plagioclase	White	25-		<3.0		Clasts

Special Features: Devitrified, vesicular glass, with white plagioclase clasts.

Generic No.: 60665,0
Rock Type: Gray, vesicular glass, partly devitrified, with white clasts

Weight (g): 90.1
Dimensions (cm): 6.5 x 4.8 x 2.8
Color (fresh): Medium dark gray (N4)
Shape: Irregular, bomb-like
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic; partly devitrified, gray glass with clast inclusion
Cavities (%): Many vesicles
Surface: Smooth to rough
Zap pits: Few, glass lined; they are rather small

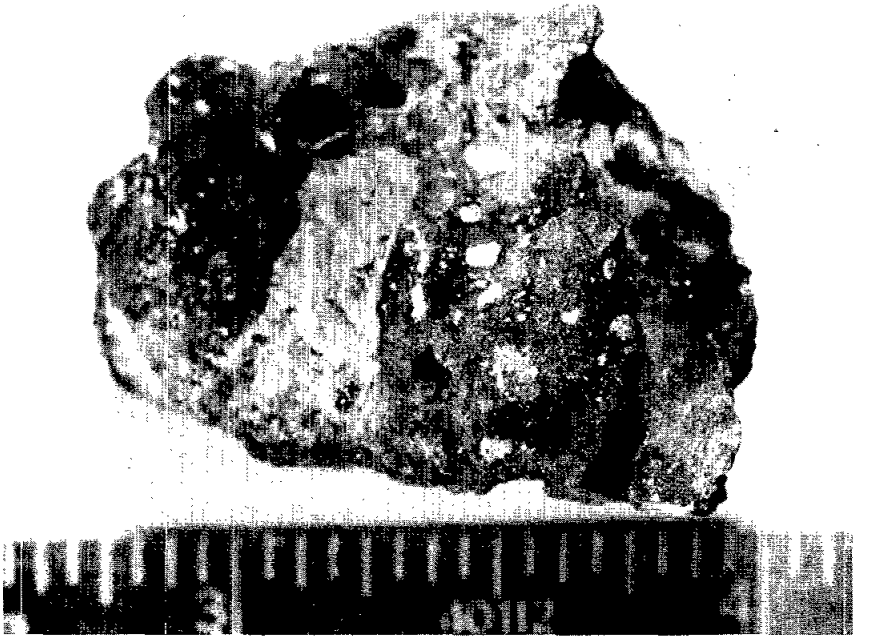
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Vesicular glass	Medium dark gray	70				
Plagioclase	White	35		<2.0		Clasts
Gray and white microbreccia		5		<1.0		Clasts

Special Features: This sample consists of gray, vesicular, partly devitrified glass that contains white plagioclase and gray and white microbreccia clasts. The inclusions are <2.0 cm.

Generic No.: 60666,0
Rock Type: Gray, vesicular glass, devitrified, with white clasts

Weight (g): 15.95
Dimensions (cm): 3.5 x 2.3 x 2.3
Color (fresh): Medium dark gray (N4)
Shape: Subangular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Gray vesicular glass, devitrified, with clasts
Cavities (%): Many vesicles
Surface: Smooth to rough
Zap pits: Few, glass lined

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Glass, partly devitrified		70				
Anorthosite and gray crystalline clasts	White / Gray	30	Irreg to rounded	1.2		Clasts



Generic No.: 60668,0
Rock Type: Gray vesicular glass, devitrified, with white clasts

Weight (g): 2.91
Dimensions (cm): 2.1 x 1.5 x 1.0
Color (fresh): Dark gray (N3)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Gray, vesicular glass, devitrified, with clasts
Cavities (%): Many vesicles
Surface: Rough
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass	Dark gray	90				
Plagioclase	White	10	Angular to rounded			Clasts

Special Features: This rock is still covered by a considerable amount of dust, part of which may be welded to the glass. The glass is devitrified and extremely fine-grained crystalline.

Generic No.: 60669,0
Rock Type: Gray, vesicular glass, devitrified, with white clasts

Weight (g): 2.54
Dimensions (cm): 2.8 x 1.5 x 1.3
Color (fresh): Medium dark gray (N4)
Shape: Angular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Vesicular, devitrified glass with white clasts
Cavities (%): Many vesicles
Surface: Smooth to rough
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass	Medium dark gray	95				
Plagioclase	White	5		<1.0		Clasts

Generic No.: 60677,0
Rock Type: Gray, vesicular, glass, devitrified, with white clasts

Weight (g): 5.23
Dimensions (cm): 2.4 x 2.2 x 1.5
Color (fresh): Medium dark gray (N4)
Shape: Angular
Variability: None
Coherence: intergranular - glass: tough
clasts: friable
fracturing - none in glass
Fabric/texture: Isotropic. Gray vesicular devitrified glass with white clasts
Cavities (%): Highly vesicular glass
Surface: Rough
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass	Medium dark gray	85+				
Plagioclase		5	Irreg	<3.0		Clasts
Micro-breccia clast		10	Blocky	14x2		

Special Features: The glass contains a large, white clast (14 x 2 mm) that in itself is a microbreccia containing inclusions of the gray, tough, crystalline rock.

Generic No.: 60678,0
Rock Type: Gray, vesicular glass, devitrified, with white clasts

Weight (g): 1.25
Dimensions (cm): 2.0 x 1.2 x 0.7
Color (fresh): Medium dark gray
Shape: Angular
Variability: None
Coherence: intergranular - glass: tough
clast: friable
fracturing - none in glass
Fabric/texture: Isotropic. Gray, vesicular, devitrified glass, with white clasts
Cavities (%): Highly vesicular glass
Surface: Rough
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass		85				
Plagioclase		5				Clasts
Microbreccia clast		15		8.0		Clasts

Special Features: This rock is very similar to 60677,0. One single spinel was observed in microbreccia clast (reddish-brown).

Generic No.: 60679,0
Rock Type: Gray, vesicular glass, devitrified, with white clasts

Weight (g): 2.96
Dimensions (cm): 2.7 x 1.4 x 1.0
Color (fresh): Medium dark gray (N4)
Shape: Angular
Variability: None
Coherence: intergranular - glass: tough
clast: friable
fracturing - none in glass
Fabric/texture: Isotropic. Gray vesicular, devitrified glass, with white clasts
Cavities (%): Highly vesicular glass
Surface: Rough
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Devitrified glass	Medium dark gray	85				
Plagioclase microbreccia	White	5 10		 13.0		Clasts Clasts

Special Features: This rock resembles 60677,0.

Generic No.: 65348
Rock Type: Gray vesicular glass with white clasts

Weight (g): 11.66
Dimensions (cm): 2.3 x 2.7 x 2.0
Color (fresh): Glass medium gray - medium dark gray (N4)-(N5). Clasts white
Shape: Irregular
Coherence: intergranular - tough
fracturing - very few
Fabric/texture: Isotropic/vesicular glass with granular or brecciated inclusions
Cavities (%): 5% vesicles in glass
Surface: Glass, smooth (dust covered), clasts, granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Glass	Medium gray (N5)	90	Irreg			Vesicular, not devitrified, many dust particles, etc. adhering
Anorthositic clasts	White	8	Subang	3		
Recrystallized clasts	Light gray	2.5	Subang	3		Looks like gray-tough crystalline rocks (coarser varieties)

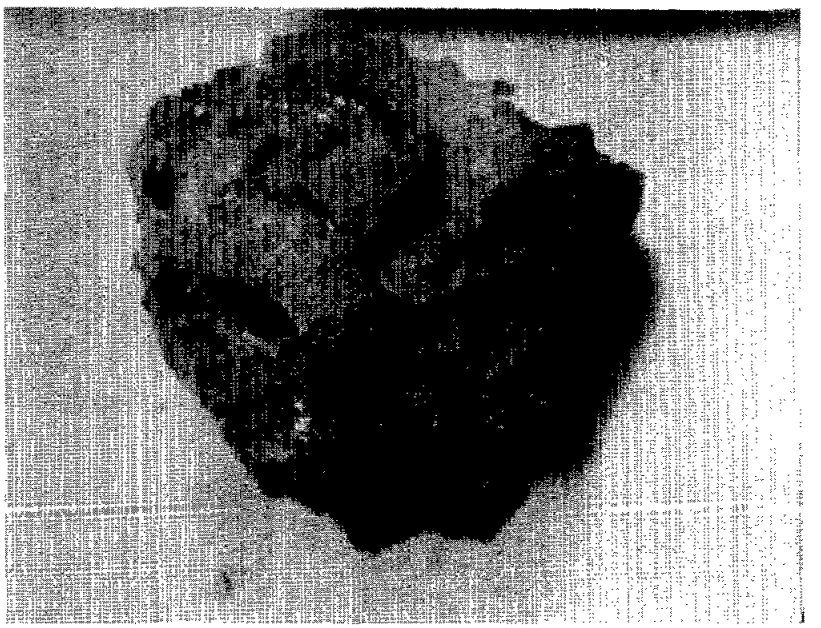
Special Features: Large vesicle or cavity through very center of specimen. This is possibly transitional to glassy agglutinate.

Generic No.: 65349
Rock Type: Gray vesicular glass, devitrified, with (few) white clasts

Weight (g): 7.58
Dimensions (cm): 2.0 x 1.9 x 1.9
Color (fresh): Medium dark gray (N4) to medium gray (N5)
Shape: Irregular
Variability: None
Coherence: intergranular - glass, tough
fracturing - few
Fabric/texture: Isotropic/vesicular glass (devitrified)
Cavities (%): 5-10% vesicles
Surface: Smooth - granular
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Anorthosite clasts	White	2.5(?)	Irreg	2x4		Only 1 or 2 white clasts

Special Features: Glass has completely devitrified. Interlocking laths can be seen on walls of vesicles.



Generic No.: 65355
Rock Type: Gray vesicular glass, devitrified

Weight (g): 4.94
Dimensions (cm): 1.5 x 1.9 x 1.4
Color (fresh): Medium gray (N5)
Shape: Irregular - rounded
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic/devitrified
Cavities (%): 5-10% vesicles
Surface: Surface irregular where in contact with soil, some vesicles filled with soil.
Zap pits: Few

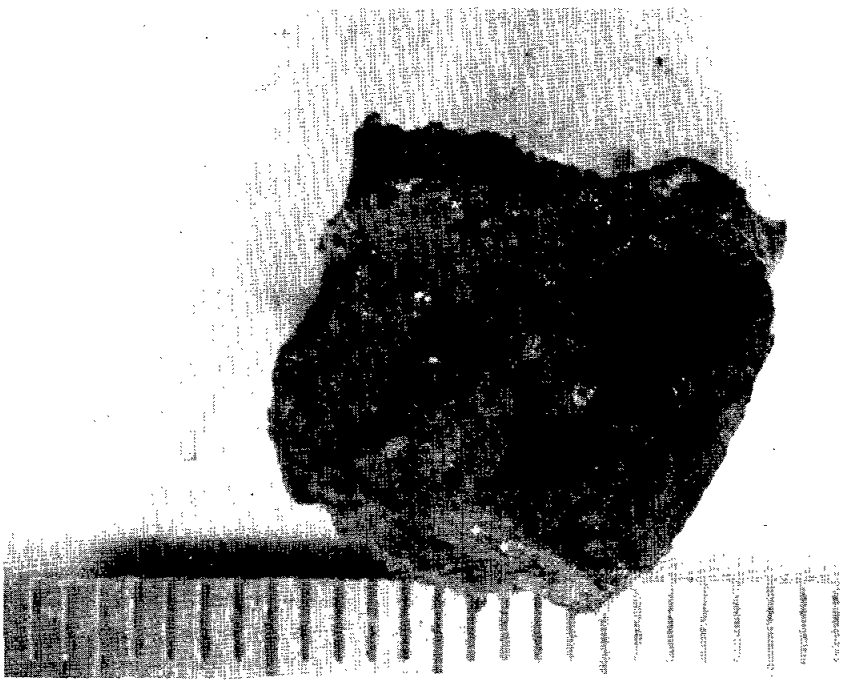
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Anorthosite clasts	White	<3	Angular	1.5		Only one or two visible

Generic No.: 65356
Rock Type: Gray vesicular glass with white clasts

Weight (g): 2.53
Dimensions (cm): 1.5 x 1.3 x 1.3
Color (fresh): Medium gray (N5)
Shape: Irregular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic vesicular glass (devitrified)
Cavities (%): 10-15% vesicles
Surface: Glass smooth (finely granulated) dust covered to irregular; clasts granulated to irregular
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Anorthosite clasts	White	10	Mostly rounded	0.5	To 1.5	

Special Features: Glass probably devitrified.



Generic No.: 65366
Rock Type: Dark glass flakes

Weight (g): 8.48
Dimensions (cm): See (1)
Color (fresh): Medium-dark gray (N4)
Shape: Slabby (flaky)
Variability: None in glass
Coherence: intergranular - tough
fracturing - very few
Fabric/texture: Isotropic/glassy (possibly devitrified)
Cavities (%): <2% vesicles
Surface: Smooth, dust adherent
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Glass flakes	Medium dark gray					
Anorthosite	White					

Special Features: These are glass flakes and a few irregular pieces, which were once part of a rind on anorthosite; most have anorthosite adhering to one surface. Anorthosite is identical to 65325 et seq. The glass is not as vesicular as the rinds on gray fine-grained crystalline rock, or the gray glass with white clasts.

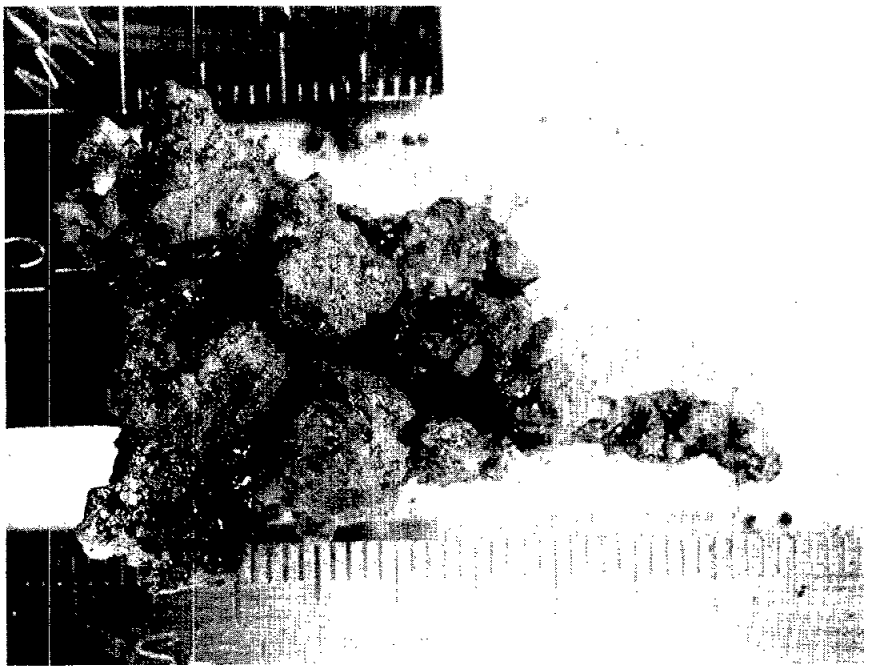
Some of the flakes contain small anorthosite clasts. Some of the fragments are small pieces of anorthosite.

(1) About 20 fragments in all. Usually about 1 - 2 mm thick. Up to 2 cm in largest dimension.

3.2.5 Glassy agglutinates (Group 5).

Generic No.: 65585,0
Rock Type: Vesicular, glassy agglutinate

Weight (g): 9.294
Color (fresh): Dusky yellow green (5GY 5/2)
Shape: Ropy, cindery
Variability: Yes, bubbles are not homogeneously distributed
Coherence: intergranular - tough
Fabric/texture: Isotropic; glass bubbly
Cavities (%): Highly vesicular, bubbly in places
Surface: Bubbly
Special Features: Areas with few bubbles are dark greenish - gray (5GY 4/1), whereas areas with many bubbles are dusky yellow - green (5GY 5/2).



Generic No.: 65586,0
Rock Type: Vesicular, glassy, agglutinate

Weight (g): 6.763
Color (fresh): Dusky, yellow green (5GY 5/2)
Shape: Ropy, highly irregular
Variability: Yes, bubbles are not homogeneously distributed
Coherence: intergranular - glass; tough
soil; friable
fracturing - few but very long fractures
Cavities (%): Highly vesicular; bubbly in places
Surface: Bubbly
Special Features: This vesicular glassy agglutinate covers a soil clod. The soil clod is less friable than in sample 65515,0. The glassy cover on the soil is comparatively thin (<0.1 mm). There are areas in the glass that are streaky white.

Generic No.: 65587,0
Rock Type: Vesicular, glassy agglutinate

Weight (g): 2.141
Color (fresh): Dusky yellow green (5GY 5/2)
Shape: Ropy, highly irregular
Variability: Yes, bubbles are not homogeneously distributed
Coherence: intergranular - glass - tough
soil - friable
fracturing - few, but very long fractures
Cavities (%): Highly vesicular, bubbly in places
Surface: Bubbly
Special Features: Compare rock 65585,0. This vesicular glassy agglutinate covers a soil clod. The soil clod is less friable than in sample 65515,0. The glassy cover on the soil is comparatively thin (<0.1 mm). There are areas in the glass that are streaky white.

Generic No.: 65767,0
Rock Type: Vesicular, glassy agglutinate

Weight (g): 17.51
Dimensions (cm): 3.3 x 2.8 x 1.6
Color (fresh): White (N9) to medium dark gray (N4)
Shape: Angular, ropy
Variability: None
Coherence: intergranular - tough
fracturing - none
Fabric/texture: Isotropic. Glassy vesicular agglutinates with large anorthosite clast
Cavities (%): Many vesicles
Surface: Very ropy, glass is smooth
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Glass	Medium dark gray	70				
Plagioclase	White	30		<20.0		Clasts

Special Features: This rock consists of very vesicular, glassy agglutinate into which are embedded anorthosite clasts up to 2.0 cm in diameter.

Generic No.: 65776,0
Rock Type: Glassy agglutinate

Weight (g): 2.33
Dimensions (cm): 1.3 x 1.1 x 1.0
Color (fresh): Medium gray (N5)
Shape: Blocky
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Glassy agglutinate with rock and mineral inclusions.
Cavities (%): Vesicles
Surface: Very rough
Zap pits: Very few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Glass	Medium gray	90				
Plagioclase	White	10				Clasts

Special Features: This is a glassy agglutinate with rock and mineral inclusions. The inclusions are <4.0 mm in diameter.

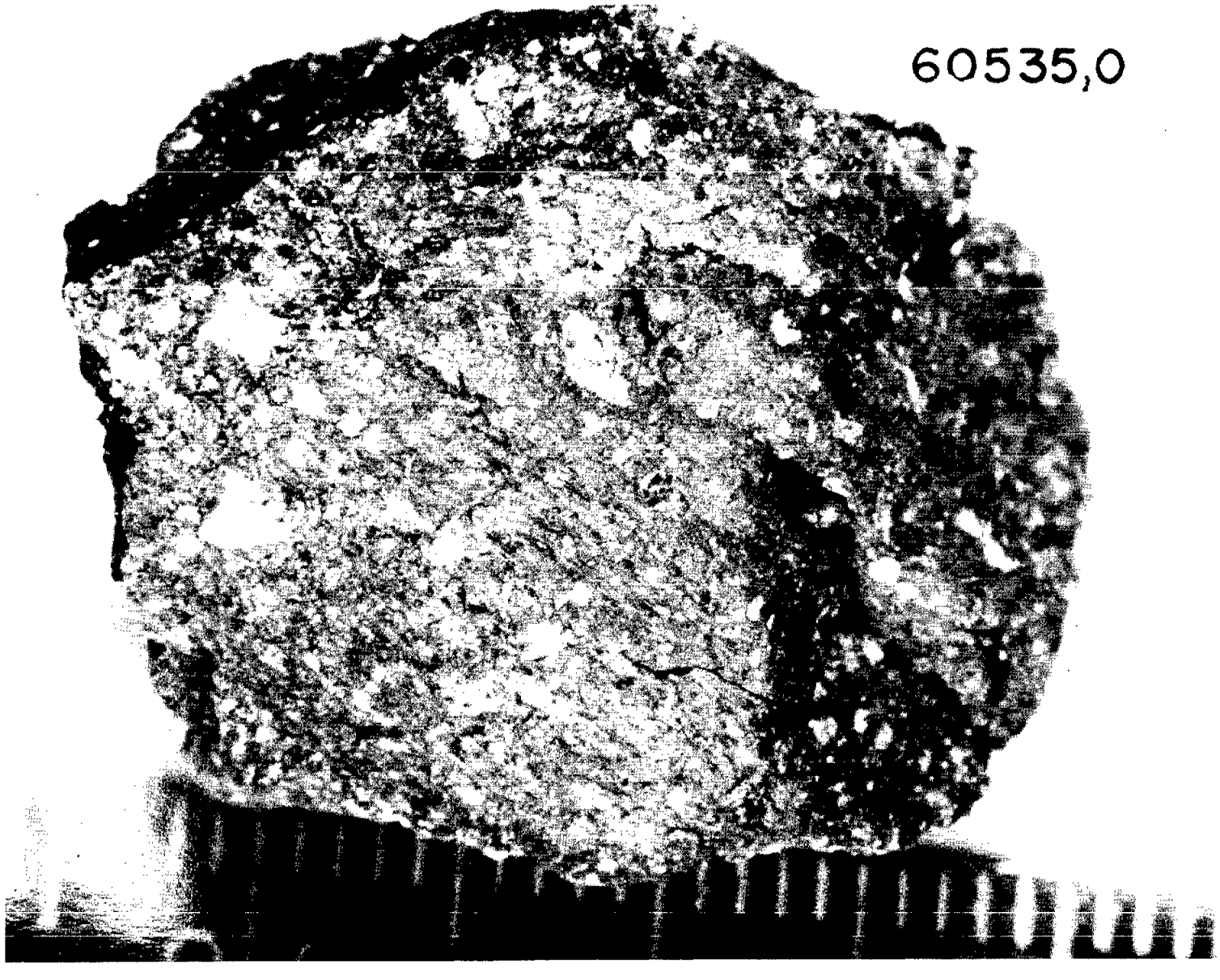
Generic No.: 65788
Rock Type: Glassy agglutinate

Weight (g): 9.52
Dimensions (cm): 2.6 x 2.3 x 1.3
Color (fresh): Medium dark gray (N4)
Shape: Irregular
Variability: Some; see below
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Glassy agglutinate
Cavities (%): Highly vesicular (large vesicles)
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Dark glass	Dark brown		Irreg			
Anorthosite clasts	White	10	Irreg	2(?)	Up to 10	
Gray crystalline clasts	Medium light gray	5	Sub-rounded	~1		

Special Features: This is a piece of vesicular glass which has a lot of soil, etc. stuck to its surface. It also contains a number of large clasts.

3.2.6 Gray and white microbreccias and breccias (Group 6)


60535,0

Generic No.: 60535,0
Rock Type: Light gray and white, coherent microbreccia

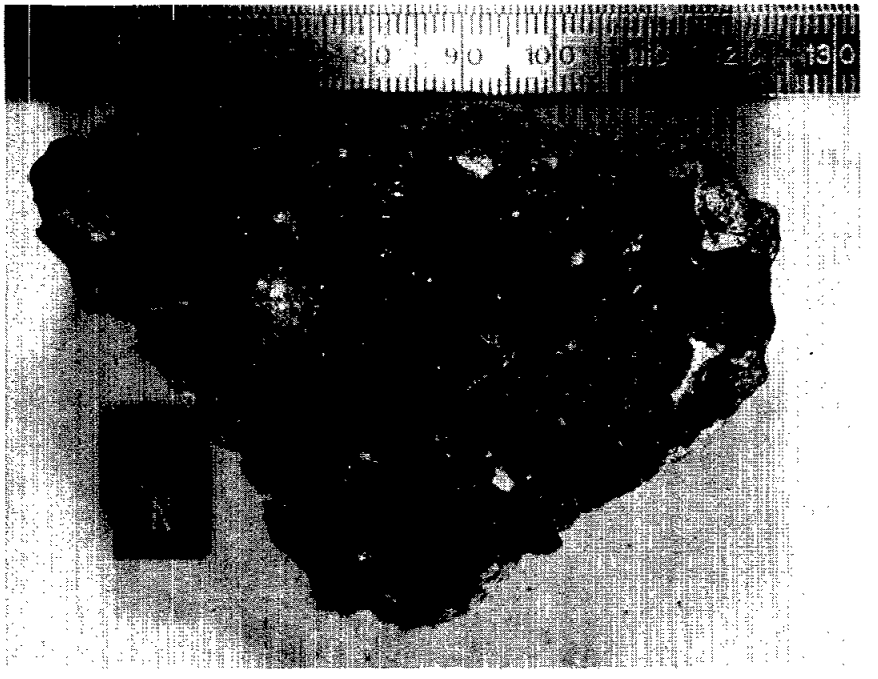
Weight (g): 7.23
Dimensions (cm): 2.5 x 2.1 x 1.3
Color (fresh): Medium gray (N5) to medium light gray (N6) with a brownish cast.
Shape: Subrounded
Variability: None, but has glass on one surface
Coherence: intergranular - coherent
fracturing - none
Fabric/texture: Isotropic, with the exception of what appears to be a slickenside on one side of the rock. Microbreccia
Cavities (%): None
Surface: Irregular to smooth
Zap pits: Many on one side, very few on other

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase clasts	White	5	Mostly angular	Up to 1.0		
Matrix	Gray	95		<0.05		(1)
Orange-brown silicate		0.1	Angular	<0.1		Clast

Special Features: (1) The matrix consists of <0.05 mm diameter grains of white and dark color, probably representing plagioclase and mafic silicates. Grain size of matrix is distinctly finer than the clasts.

Generic No.: 60639,0
Rock Type: Gray breccia

Weight (g): 175.1
Dimensions (cm): 8.0 x 5.8 x 4.5
Color (fresh): Light gray (N7) to medium gray (N5)
Shape: Subangular
Variability: One side encrusted by devitrified glass
Coherence: intergranular - friable to coherent
fracturing - few
Fabric/texture: Gray breccia, encrusted completely on one side by glass. Continued (1) below.
Cavities (%): Few vesicles in the glass
Surface: Variable
Zap pits: Highly localized areas of zap pits, both in matrix as well as anorthosite fragments.
Special Features: (1) The breccia consists of centimeter-sized fragments of anorthosite, basalt, and gray, tough, crystalline rocks. The anorthosite is 99 percent plagioclase (fine-grained). One fragment of basaltic material of ophitic texture is touching it. The basalt contains ilmenite (mm-sized), feldspar, enclosing reddish-brown pyroxene. Plagioclase laths in the basalt are approximately 1 mm long.

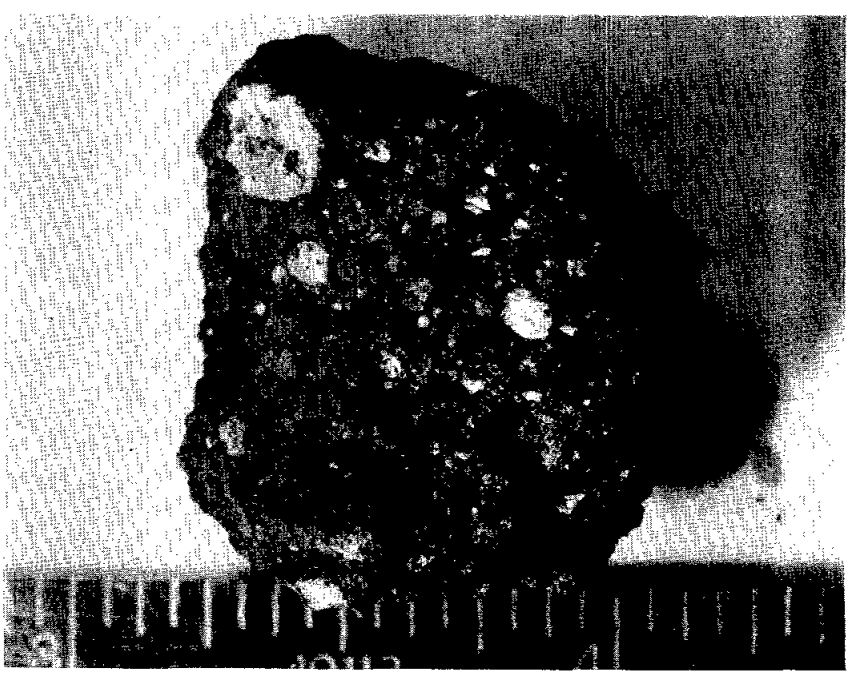


Generic No.: 60656,0
Rock Type: Gray and white, fine breccia

Weight (g): 11.23
Dimensions (cm): 2.9 x 2.5 x 1
Color (fresh): Medium gray (N5)
Shape: Subrounded
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Fine breccia, consisting of white clasts embedded into a gray, partly glassy matrix.
Cavities (%): Few
Surface: Smooth to granular
Zap pits: Few, glass lined

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Medium gray	70				Partly glassy
Plagioclase	White	25		<5.0		Clasts
Gray, tough crystalline rocks; and miscellaneous pieces		5				Clasts

Special Features: This rock is transitional to the gray, vesicular glass, devitrified with white clasts.



Generic No.: 60676,0
Rock Type: Gray and white breccia with partly glassy matrix

Weight (g): 8.92
Dimensions (cm): 3.1 x 1.8 x 1.3
Color (fresh): Medium dark gray (N4)
Shape: Subangular
Variability: None
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic. Gray and white breccia, partly glassy matrix.
Cavities (%): Few vesicles
Surface: Rough
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix		65				
Gray crystalline rock		25		<17		Clasts
Plagioclase		10		<3.0		Clasts

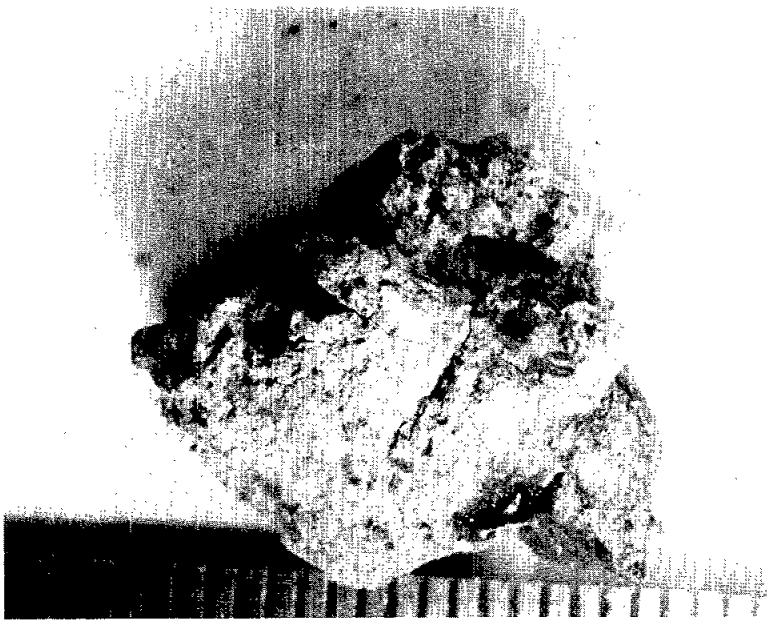
Special Features: This rock is transitional to 60656,0, but has more glass in the matrix.

65337

Generic No.: 65337
Rock Type: Gray and white breccia

Weight (g): 11.57
Dimensions (cm): 3.2 x 2.1 x 1.4
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Irregular - granulated
Zap pits: Very few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White-light gray	20	Irreg rounded	~1	To 2	Some clasts (anorthositic) seem to have light-yellow maf. sil. also. Some are single feldspar grains.
Gray crystalline clasts	Med. gray-med. light gray	5	Irreg	0.5		Gray fine-grained crystalline rock like larger specimens
Spherules	Variable	3-5	Spherical	0.5	To 1	Most are green glass, but there are many clear, some brownish.
Maf. sil. clasts	Variable	2	Irreg	0.5	To 1	There are a few green-yellow grains which may be olivine, and also some orange to brown grains (pyroxene).
Opaque	Metallic	<1	Irreg	0.2	To 0.5	Mostly nickel-iron (at least this is identifiable). Some metal or troilite grains appear tarnished.
Matrix	White-light gray	70				Mostly finely comminuted plagioclase



65338

Generic No.: 65338
Rock Type: Gray and white breccia

Weight (g): 2.65
Dimensions (cm): 1.7 x 1.7 x 1.0
Color (fresh): Very light gray (N8)
Shape: Subrounded-subangular
Variability: Some (see [1])
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/fine breccia
Cavities (%): Up to 30% vesicles (?) in some areas
Surface: Irregular
Zap pits: Few (indistinct)

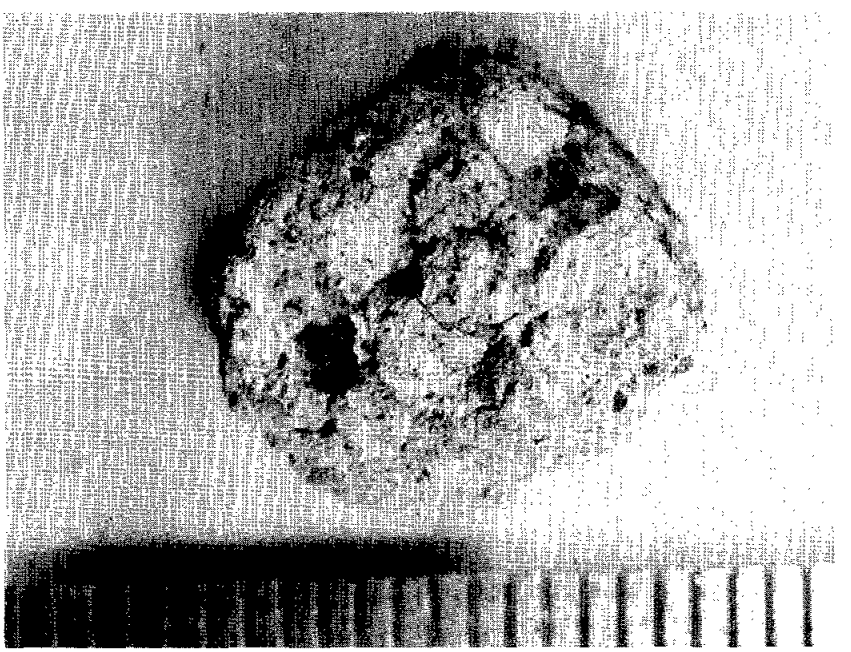
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Light gray	10-15	Angular	<1		One large gray clast about 5 x 5 x 4 mm, a few others.
Plagioclase-rich clasts	White	10	Irreg	~1		There may be mafic silicates in some of these. Some are single plagioclase crystals.
Colored clasts	Yellow-green	2	Rounded	~0.5		Could be glass or olivine.
Matrix	Light gray					Mostly finely comminuted plagioclase.

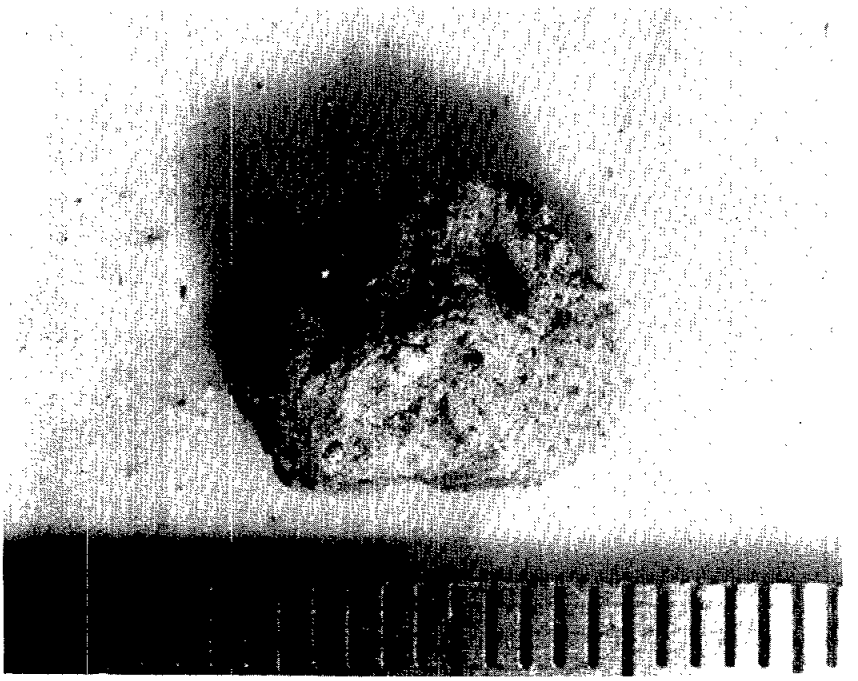
Special Features: (1) Some vesicular areas, but most is homogeneous non-vesicular breccia. One patch, 1.5 mm diameter, of once-molten, highly reflective material on surface; looks like metal. Also a similar area of dark glass. The surface is powdery.

Generic No.: 65339
Rock Type: Gray and white breccia

Weight (g): 1.62
Dimensions (cm): 1.0 x 1.0 x 1.0
Color (fresh): Very light gray (N8)
Shape: Rounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/micro-fine breccia
Cavities (%): None
Surface: Irregular - granulated

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Feldspar-rich clasts	White	10(?)	Rounded to irreg	∿1		Most are single plagioclase grains
Gray aphanitic clasts	Light to med. gray	10(?)	Angular	∿1		Some of these may be dark gray glass (devitrified).
Yellow orange clasts		1		<0.1		
Matrix	White	80-85				Mostly finely comminuted plagioclase





65345

Generic No.: 65345
Rock Type: Gray and white breccia

Weight (g): 0.86
Dimensions (cm): 1.1 x 0.8 x 0.8
Color (fresh): Light gray (N7)
Shape: Rounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia - fine breccia
Cavities (%): None
Surface: Irregular
Zap pits: Few if any

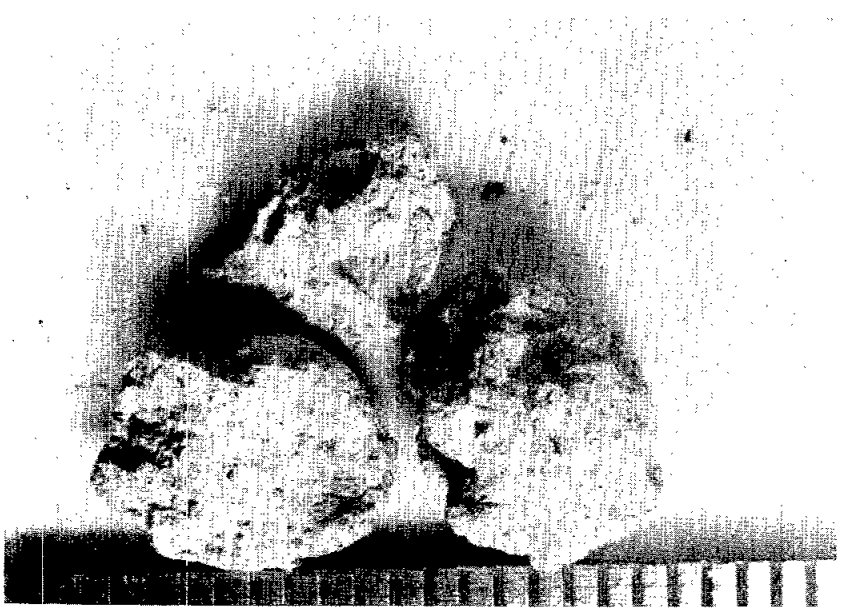
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	10?	Irreg	∿0.5	To 1.5	Many are single plagioclase grains
Gray aphanitic clasts	Light med. gray	20	Angular	∿0.5	To 1	Some are probably dark, devitrified glass
Maf. sil. (?)	Brown yellow	3	Rounded angular	∿0.3		Possibly maf. sil., possibly glass
Spinel(?)	Red orange	<0.1	Rounded	0.1		
Matrix	White very light gray					Mostly plagioclase finely comminuted but dark material is present also.

Special Features: This specimen shows more small clasts, possibly more of a gradation from matrix to large clasts than preceeding microbreccias.

Generic No.: 65346
Rock Type: Gray and white breccia

Weight (g): 0.80
Dimensions (cm): Three pieces: 2 - 6 mm diameter; 1 - 6 x 5 x 3
Color (fresh): Light gray (N7)
Shape: Subrounded - subangular
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia - fine breccia
Cavities (%): None
Surface: Irregular
Zap pits: Few - if any

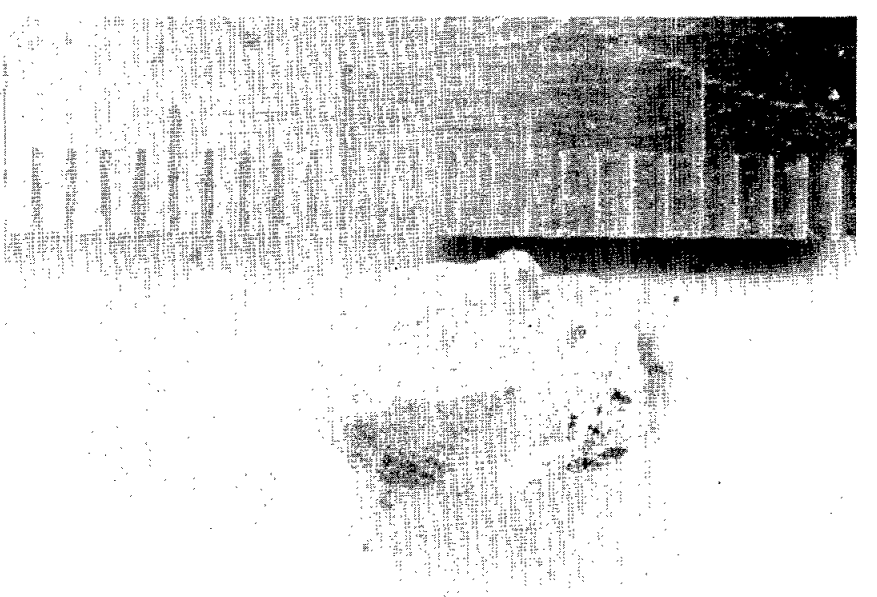
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray aphanitic clasts	Light-med. gray	20	Angular well-rounded	~0.7		Some are glass (devitrified). Some may be spherules
Plag-rich clasts	White	20-15	Irreg rounded	~0.5		Many are single grains of plagioclase
Metal	Metallic	1	Irreg rounded	<0.5		
Matrix	White					Mostly finely comminuted feldspar



Generic No.: 65347
Rock Type: Gray and white breccia

Weight (g): 0.43
Dimensions (cm): 1.0 x 0.6 x 0.4
Color (fresh): Light gray (N7) to very light gray (N8)
Shape: Subrounded, subangular
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Irregular
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Dark-medium light gray	15-20	Ang-rounded	<0.05	To 2	Many are probably devit. glass. Most are small
Plag-rich clasts	White	10	Irreg-subrounded	<1	To 1.5	Mostly single grains
Matrix	White-light gray					Mostly finely comminuted plagioclase

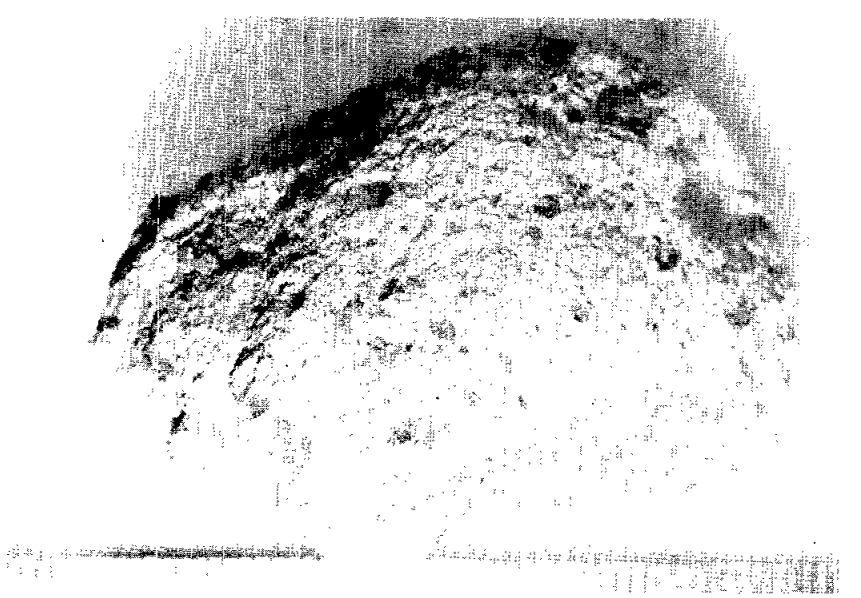


Generic No.: 65715
Rock Type: Gray and white breccia

Weight (g): 31.36
Dimensions (cm): Three: 4.0 x 3.3 x 2.1
2.0 x 1.3 x 0.6
0.6 diameter
Color (fresh): Light gray (N7)
Shape: Rounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Granular to powdery
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plag.-rich clasts	White	5-10	Irreg	1		Mostly single grains
Gray cryst. clasts	M. lt. gray	10-20	Irreg.-rounded	1		
Dark glass clasts	M. dk. gray	5	Angular	0.7		
Matrix	Light gray					Mostly comminuted plagioclase

Special Features: Identical to 65337 etc. (1) Largest piece: 4.0 x 3.3 x 2.1; second piece 2.0 x 1.3 x 0.6; third piece: about 0.6 diameter (rounded. One or two pieces of orange material (oxidized).



Generic No.: 65716
Rock Type: Gray and white breccia

Weight (g): 14.28
Dimensions (cm): Three: 2.8 x 2.1 x 1.7
0.8 diameter
0.8 diameter
Color (fresh): Light gray (N7)
Shape: Rounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Granulated to powdery
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plag-rich clasts	White	10	Subrounded	1		Mostly single grains
Gray cryst. clasts	M. lt. gray	10	Angular	0.5		
Dark glass clasts	M. dk. gray	5	Irreg-angular	0.5		
Matrix	Lt. gray					Mostly finely comminuted plagioclase

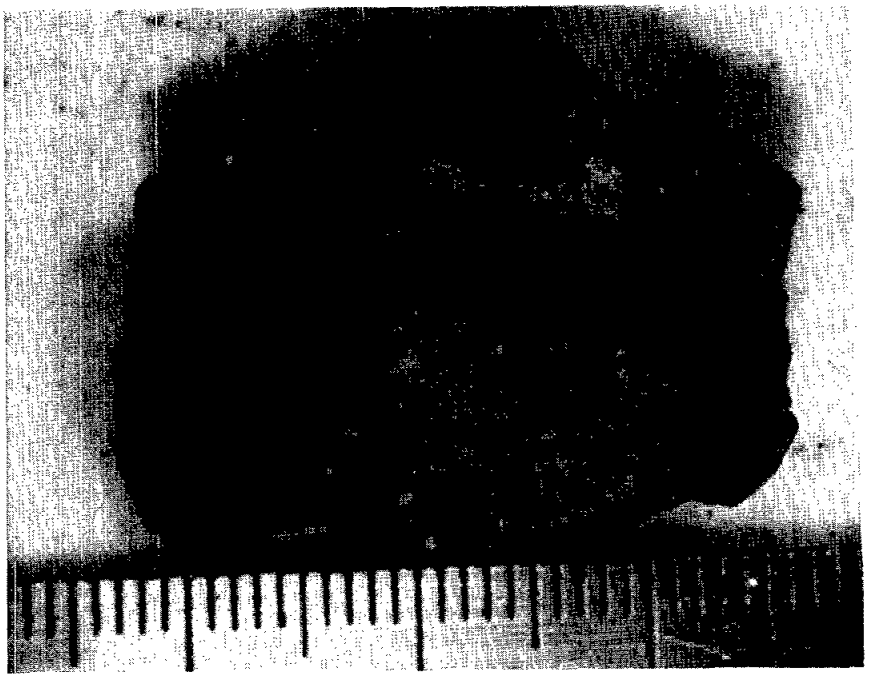
Special Features: (1) Large piece: 2.8 x 2.1 x 1.7.
Two smaller pieces about 0.8 diameter.

Generic No.: 65717
Rock Type: Gray and white breccia

Weight (g): 7.415
Dimensions (cm): 3.0 x 2.1 x 1.3
Color (fresh): Medium light gray (N6) with brown cast
Shape: Subrounded
Variability: None (?)
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery (dust covered) - granulated
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plag-rich clasts	White	10	Sub-rounded	1		
Gray cryst. clasts	Med. gray	10	Angular	1		
Matrix						

Special Features: This specimen is almost entirely covered with finely powdered material (dust?).



Generic No.: 65718
Rock Type: Gray and white breccia

Weight (g): 10.61
Dimensions (cm): (1)
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Granular to powdery
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plag-rich clasts	White	10	Sub-rounded	1		
Gray cryst. clasts	M. lt. gray	20	Angular			
Matrix	Light gray					

Special Features: (1) Large piece: 2.6 x 2.1 x 2.1; second piece 1.0 x 0.5 x 0.3; third, and fourth less than 0.4 diameter.

Generic No.: 65719
Rock Type: Gray and white breccia

Weight (g): 7.04
Dimensions (cm): 2.3 x 2.0 x 2.0
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery to granulated
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray cryst. clasts	Med. gray	10-15	Angular	2		
Plag-rich clasts	White	5	Sub-rounded	1		Mostly single grains
Maf. sil. clasts	Yellow	1	Rounded	0.5		Maybe glass

Generic No.: 65725
Rock Type: Gray and white breccia

Weight (g): 5.19
Dimensions (cm): 2.5 x 1.9 x 1.2
Color (fresh): Light gray (N7)
Shape: Subangular
Variability: None
Coherence: intergranular - moderately coherent
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Medium gray	20-30	Angular	~1	Up to 5	
Plagioclase rich clasts	White	5		0.5		Mostly single grains


657726.0

Generic No.: 65726
Rock Type: Gray and white breccia

Weight (g): 5.19
Dimensions (cm): 2.4 x 1.2 x 1.1
Color (fresh): Light gray
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Granular to powdery
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Medium gray & darker	15	Angular	0.5		
Plagioclase rich clasts	White	5	Sub-rounded	0.5-1		

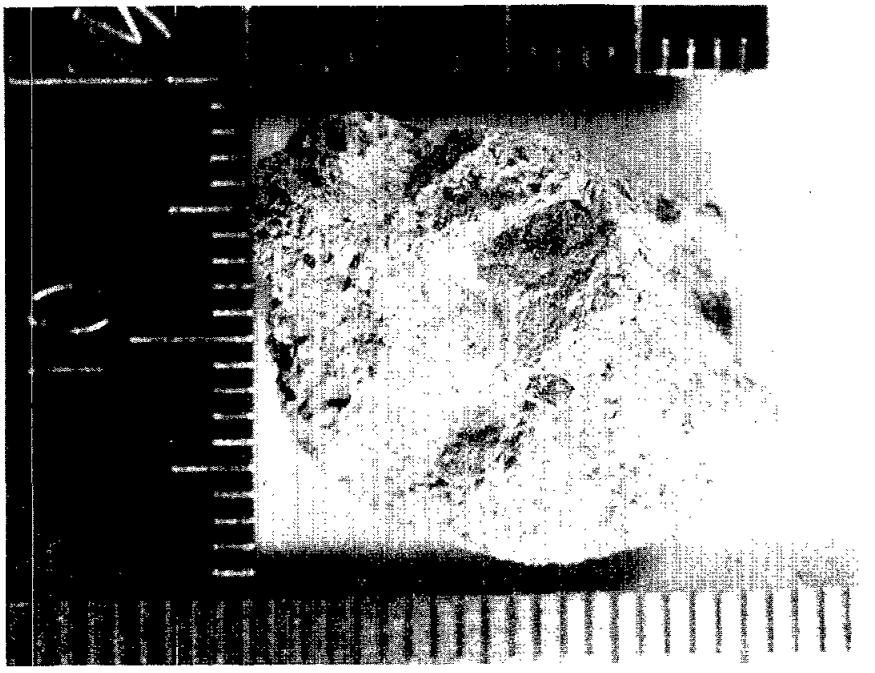
Special Features: One large medium dark gray clast (3 x 5 mm) contains smaller white clasts itself.

Generic No.: 65727
Rock Type: Gray and white breccia

Weight (g): 4.30
Dimensions (cm): Large piece: 2.2 x 1.4 x 1.3
Small: 0.4 diameter
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable, moderately coherent
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery-granulated
Zap pits: Few if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Medium light gray	20-30	Rounded	1-2	Up to 5	
Plagioclase rich clasts	White	5-10		~1		
Matrix	Light gray					Mostly comminuted feldspar

Special Features: Larger gray clasts and lower clast/matrix than usual for this group.



Generic No.: 65728
Rock Type: Gray and white microbreccia

Weight (g): 4.22
Dimensions (cm): 2.1 x 1.4 x 1.3
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery - granulated
Zap pits: Few, if any

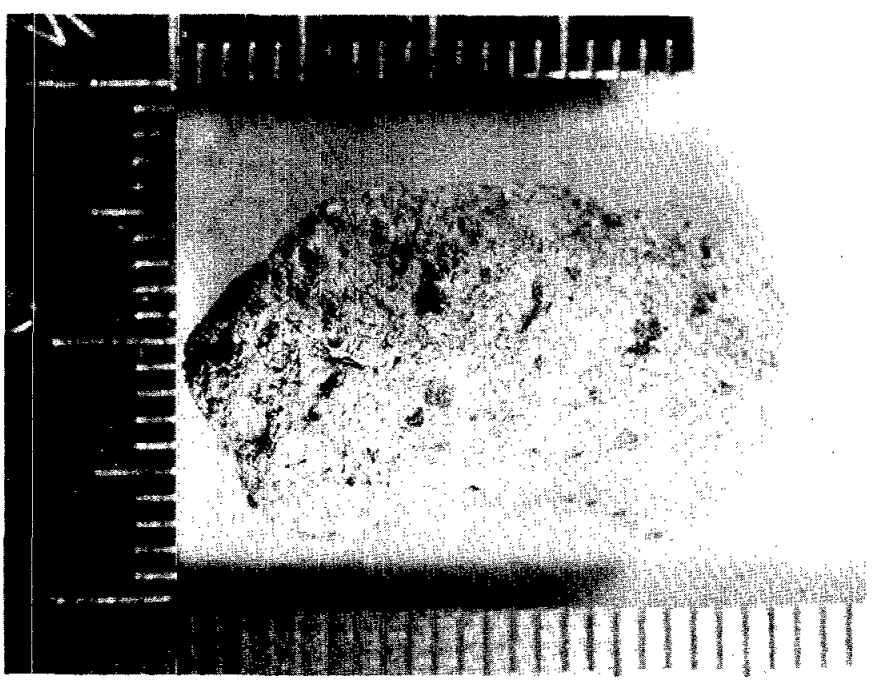
Component	Color	% of Rock	Shape	Size (mm) Dom.	Size (mm) Range	Comments
Gray crystalline clasts	Medium light gray	15	Angular-rounded	0.5-2	Up to 4	
Plagioclase rich clasts	White	<5				
Matrix						Mostly comminuted plagioclase
Miscellaneous clasts						

Special Features: One bluish-green clast (possibly green glass) (0.5 mm). One dark clast 1 mm diameter is transparent dark red; possibly glass. One or two pale orange-pink, small (0.5 mm) clasts.

Generic No.: 65729
Rock Type: Gray and white breccia

Weight (g): 3.81
Dimensions (cm): 2.2 x 1.3 x 1.2
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable, moderately coherent
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery-granulated
Zap pits: Few, if any

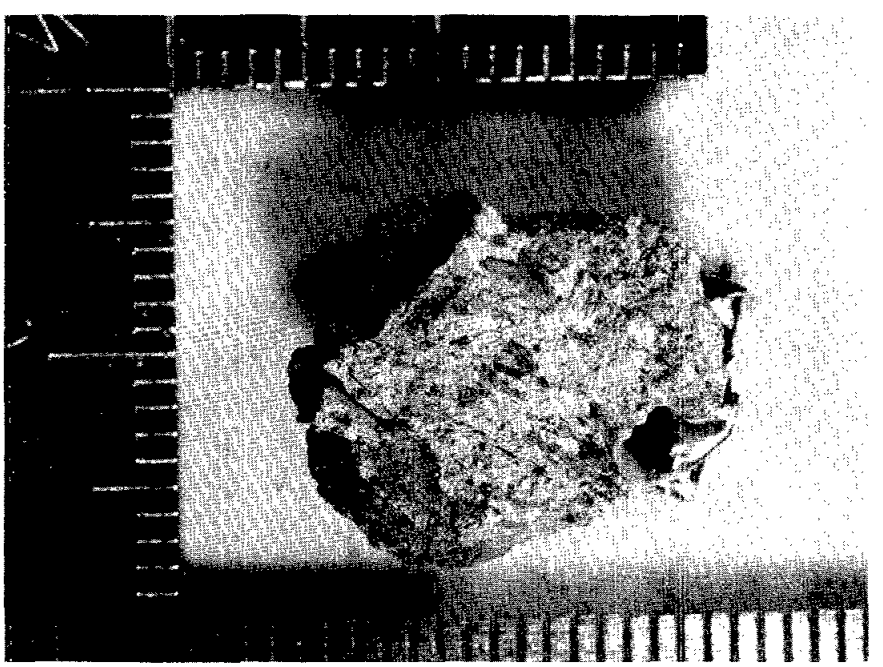
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Medium light gray	15-20	Round-sub-angular	~1		
Plagioclase rich clasts	White	5-10	Sub-rounded			Mostly single grains
Matrix	Light gray					Mostly comminuted plagioclase



Generic No.: 65735
Rock Type: Gray and white breccia

Weight (g): 4.26
Dimensions (cm): Two: 1.9 x 1.8 x 1.0
1.5 x 1.4 x 1.1
Color (fresh): Medium light gray (N6)
Shape: Subangular
Variability: Some, due to size of some clasts
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia; fine breccia
Cavities (%): None
Surface: Powdery to granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	10-20	Sub-rounded	~1		Mostly single grains
Gray crystalline clasts	Medium light gray	10-15	Angular sub-rounded	~1		One very large? Broken off from one surface
Mafic silicate	Yellow	2	Rounded			One large clast (2-5 mm) in each piece and a few small clasts



Generic No.: 65736
Rock Type: Gray and white breccia

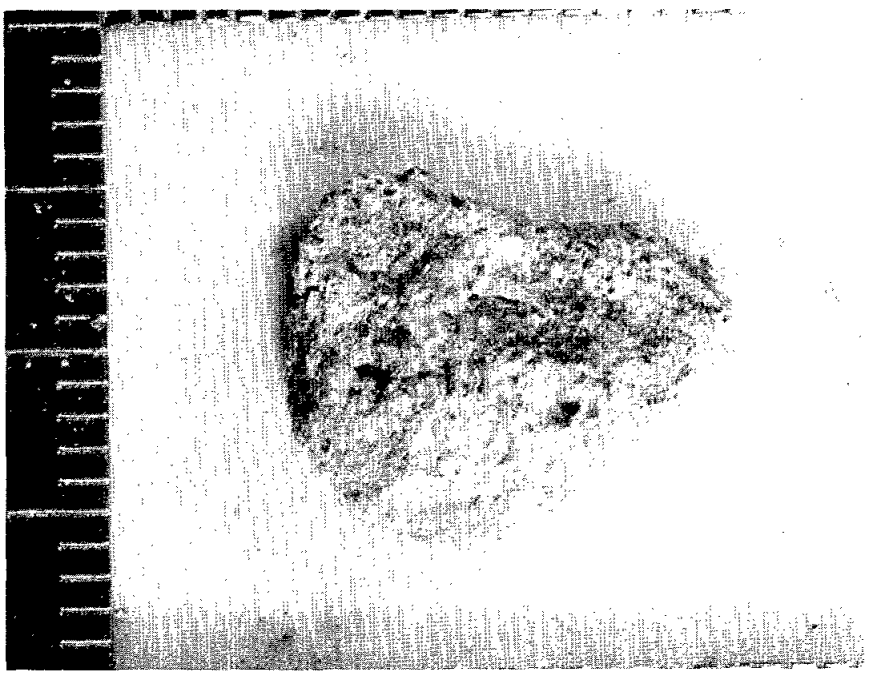
Weight (g): 2.74
Dimensions (cm): 1.6 x 1.3 x 1.0
3.0 x 0.3 x 0.2
0.15 diameter
Color (fresh): Light gray (N7)
Shape: Subangular
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Granulated - powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Medium light gray	15-20	Angular-rounded	~1	Up to 5	
Plagioclase rich clasts	White	5-10	Sub-rounded	~1		
Matrix	Light gray					Mostly comminuted feldspar

Generic No.: 65737
Rock Type: Gray and white breccia

Weight (g): 0.85
Dimensions (cm): 1.4 x 1.0 x 0.5
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Granulated to powdery
Zap pits: Few, if any

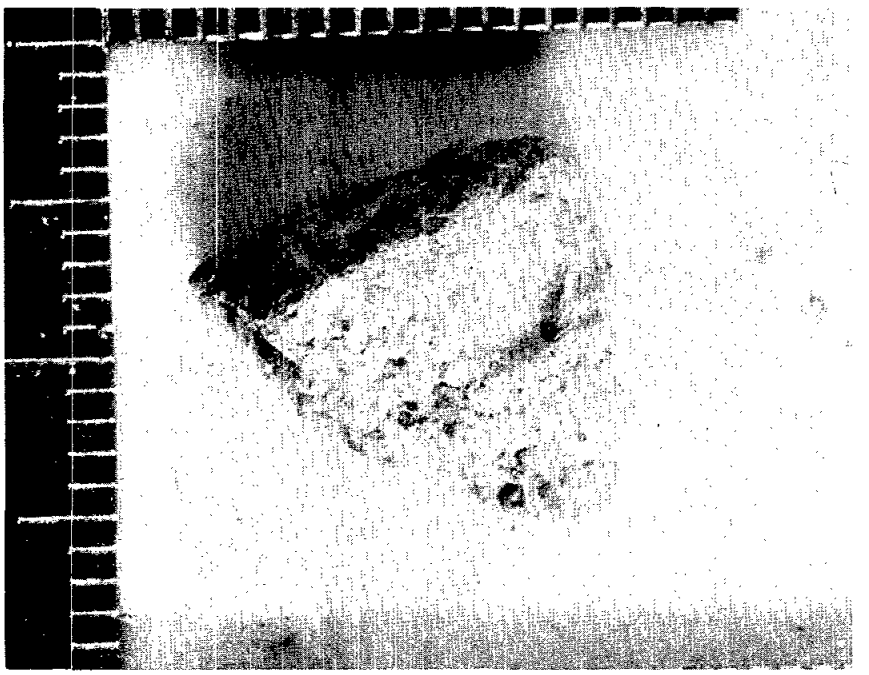
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	10	Sub-rounded	~1	Up to 3	
Gray crystalline clasts	Medium light	10-20	Angular-rounded	0.5	Up to 3	
Matrix	Light gray					Mostly comminuted plagioclase



Generic No.: 65738
Rock Type: Gray and white breccia

Weight (g): 1.17
Dimensions (cm): 1.5 x 1.0 x 0.6
Color (fresh): Light gray to very light gray (N7)
Shape: Subangular
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Irregular, powdery to granulated
Zap pits: Few, if any

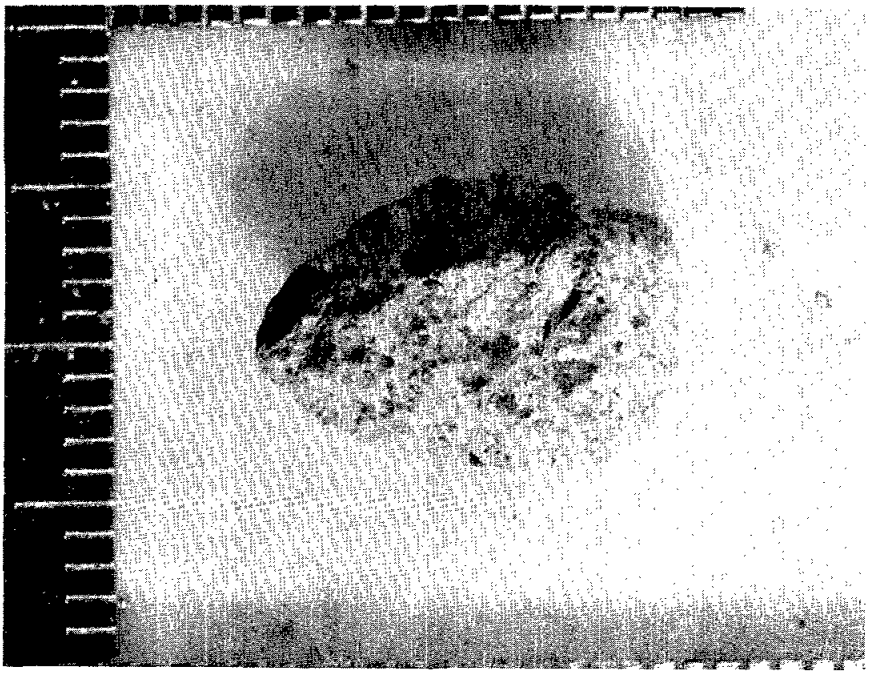
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	10-20	Sub-rounded	~1	Up to 4	
Gray crystalline clasts	Medium light gray	10	Sub-angular	~1		
Matrix	Light gray					



Generic No.: 65739
Rock Type: Gray and white breccia

Weight (g): 0.95
Dimensions (cm): 1.2 x 0.8 x 0.7
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery-granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Medium light gray	10-20	Sub-rounded	~1		
Plagioclase rich clasts	White	5-10	Irreg-subrounded	~1		
Matrix	Light gray					Mostly comminuted plagioclase



60657

Generic No.: 60657,0
Rock Type: Gray and white microbreccia

Weight (g): 6.05
Dimensions (cm): 3.3 x 1.8 x 0.8
Color (fresh): Medium light gray (N6) to light gray (N7)
Shape: Subrounded
Variability: Yes, two ends of the rock have attached glass (see [1])
Coherence: intergranular - tough
fracturing - few
Fabric/texture: Isotropic microbreccia, consisting of white clasts, embedded into a light gray, crystalline matrix
Cavities (%): None, vesicles in attached glass
Surface: Mostly smooth to granulated
Zap pits: Few, glass lined

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Microbreccia						
(a) Matrix	Light gray	60		<0.01		
(b) Plagioclase	White	40		<1.0		Clasts
(a) Devitrified glass		80				
(b) Anorthosite	White	20		<4.0		Clasts

Special Features: (1) This rock is a gray and white microbreccia, with no apparent glass in the matrix. However, two large areas of partly devitrified vesicular glass are attached to two ends of the rock. The glass in itself contains <4 mm anorthosite fragments (white). Annealed breccia.

Generic No.: 60658,0
Rock Type: Gray and white breccia

Weight (g): 5.47
Dimensions (cm): 2.5 x 1.6 x 0.8
Color (fresh): Light gray (N7)
Shape: Subangular
Variability: None
Coherence: intergranular - coherent
fracturing - few
Fabric/texture: Isotropic. Fine breccia consisting of a light gray matrix, into which are embedded white clasts
Cavities (%): None. One big fracture into which glass flowed. Vesicles in the glass.
Surface: Smooth to granulated
Zap pits: Few, glass lined

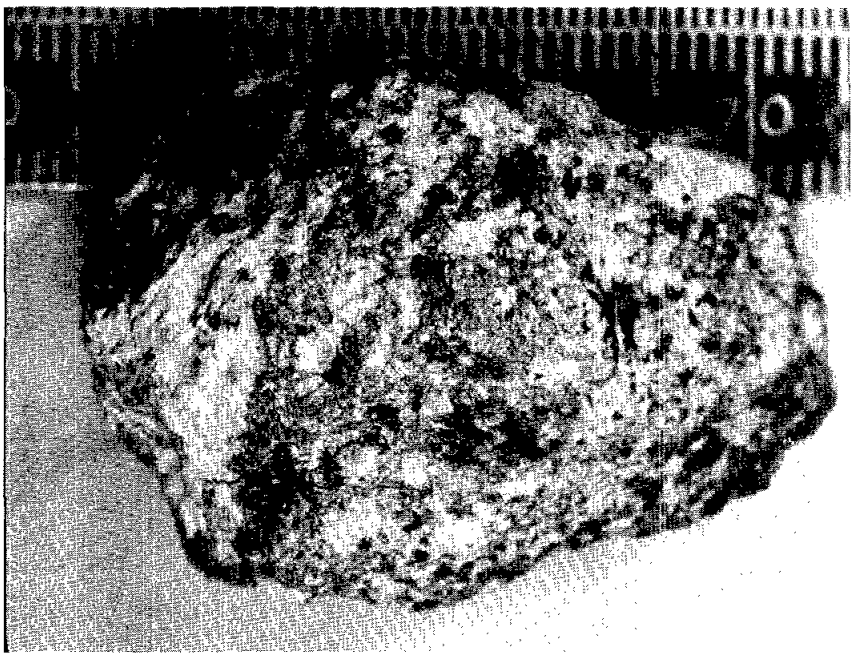
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Light gray	55				
Plagioclase	White	45	Irreg to rounded	<30		Clasts

Special Features: This fine breccia is similar to rock 60657,0. It is partly coated by a greenish-black vesicular, shiny glass. The glass also contains a few whitish inclusions.

Generic No.: 60659,0
Rock Type: Gray and white breccia

Weight (g): 22.20
Dimensions (cm): 3.9 x 3.0 x 1.5
Color (fresh): Light gray (N7)
Shape: Subrounded
Variability: None
Coherence: intergranular - coherent
fracturing - few, some large ones
Fabric/texture: Isotropic. Breccia consisting of a gray matrix into which are embedded many white clasts

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Medium gray	60				
Plagioclase	White	40	Angular to rounded	Up to 2.0		Clasts
Clasts	Green	<0.1		<2.0		
Brownish-red mineral		In matrix				Possibly spinel



Generic No.: 65757,0
Rock Type: Gray and white breccia

Weight (g): 26.20
Dimensions (cm): 4.0 x 3.0 x 2.0
Color (fresh): Medium gray (N5)
Shape: Subangular
Variability: Certain parts of the surface have a dark glass coat
Coherence: intergranular - coherent
fracturing - few
Fabric/texture: Isotropic. Breccia, with large (centimeter sized) white plagioclase clasts.
Cavities (%): Vesicles in the glass that coats the surface
Surface: Irregular
Zap pits: Very few, glass lined

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Medium gray	65				
Plagioclase	White	25				Clasts
Glass	Dark	10				Surface

Special Features: The glass covering part of the surface is clear and glassy in places, in others it is devitrified.

Generic No.: 65758,0
Rock Type: Gray and white breccia

Weight (g): 5.95
Dimensions (cm): 2.4 x 1.9 x 1.1
Color (fresh): Very light gray (N8) to medium gray (N5)
Shape: Subangular
Coherence: intergranular - coherent
fracturing - some
Fabric/texture: Isotropic. Breccia consisting of gray matrix and white clasts
Cavities (%): None
Surface: Granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray matrix	Gray	25		Very fine-grained		
Plagioclase		75				Clasts

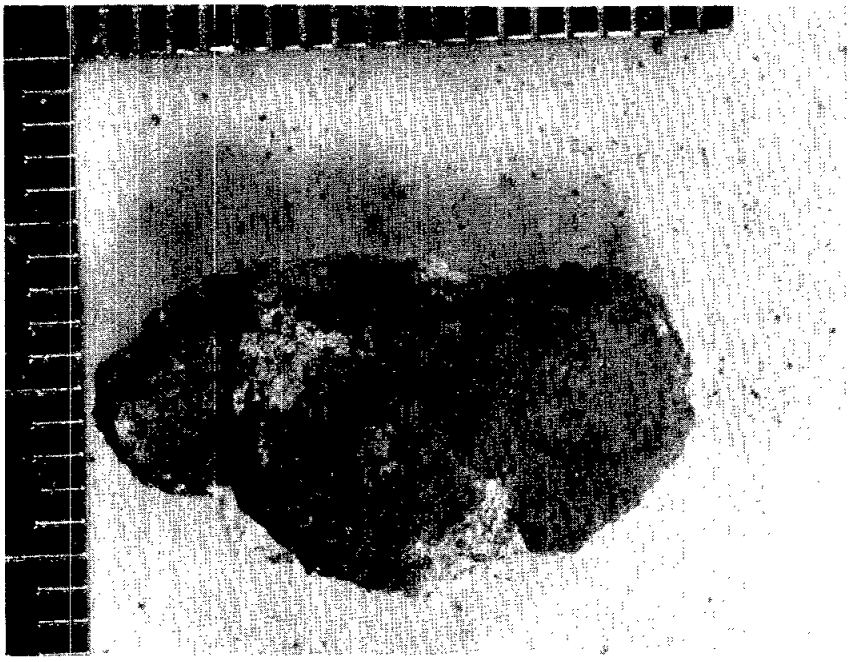
Special Features: This appears to essentially consist of one large plagioclase clast, with the remainder being fine-grained matrix.

Generic No.: 65765,0
Rock Type: Gray and white breccia

Weight (g): 1.12
Dimensions (cm): 1.7 x 1.0 x 0.5
Color (fresh): White (N9) to medium dark gray (N4)
Shape: Subangular
Variability: Yes, see (1)
Coherence: intergranular - coherent
fracturing - very few
Fabric/texture: Isotropic. Gray and white breccia
Cavities (%): None
Surface: Granulated
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase	White	75	Sub-rounded		~10.0	Clast
Gray matrix	Gray	23				
Soil and glass		2				

Special Features: (1) This rock consists of one large anorthosite clast that makes up approximately 3/4 of the rock. On one side, attached to the white clast, is gray, brecciated material, and on the back side, the rock is covered by a thin layer of the same material, plus some soil and glass. The gray matrix has smaller clasts of plagioclase.

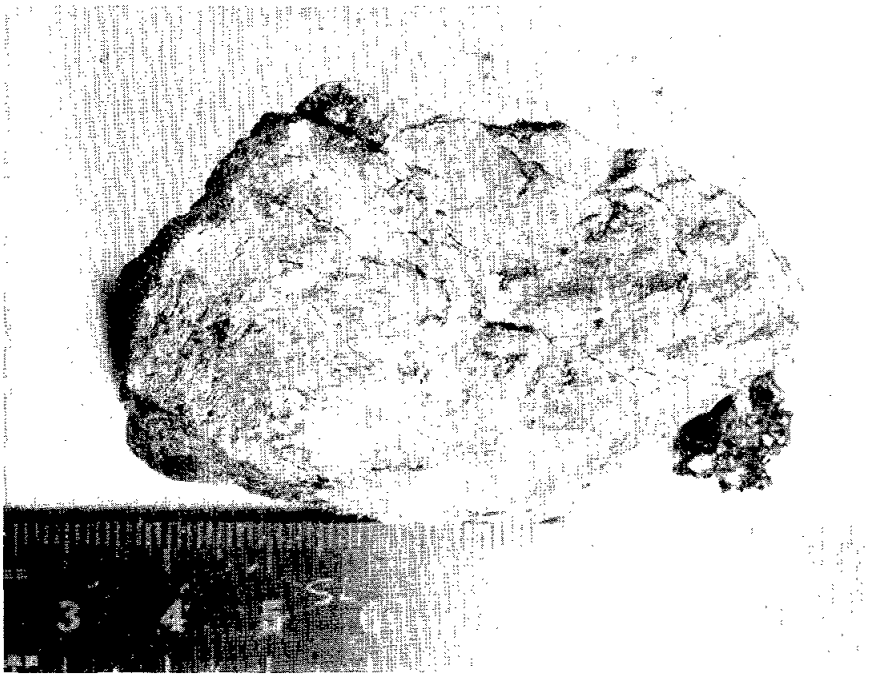


Generic No.: 65786,0
Rock Type: Gray and white, coherent fine breccia

Weight (g): 83.02
Dimensions (cm): 6.4 x 4.2 x 3.0
Color (fresh): Light gray (N7)
Shape: Subangular
Variability: None
Coherence: intergranular - coherent
fracturing - fair amount
Fabric/texture: Isotropic. Fine breccia
Cavities (%): None
Surface: Smooth to granulated
Zap pits: Splash glass (dark greenish gray 5GY 4/1)

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Gray	85				
Plagioclase	White	15				Clasts

Special Features: Beautiful slickenside (5 cm).

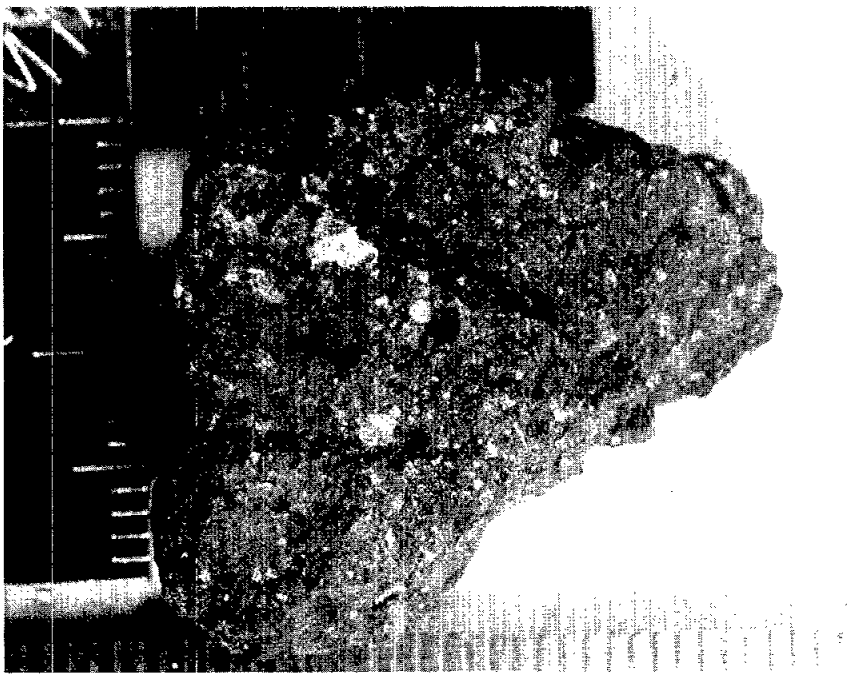


Generic No.: 65787,0
Rock Type: Gray coherent microbreccia

Weight (g): 8.28
Dimensions (cm): 3.0 x 2.0 x 1.0
Color (fresh): Light gray (N7)
Shape: Subangular
Variability: None
Coherence: intergranular - coherent
fracturing - few
Fabric/texture: Isotropic. Gray microbreccia
Cavities (%): None
Surface: Smooth to granulated
Zap pits: Few, and some splash glass

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Gray	60				
Plagioclase	White	40				Clasts

Special Features: This rock is transitional from the gray breccias to the gray, tough, crystalline rocks.



3.2.7 Soil clods (Group 7)

6 5 5 1 8
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Generic No.: 65515,0
Rock Type: Soil clod

Weight (g): 50.25
Dimensions (cm): 5.3 x 2.9 x 3.0
Color (fresh): Between very pale orange (10YR 8/2) and yellowish brown (10YR 6/2)
Shape: Rounded
Variability: None
Coherence: intergranular - extremely friable
fracturing - none
Fabric/texture: Isotropic. Soil clod. Extremely friable.
Surface: Smooth
Zap pits: None
Special Features: The soil clods are characterized by a generally uniform small (<0.1 mm) grain size. This specimen contains a 6 mm, very friable white inclusion of similar small grain size. We decided not to measure the dimensions of specimens in this group because they are extremely friable and are falling apart, thus constantly changing dimensions.

Generic No.: 65516,0
Rock Type: Soil clod

Weight (g): 10.485
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Rounded
Variability: None
Coherence: intergranular - extremely friable
fracturing - none
Fabric/texture: Isotropic. Soil clod. Extremely friable
Surface: Smooth
Zap pits: None
Special Features: Contains a few metal grains and a few plagioclase crystals that are discernible. Compare rock 65515,0.

Generic No.: 65517,0
Rock Type: Disintegrated soil clod

Weight (g): 11.848
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Soil
Variability: None
Coherence: intergranular - extremely friable
Fabric/texture: Soil
Special Features: Compare rock 65515,0

Generic No.: 65518,0
Rock Type: Soil clod

Weight (g): 9.477
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Fabric/texture: Isotropic. Soil clod, extremely friable.
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65519,0
Rock Type: Soil clod

Weight (g): 10.579
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Fabric/texture: Isotropic. Soil clod, extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65525,0
Rock Type: Soil clod

Weight (g): 7.483
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Fabric/texture: Isotropic. Soil clod, extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65526,0
Rock Type: Soil clod

Weight (g): 3.545
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Fabric/texture: Isotropic. Soil clod.
Surface (face): Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65527,0
Rock Type: Soil clod

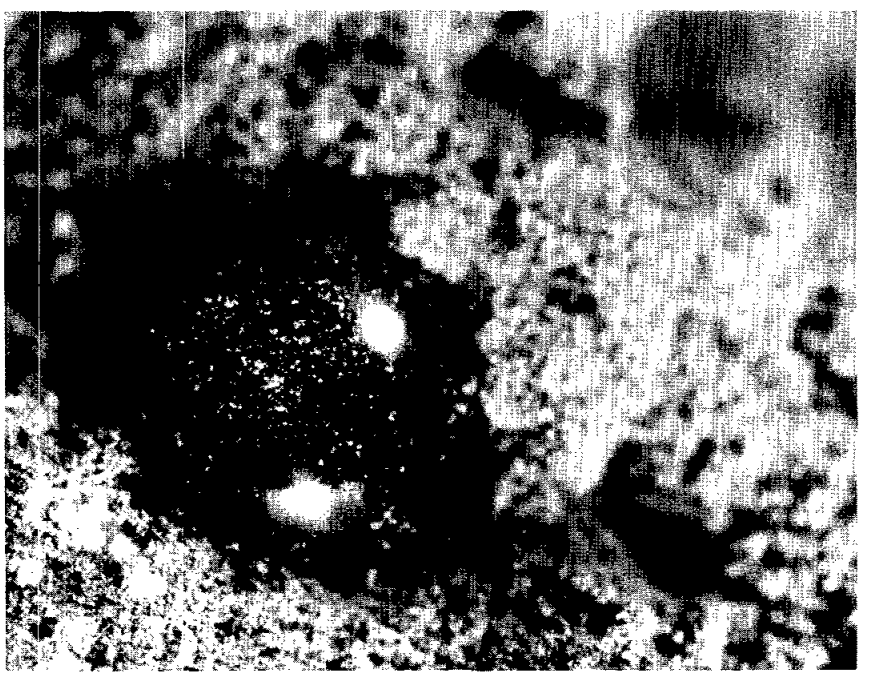
Weight (g): 2.890
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Fabric/texture: Isotropic. Soil clod
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65528,0
Rock Type: Soil clod

Weight (g): 3.082
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65529,0
Rock Type: Soil clod

Weight (g): 2.555
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Rounded
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Several small glass beads are exposed on the surface. A very large spherule is exposed on the other side (~4 mm in diameter). Compare rock 65515,0.



Generic No.: 65535,0
Rock Type: Soil clod

Weight (g): 2.658
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65536,0
Rock Type: Soil clod

Weight (g): 1.575
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: A 0.5 mm green glass fragment is exposed on the surface. Compare rock 65515,0.

Generic No.: 65537,0
Rock Type: Soil clod

Weight (g): 2.426
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65538,0
Rock Type: Soil clod

Weight (g): 2.342
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65539,0
Rock Type: Soil clod

Weight (g): 2.180
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65545,0
Rock Type: Soil clod

Weight (g): 1.797
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65546,0
Rock Type: Soil clod

Weight (g): 1.346
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65547,0
Rock Type: Soil clod

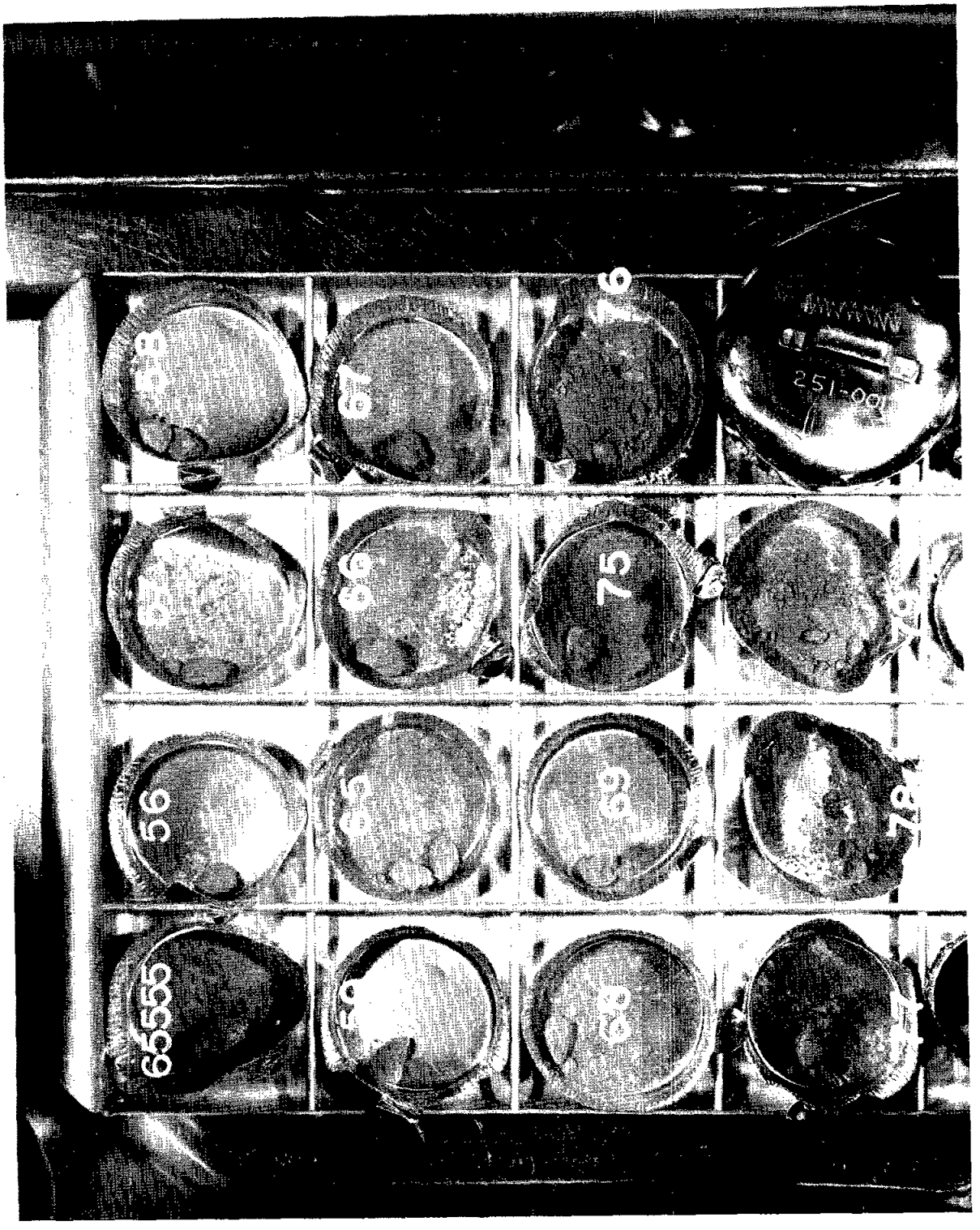
Weight (g): 1.587
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65548,0
Rock Type: Soil clod

Weight (g): 3.023
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65549,0
Rock Type: Soil clod

Weight (g): 2.094
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0


251-00

Generic No.: 65555,0
Rock Type: Soil clod

Weight (g): 2.202
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65556,0
Rock Type: Soil clod

Weight (g): 1.17
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65557,0
Rock Type: Soil (former clod)

Weight (g): 3.295
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Soil
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65558,0
Rock Type: Soil clod

Weight (g): 1.695
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0.

Generic No.: 65559,0
Rock Type: Soil clod

Weight (g): 1.533
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65565,0
Rock Type: Soil clod

Weight (g): 0.852
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare to rock 65515,0

Generic No.: 65566,0
Rock Type: Soil clod

Weight (g): 1.998
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare to rock 65515,0

Generic No.: 65567,0
Rock Type: Soil clod

Weight (g): 1.289
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65568,0
Rock Type: Soil clod

Weight (g): 0.808
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65569,0
Rock Type: Soil clod

Weight (g): 0.873
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Round
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65575,0
Rock Type: Soil clod (3)

Weight (g): 0.907
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Somewhat angular
Variability: None
Coherence: intergranular - friable
Surface: Smooth
Zap pits: None
Special Features: Several inclusions of yellow and white crystalline material are observed. This sample is somewhat less friable than the others in this group.

Generic No.: 65576,0
Rock Type: Soil clod

Weight (g): 0.906
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Rounded
Variability: None
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: Compare rock 65515,0

Generic No.: 65577,0
Rock Type: Soil (former clod)

Weight (g): 0.706
Color (fresh): 10YR 8/2 to 10YR 6/2
Shape: Soil
Variability: None
Coherence: intergranular - extremely friable
Special Features: Compare rock 65515,0

Generic No.: 65578,0
Rock Type: Soil (former clod)

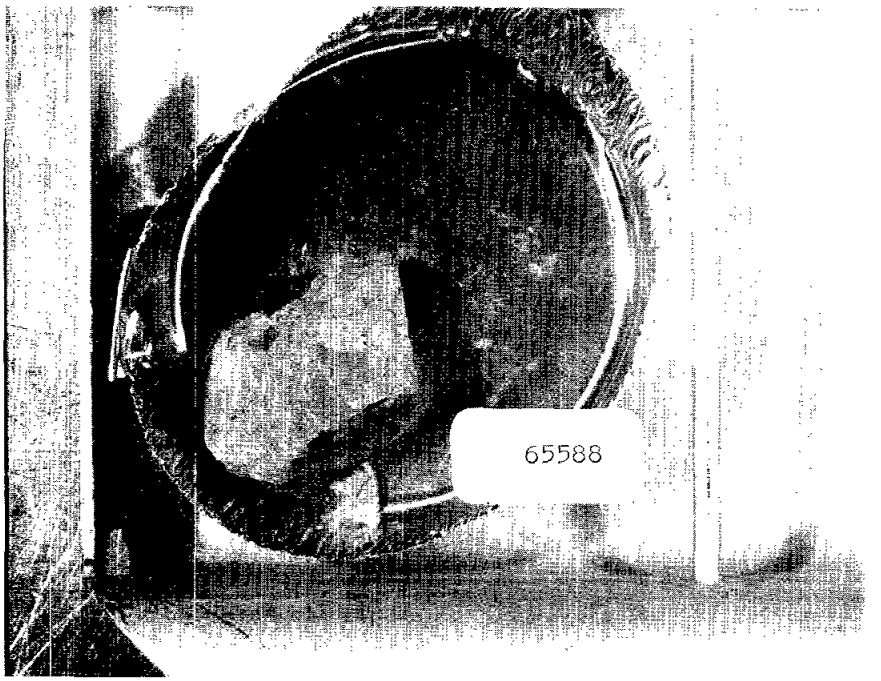
Weight (g): 0.320
Shape: Soil
Color (fresh): 10YR 8/2 to 10YR 6/2
Coherence: intergranular - extremely friable
Special Features: Compare rock 65515,0

Generic No.: 65579,0
Rock Type: Soil clod

Weight (g): 0.612
Shape: Round
Coherence: intergranular - extremely friable
Surface: Smooth
Zap pits: None
Special Features: One clod contains a fragment of irregularly shaped vesicular, devitrified, medium dark gray glass (5 mm diameter). Compare rock 65515,0.

Generic No.: 65588,0
Rock Type: Soil clod

Weight (g): 9.629
Color (fresh): 5Y 8/1
Shape: Round to subangular
Variability: None
Coherence: intergranular - friable
Surface: Smooth
Zap pits: None
Special Features: Somewhat less friable than 65515,0



Generic No.: 65755,0
Rock Type: Soil clod

Weight (g): 1.42
Dimensions (cm): 1.5 x 1.3 x 0.5
Color (fresh): 10YR 7/2
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic. Soil clod rich in white clasts (<10%)
Surface: Smooth
Zap pits: None
Special Features: This soil clod has many more white plagioclase inclusions than the type clod in 65515,0; 0.5 mm dark glass spherule and same size, milky white plagioclase grains are observed.

3.2.8 Brownish soil breccias (Group 8)

Generic No.: 60637,0
Rock Type: Light brownish-gray microbreccia

Weight (g): 7.98
Dimensions (cm): 3.1 x 1.8 x 1.7
Color (fresh): Light brownish gray
Shape: Subrounded
Variability: None
Coherence: intergranular - friable to coherent
fracturing - few
Fabric/texture: Isotropic microbreccia
Cavities (%): None
Surface: Smooth to granulated
Zap pits: Few

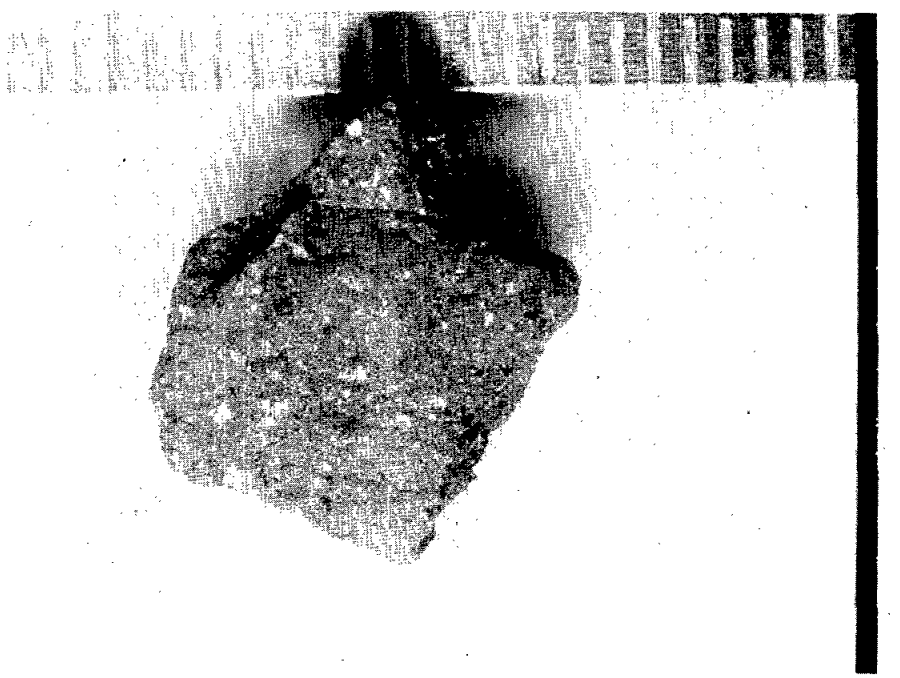
Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Light brownish gray	95				
Plagioclase	White	5	Irreg to rounded		<1.0	Clasts

Generic No.: 60638,0
Rock Type: Light brownish-gray microbreccia

Weight (g): 0.72
Dimensions (cm): 1.2 x 1.0 x 0.4
Color (fresh): Light brownish gray (5YR 6/1)
Shape: Angular
Variability: None
Coherence: intergranular - friable to coherent
fracturing - few
Fabric/texture: Isotropic; microbreccia
Cavities (%): None
Surface: Smooth to granulated
Zap pits: Few

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix	Light brownish gray	95				
Plagioclase	White	5	Irreg to rounded		<1.0	Clasts

Special Features: This rock resembles rock 60637,0



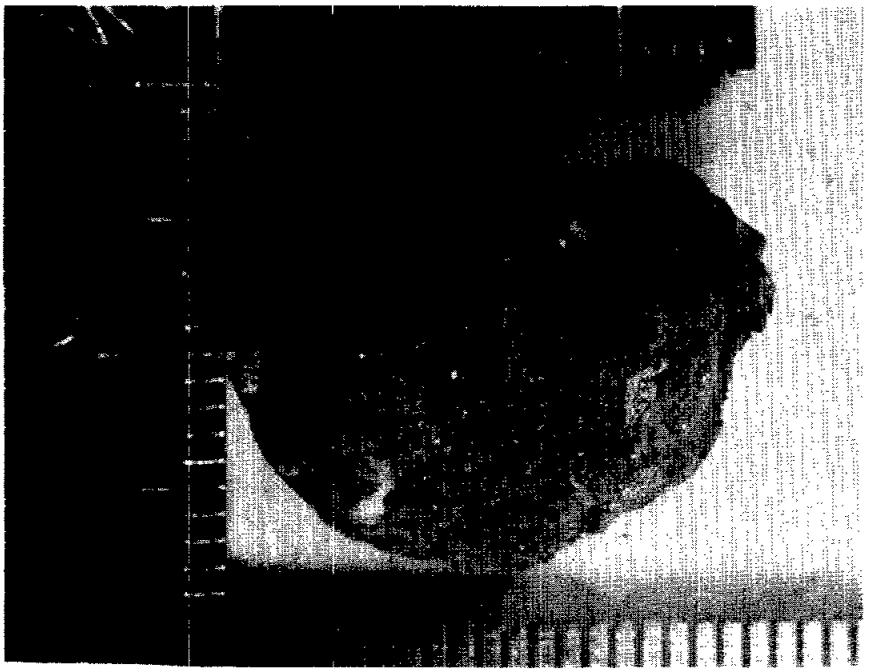
65745

Generic No.: 65745
Rock Type: Brown soil microbreccia

Weight (g): 7.76
Dimensions (cm): 2.6 x 2.2 x 1.2
Color (fresh): Medium light gray (N6) to light brownish gray (5YR 6/1)
Shape: Subrounded; subangular
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Medium light gray	5-10	Sub-angular-rounded	0.5		
Plagioclase rich clasts	White	5-10	Sub-angular-rounded	0.5	Up to 3	Some single grains of plagioclase lithic fragments with maf. sil. opaque
Dark glass spherules	Brownish black	1-2	Spheres	<0.5	Up to 1	
Maf. sil.	Yellow	<1	Irreg	0.5		One or two grains
Metallic		<1	Irreg	0.1		Iron-nickel
Matrix	Light brownish gray					Very fine grain size

Special Features: This is distinct from white breccias 65715 to 65739. In this, the matrix is apparently soil (mostly).



65746

Generic No.: 65746
Rock Type: Brownish soil microbreccia

Weight (g): 4.19
Dimensions (cm): 1.8 x 1.6 x 1.1
Color (fresh): Medium dark gray (N6) to light brownish gray (5YR 6/1)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic; microbreccia
Cavities (%): None
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Gray crystalline clasts	Medium light gray	5	Sub-angular-rounded	0.5		
Plagioclase rich clasts	White light gray	10-20	Rounded	~1		
Gray vesicular glass clasts	Medium gray	10	Irreg		Up to 5	One very large (5 mm)
Gray clasts	Green	<2	Irreg			Probably green glass
Matrix	Brownish gray					Brownish soil

Special Features: One of the white clasts (2 mm diameter) has a pinkish brown phase, possibly spinel, in plagioclase. Another has yellow-brown phase and plagioclase.

Generic No.: 65747
Rock Type: Brownish soil microbreccia

Weight (g): 0.82
Dimensions (cm): 1.2 x 1.0 x 0.5
0.3 x 0.2 x 0.2
Color (fresh): Medium light gray (N6) to light brownish gray (5YR 6/1)
Shape: Rounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	20	Sub-rounded	∿0.8		
Gray crystalline clasts	Medium light gray	10-15	Angular-sub-rounded	∿1		
Maf. sil.	Yellow	<2	Irreg			One clast 1 mm
Matrix	Brownish gray					Brown soil - very fine

Generic No.: 65748
Rock Type: Brownish soil microbreccia

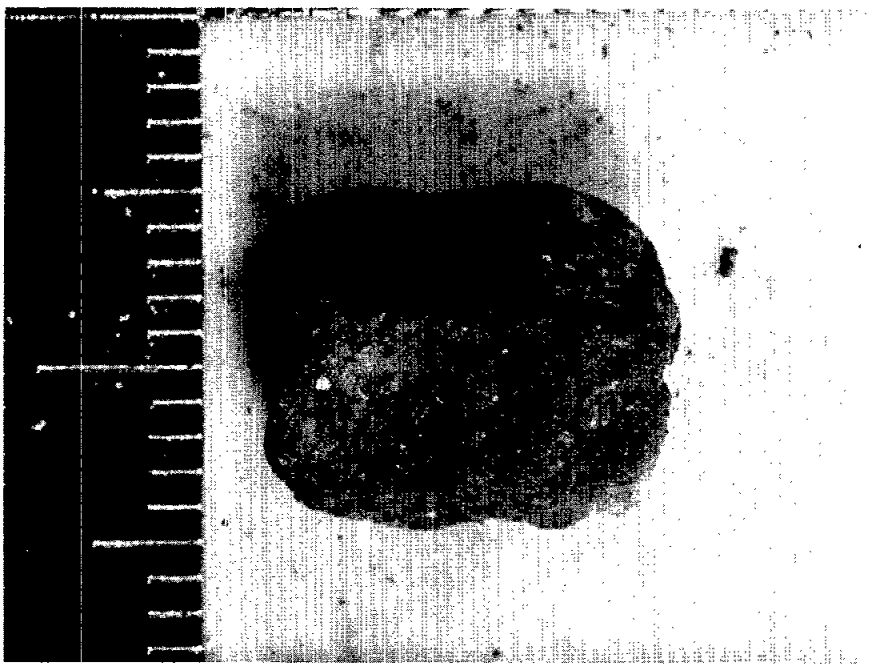
Weight (g): 0.97
Dimensions (cm): 1.5 x 1.0 x 0.6
Color (fresh): Medium light gray (N6) to light brownish gray (5YR 6/1)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	10-15	Sub-round-sub-angular	0.5		
Gray crystalline clasts	Medium light gray	10	Subround subangular	1.0		
Matrix	Brownish gray					Very fine grained-brown soil

Generic No.: 65749
Rock Type: Brownish soil microbreccia

Weight (g): 0.95
Dimensions (cm): 1.1 x 0.9 x 0.7
Color (fresh): Medium light gray (N6) to light brownish gray (5YR 6/1)
Shape: Subangular
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	10	Sub-rounded	0.5		
Gray crystalline clasts	Medium light gray	10	Sub-rounded to subangular	0.8		
Matrix						Brown soil, fine-grained

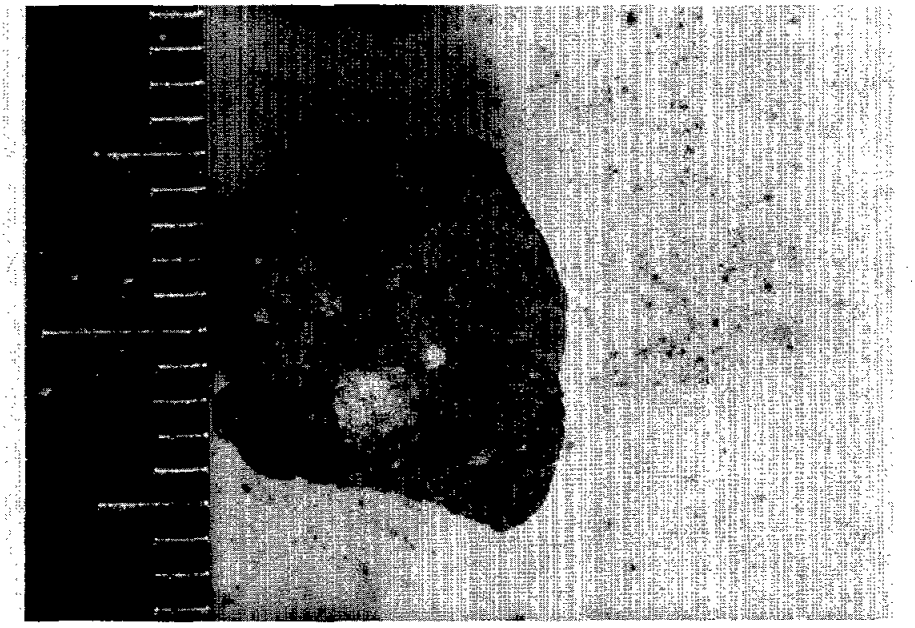


Generic No.: 65756,0
Rock Type: Friable, fine breccia

Weight (g): 0.770
Dimensions (cm): 1.1 x 1.0 x 0.5
Color (fresh): Light brownish gray (5YR 6/1)
Shape: Subangular
Variability: None
Coherence: intergranular - friable
fracturing - very few
Fabric/texture: Isotropic. Fine breccia
Cavities (%): Some
Surface: Granular
Zap pits: None

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Matrix		80		Very fine		
Plagioclase		20				Clasts

Special Features: This rock consists of a fine-grained, friable, light brownish-gray matrix into which are embedded predominantly plagioclase grains predominantly 3 mm in diameter; there is also a light canary yellow mineral, possibly pyroxene, associated with the feldspar. This "breccia" is transitional to a soil clod.



Generic No.: 65768,0
Rock Type: Friable, fine breccia, covered by glass

Weight (g): 3.25
Dimensions (cm): 2.0 x 1.6 x 0.8
Color (fresh): Light brownish gray (5YR 6/1)
Shape: Subrounded
Variability: None
Coherence: intergranular - friable to coherent
fracturing - few
Fabric/texture: Isotropic. Fine breccia, with glass cover
Cavities (%): Vesicles in the glass
Surface: Irregular
Special Features: This is a friable, fine breccia that is covered 2/3 by a thin coating of bubbly, vesicular, gray-green glass. This glass is similar to the yellow-green glassy agglutinates. Contains a variety of rock and mineral inclusions. The matrix is similar to soil clods. One face shows a slickenside approximately 1 cm in length.

Generic No.: 65769,0
Rock Type: Friable microbreccia, covered by glass

Weight (g): 2.74
Dimensions (cm): 1.5 x 1.3 x 1.0
Color (fresh): Light brownish gray (5YR 6/1)
Shape: Subangular
Variability: None
Coherence: intergranular - friable to coherent
fracturing - few
Fabric/texture: Isotropic; microbreccia, with glass cover
Cavities (%): Vesicles in the glass
Surface: Irregular
Zap pits: None apparent
Special Features: This is a friable microbreccia that is covered 2/3 by glass (thin coating; bubbly, vesicular, gray green). This glass is similar to the yellow-green glassy agglutinates. Contains a variety of rock and mineral inclusions. The matrix is similar to soil clods. One face shows a slickenside.

Generic No.: 65775,0
Rock Type: Fine breccia

Weight (g): 3.50
Dimensions (cm): 1.9 x 1.5 x 0.9
Color (fresh): Light brownish gray (5YR 6/1)
Shape: Subangular
Variability: None
Coherence: intergranular - friable to coherent
fracturing - none
Fabric/texture: Isotropic. Fine-breccia
Cavities (%): Vesicles in the glass
Surface: Irregular
Zap pits: None apparent
Special Features: This is a friable fine breccia to which is attached a glass corresponding to 10% of the surface area.

Generic No.: 65925
Rock Type: Brownish soil microbreccia

Weight (g): 3.82
Dimensions (cm): 1.4 x 1.1 x 0.7
1.5 x 1.2 x 0.8
Color (fresh): Medium light gray (N6) to light brownish gray (5YR 6/1)
Shape: Subangular - subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase clasts	White	15		0.5	Up to 1.5	
Gray crystalline clasts	Medium light gray	10			~1	
Matrix						Brown soil-very fine

Generic No.: 65926
Rock Type: Brownish soil microbreccia

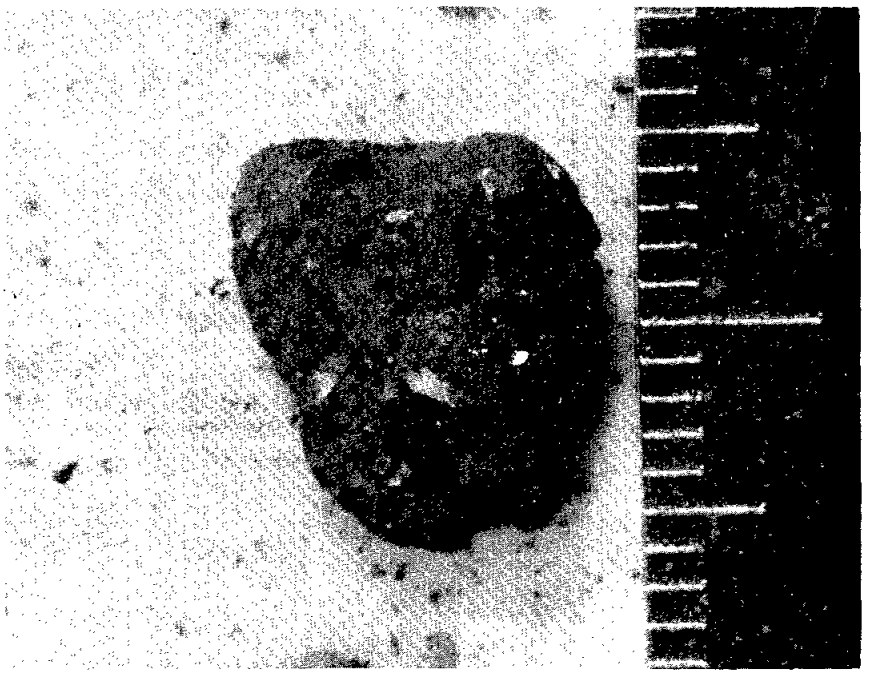
Weight (g): 3.03
Dimensions (cm): Three - 1.4 x 0.9 x 1.1; 0.4 diameter; 0.2 diameter
Color (fresh): Medium light gray (N6) to light brownish gray
Shape: Subrounded
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	10		0.5		
Gray crystalline clasts	Medium light gray	10		~1		
Matrix	Brownish gray					Brown soil - very fine

Generic No.: 65927
Rock Type: Brownish soil microbreccia

Weight (g): 0.72
Dimensions (cm): 1.0 x 0.9 x 0.7
Color (fresh): Medium light gray (N6) to light brownish gray (5YR 6/1)
Shape: Subangular
Variability: None
Coherence: intergranular - friable
fracturing - few
Fabric/texture: Isotropic/microbreccia
Cavities (%): None
Surface: Powdery
Zap pits: Few, if any

Component	Color	% of Rock	Shape	Size (mm) Dom.	Range	Comments
Plagioclase rich clasts	White	10	Irreg-subrounded	0.5	To 1.5	
Gray crystalline clasts	Medium light gray	10	Sub-rounded subangular	~1		
Maf. sil. clasts	Yellow	<2		~1		One or two clasts



4. Sample Inventory

Sample Number	Weight (in grams)	Rock Type
60515,0	16.74	Anorthosite
60516,0	7.91	Anorthosite
60517,0	1.23	Anorthosite
60518,0	1.12	Anorthosite
60519,0	0.50	Anorthosite
60525,0	12.84	Gray fine-grained crystalline rock
60526,0	8.42	Gray fine-grained crystalline rock
60527,0	7.36	Gray fine-grained crystalline rock
60528,0	2.94	Gray vesicular glass
60529,0	1.24	Gray vesicular glass
60535,0	7.23	Gray & white microbreccia
60615,0	32.97	Gray fine-grained crystalline rock
60616,0	3.40	Gray fine-grained crystalline rock
60617,0	2.77	Gray fine-grained crystalline rock
60618,0	21.67	Anorthosite
60619,0	28.00	Anorthosite
60625,0	117.00	Gray fine-grained crystalline rock
60626,0	15.87	Gray fine-grained crystalline rock
60627,0	12.09	Gray fine-grained crystalline rock
60628,0	6.86	Anorthosite
60629,0	4.92	Anorthosite
60635,0	15.05	Troctolitic or noritic crystalline rock
60636,0	35.65	Gray fine-grained crystalline rock
60637,0	7.98	Brownish soil breccia
60638,0	0.72	Brownish soil breccia
60639,0	175.10	Gray & white microbreccia
60645,0	33.50	Gray vesicular glass
60646,0	3.39	Gray vesicular glass
60647,0	1.76	Gray vesicular glass
60648,0	2.84	Gray vesicular glass
60649,0	1.03	Gray vesicular glass
60655,0	8.63	Gray vesicular glass
60656,0	11.23	Gray & white microbreccia
60657,0	6.05	Gray & white microbreccia
60658,0	5.47	Gray & white microbreccia
60659,0	22.20	Gray & white microbreccia
60665,0	90.10	Gray vesicular glass
60666,0	15.95	Gray vesicular glass
60667,0	7.66	Gray fine-grained crystalline rock
60668,0	2.91	Gray vesicular glass
60669,0	2.54	Gray vesicular glass
60675,0	1.30	Gray fine-grained crystalline rock
60676,0	8.92	Gray & white microbreccia
60677,0	5.23	Gray vesicular glass
60678,0	1.25	Gray vesicular glass
60679,0	2.96	Gray vesicular glass
65325,0	67.84	Anorthosite
65326,0	36.40	Anorthosite

Sample Number	Weight (in grams)	Rock Type
65327,0	6.97	Anorthosite
65328,0	1.28	Anorthosite
65329,0	1.92	Anorthosite
65335,0	1.63	Anorthosite
65336,0	0.60	Anorthosite
65337,0	11.57	Gray & white microbreccia
65338,0	2.65	Gray & white microbreccia
65339,0	1.62	Gray & white microbreccia
65345,0	0.86	Gray & white microbreccia
65346,0	0.80	Gray & white microbreccia
65347,0	0.43	Gray & white microbreccia
65348,0	11.66	Gray vesicular glass
65349,0	7.58	Gray vesicular glass
65355,0	4.94	Gray vesicular glass
65356,0	2.53	Gray vesicular glass
65357,0		Gray fine-grained crystalline rock
65358,0	7.02	Gray fine-grained crystalline rock
65359,0	2.53	Anorthosite
65365,0	2.16	Gray fine-grained crystalline rock
65366,0	8.48	Gray vesicular glass
65515,0	50.25	Soil clod
65516,0	10.485	Soil clod
65517,0	11.848	Soil clod
65518,0	9.477	Soil clod
65519,0	10.579	Soil clod
65525,0	7.483	Soil clod
65526,0	3.545	Soil clod
65527,0	2.890	Soil clod
65528,0	3.082	Soil clod
65529,0	2.555	Soil clod
65535,0	2.658	Soil clod
65536,0	1.575	Soil clod
65537,0	2.426	Soil clod
65538,0	2.342	Soil clod
65539,0	2.180	Soil clod
65545,0	1.797	Soil clod
65546,0	1.346	Soil clod
65547,0	1.587	Soil clod
65548,0	3.023	Soil clod
65549,0	2.094	Soil clod
65555,0	2.202	Soil clod
65556,0	1.17	Soil clod
65557,0	3.295	Soil clod
65558,0	1.695	Soil clod
65559,0	1.533	Soil clod
65565,0	0.852	Soil clod
65566,0	1.998	Soil clod
65567,0	1.289	Soil clod
65568,0	0.808	Soil clod
65569,0	0.873	Soil clod
65575,0	0.907	Soil clod
65576,0	0.906	Soil clod

Sample Number	Weight (in grams)	Rock Type
65577,0	0.706	Soil clod
65578,0	0.320	Soil clod
65579,0	0.612	Soil clod
65585,0	9.294	Glassy agglutinate
65586,0	6.763	Glassy agglutinate
65587,0	2.141	Glassy agglutinate
65588,0	9.629	Soil clod
65715,0	31.36	Gray & white microbreccia
65716,0	14.28	Gray & white microbreccia
65717,0	7.415	Gray & white microbreccia
65718,0	10.61	Gray & white microbreccia
65719,0	7.04	Gray & white microbreccia
65725,0	5.19	Gray & white microbreccia
65726,0	5.19	Gray & white microbreccia
65727,0	4.30	Gray & white microbreccia
65728,0	4.22	Gray & white microbreccia
65729,0	3.81	Gray & white microbreccia
65735,0	4.26	Gray & white microbreccia
65736,0	2.74	Gray & white microbreccia
65737,0	0.85	Gray & white microbreccia
65738,0	1.17	Gray & white microbreccia
65739,0	0.95	Gray & white microbreccia
65745,0	7.76	Brownish soil breccia
65746,0	4.19	Brownish soil breccia
65747,0	0.82	Brownish soil breccia
65748,0	0.97	Brownish soil breccia
65749,0	0.95	Brownish soil breccia
65755,0	1.42	Soil clod
65756,0	0.770	Brownish soil breccia
65757,0	26.20	Gray & white microbreccia
65758,0	5.95	Gray & white microbreccia
65759,0	3.11	Anorthosite
65765,0	1.12	Gray & white microbreccia
65766,0	1.01	Anorthosite
65767,0	17.51	Glassy agglutinate
65768,0	3.25	Brownish soil breccia
65769,0	2.74	Brownish soil breccia
65775,0	3.50	Brownish soil breccia
65776,0	2.33	Glassy agglutinate
65777,0	16.53	Gray fine-grained crystalline rock
65778,0	12.22	Gray fine-grained crystalline rock
65779,0	12.71	Gray fine-grained crystalline rock
65785,0	5.16	Troctolitic or noritic crystalline rock
65786,0	83.02	Gray & white microbreccia
65787,0	8.28	Gray & white microbreccia
65788,0	9.52	Glassy agglutinate
65789,0	12.24	Anorthosite
65795,0	6.84	Troctolitic or noritic crystalline rock
65925,0	3.82	Brownish soil breccia
65926,0	3.03	Brownish soil breccia
65927,0	0.72	Brownish soil breccia

5. Samples with brown to reddish, rust-like spots

In a number of rock specimens, relatively abundant spots of brown to reddish color were noted that resembled, in some cases,"limonite"-spots commonly found around metallic nickel-iron grains in stone meteorites. However, in case of the lunar samples, no association with metal was apparent.

The following rocks were found to have the brown to reddish spots:

Anorthosites (group 1): 65326, 65359, 65759, 65766.

Gray fine-grained crystalline rocks (group 3): 60525, 60625, 65779.

Acknowledgement

We wish to express our sincere appreciation to the members of the Lunar Receiving Laboratory, Manned Spacecraft Center, Houston, Texas, and the employees of Brown-Root-Northrop, Houston, Texas, who have been most helpful during examination of the rake samples. In particular, we are grateful for the many excellent photographs of the samples and the assistance in editing and typing of this report. Without their help, this study would not have been possible. We have also greatly benefited from the Preliminary Examination Team descriptions of the rake samples made by D. A. Morrison, W. C. Phinney, and H. G. Wilshire, whose classification and terminology is largely retained in the present report.

This work is supported in part by Grant NGL 32-004-063 from the National Aeronautics and Space Administration(Klaus Keil, Principal Investigator).