Description, classification and inventory of 113 Apollo 17 rake samples from stations 1A, 2, 7 and 8

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CONTENTS

Abstract

One hundred thirteen Apollo 17 rake samples ranging in weight from 0.77 to 577.8 g from stations 1A, 2, 7, and 8 were studied macroscopically and under the stereomicroscope while still in the storage cabinets of the Lunar Receiving Laboratory, Houston, Texas. The rocks are described and classified into 8 groups, namely mare basalt (60); mare basalt breccia, agglutinated (1); anorthosite, cataclastic (1); anorthositic norite or troctolite (1); microbreccia (43); green glassy rock (probably melted breccia) (1); agglutinate (1); and soil clod (5). The mare basalts were subdivided on the basis of grain size into very fine (2), fine (21), fine to medium (1), medium (19), medium to coarse (1), and coarse (16) mare basalts. Microbreccia subdivision was made on the basis of the degree of coherence of their matrices into coherent-matrix breccias (41) and friable-matrix microbreccias (2). Soil clods also vary in their consistency and were grouped into friable soil clods (2) and soil clods transitional to friable-matrix microbreccias (3). Classification of individual rocks is often difficult because (1) their study was limited to stereomicroscopy; (2) some are partially covered by fine dust which makes recognition of textures and minerals difficult; and (3) they grade from one type into the other. Therefore, this classification will have to be modified after detailed microscopic, electron microprobe, and chemical study.

1. Introduction

In the present report, descriptions and classifications of 113 Apollo 17 rake samples from stations 1A, 2, 7, and 8 are given. The purpose of this study is to arrive at a preliminary classification of Apollo 17 rake samples, based on macroscopic and stereomicroscopic examination of the rocks while still in the storage cabinets of the Lunar Receiving Laboratory, Houston, Texas. This preliminary classification has several purposes. First, it aided us in selecting 54 representative samples from the 113 total rake samples for our mineralogic, petrologic, bulk chemical (via broad beam electron microprobe and neutron activation analysis*), mineral chemical (via focused beam electron microprobe analysis), and trace element (via neutron activation analysis) studies. Second, it may serve as a petrologic basis for allocating rake samples to other Principal Investigators for other studies, such as age dating. It is also hoped that it may aid these investigators in interpreting their data before detailed mineralogic and petrologic data are available.

The classification proposed here is necessarily preliminary. The difficulties encountered in establishing the present preliminary classification results from a number of limitations. First, examination was restricted to stereomicroscopy of the samples while still in the storage cabinets in Houston. Second, some of the samples are partially

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* Neutron activation analysis will be carried out on the same sample for which we will prepare electron microprobe sections in collaboration with G. Goles and R. A. Schmitt.

covered by fine dust which makes identification of textures and minerals difficult, particularly in view of the fact that the samples could not be altered in any way (e.g. broken). Third, rocks sometimes grade from one type into the other. Hence, the preliminary classification proposed here will have to be modified as more detailed mineralogic, petrologic and compositional data become available.

2. Sample localities

The samples described here are from four localities at the Apollo 17 landing site (Fig. 1) namely stations 1A (71000 numbering sequence), 2 (72000 numbering sequence), 7 (77000 numbering sequence), and 8 (78000 numbering sequence). Of the 42 samples collected at station 1A, all are mare basalts. All but one of the 12 station 2 samples are coherent-matrix microbreccias; the exception is a cataclastic anorthosite. Station 7 yielded 9 microbreccias and 3 mare basalts, and station 8 yielded 16 mare basalts, 14 microbreccias, 5 soil clods, 1 anorthosite norite or troctolite, 1 green glassy rock, and 1 agglutinate (see section 4 "Numerical sample inventory and sample index").

3. Classification

3.1 General characterization

The 113 rake samples were classified on the basis of macroscopic and stereomicroscopic examination while still in the storage cabinets at the Lunar Receiving Laboratory, Houston, Texas. On the basis of texture and mineral content, the Apollo 17 rake samples were classified into

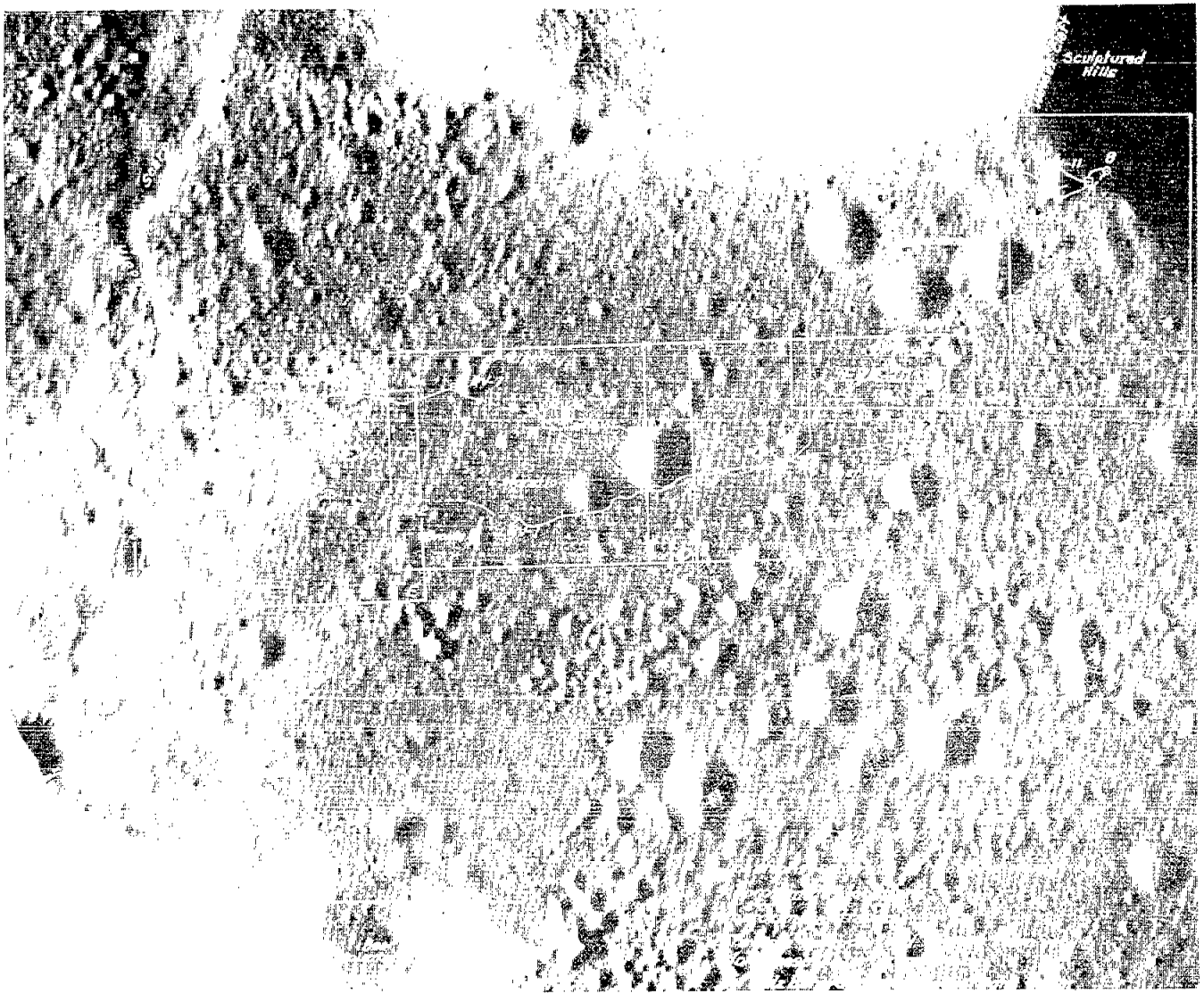

Figure 1. Map of EVA Traverse and Sample Collection Stations. (From USGS IR 72. Lettered boxes show boundaries of the detailed traverse maps that appear in the USGS IR 72 as Figures 4a through 4f).

8 groups, namely mare basalt (60); mare basalt breccia, agglutinated (1); anorthosite, cataclastic (1); anorthositic norite or troctolite (1); microbreccia (43); green glassy rock (probably melted breccia) (1); agglutinate (1); and soil clod (5). The mare basalts were subdivided on the basis of grain size into very fine (2), fine (21), fine to medium (1), medium (19), medium to coarse (1), and coarse (16) mare basalts. This classification will be modified based on more quantitative mineralogic-petrologic-chemical parameters as laboratory studies of these rocks progress. Microbreccia subdivision was made on the basis of the degree of coherence of their matrices into coherent-matrix microbreccias (41) and friable-matrix microbreccias (2). Soil clods also vary in their consistency and were grouped into friable soil clods (2) and soil clods transitional to friable-matrix microbreccias (3).

3.1.1 Mare basalt (some olivine-rich) (60)

3.1.1.1 Very fine mare basalt (2).

78586,0; 78587,0.

These rocks are grayish black to medium dark gray in color, coherent, and very fine-grained. They have very few vugs and appear rich in opaques. However, the rocks are too fine-grained to allow estimates of mineral abundances.

3.1.1.2 Fine mare basalt (21)

71526,0; 71527,0; 71528,0; 71537,0; 71538,0; 71545,0; 71546,0; 71569,0; 71575,0; 71576,0; 71577,0; 71578,0; 71589,0; 71596,0; 78528,0; 78588,0; 78589,0; 78595,0; 78596,0; 78598,0; 78599,0.

Fine mare basalts are grayish black to dark gray in color and show varying amounts of vugs and vesicles. Sometimes, vesicles appear to be lined by plates of ilmenite (71546,0, 71569,0). Dominant grain size is less than 0.1 mm. Major minerals are plagioclase (∿25-30%), pyroxene (∿60%), and ilmenite (∿10%), and sometimes mafic silicates (possibly olivine) (∿2-5%).

3.1.1.3 Fine to medium mare basalt (1)

78569,0.

This rock is medium dark gray in color and the dominant grain size is about 0.1 mm. Major minerals are plagioclase (∿30%), pyroxene (∿60%), and ilmenite (∿10%).

3.1.1.4 Medium mare basalt (19)

71507,0; 71508,0; 71525,0; 71529,0; 71535,0; 71539,0; 71547,0; 71548,0; 71549,0; 71555,0; 71558,0; 71579,0; 71585,0; 71586,0; 71587,0; 71588,0; 71595,0; 78579,0; 78597,0.

Medium mare basalts are medium dark gray to medium gray to dark gray or dark brownish gray in color and exhibit varying amounts of vugs and vesicles, some of which are sometimes lined by what appears to be ilmenite. Some vesicles in 71586,0, in addition to ilmenite, have long needles of what may be pyroxene. The dominant grain sizes of these rocks range from ∿0.1-0.3 mm, and that of ilmenite near vugs in 71587,0 may be as large as 0.5 mm. Isolated olivine grains in 78579,0 reach sizes up to ∿0.7 mm in longest dimension. Major minerals are

plagioclase (∿20-30%), pyroxene (∿55-60%), ilmenite (∿10-20%), and sometimes a mafic mineral, possibly olivine (2-5%).

3.1.1.5 Medium to coarse mare basalt (1)

77516,0.

Described in detail in "Lunar Sample Information Catalog, Apollo 17", L. B. Johnson Space Center, Houston, Texas, April 1973 (pp. 373-374).

3.1.1.6 Coarse mare basalt (16)

71509,0; 71536,0; 71556,0; 71557,0; 71559,0; 71565,0; 71566,0; 71567,0; 71568,0; 71597,0; 77535,0; 77536,0; 78575,0; 78576,0; 78577,0; 78578,0.

Coarse mare basalts are dark brownish gray to brownish gray to medium dark gray to medium gray to dark gray to olive gray in appearance and have varying amounts of vugs and vesicles, sometimes with crystals (pyroxene) projecting into them. These rocks are coherent to friable and have dominant grain size ranging from ∿0.3-0.8 mm. In 71597,0, some olivine crystals reach longest dimensions of over 1 mm. Major minerals are plagioclase (∿30%), pyroxene (∿55-60%), ilmenite (∿10%), and sometimes olivine (∿1-5%). One rock (71597,0) is noted for its high olivine content of ∿25%.

3.1.2 Mare basalt breccia, agglutinated (1)

71515,0

This rock consists of mare basalt clasts and soil derived from mare basalt, agglutinated by dark glass.

3.1.3 Anorthosite, cataclastic (1)

72559,0

This specimen is light olive gray in color and consists of >99% plagioclase, ranging in grain size from <0.1- >2.0 mm. It has the texture of a microbreccia and is probably a cataclastic anorthosite.

3.1.4 Anorthositic norite or troctolite (1)

78527,0

The sample is greenish-gray in color, coherent, and has few cavities. Its grain size ranges from 0.2-0.5 mm. It consists of ∿75% plagioclase and 25% of a greenish to dark phase, possibly olivine.

3.1.5 Microbreccia (43)

3.1.5.1. Coherent-matrix microbreccia (41)

72505,0; 72535,0; 72536,0; 72537,0; 72538,0; 72539,0; 72545,0; 72546,0; 72547,0; 72548,0; 72549,0; 72555,0; 72556,0; 72557,0; 72558,0; 72705,0; 72735,0; 72736,0; 72737,0; 72738,0; 77515,0; 77517,0; 77518,0; 77519,0; 77526,0; 77537,0; 77538,0; 77539,0; 77545,0; 78535,0; 78536,0; 73537,0; 78538,0; 78539,0; 78545,0; 78546,0; 78556,0; 78557,0; 78565,0; 78567,0; 78568,0.

Coherent-matrix microbreccias are medium gray to medium dark gray to dark gray in color. They are coherent and have only few vugs. The matrix usually makes up ∿87-95% of the rocks, with clasts of plagioclase and anorthosite (∿2-10%) and mafic silicates (∿1-5%) embedded into the matrix. A reddish phase, possibly spinel, was also observed (<1%, 72538,0). Lithic clasts that are grayish in color are also observed occasionally.

3.1.5.2 Friable-matrix microbreccia (2)

78547,0; 78555,0

These rocks are friable to coherent and medium dark gray to brownish gray in color. They consist of ~85-90% matrix, with clasts of plagioclase, lithic fragments (both anorthosites and possibly mare basalt), and mafic silicates embedded into the matrix.

3.1.6 Green glassy rock (probably melted breccia) (1)

78526,0

This rock is dark greenish gray in color, coherent, and has a microbreccia texture. It is possibly a melted breccia.

3.1.7 Agglutinate (1)

78525,0

This specimen is medium dark gray in color, has numerous large vesicles, and consists of ~50% black glass and ~50% dark gray, coherent microbreccia. Apparently, the rock is an agglutinated microbreccia.

3.1.8 Soil clod

3.1.8.1 Soil clod, friable (2)

78548,0; 78566,0

Soil clods are medium gray to medium dark gray in color and very friable. They consist of ~98-99% very fine-grained matrix into which are embedded white plagioclase clasts (~1%) and a few glass spherules.

3.1.8.2 Soil clod, transitional to friable-matrix microbreccia (3).

78549,0; 78558,0; 78559,0.

These soil clods are medium dark gray to dark gray to dark brownish gray in color, friable to slightly coherent. The matrix makes up ~96-100% of the rock, with few lithic clasts, plagioclase clasts, and glass spherules. Apparently, these rocks are soil clods of somewhat more coherent variety, transitional to friable-matrix microbreccias.

3.2 Rock description

3.2.1 Mare basalt (some olivine-rich)

3.2.1.1 Very fine mare basalt

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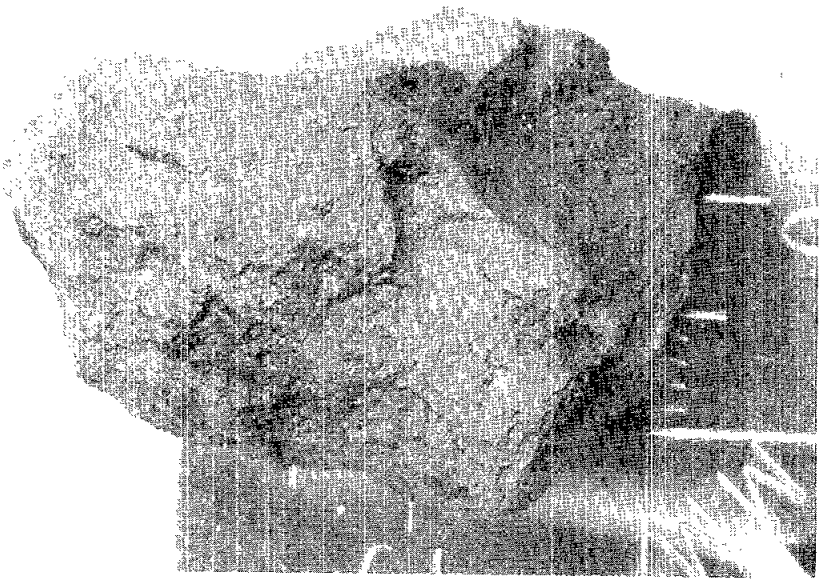
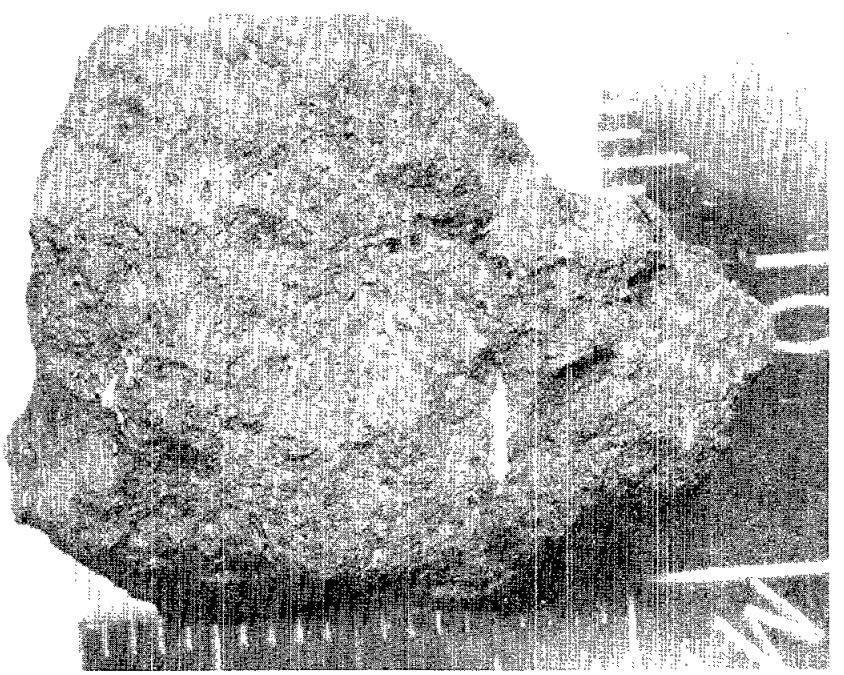
78586,0

ROCK TYPE: Mare basalt, very fine
WEIGHT: 10.73 g
DIMENSIONS: 2.6 x 1.8 x 1.5 cm
COLOR: Grayish black (N2)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Numerous
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Rock is very fine-grained and rich in opaques. Abundance of phases can not be estimated.



78587,0

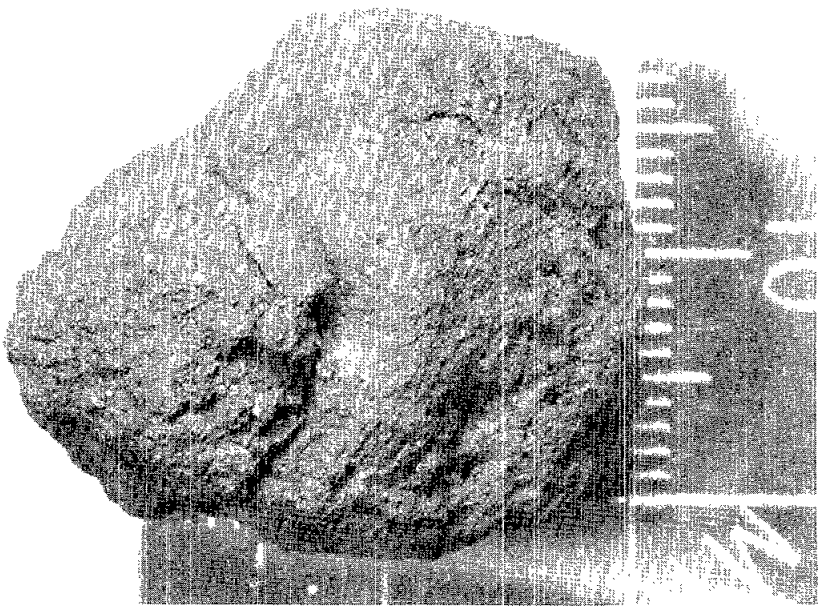
ROCK TYPE: Mare basalt, very fine
WEIGHT: 11.48 g
DIMENSIONS: 2.5 x 2.0 x 1.2 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: Very few vugs
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Rock is very fine-grained and rich in opaques. Abundance of phases can not be estimated.



71526,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 12.91 g
DIMENSIONS: 2.4 x 1.9 x 1.5 cm
COLOR: Dark gray (N3)
SHAPE: Rounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few

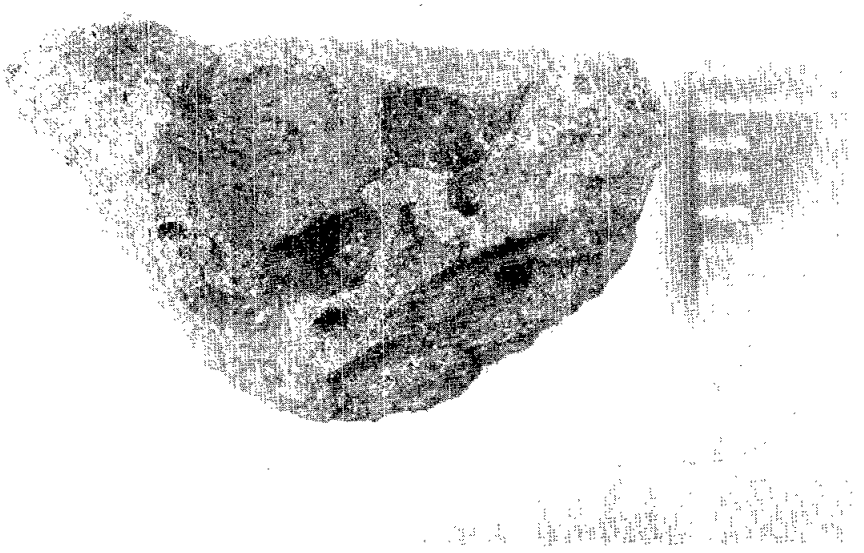
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	< 0.1		
Pyrox	Reddish-brown	60	Irreg	< 0.1		
Ilm	Black	10	Irreg	< 0.1		



71527,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 2.186 g
DIMENSIONS: 1.6 x 1.0 x 0.8 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vesicles
SURFACE: Granulated
ZAP PITS: Few

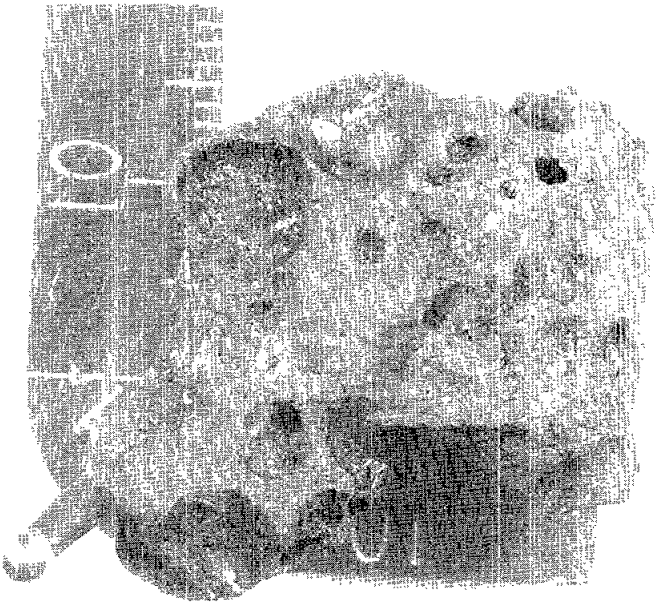
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish-brown	59	Irreg-prism	<0.1		
Ilm	Black	10	Irreg-tab	<0.1		
Maf sil	Yellow-green	1	Irreg	<0.1		Olivine



71528,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 11.25 g
DIMENSIONS: 3.1 x 2.0 x 1.3 cm
COLOR: Dark gray (N3)
SHAPE: 11.25
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 15% vesicles
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Relatively large vesicles (0.5 cm) lined with plates of ilmenite and some long needles (probably pyroxene).

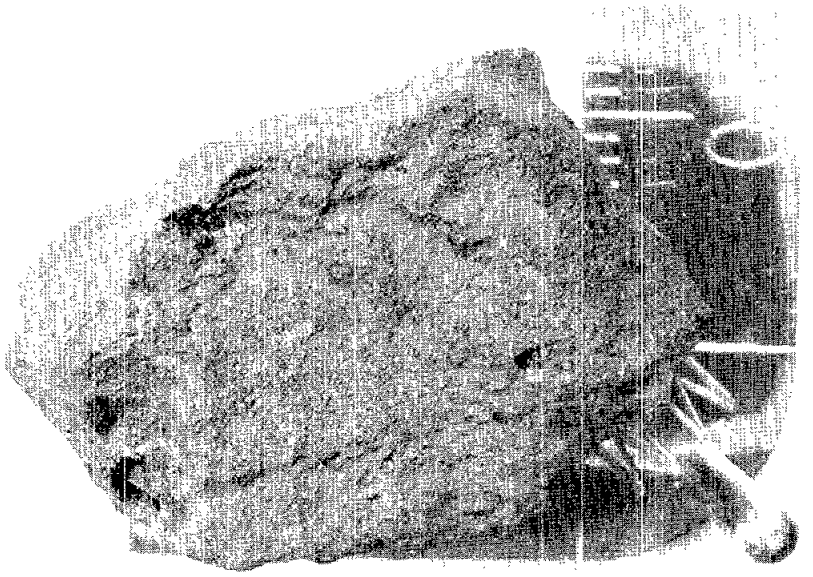
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish-brown	60	Irreg-prism	<0.1		
Ilm	Black	10	Irreg-tab	<0.1		



71537,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 12.25 g
DIMENSIONS: 2.8 x 1.9 x 1.6 cm
COLOR: Dark gray (N3)
SHAPE: Blocky - subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Covered with dust making description difficult.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish	59	Irreg	<0.1		
Ilm	Black	10	Irreg	<0.1		
Maf sil	Yellow-green	1	Irreg	0.5		Olivine



71538,0

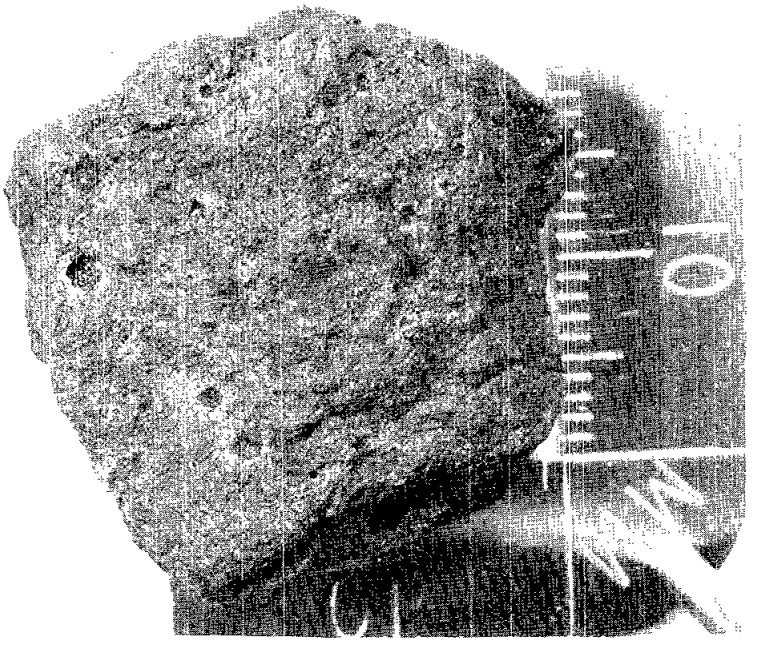
ROCK TYPE: Mare basalt, fine
WEIGHT: 8.038 g
DIMENSIONS: 1.8 x 1.5 x 1.5 cm
COLOR: Grayish-black (N2)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs
SURFACE: Granulated
ZAP PITS: Few

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	< 0.1		
Pyrox	Reddish-brown	58	Irreg	< 0.1		
Ilm	Black	10	Irreg	< 0.1		
Maf sil	Yellow-green	2	Irreg	< 0.1		Olivine

71545,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 17.26 g
DIMENSIONS: 2.8 x 2.7 x 1.6 cm
COLOR: Dark gray (N3)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few to many

		% OF		SIZE (mm.)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish-brown	58	Irreg	<0.1		
Ilm	Black	10	Irreg	<0.1		
Maf sil	Yellow-green	2	Irreg	<0.1		Olivine



71546,0

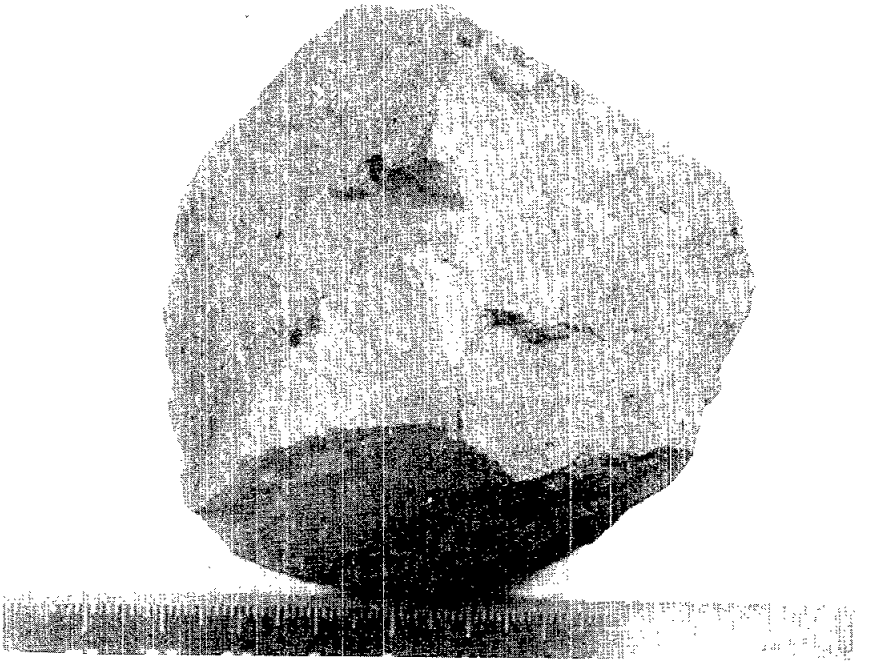
ROCK TYPE: Mare basalt, fine
WEIGHT: 150.7 g
DIMENSIONS: 6.0 x 4.4 x 3.3 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vugs, 2% vesicles
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Vesicles are lined with plates of ilmenite.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30		<0.1		
Pyrox	Reddish	60		<0.1		
Ilm	Black	10		<0.1		

71569,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 289.6 g
DIMENSIONS: 8.3 x 7.5 x 4.1 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs, 1% vesicles
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Vesicles lined with ilmenite.

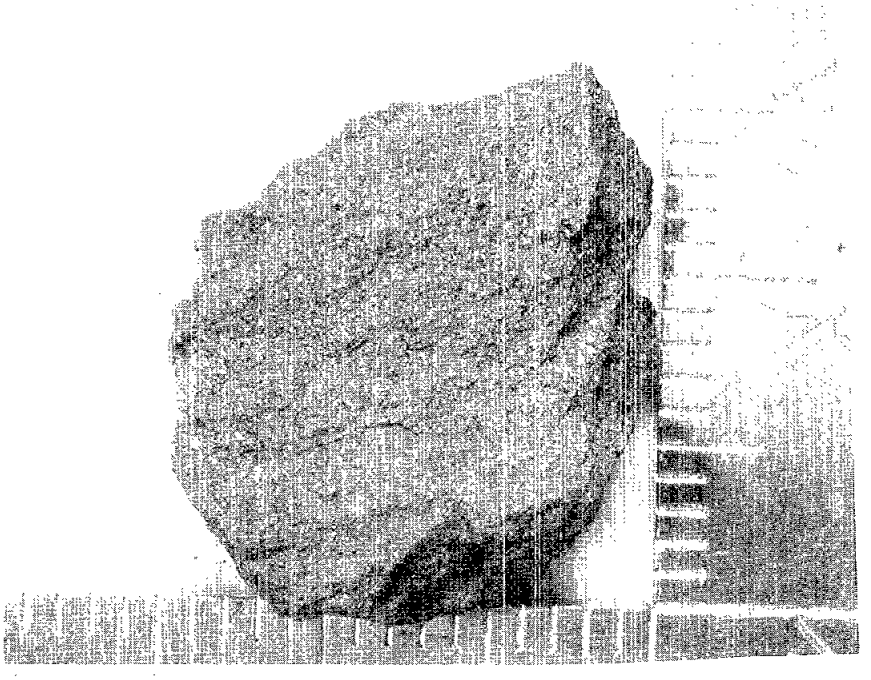
		% OF		SIZE (mm.)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish-brown	60	Irreg	<0.1		
Ilm	Black	10	Irreg	<0.1		



71575,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 2.113 g
DIMENSIONS: Two pieces: (1) 1.4 x 0.4 x 1.1 cm
(2) 1.4 x 1.1 x 0.4 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: None

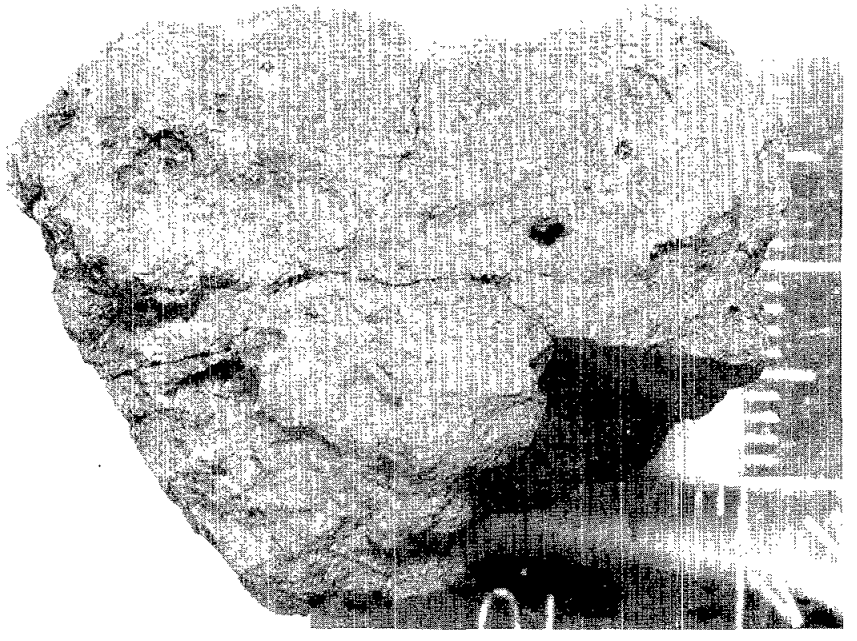
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish-brown	60	Irreg	<0.1		
Ilm	Black	10	Irreg	<0.1		



71576,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 23.54 g
DIMENSIONS: 3.2 x 2.5 x 1.8 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few

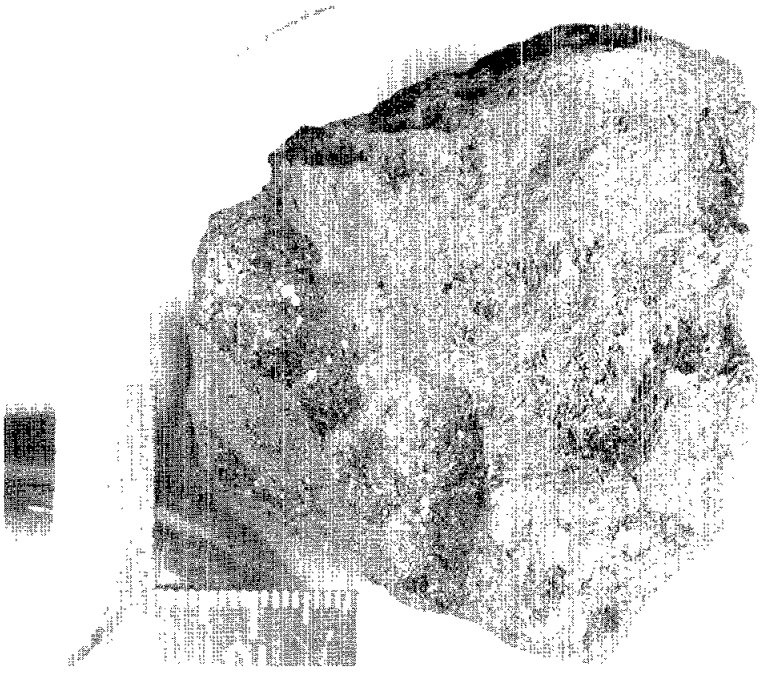
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	≤0.1		
Pyrox	Reddish-brown	59	Irreg-prism	≤0.1		
Ilm	Black	10	Irreg-tab	≤0.1 0.2		
Maf sil	Yellow-green	1	Irreg			Olivine



71577,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 234.7 g
DIMENSIONS: 4.9 x 4.8 x 4.7 cm
COLOR: Dark gray (N3)
SHAPE:
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 8% vugs (up to 2 cm long)
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Vugs lined with ilmenite.

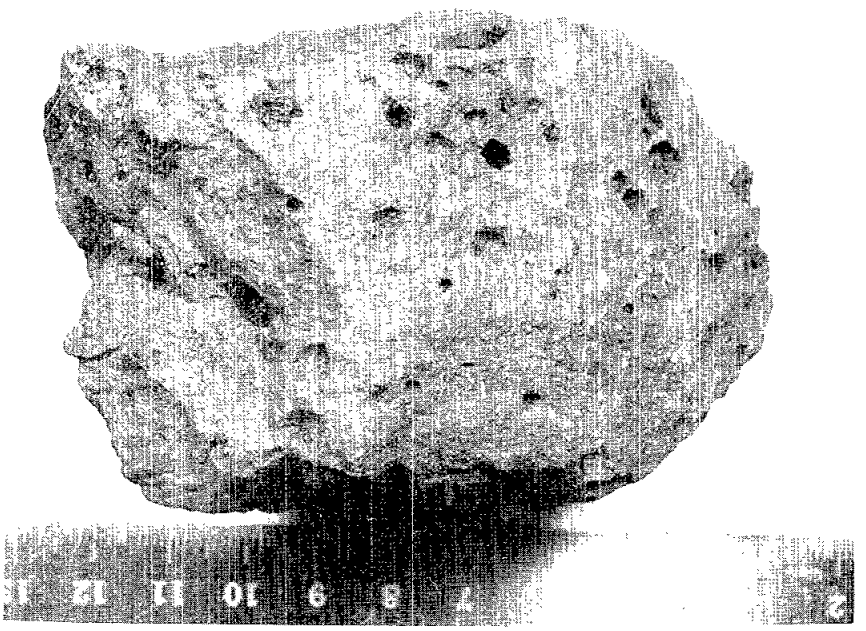
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish-brown	59	Irreg	<0.1		
Ilm	Black	10	Irreg	<0.1		
Maf sil	Yellow-green	1	Irreg	<0.1		Olivine



71578,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 353.9 g
DIMENSIONS: 8.9 x 6.8 x 4.7 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vesicles lined with ilmenite, 1% vugs
SURFACE: Granulated
ZAP PITS: Few, many in places

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	< 0.1		
Pyrox	Reddish	59	Irreg	< 0.1		
Ilm	Black	10	Irreg	< 0.1		
Maf sil	Yellow-green	1	Irreg	0.5		Olivine



71589,0

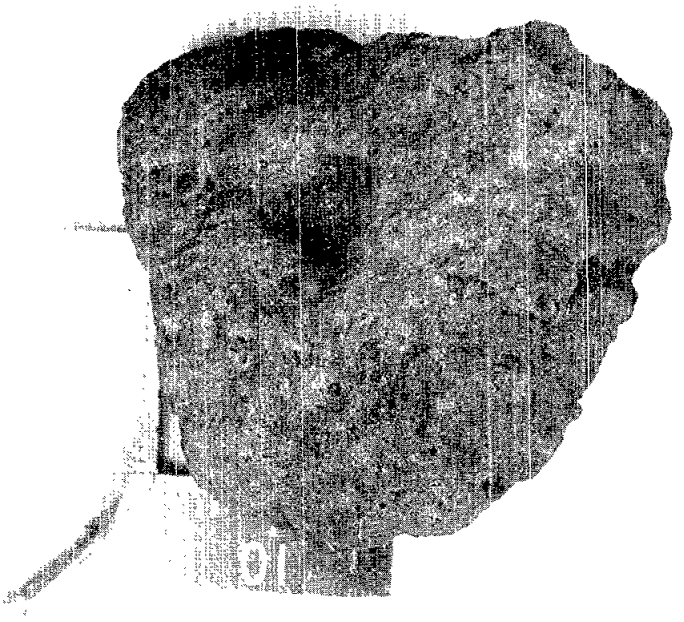
ROCK TYPE: Mare basalt, fine
WEIGHT: 6.860 g
DIMENSIONS: 2.3 x 1.6 x 1.3 cm
COLOR: Dark gray (N3)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg-prism	<0.1		
Pyrox	Reddish-brown	58	Irreg-prism	<0.1		
Ilm	Black	10	Irreg-tab	<0.1		
Maf sil	Yellow-green	2	Irreg	<0.1		Olivine

71596,0

ROCK TYPE: Mare basalt, fine - moderately olivine-rich
WEIGHT: 61.05 g
DIMENSIONS: 4.1 x 3.6 x 2.3 cm
COLOR: Dark gray (N3)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few to many

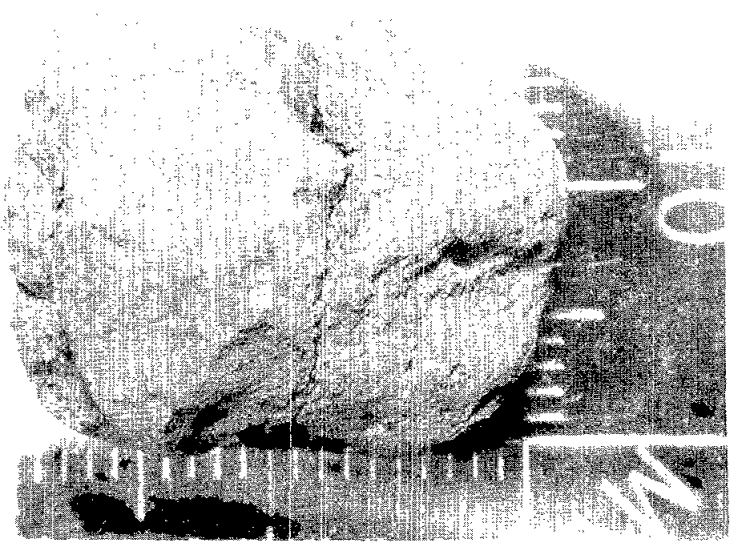
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	25	Irreg	< 0.1		
Pyrox	Reddish-brown	60	Irreg-prism	< 0.1		
Ilm	Black	10	Irreg-tab	< 0.1		
Maf sil	Yellow-green	5	Irreg	0.4		Olivine



78528,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 7.00 g
DIMENSIONS: 2.0 x 1.5 x 1.2 cm
COLOR: Brownish gray (5YR 4/1)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - One, near-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Covered with much dust making description difficult.

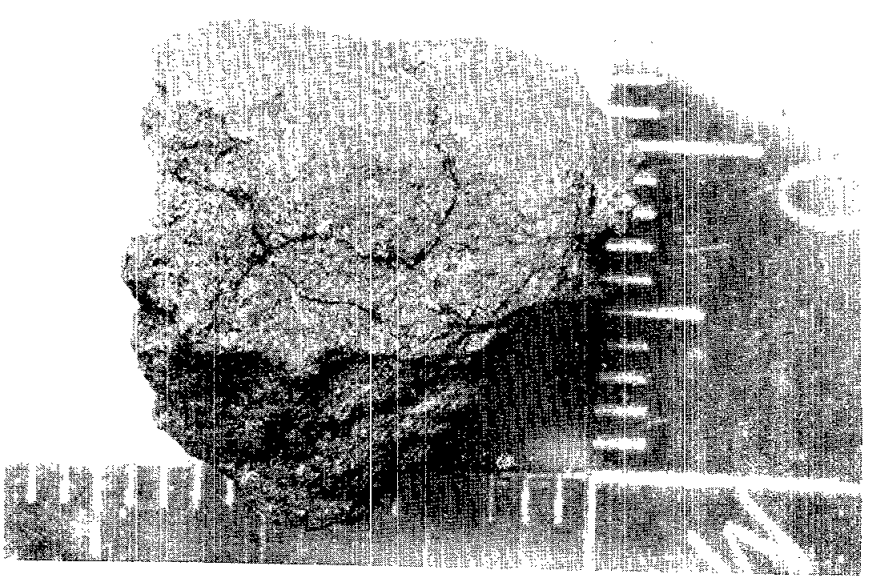
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish-brown	60	Irreg	<0.1		
Ilm	Black	10	Irreg	<0.1		



78588,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 3.77 g
DIMENSIONS: 1.4 x 1.2 x 0.9 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Many, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: Few
SURFACE: Granulated
ZAP PITS: None

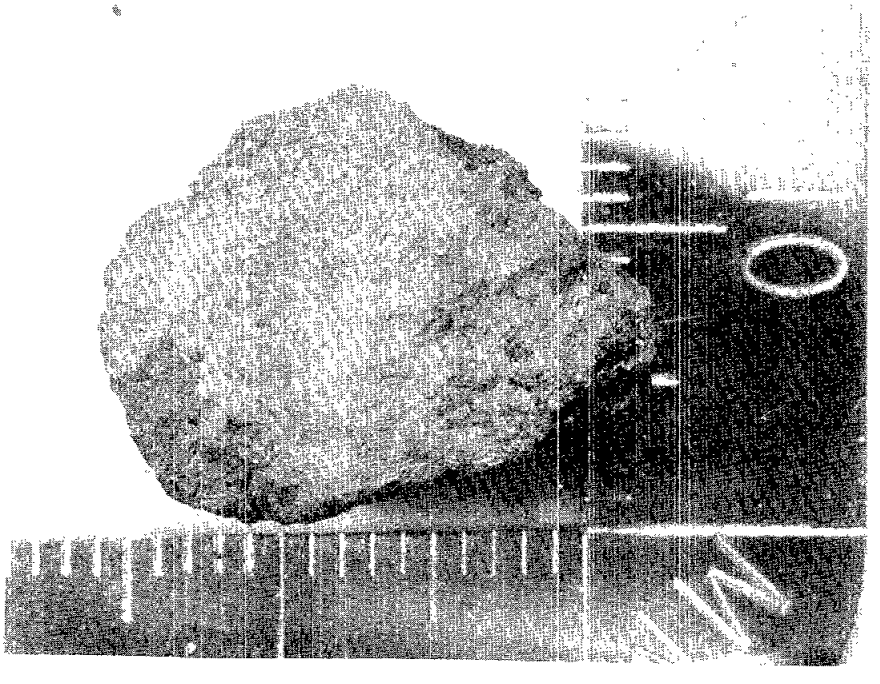
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	< 0.1		
Pyrox	Reddish-brown	60	Irreg	< 0.1		
Ilm	Black	10	Irreg	< 0.1		
Maf sil	Yellow-green	<1	Irreg	< 0.1		Olivine



78589,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 4.10 g
DIMENSIONS: 1.8 x 1.4 x 1.2 cm
COLOR: Medium gray (N5)
SHAPE: Subangular to subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Covered with dust making description difficult.

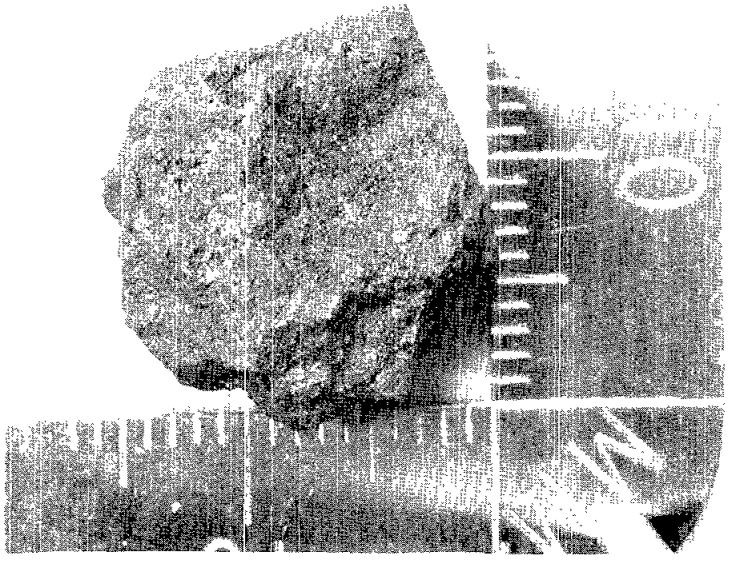
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	< 0.1		
Pyrox	Reddish-brown	60	Irreg	< 0.1		
Ilm	Black	10	Irreg	< 0.1		
Maf sil	Yellow-green	< 1	Irreg	< 0.1		



78595,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 4.19 g
DIMENSIONS: 1.3 x 1.4 x 1.2 cm
COLOR: Medium gray (N5)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	<0.1		
Pyrox	Reddish-brown	60	Irreg	< 0.1		
Ilm	Black	10	Irreg	< 0.1		



78596,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 7.55 g
DIMENSIONS: 2.0 x 1.5 x 1.5 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular

VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	< 0.1		
Pyrox	Reddish-brown	60	Irreg	< 0.1		
Ilm	Black	10	Irreg	< 0.1		

78598,0

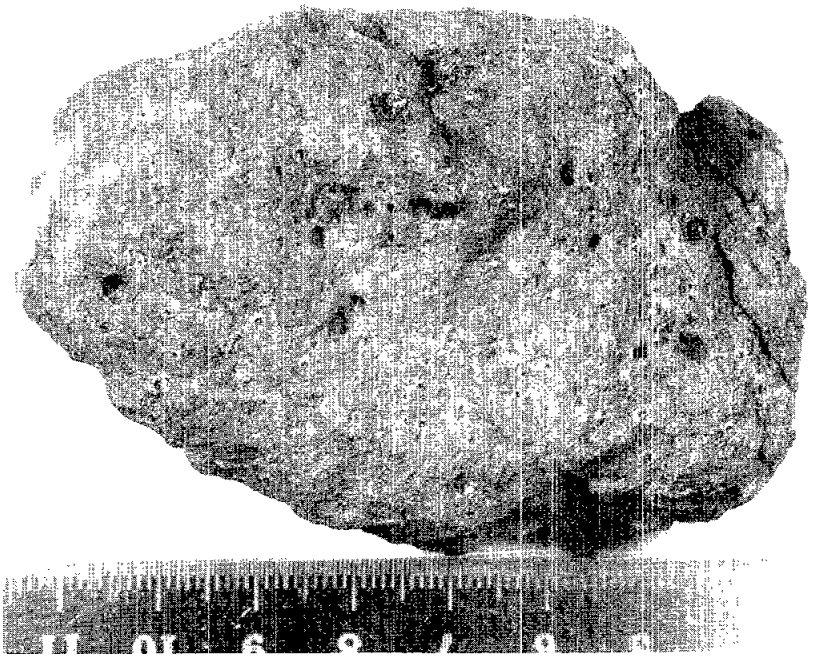
ROCK TYPE: Mare basalt, fine
WEIGHT: 224.1 g
DIMENSIONS: 8.6 x 4.5 x 4.5 cm
COLOR: Medium gray (N5)
SHAPE: Angular to subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Covered with dust making description difficult. Too fine-grained to see minerals clearly.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag						
Pyrox						
Ilm						

78599,0

ROCK TYPE: Mare basalt, fine
WEIGHT: 198.6 g
DIMENSIONS: 7.2 x 4.7 x 3.0 cm
COLOR: Medium gray (N5)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular -
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs
SURFACE: Granulated
ZAP PITS: Many

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	< 0.1		
Pyrox	Reddish-brown	60	Irreg	< 0.1		
Ilm	Black	10	Irreg	< 0.1		



78569,0

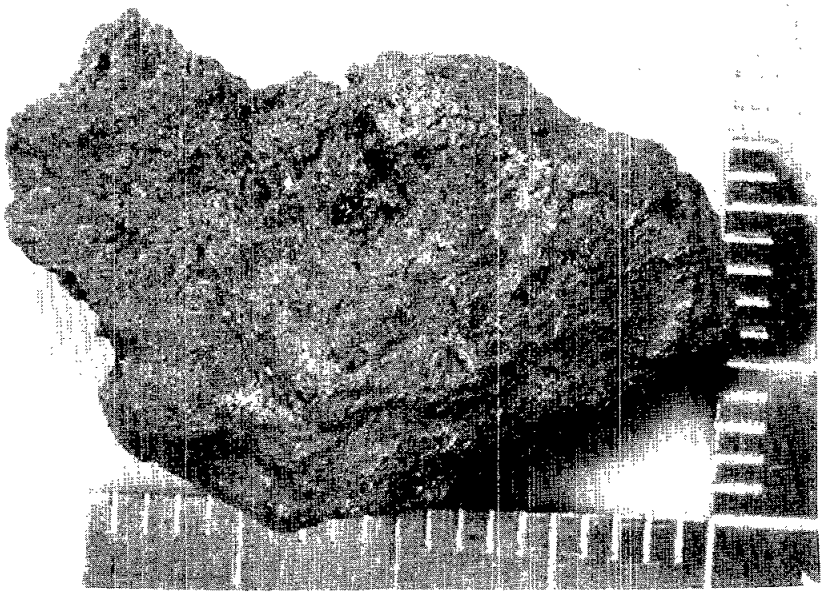
ROCK TYPE: Mare basalt, fine to medium
WEIGHT: 14.53 g
DIMENSIONS: 2.3 x 1.9 x 1.5 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular to subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - One, near-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.1		
Pyrox	Reddish-brown	60	Irreg	0.1		
Ilm	Black	10	Irreg	0.1		

71507,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 3.962 g
DIMENSIONS: 2.2 x 1.4 x 0.6 cm
COLOR: Dark gray (N3)
SHAPE: Irregular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few

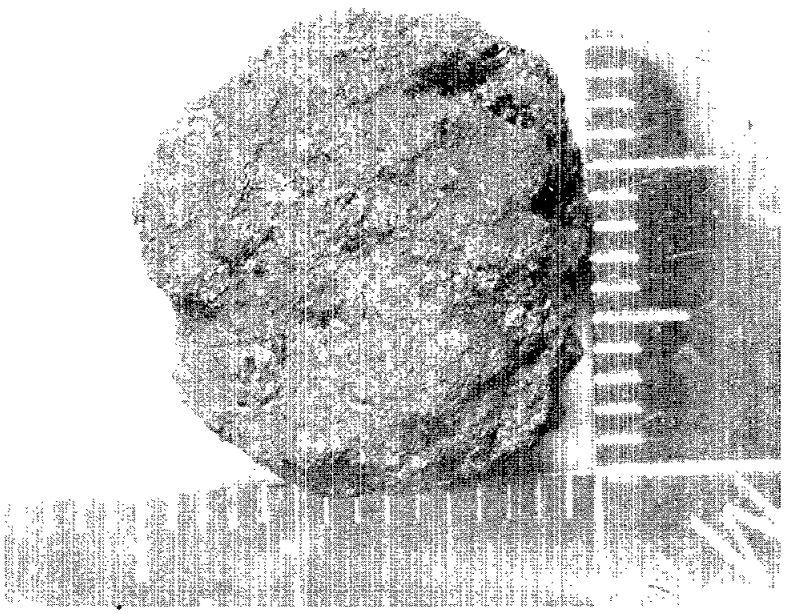
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.3		
Pyrox	Reddish-brown	60	Irreg-prism	0.3		
Ilm	Black	10	Irreg-tab	0.3		



71508,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 3.423 g
DIMENSIONS: 1.4 x 1.3 x 1.0 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: None

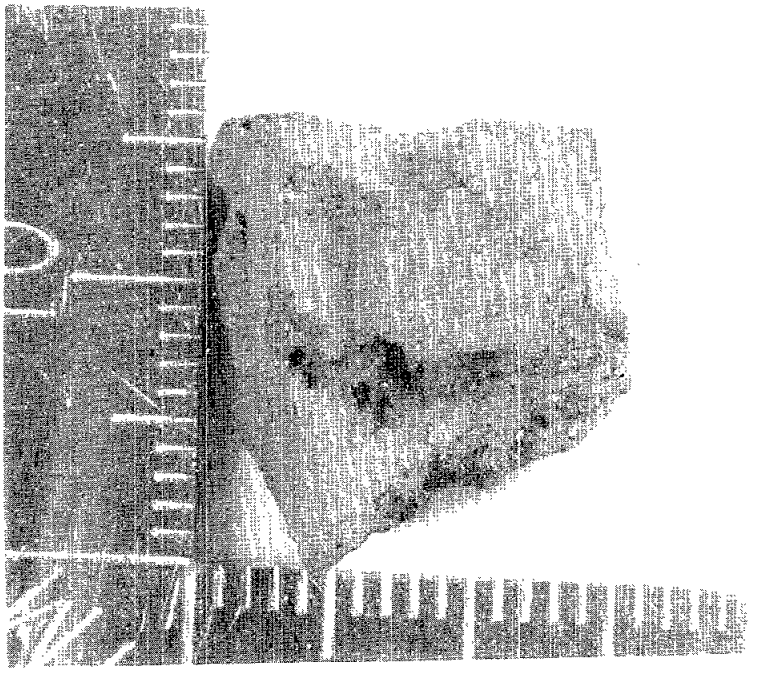
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.3		
Pyrox	Reddish-brown	60	Irreg-prism	0.3		
Ilm	Black	10	Irreg-tab	0.3		



71525,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 3.900 g
DIMENSIONS: 1.7 x 1.3 x 1.2 cm
COLOR: Medium gray (N4)
SHAPE: Angular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Covered with dust making description difficult.

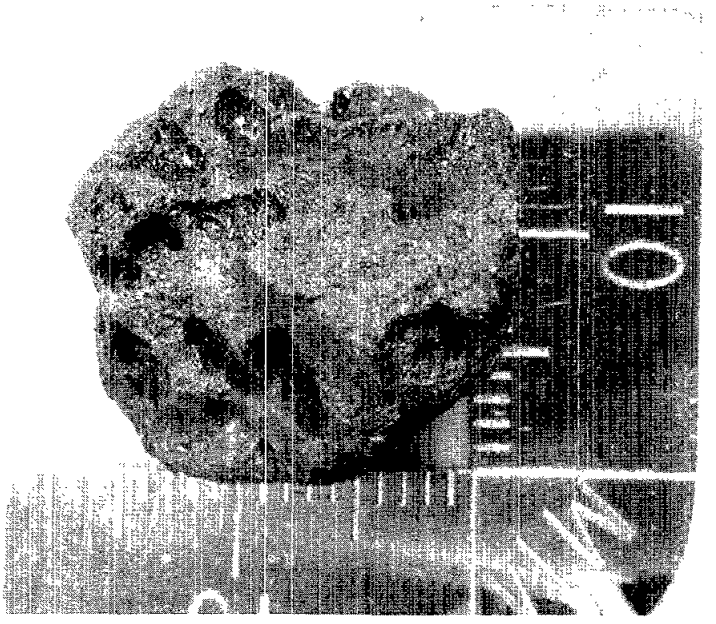
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White		Irreg	0.1		
Pyrox	Reddish-brown		Irreg	0.1		
Ilm	Black		Irreg	0.1		



71529,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 6.025 g
DIMENSIONS: 1.8 x 1.7 x 1.7
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
CHOERENCE: Intergranular - Coherent
Fracturing - Absent
FABRIC/TEXTURE: Isotropic
CAVITIES: 15% vesicles - ilmenite and other phases visible on surfaces
SURFACE: Granulated
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.1		
Pyrox	Reddish-brown	70	Irreg-prism	0.1		
Ilm	Black		Irreg-tab	0.1		



71535,0

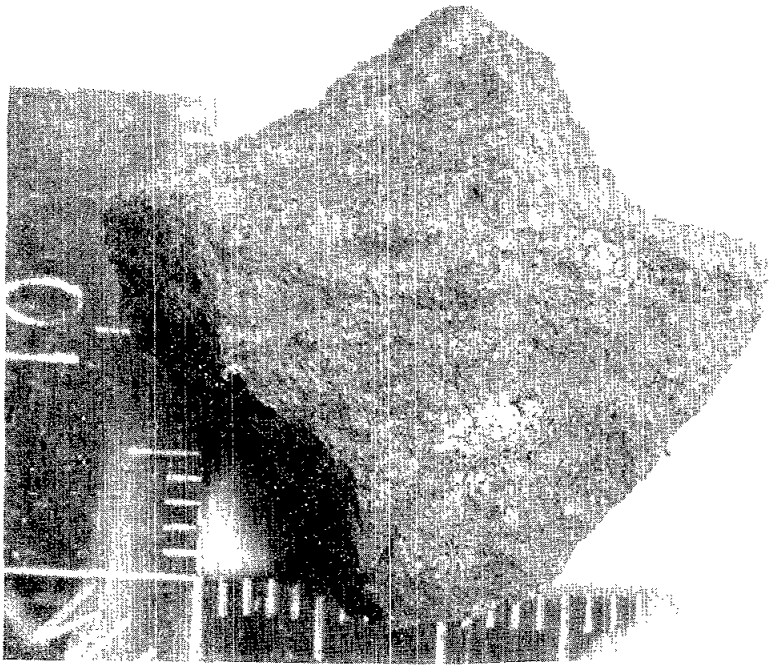
ROCK TYPE: Mare basalt, medium
WEIGHT: 17.71 g
DIMENSIONS: 2.7 x 2.2 x 2.0 cm
COLOR: Dark brownish-gray (5YR 3/1)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 3% vugs or vesicles
SURFACE: Granulated
ZAP PITS: None

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.2		
Pyrox	Reddish-brown	60	Irreg-prism	0.2		
Ilm	Black	10	Irreg-tab	0.2		

71539,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 10.90 g
DIMENSIONS: 2.3 x 1.8 x 1.7 cm
COLOR: Dark gray (N3)
SHAPE: Subangular - blocky
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs
SURFACE: Granulated to hackly
ZAP PITS: None
SPECIAL FEATURES: Sample covered with dust making good description difficult.

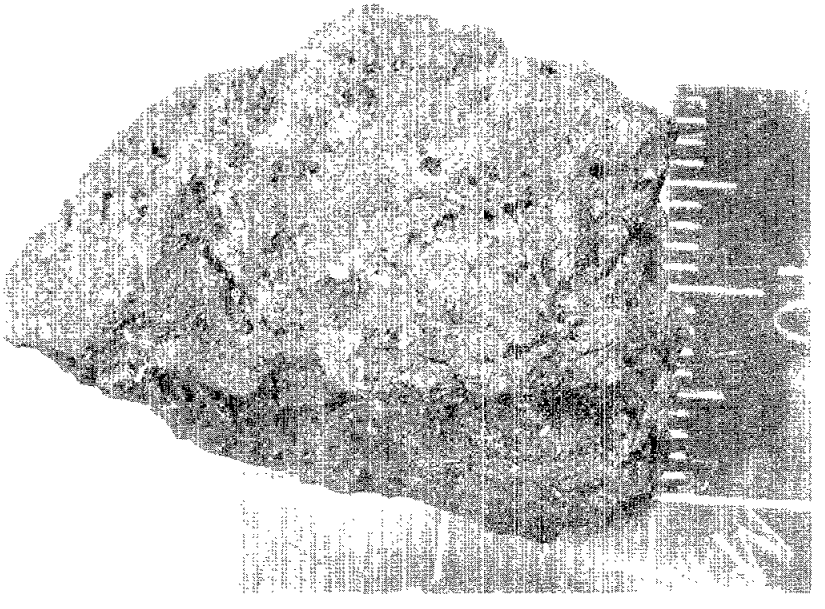
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.1 - 0.2		
Pyrox	Reddish-brown	60	Irreg-prism	0.1 - 0.2		
Ilm	Black	10	Irreg-tab	0.1 - 0.2		



71547,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 12.54 g
DIMENSIONS: 3.0 x 2.5 x 1.7 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vugs
SURFACE: Granulated
ZAP PITS: Few

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.2		
Pyrox	Reddish-brown	58	Irreg-prism	0.2		
Ilm	Black	10	Irreg-tab	0.2		
Maf sil	Yellow-green	2	Irreg	0.2		Olivine



71548,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 25.46 g
DIMENSIONS: Two pieces: (1) 1.8 x 1.0 x 0.8 cm
(2) 3.2 x 2.6 x 2.1 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, penetrative and non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.3		
Pyrox	Reddish-brown	60	Irreg-prism	0.3		
Ilm	Black	10	Irreg-tab	0.3		

71549,0

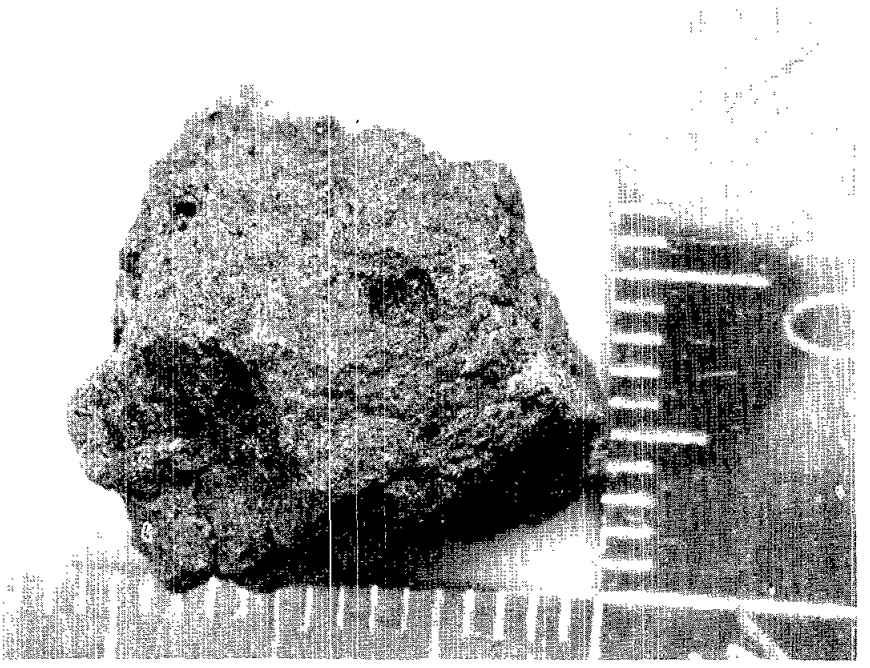
ROCK TYPE: Mare basalt, medium
WEIGHT: 7.903 g
DIMENSIONS: 2.0 x 1.5 x 1.3 cm
COLOR: Dark gray (M3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs
SURFACE: Granular
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.3	0.1 - 1.0	
Pyrox	Reddish-brown	60	Irreg-prism	0.3	0.1 - 1.0	
Ilm	Black	10	Irreg-tab	0.3	0.1 - 1.0	

71555,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 4.547 g
DIMENSIONS: 1.7 x 1.5 x 1.5 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: Some surface variations (see SURFACE)
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated - Some surfaces have areas of ilmenite plates, which may be parts of vesicles.
ZAP PITS: None

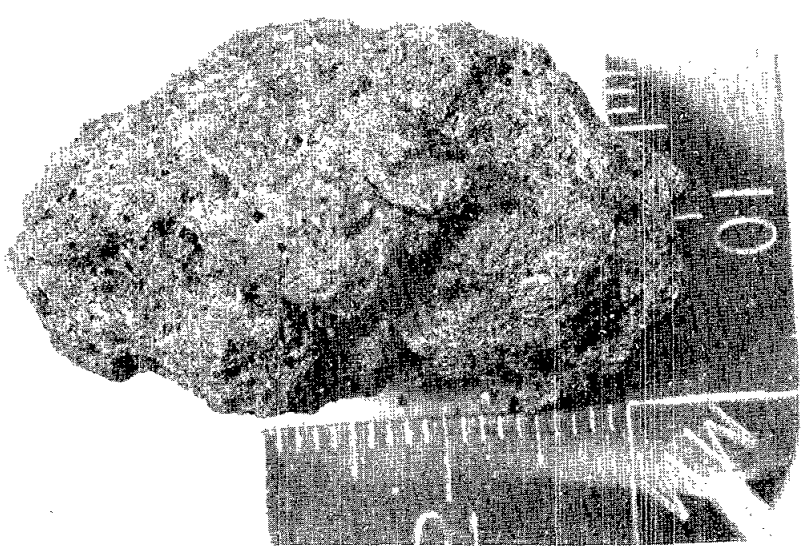
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.1 - 0.2		
Pyrox	Reddish-brown	58	Irreg-prism	0.1 - 0.2		
Ilm	Black	10	Irreg-tab	0.1 - 0.2		
Maf sil	Yellow	2	Irreg	0.1 - 0.2		Olivine



71558,0

ROCK TYPE: Mare basalt, medium, moderately olivine-rich
WEIGHT: 15.81 g
DIMENSIONS: 3.6 x 2.0 x 1.5 cm
COLOR: Dark brownish-gray (5YR 3/1)
SHAPE: Subangular, subround
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 5-10%, pyrox needles projecting into them
SURFACE: Granulated
ZAP PITS: None

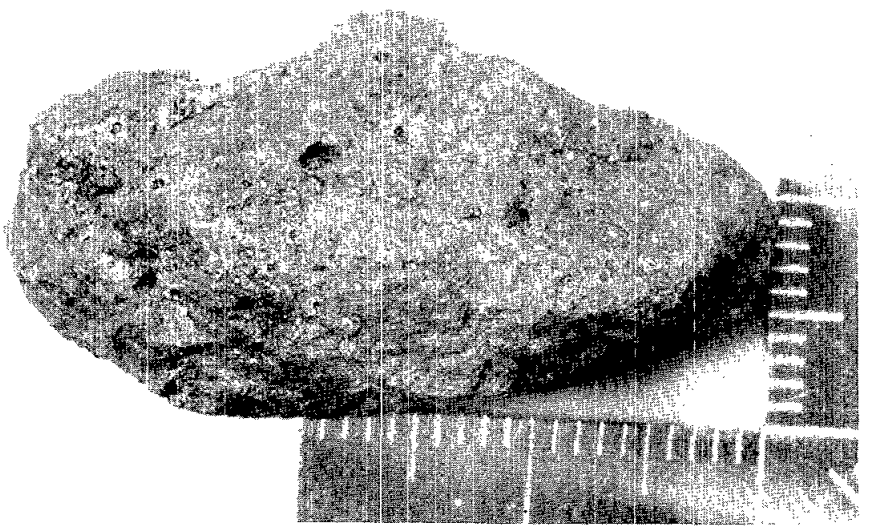
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.3		
Pyrox	Reddish-brown	55	Irreg-prism	0.3		
Ilm	Black	10	Irreg-tab	0.2		
Maf sil	Yellow	5	Irreg	0.2		Olivine



71579,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 7.937 g
DIMENSIONS: Two pieces: (1) 1.1 x 1.5 x 3.1 cm
(2) 3.1 x 1.5 x 1.1 cm
COLOR: Dark gray (N3)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few

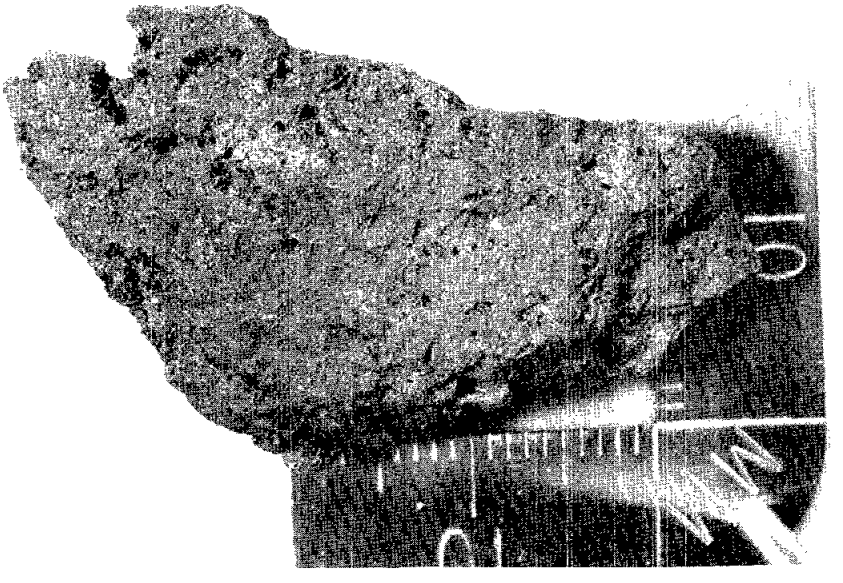
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.2		
Pyrox	Reddish-brown	60	Irreg-prism	0.2		
Ilm	Black	10	Irreg-tab	0.2		



71585,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 13.86 g
DIMENSIONS: 3.8 x 2.2 x 1.2 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular, subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 8% vugs
SURFACE: Granulated
ZAP PITS: Few

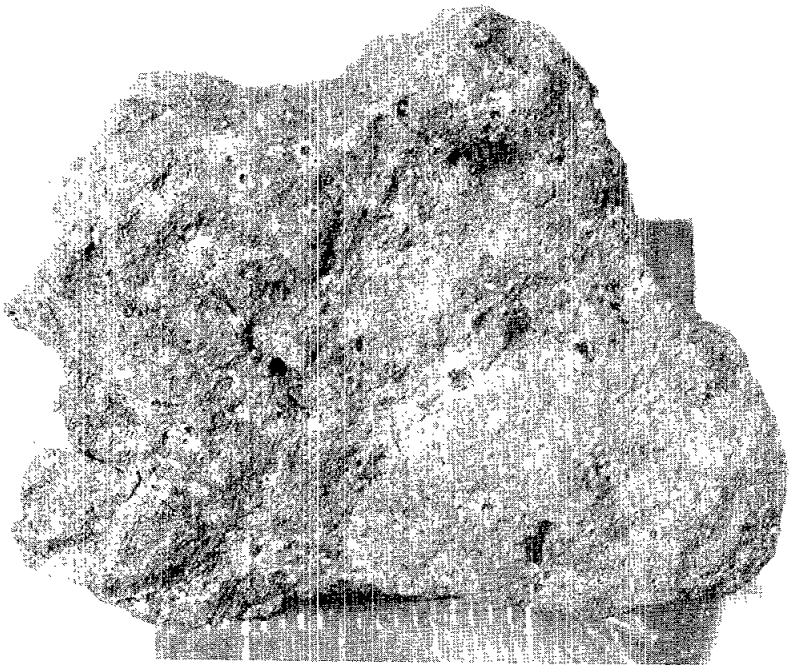
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.2		
Pyrox	Reddish-brown	58	Irreg-prism	0.2		
Ilm	Black	10	Irreg-tab	0.2		
Maf sil	Yellow-green	1	Irreg	0.2		Olivine
Maf sil	Yellow-orange	1	Irreg	0.5		



71586,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 26.92 g
DIMENSIONS: 3.7 x 2.8 x 1.3 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: None
CAVITIES: 2% vugs, 5% vesicles
SURFACE: Granulated
ZAP PITS: Few to many
SPECIAL FEATURES: Relatively few large vesicles lined with plates of ilmenite and some long needles (probably pyroxene).

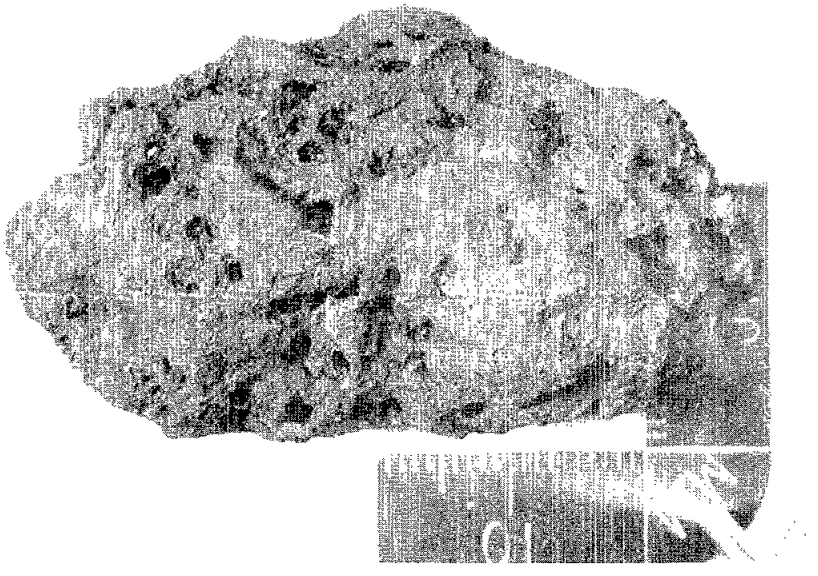
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.2		
Pyrox	Reddish-brown	59	Irreg-prism	0.2		More prismatic
Ilm	Black	10	Irreg-tab	0.2		
Maf sil	Yellow-green	1	Irreg	0.2		Olivine



71587,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 41.27 g
DIMENSIONS: 5.0 x 2.9 x 1.6 cm
COLOR: Dark gray (N3)
SHAPE: Subrounded
VARIABILITY: Fine-grained, but coarser near vugs
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 1-2% vugs, ilmenite commonly project into vugs
SURFACE: Granulated
ZAP PITS: Few to many
SPECIAL FEATURES: Possibly different from other basalts.

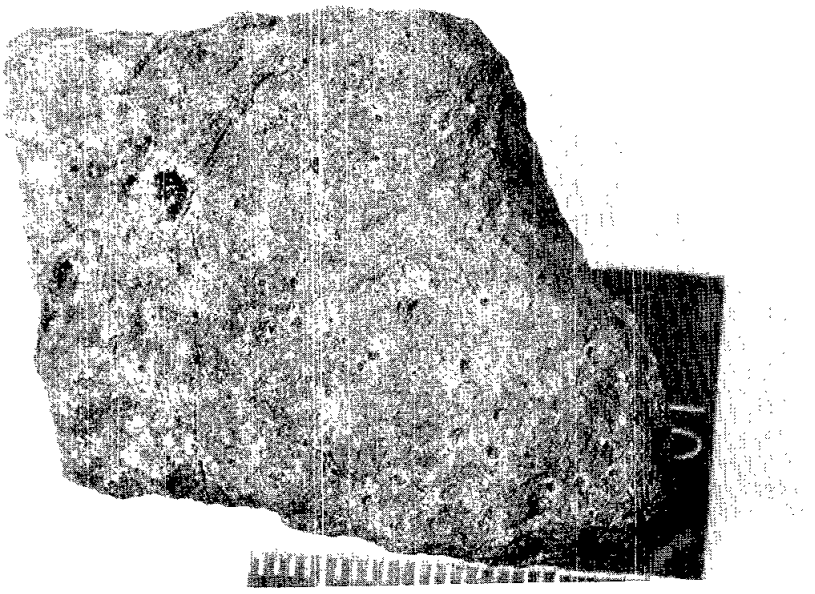
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	20	Irreg	0.1		
Pyrox	Reddish-brown	58	Irreg	0.1		
Ilm	Black	20	Irreg	0.1 - 0.5		Gets large and abundant near vugs
Maf sil	Yellow-green	2	Irreg	0.1		Olivine



71588,0

ROCK TYPE: Mare basalt, medium; moderately olivine-rich
WEIGHT: 48.98 g
DIMENSIONS: 3.8 x 3.0 x 2.5 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, near-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs
SURFACE: Granulated
ZAP PITS: Few, one large one (3 mm)

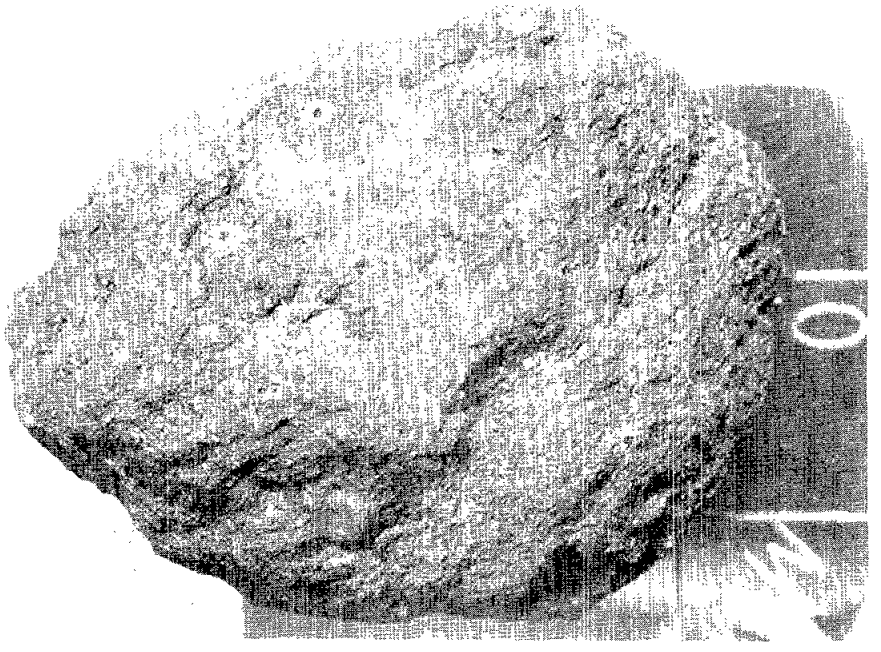
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.2		
Pyrox	Reddish-brown	55	Irreg	0.2		
Ilm	Black	10	Irreg	0.2		
Maf sil	Yellow-green	5	Irreg	0.2		Olivine



71595,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 25.21 g
DIMENSIONS: 3.4 x 2.7 x 2.0 cm
COLOR: Dark gray (N3)
SHAPE: Subrounded
VARIABILITY: Grain size varies
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1-2% vugs
SURFACE: Granulated
ZAP PITS: Few

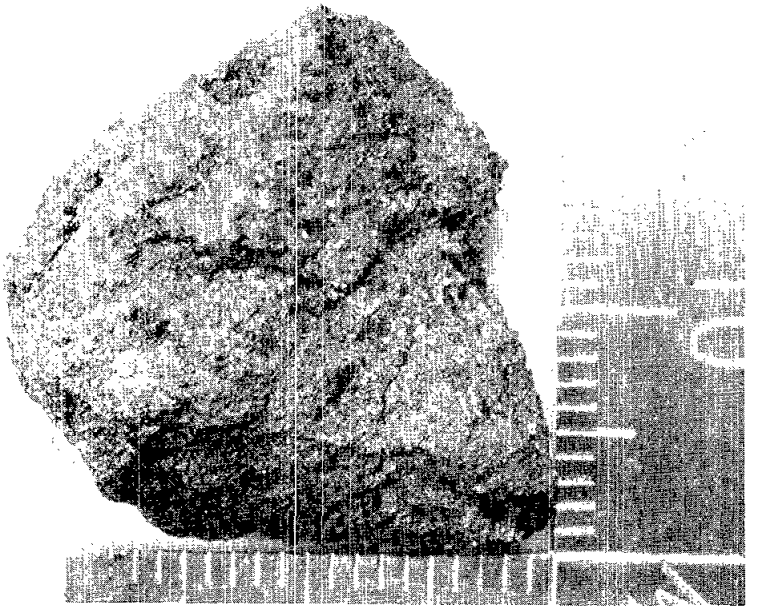
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.2		
Pyrox	Reddish-brown	58	Irreg-prism	0.2		
Ilm	Black	10	Irreg-tab	0.2		
Maf sil	Yellow	2	Irreg	0.2		Olivine



78579,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 6.07 g
DIMENSIONS: 2.4 x 2.0 x 1.0 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few
FABRIC/TEXTURE: Isotropic
CAVITIES: 3% vugs
SURFACE: Granulated
ZAP PITS: None

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg		0.3	
Pyrox	Reddish-brown	59	Irreg-prism		0.3	
Ilm	Black	10	Irreg-tab		0.3	
Maf sil	Yellow	1	Irreg		0.7	Olivine



78597,0

ROCK TYPE: Mare basalt, medium
WEIGHT: 319.1 g
DIMENSIONS: 6.7 x 5.7 x 5.0 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vesicles
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Large crystals of olivine and pyroxene in vesicles.

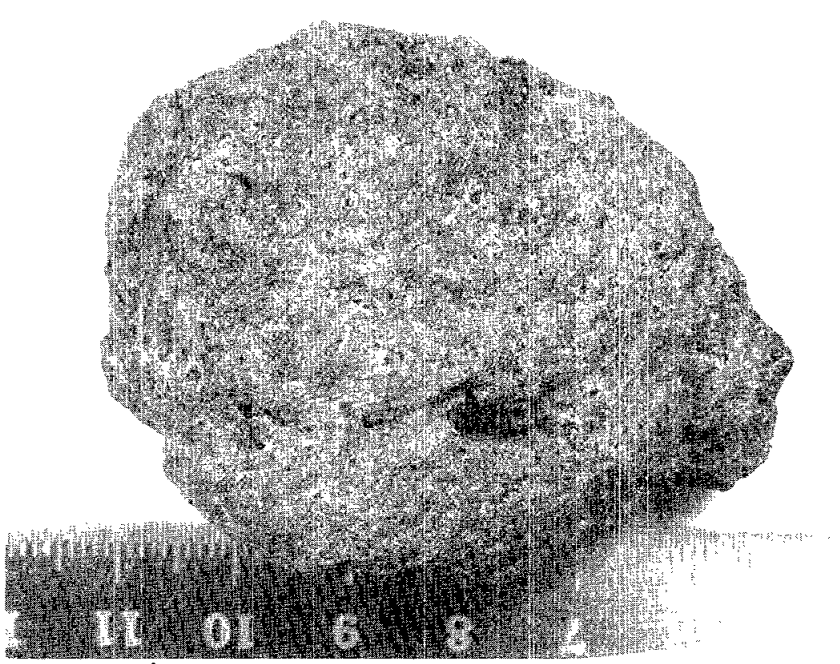
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.2		
Pyrox	Reddish-brown	57	Irreg	0.2		
Ilm	Black	10	Irreg	0.2		
Maf sil	Green	3	Irreg	0.2		Olivine

77516,0

ROCK TYPE: Mare basalt, medium to coarse
WEIGHT: 103.7 g
DIMENSIONS: 5.5 x 4 x 3
COLOR: GRAY (N4 to N5) with brownish tint
SHAPE: Subrounded to subangular, somewhat slabby
VARIABILITY: Inhomogeneous distribution of vugs
COHERENCE: Intergranular - Tough
Fracturing - One penetrative parallel to slabby direction
FABRIC/TEXTURE: Variolitic, locally trachytic
CAVITIES: 1 - 2%; up to 8 mm; contain projecting ilmenite, pyroxene, and plagioclase crystals
SURFACE: Uneven, finely hackly
ZAP PITS: Zapped on all sides.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag		35	Lath	0.75	0.5 - 3	1
Pyrox	Root beer brown	45-50	Equant		0.1 - 0.5	
Opaques	Black	10-15	Platy		<0.1 - 1	
Oliv	Green	5	Equant	0.5	0.2 - 1.0	2

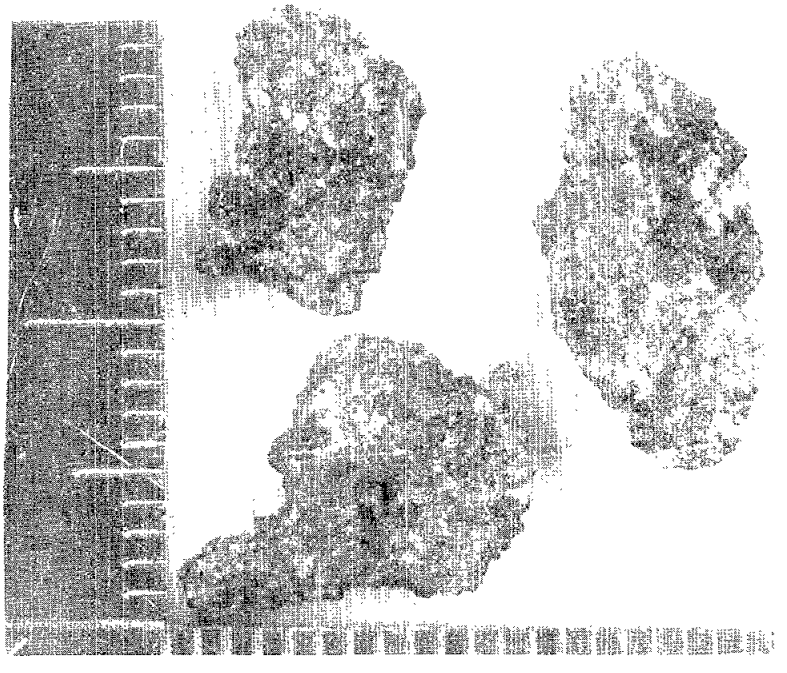
NOTES:
1. Plagioclase is lath-shaped, commonly has pyroxene(?) prisms growing down center of laths.
2. Appears to be concentrated in one part of rock.



71509,0

ROCK TYPE: Mare basalt, coarse; moderately olivine-rich
WEIGHT: 1.690 g
DIMENSIONS: Two pieces: (1) 1.2 x 0.7 x 0.3 cm
(2) 1.8 x 0.9 x 0.5 cm
COLOR: Dark brownish-gray (5YR 3/1)
SHAPE: Irregular (two large pieces plus 2 crumbs)
VARIABILITY: None
COHERENCE: Intergranular - Friable to coherent
Fracturing - Few, penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None

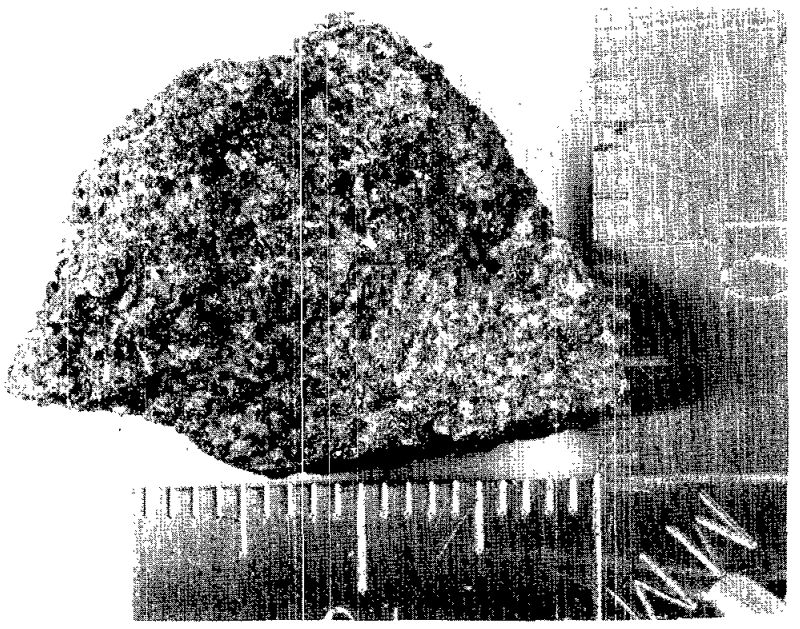
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.4		
Pyrox	Reddish-brown	55	Irreg-prism	0.4		
Ilm	Black	10	Irreg-tab	0.4		
Maf sil	Yellow-green	5	Irreg	0.4		Olivine



71536,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 5.322 g
DIMENSIONS: 2.4 x 1.6 x 0.9 cm
COLOR: Brownish-gray (5YR 4/1)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: None

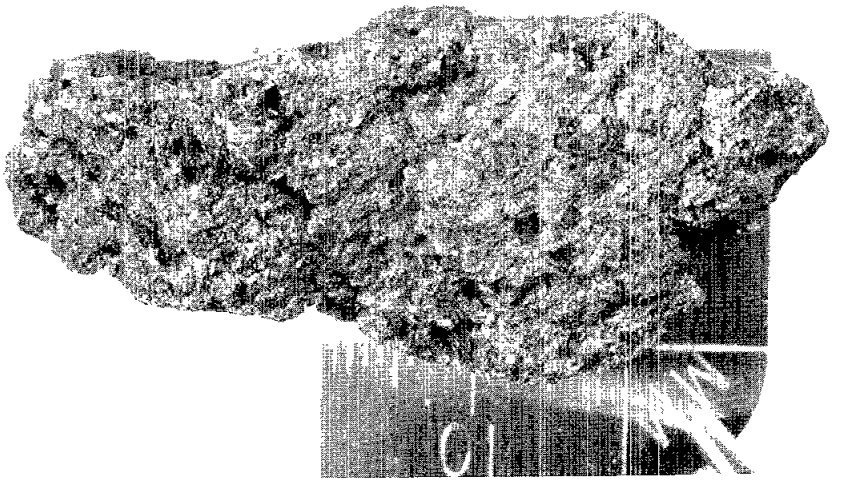
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.5		
Pyrox	Reddish-brown	60	Irreg-prism	0.5		
Ilm	Black	10	Irreg-tab	0.5		



71556,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 29.14 g
DIMENSIONS: 4.8 x 2.3 x 2.2 cm
COLOR: Dark brownish-gray (5YR 3/1)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vugs, with mainly pyroxene crystals projecting into them
SURFACE: Granulated
ZAP PITS: None

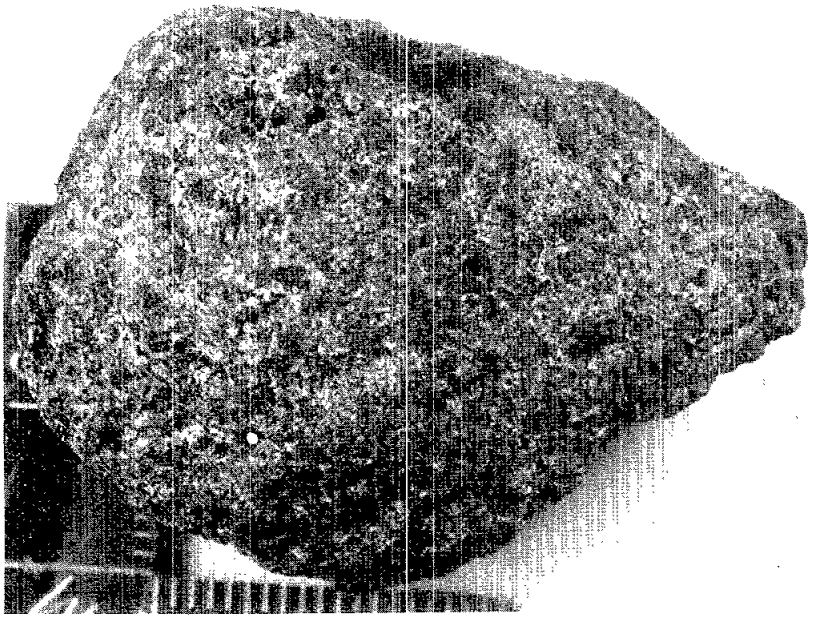
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.5	0.1 - 1.0	
Pyrox	Reddish-brown	60	Irreg-prism	0.5	0.1 - 1.0	
Ilm	Black	10	Irreg-tab	0.3	0.1 - 0.5	



71557,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 40.35 g
DIMENSIONS: 3.2 x 2.7 x 2.5 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs
SURFACE: Granulated
ZAP PITS: None

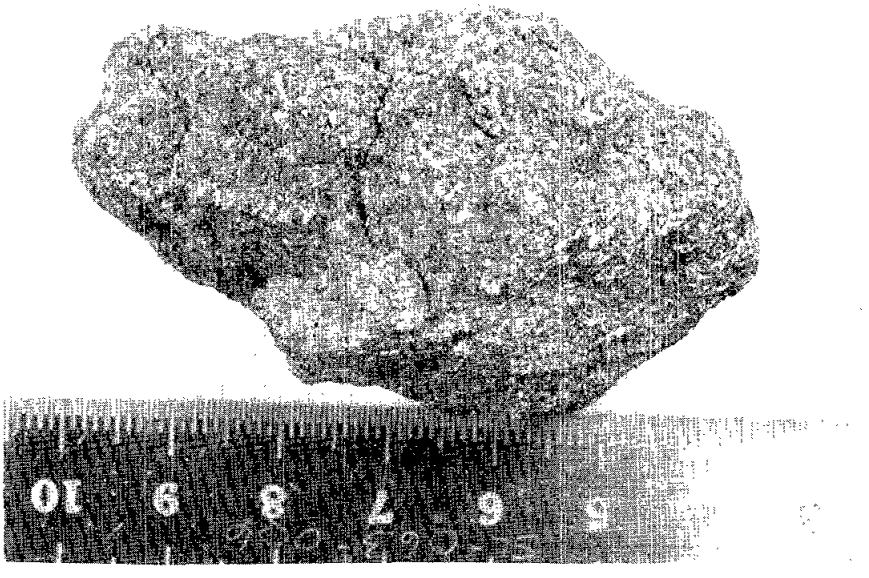
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.4		
Pyrox	Reddish-brown	60	Irreg-prism	0.4		
Ilm	Black	10	Irreg-tab	0.4		



71559,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 82.16 g
DIMENSIONS: 6.3 x 3.5 x 3.4 cm
COLOR: Dark gray (N3)
SHAPE: Blocky - subangular
VARIABILITY: None
COHERENCE: Intergranular - Friable
Fracturing - Few, nearly penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.5		
Pyrox	Reddish-brown	60	Irreg-prism	0.5		
Ilm	Black	10	Irreg-tab	0.3		



71565,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 24.09 g
DIMENSIONS: 3.2 x 2.4 x 1.7 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 3% vugs
SURFACE: Granulated
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.4		
Pyrox	Reddish-brown	56	Irreg-prism	0.4		
Ilm	Black	10	Irreg-lab	0.4		
Maf sil	Yellow-green	4	Irreg	0.4		Olivine

71566,0

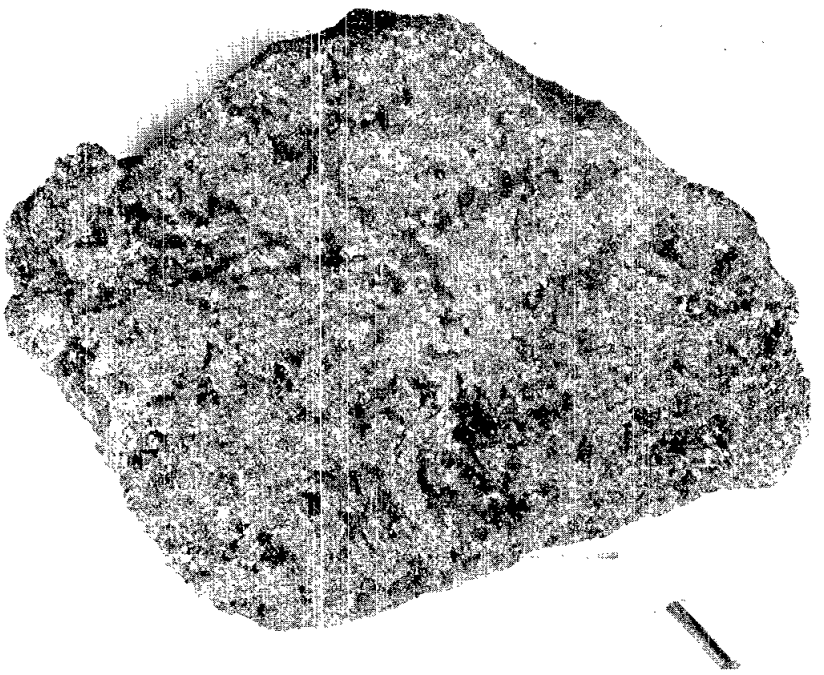
ROCK TYPE: Mare basalt, coarse
WEIGHT: 415.4 g
DIMENSIONS: 10.6 x 6.3 x 4.7 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, nearly penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs, 1% vesicles
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Vesicles lined with ilmenite.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.4		
Pyrox	Reddish-brown	60	Irreg	0.4		
Ilm	Black	10	Irreg	0.3		

71567,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 146.0 g
DIMENSIONS: 5.8 x 5.0 x 4.2 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vugs
SURFACE: Granulated
ZAP PITS: None

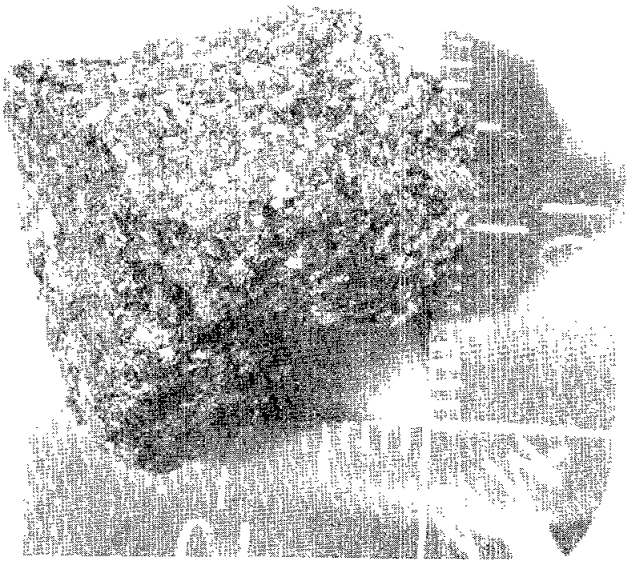
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.5		
Pyrox	Reddish-brown	59	Irreg-prism	0.5		
Ilm	Black	10	Irreg-tab	0.4		
Maf sil	Yellow-green	1	Irreg	0.5		Olivine



71568,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 10.02 g
DIMENSIONS: 2.2 x 2.1 x 1.7 cm
COLOR: Dark brownish-gray (5YR 3/1)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None

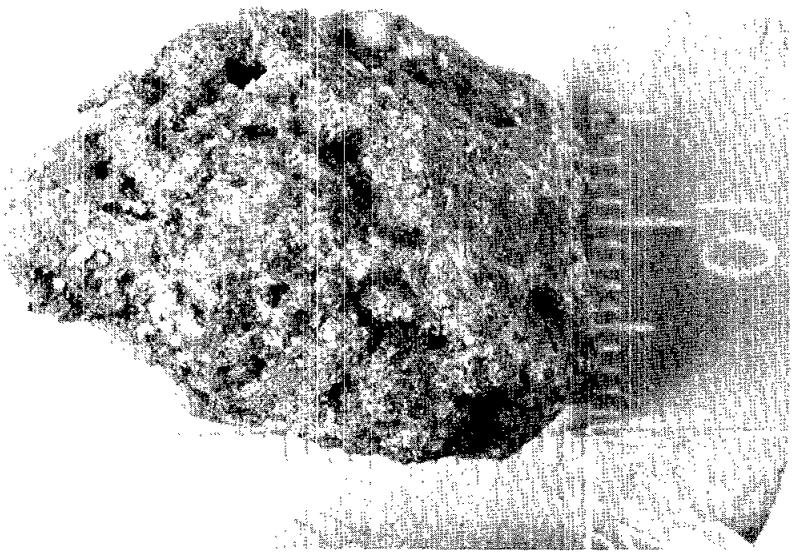
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.6		
Pyrox	Reddish-brown	59	Irreg-prism	0.6		
Ilm	Black	10	Irreg-tab	0.6		
Maf sil	Yellow-green	1	Irreg	0.6		Olivine



71597,0

ROCK TYPE: Mare basalt, coarse - very olivine-rich
WEIGHT: 12.35 g
DIMENSIONS: 2.6 x 2.2 x 1.7 cm
COLOR: Olive gray (5Y 4/1)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vugs
SURFACE: Granulated
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	20	Irreg	0.5		
Pyrox	Pinkish-brown	45	Irreg-prism	0.5		
Ilm	Black	10	Irreg-tab	0.3		
Maf sil	Yellow-green	25	Irreg	1.0		Olivine

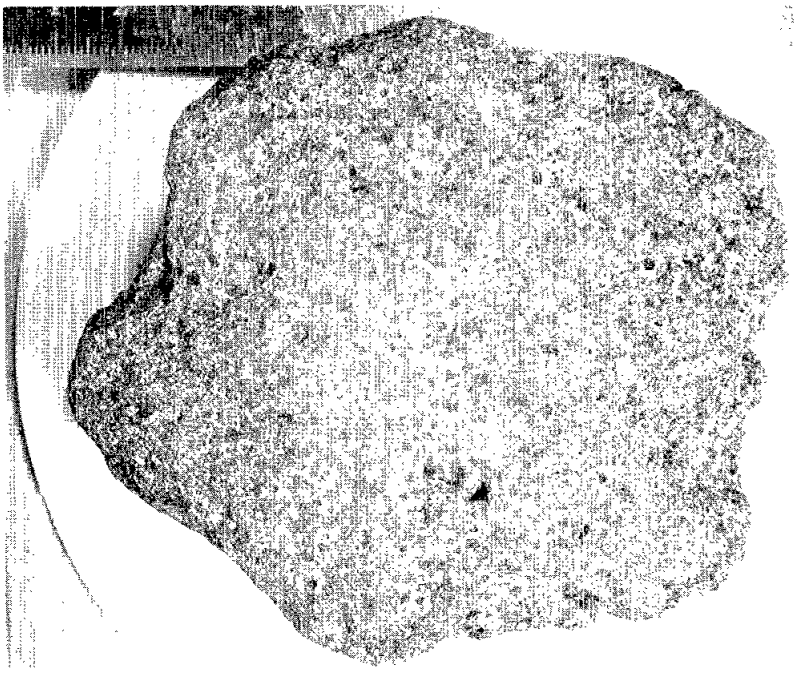


77535,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 577.8 g
DIMENSIONS: 10.5 x 8.5 x 3.5
COLOR: Gray with brownish cast (N5)
SHAPE: Slabby subrounded
COHERENCE: Intergranular - Tough
Fracturing - None
FABRIC/TEXTURE: Large poikilitic plagioclases
CAVITIES: 1%, from <1 cm to 6 mm vugs with projecting pyroxene and opaque crystals.
SURFACE: Hackly. Partial glass coating one surface.
ZAP PITS: Zapped on all sides.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	35	Laths	1.5	1 to 7x5	1
Pyrox	Brown	45-50	Equant	0.5	0.1 - 1	2
Opaque	Black	10-15	Equant	0.5	0.1 - 1	
Oliv(?)	Green	Tr	Equant	<1		

NOTES:
1. Poikilitic grains.
2. Intergrowths of pyroxene and ilmenite, about 1x2 mm, form 5% of the rock.

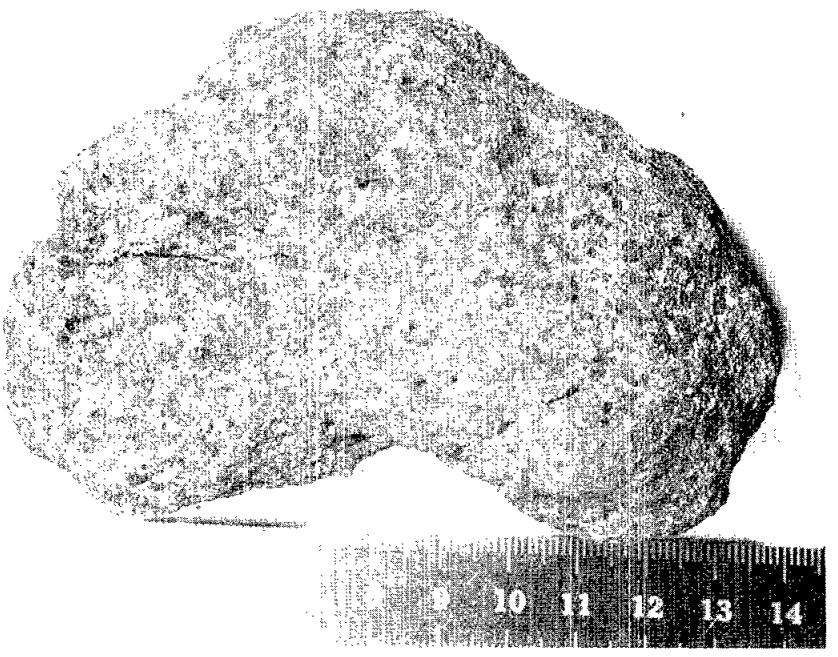


77536,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 355.3 g
DIMENSIONS: 11 x 7.0 x 3.5 cm
COLOR: Brownish gray (5 YR 4/1)
SHAPE: Tabular, subrounded
VARIABILITY: Some textural variation
COHERENCE: Intergranular - Tough
Fracturing - Penetrative normal to major and intermediate axes.
FABRIC/TEXTURE: Subophitic
CAVITIES: 1% vugs with projecting pyroxenes, and ilmenite to 2 mm.
SURFACE: Hackly; one side has partial glass coating
ZAP PITS: All zapped except glass-coated side
SPECIAL FEATURES: Glass on unpitted side, also one 1 cm square area on this surface looks slickensided. Plagioclase laths may have weak preferred orientation. Brown mafic clots of 80% pyroxene and 20% opaques average 3 x 4 mm and reach 10 x 15 mm.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Pyrox	Brown	55			1.0	
Plag	White	25-30			1x5	1
Ilm	Black	20	Equant		1.5	2
Oliv	Green	1 - <1			<1	3

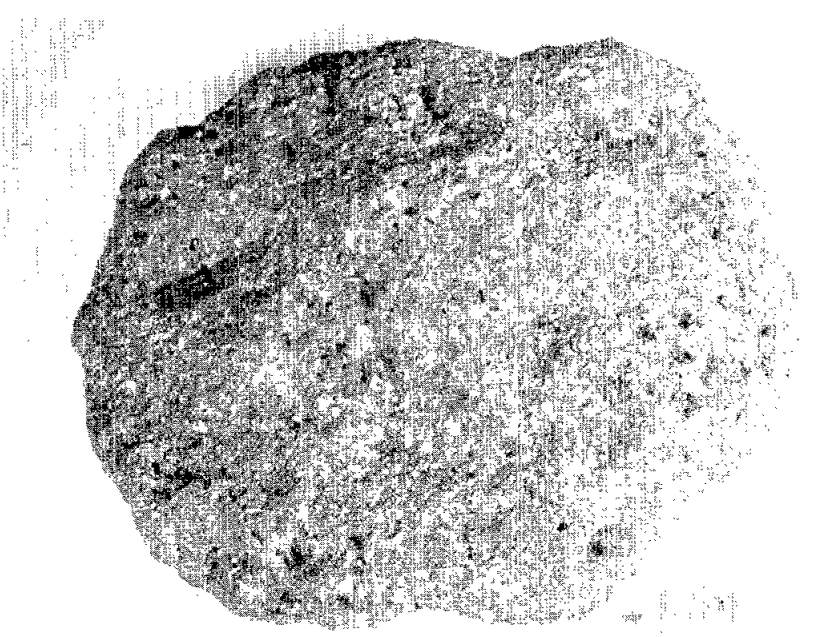
NOTES:
1. One plagioclase crystal is 10 x 3 cm and is poikolitic.
2. Equant to rounded clusters.
3. Enclosed by plagioclase.



78575,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 140.0 g
DIMENSIONS: 5.8 x 4.8 x 3.4 cm
COLOR: Medium gray (N5)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 2% vugs
SURFACE: Granulated
ZAP PITS: Few

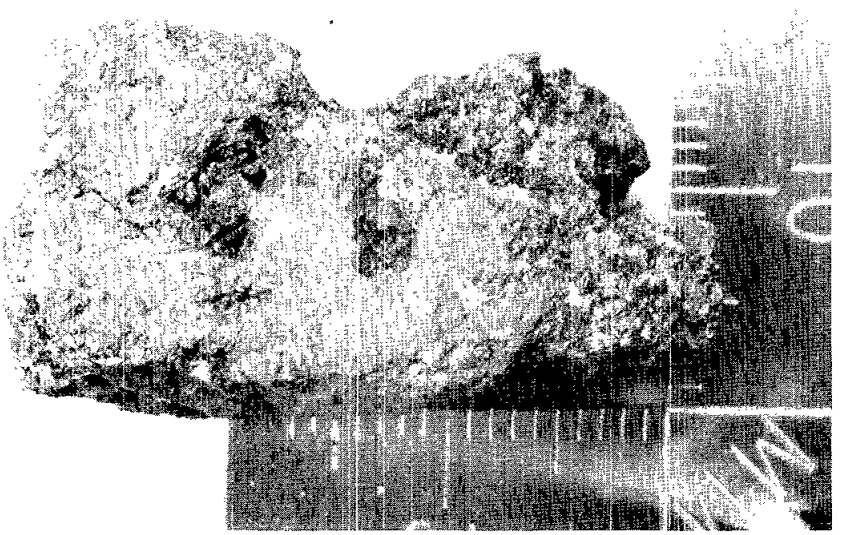
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30		1		
Pyrox	Reddish-brown	59		1	0.5 - 0.8	
Ilm	Black	10			0.5 - 0.8	
Maf sil	Yellow-green	1			0.5 - 0.8	Olivine



73576,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 11.64 g
DIMENSIONS: 3.0 x 1.6 x 1.5 cm
COLOR: Brownish gray (5YR 4/1)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, near-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: Few vugs
SURFACE: Granulated
ZAP PITS: None

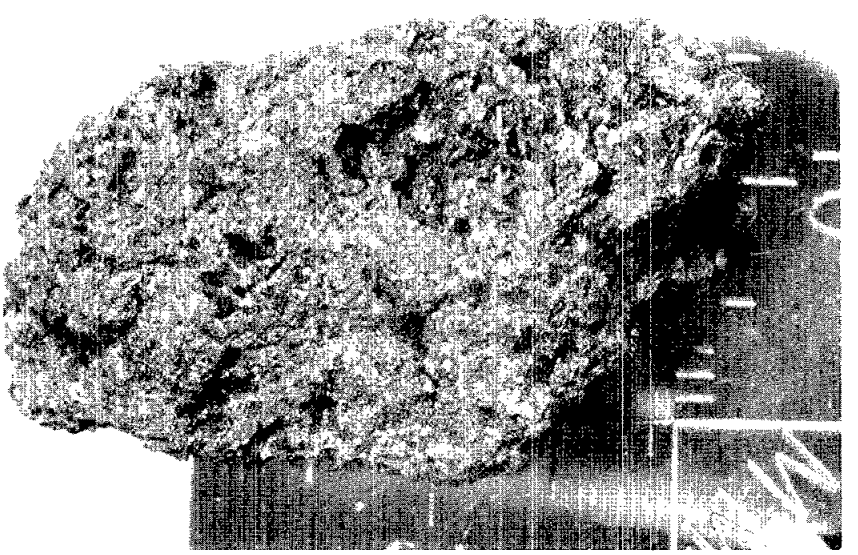
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.4		
Pyrox	Reddish-brown	60	Irreg-prism	0.4		
Ilm	Black	10	Irreg-tab	0.4		



78577,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 8.84 g
DIMENSIONS: 3.0 x 1.7 x 1.1 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% vugs
SURFACE: Granulated
ZAP PITS: None

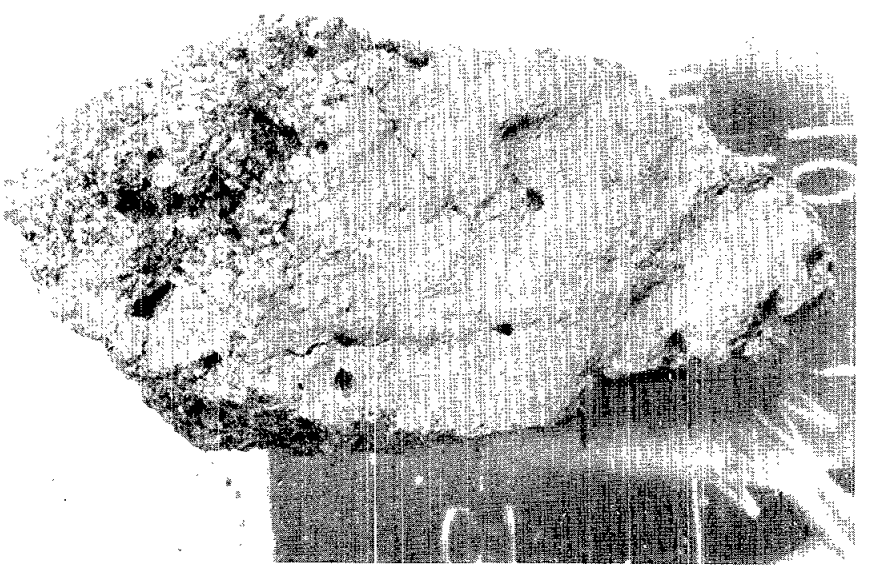
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg	0.5		
Pyrox	Reddish-brown	60	Irreg-prism	0.5		
Ilm	Black	10	Irreg-tab	0.5		



78578,0

ROCK TYPE: Mare basalt, coarse
WEIGHT: 17.13 g
DIMENSIONS: 3.6 x 1.7 x 1.7 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: 5% with crystals projecting into it
SURFACE: Granulated
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	30	Irreg		0.4 - 0.6	
Pyrox	Reddish-brown	60	Irreg-prism		0.4 - 0.6	
Ilm	Black	10	Irreg-tab		0.4 - 0.6	

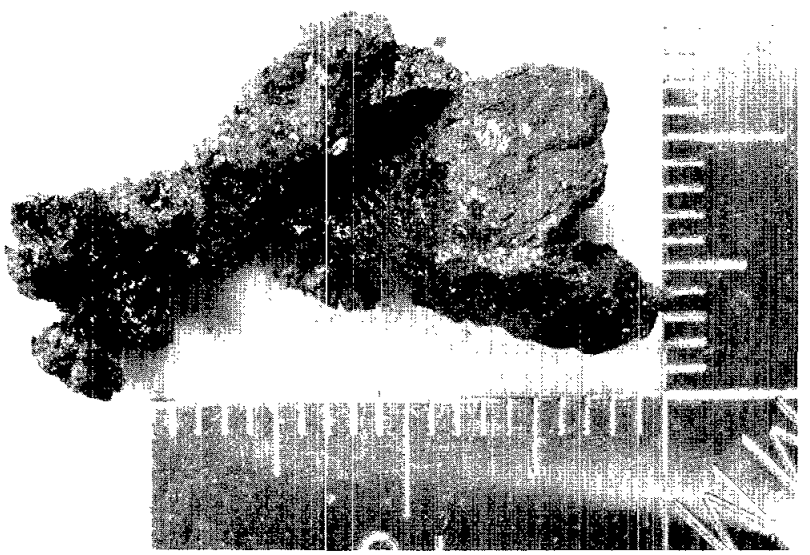


3.2.2 Mare basalt breccia, agglutinated

71515,0

ROCK TYPE: Mare basalt breccia, agglutinated
WEIGHT: 1.635 g
DIMENSIONS: 2.5 x 1.0 x 0.6 cm
COLOR:
SHAPE: Subrounded
VARIABILITY: Parts glassy, parts soil (?) breccia
COHERENCE: Intergranular - Friable
Fracturing - Few
FABRIC/TEXTURE: Fine breccia and glass
CAVITIES: None
SURFACE: Smooth and granulated (variously)
ZAP PITS: None
SPECIAL FEATURES: Mare basalt clasts and soil derived from mare basalt, agglutinated by dark glass.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White					
Pyrox	Reddish-brown					
Ilm	Black					
Maf sil	Yellow-green					Olivine

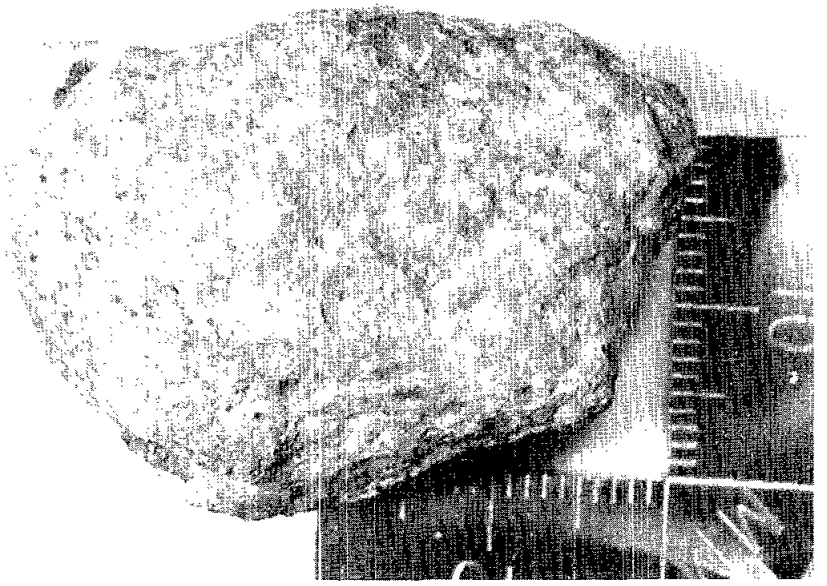


3.2.3 Anorthosite, cataclastic

72559,0

ROCK TYPE: Anorthosite, cataclastic
WEIGHT: 27.84 g
DIMENSIONS: 3.4 x 2.3 x 1.6 cm
COLOR: Light olive gray (5Y 6/1)
SHAPE: Rounded
VARIABILITY: None
COHERENCE: Intergranular - Ccherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Probably cataclastic anorthosite.

COMPONENT	COLOR	% OF ROCK	SHAPE	DOM.	SIZE (mm) RANGE	NOTES
Plag	White	99+	Irreg		< 0.1 - >2.0	

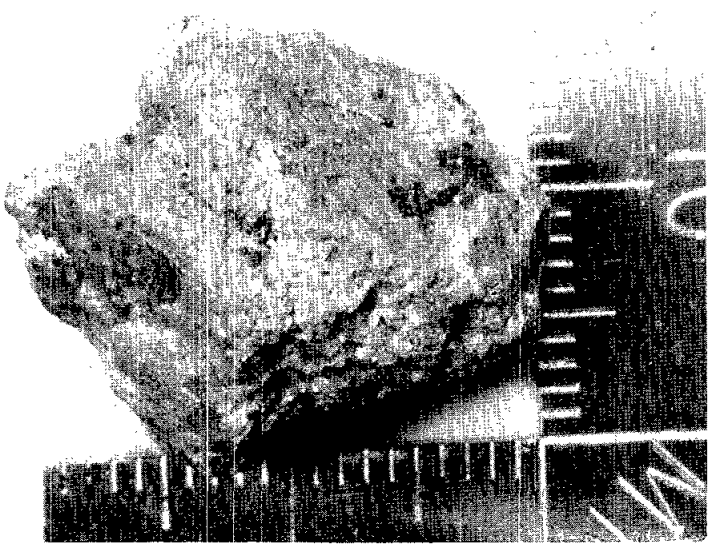


3.2.4 Anorthositic norite or troctolite

78527,0

ROCK TYPE: Anorthositic norite or troctolite
WEIGHT: 5.16 g
DIMENSIONS: 1.8 x 1.3 x 1.2 cm
COLOR: Greenish gray (5GY 6/1)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Isotropic
CAVITIES: Few
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Probably not a primary texture.

		% OF			SIZE (mm)	
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	75	Irreg		0.2 - 0.5	
Maf sil	Green to dark	25	Irreg		0.2 - 0.5	Olivine



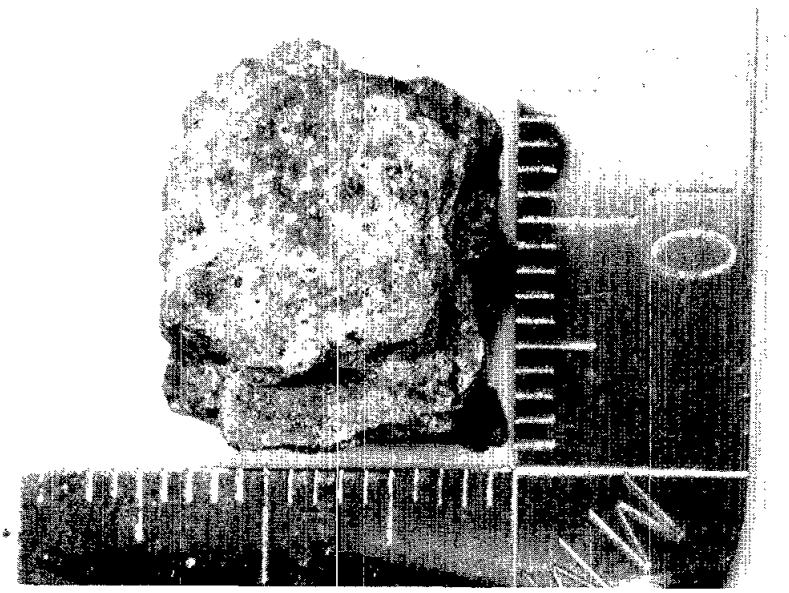
3.2.5 Microbreccia

3.2.5.1 Coherent-matrix microbreccia

72505,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 3.09 g
DIMENSIONS: 1.7 x 1.4 x 0.8 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Many

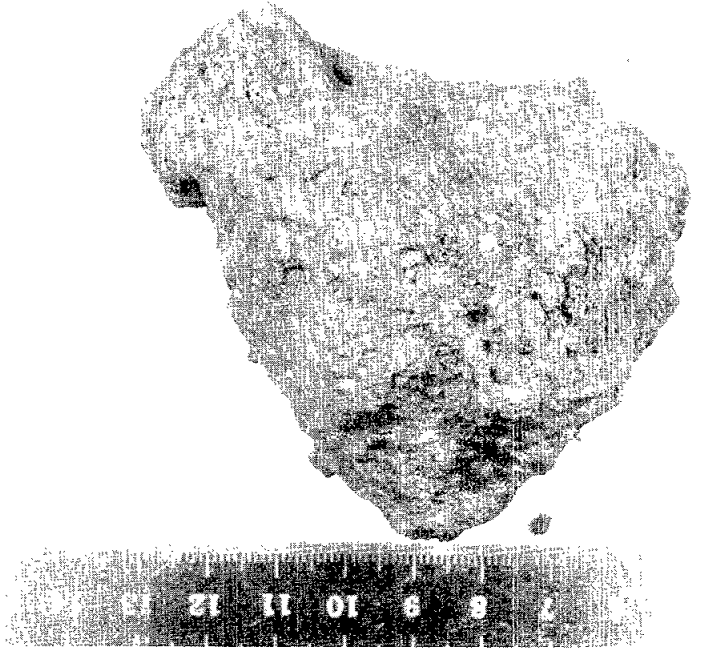
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	SIZE (mm) RANGE	NOTES
Plag clasts	White	3			1 - 2	
Maf sil	Yellow-green	1			1 - 2	
Matrix	White & dark					Possibly melted cr recrystal-lized



72535,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 221.4 g
DIMENSIONS: 7.6 x 6.8 x 5.9 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Many
SPECIAL FEATURES: One surface has a thin layer of dark glass.

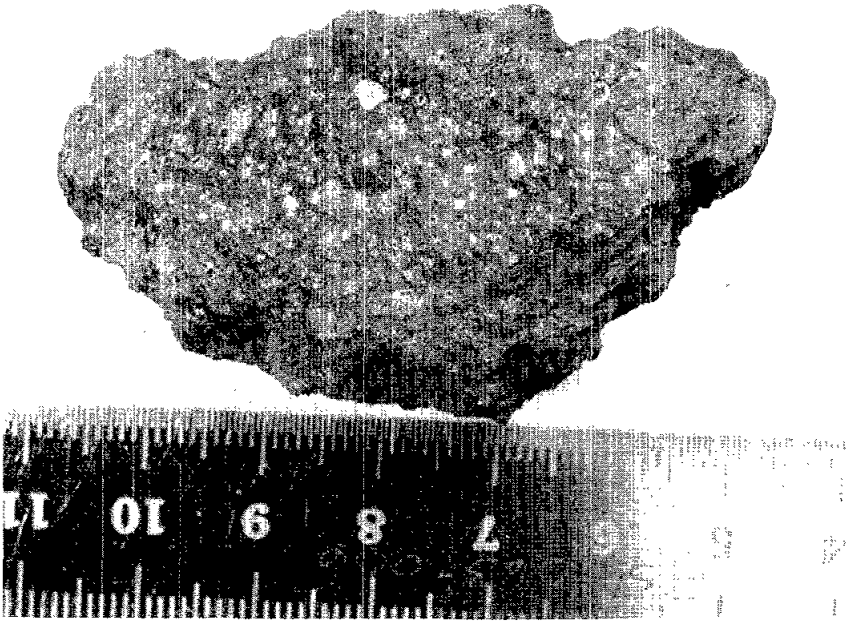
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag clasts	White	5	Irreg		1 - 2	
Lithic clasts	White & brown	3	Irreg		2 - 10	Anorthositic
Matrix	White & dark	92			<0.1 - 1.0	



72536,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 52.30 g
DIMENSIONS: 2.1 x 2.9 x 5.5 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Many

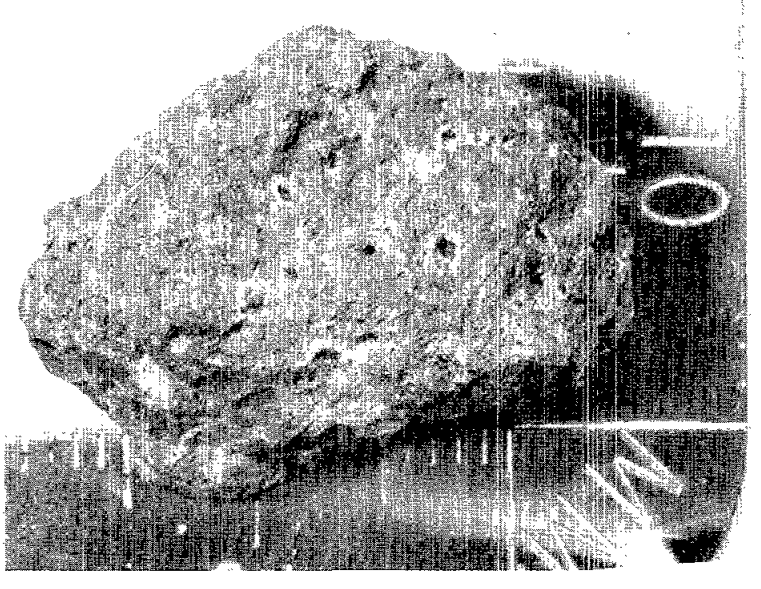
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag clasts	White	3	Irreg		0.5 - 2.0	
Lithic clasts	Mostly white	2	Irreg		0.5 - 2.0	Feldspathic with some light-colored mafics
Maf sil	Yellow-green	1	Irreg		0.5 - 1.0	
Matrix	White & dark	94			<0.1 - 1.0	



72537,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 5.192 g
DIMENSIONS: 2.1 x 1.2 x 1.5 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

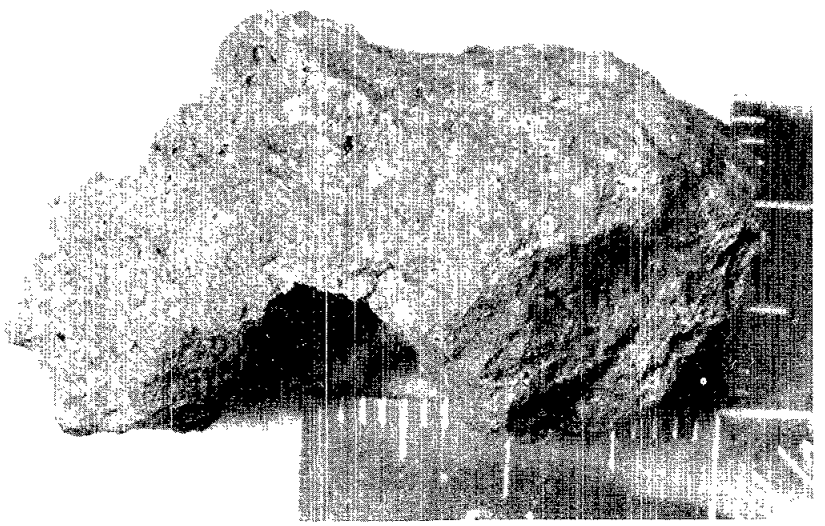
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	3	Irreg		1 - 2	
Maf sil	Yellow-green	1	Irreg		1 - 2	
Matrix	White & dark	96			< 0.1 - 1.0	



72538,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 11.09 g
DIMENSIONS: 3.3 x 2.1 x 1.6 cm
COLOR: Dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few to many

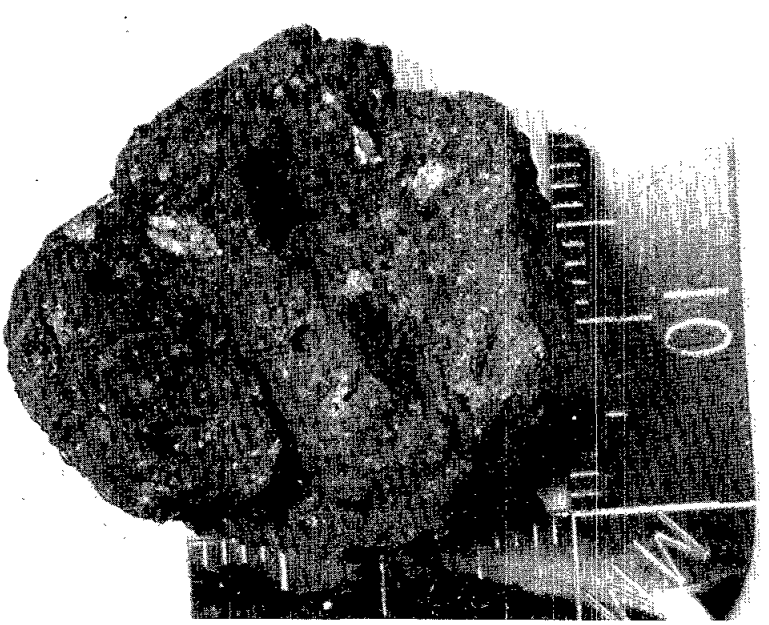
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag clasts	White	5	Irreg		1 - 2	
Spin clasts	Red	<1	Irreg	0.4		
Maf sil clasts	Yellow-green	2	Irreg		0.5 - 1.0	
Matrix	White & dark	92			<0.1 - 1.0	



72539,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 11.22 g
DIMENSIONS: 2.5 x 2.5 x 1.3 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: 4% vesicles
SURFACE: Granulated
ZAP PITS: Few
SPECIAL FEATURES: Clasts are embedded in dark gray, very fine matrix that appears to be a devitrified glass.

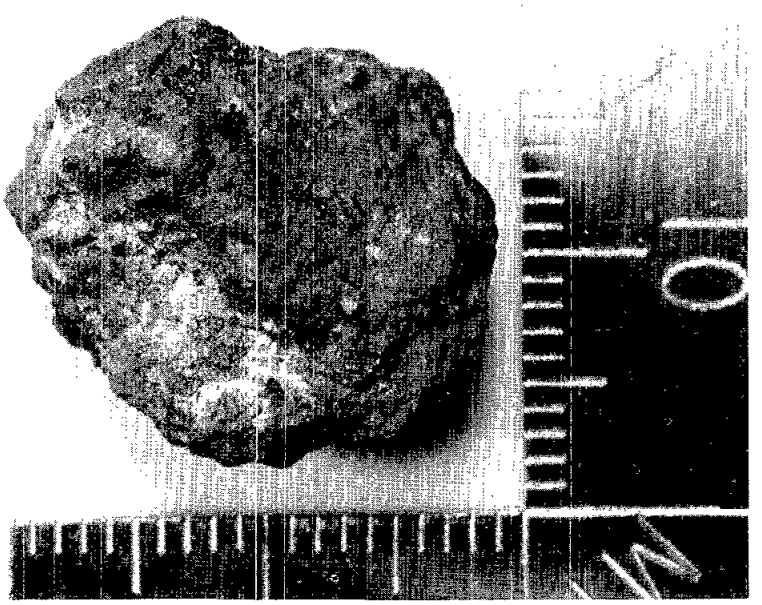
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag clasts	White	6			1 - 2	
Lithic clasts	White	2			1 - 3	Anorthositic
Maf sil	Yellow-green	1			1	
Matrix	Dark gray	91			<0.1	Very fine, possibly finely crystalline



72545,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 4.055 g
DIMENSIONS: 1.7 x 1.2 x 0.8 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: <1% vugs
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Part of the matrix resembles that of rock 72705.

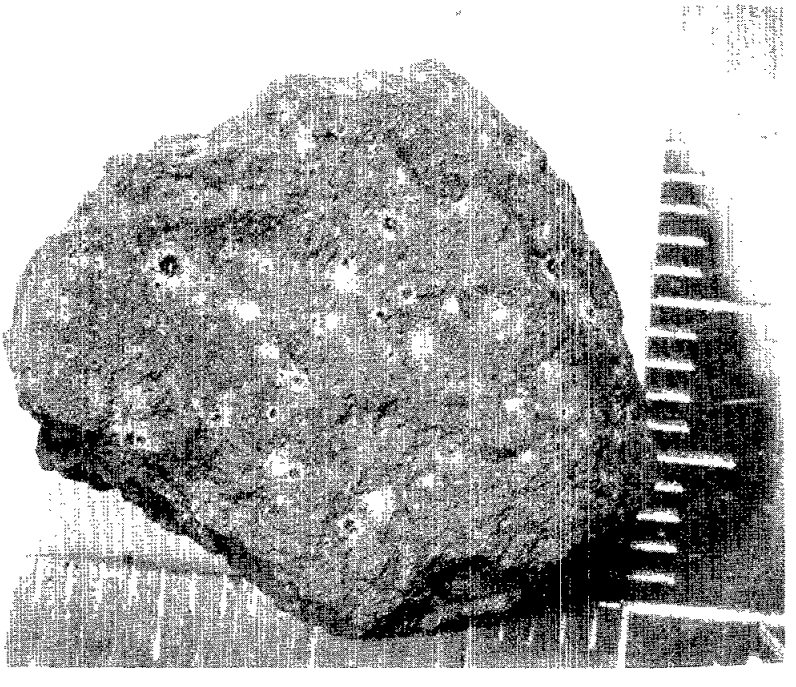
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	3	Irreg		0.5 - 2.0	
Lithic clasts	Mostly white	3	Irreg	4		
Maf sil	Yellow-green	1	Irreg		0.5 - 1.0	
Matrix	Dark	93		<0.1		



72546,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 4.856 g
DIMENSIONS: 1.8 x 1.7 x 1.0 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Many (on one surface)

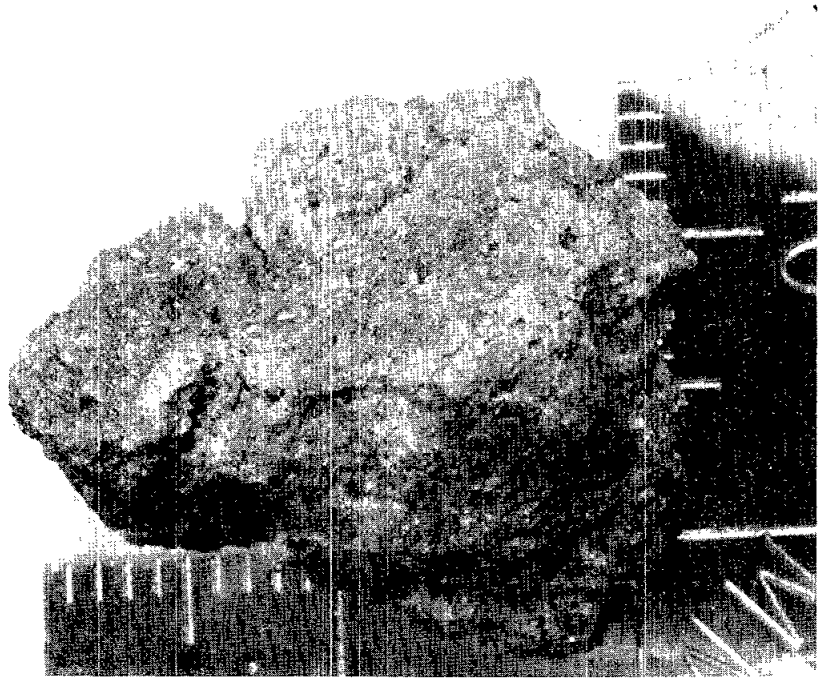
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	2	Irreg		0.5 - 1.0	
Lithic clasts	White &	5	Irreg		1 - 5	Feldspar and honey-brown mafic silicate
Matrix	White & dark	93			<0.1 - 1.0	



72547,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 5.045 g
DIMENSIONS: 2.0 x 1.7 x 1.1 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

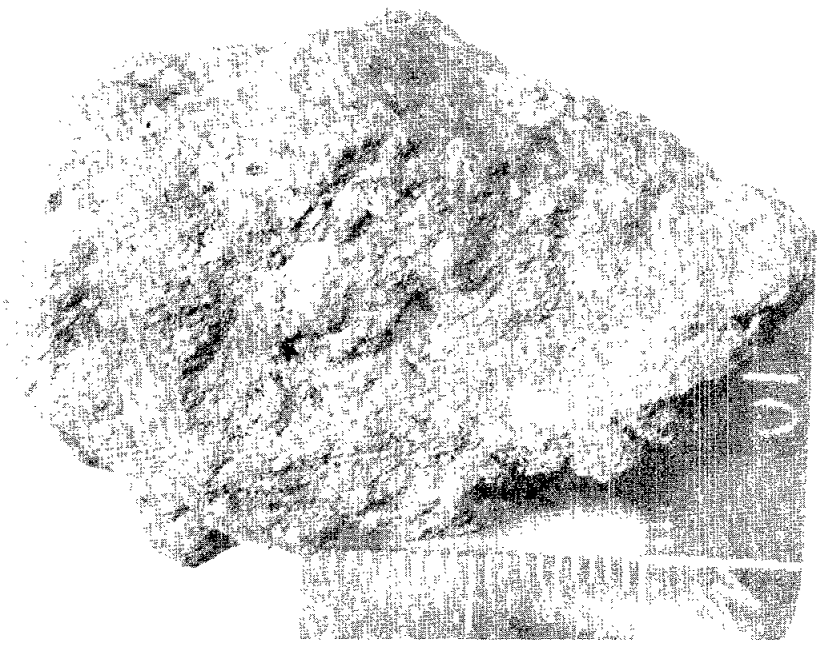
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	5			1 - 2	
Maf sil	Yellow-green	2			1	
Maf sil	Orange	3			1	
Matrix	White & black	90			<0.1 - 1.0	



72548,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 29.29 g
DIMENSIONS: 4.1 x 2.5 x 2.0 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

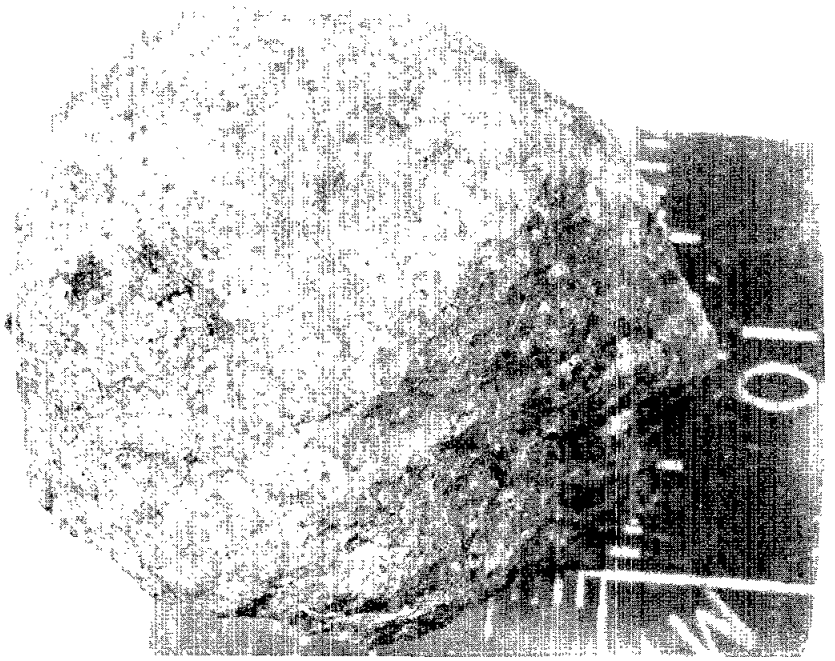
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag clasts	White	3			1 - 2	
Maf sil	Yellow-green	1			1 - 2	
Maf sil	Dark brown	2			1 - 2	
Matrix	White & dark	94			≤ 0.1 - 1.0	



72549,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 21.00 g
DIMENSIONS: 2.8 x 2.5 x 2.4 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few

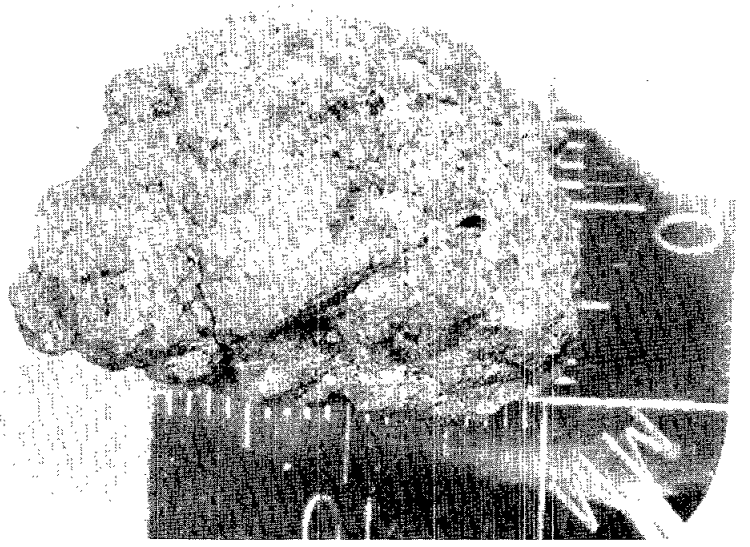
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	SIZE (mm) RANGE	NOTES
Plag clasts	White	5	Irreg		1 - 2	
Pyrox	Reddish-brown	2	Irreg		1 - 2	
Maf sil	Yellow-green	2	Irreg		1 - 2	
Matrix	White & dark	91				Possibly melted or recrystallized



72555,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 10.48 g
DIMENSIONS: 2.6 x 1.8 x 1.7 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: None

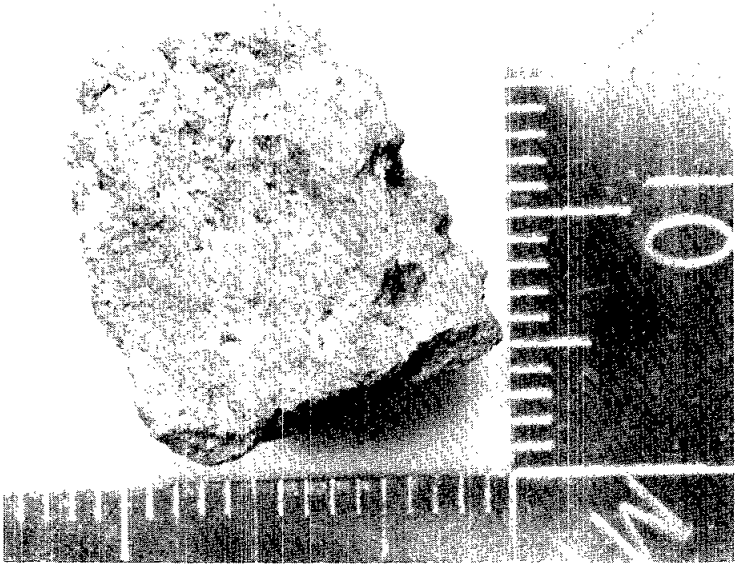
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	5	Irreg		1 - 2	
Ilm	Black	1	Tab		1	
Maf sil	Yellow-green	2	Irreg		0.5 - 1.5	
Matrix	White & dark	92			< 0.1 - 1.0	



72556,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 3.861 g
DIMENSIONS: 1.5 x 1.5 x 1.5 cm
COLOR: Medium gray (N5)
SHAPE: Subangular
VARIABILITY:
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: 3% vugs
SURFACE: Granulated
ZAP PITS: Few

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	2	Irreg	<0.5		
Maf sil	Yellow & green	1	Irreg	<0.5		
Matrix	White & dark	97		<0.1		



72557,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 4.559 g
DIMENSIONS: 2.0 x 1.8 x 1.6 cm
COLOR: Medium gray (N5)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: <1% vugs
SURFACE: Granulated
ZAP PITS: Many on one side

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	2	Irreg		<0.5 - 2.0	
Maf sil	Yellow-green	1	Irreg		0.5 - 1.0	
Matrix	White & dark	97		<0.1		

72558,0

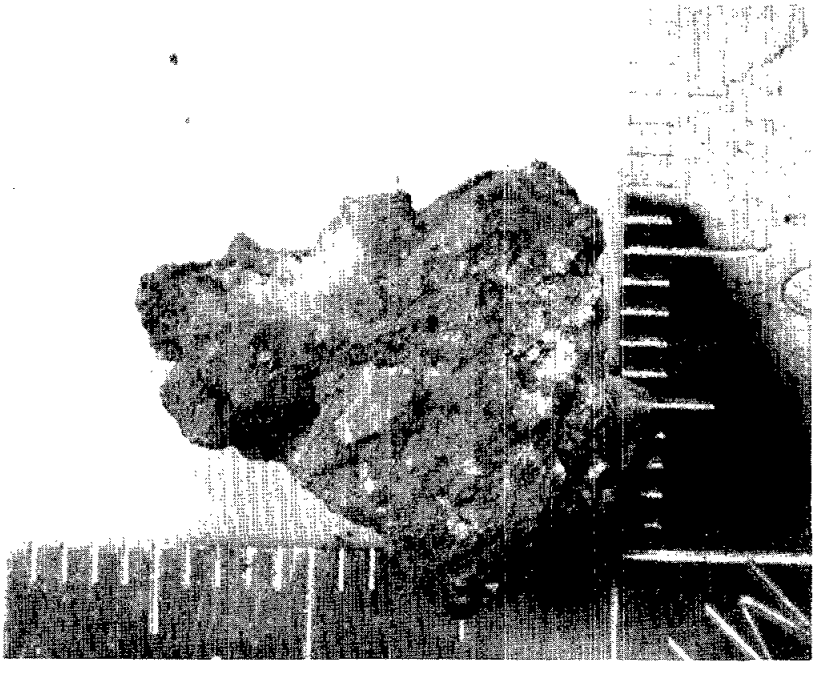
ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 5.713 g
DIMENSIONS: 1.8 x 1.5 x 1.4 cm
COLOR: Medium gray (N5)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Few

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag clasts	White	3	Irreg		0.5 - 1.5	
Maf sil	Yellow-green to brown	5	Irreg		<0.1 - 1.0	
Matrix	White & dark	92		<0.1		

72705,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 2.39 g
DIMENSIONS: 1.6 x 1 x 0.7 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: 1% small vugs
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Consists of white plag. clasts embedded in dark gray, very fine matrix that appears to be a devitrified glass.

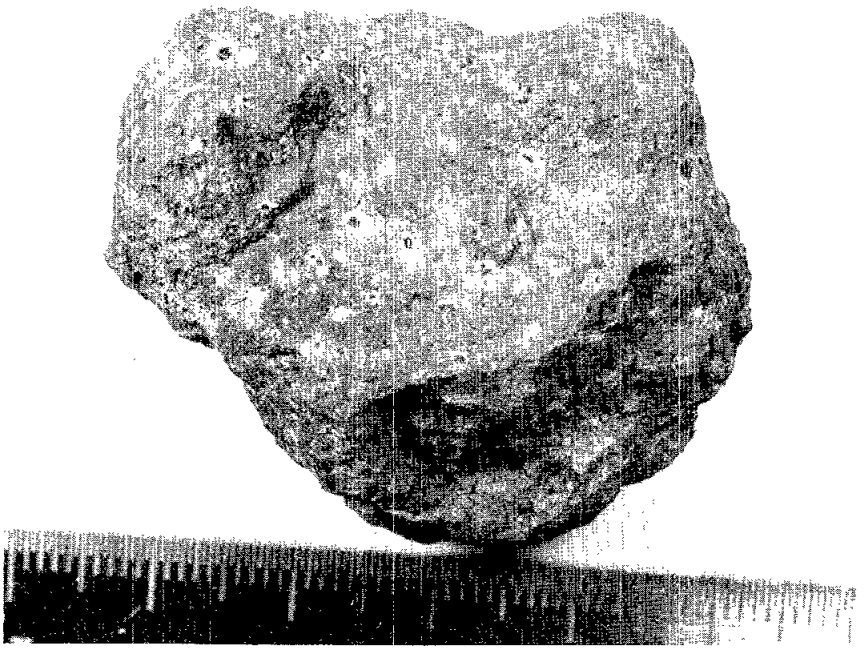
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	10	Irreg		1 - 3	
Matrix	Dark	90		< 0.1		Very fine, possibly crystalline



72735,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 51.11 g
DIMENSIONS: 4.2 x 3.5 x 3.0 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: 5% vugs
SURFACE: Granulated
ZAP PITS: Few

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	5	Irreg		0.5 - 2.0	
Maf sil	Yellow-green	1	Irreg		0.5 - 1.0	
Matrix	Dark	94		<0.1		



72736,0

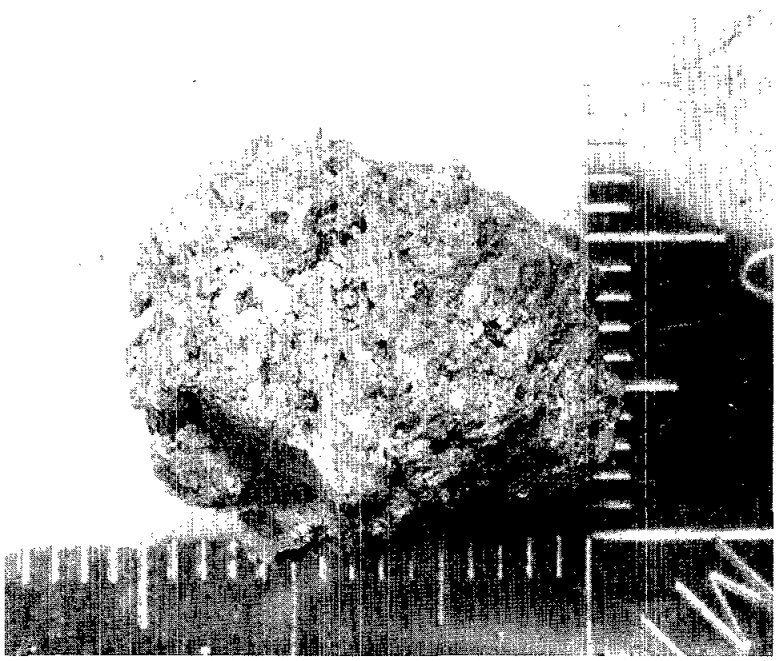
ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 28.73 g
DIMENSIONS: 5.0 x 2.6 x 1.8 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, near-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: 1% vugs
SURFACE: Granulated
ZAP PITS: Many

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	5	Irreg		1 - 2	
Matrix	White & dark	95		<0.1		

72737,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 3.33 g
DIMENSIONS: 1.5 x 1.1 x 1.1 cm
COLOR: Medium gray (N5)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: <1% vugs
SURFACE: Granulated
ZAP PITS: Few

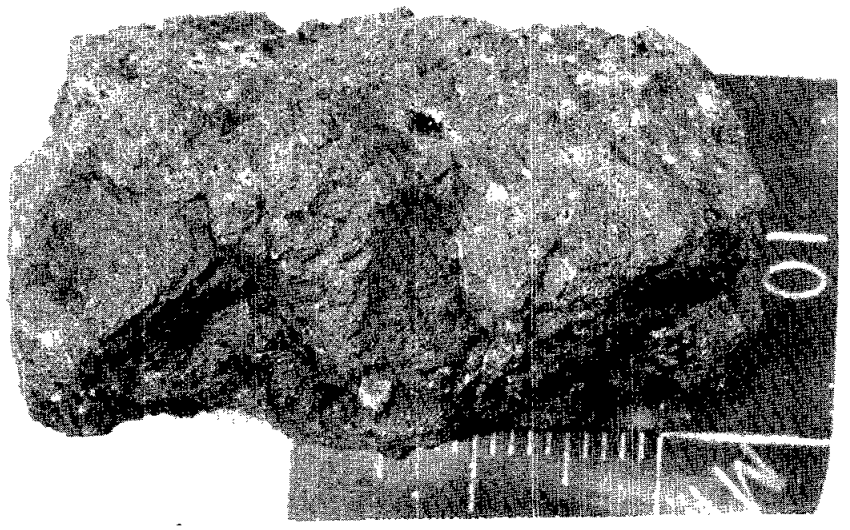
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Plag clasts	White	5	Irreg		1 - 2	
Maf sil	Yellow-green	2	Irreg		1 - 2	
Matrix	White & dark	93			<0.1 - 1.0	Fine granulated feldspar & minor dark minerals



72738,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 23.75 g
DIMENSIONS: 3.8 x 2.9 x 2.5 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: Few vugs
SURFACE: Granulated
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag clasts	White	5	Irreg		<0.5 - 2.0	
Lithic clasts	Mostly white	4	Irreg		up to 6.0	
Maf sil	Yellow-green	1	Irreg		0.5 - 1.0	
Matrix	White & dark	90				



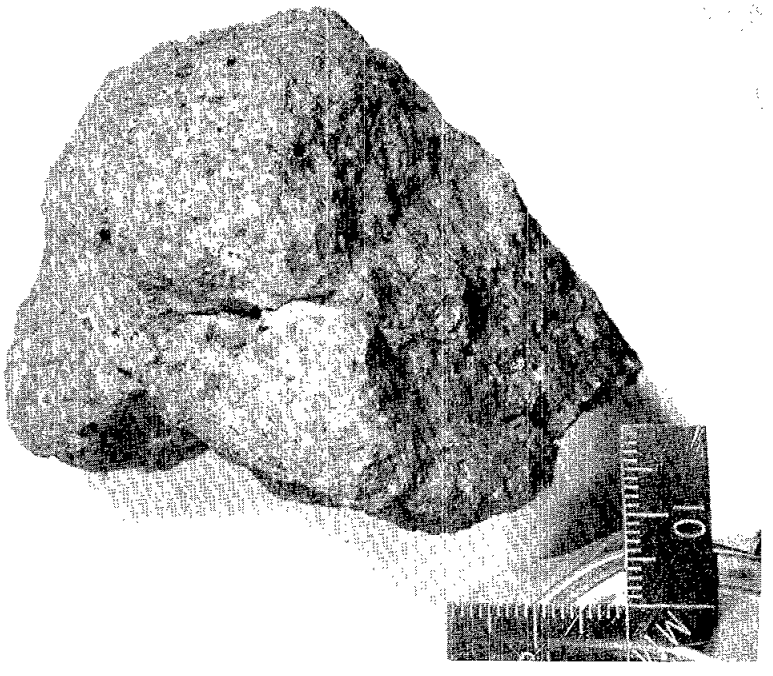
77515,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 337.6 g
DIMENSIONS: 7.5 x 6.5 x 5.5
COLOR: Medium light gray (N6 to N7)
SHAPE: Blocky, subangular
VARIABILITY: Homogeneous on hand specimen scale
COHERENCE: Intergranular - Coherent
Fracturing - None penetrative
FABRIC/TEXTURE: Annealed
CAVITIES: 10%, cavities vary from ellipsoidal smooth-walled cavities to very irregularly shaped cavities. All have drusy linings with some metal. Size varies from <1 mm to 1.0 cm. Slit-like cavities also occur, which are 5 mm x 1 mm.
SPECIAL FEATURES: Slit cavities show preferred orientation and are concentrated in a zone ≤1 cm thick.

COMPONENTS	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Clasts						
Lithic I	Yellowish gray	<1	Subrnd		9x7	1
Lithic II	Light brownish gray	≤1	Subrnd		8x6	2
Lithic III	White	<1	Subrnd		2	3
Lithic IV	Blue gray	1	Subang	1	Up to 2	4
Plag	White				Up to 2	
Maf sil	Yellow green	≤2			Up to 2	
Maf sil	Resinous brown				2	
Matrix		95				5

NOTES:
1. Yellow-green mineral (45%) and plagioclase (55%). Fragment is partly surrounded with a 0.5 - 1.5 mm thick blue-gray selvage.
2. Appears to be broken plagioclase with grain size up to 2 mm. A second clast of this type has 3 mm fragments.
3. One finely sugary aggregate of plagioclase.
4. Aphanitic.
5. Composed of mineral debris identical to larger mineral fragments, fine grained sugary light gray material, and cavities which have metal particles including iron(?) and troilite(?).

77515,0



77517,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 45.6 g
DIMENSIONS: 4 x 4 x 3 cm
COLOR: Light gray (N7 to N8)
SHAPE: Blocky, rounded
VARIABILITY: Homogeneous in fragment distribution and matrix characteristics
COHERENCE: Intergranular - Moderately tough
Fracturing - Several penetrative
FABRIC/TEXTURE: Breccia, annealed breccia
CAVITIES: <1%, <1 mm
SURFACE: All surfaces uneven
ZAP PITS: Zapped on all but freshly broken face.
SPECIAL FEATURES: Matrix cement appears to be feldspar, cleavage flashes suggest either matrix is recrystallized or presence of a large number of relict plagioclase fragments up to 1 mm. This rock does not fit any of the breccia categories based on boulder or large rock samples.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Clast Type						
I	N5-N6	20-25	Ang blocky		<1 - 5	1
II	N6		Ang blocky		10x10	2
III	Yellow green	<1			<1 - 1	3
IV	Light bluish gray	1 - 2			1 - 2	4
V	Yellow green to brown	Tr			2	5
Maf sil	Green	<1			<1	
Maf sil	Brown				<1	
Matrix		80 - 75				6

NOTES:
1. Cryptocrystalline and very uniform; contain no clasts.
2. Like type I but more vitreous.
3. Mineral debris.
4. Crushed feldspar(?), cryptocrystalline.
5. Yellow green rim, reddish brown interior.
6. Fine-grained, sugary white material plus small fragments of lithic and mineral debris.

77517,0

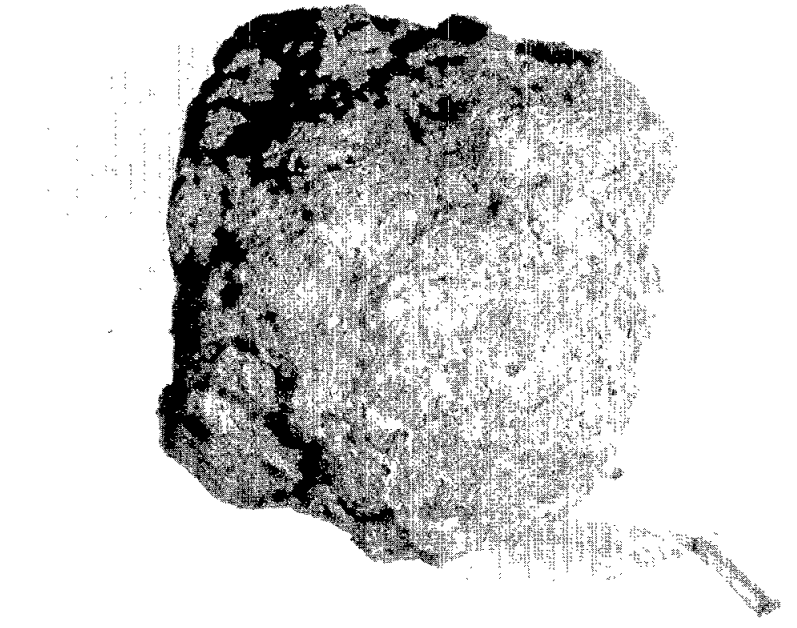
77518,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 42.5 g
DIMENSIONS: 3.5 x 3.5 x 2.5 cm
COLOR: Medium light gray (N6)
SHAPE: Blocky, subround
VARIABILITY: Homogeneous
COHERENCE: Intergranular - Tough
Fracturing - None
FABRIC/TEXTURE: Annealed
CAVITIES: 3 x 5 mm to <1 mm, irregular. 2% cavities have some coarse (0.5 mm) euhedral blocky crystals, suggesting grain growth, but do not have fine druses as in most rocks of this type. One area has slit-like cavities with preferred orientation.
SURFACE: Rough
ZAP PITS: Pitted all sides

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	SIZE (mm) RANGE	NOTES
Clasts						
Maf sil	Yellow green-brown	<1	Prism	1.5x1		1
Maf sil	Deep reddish brown	<1	Ang	1		2
Maf sil	Yellow green		Equant	1		
Lithic	Med gray aphanitic	<1	Ang		Up to 1x2	3
Matrix						4

NOTES:
1. Zoned to brown at edge, probably pyroxene.
2. Pyroxene(?).
3. Very fine-grained.
4. Annealed fine-grained mixture of half gray and half white components with about 5% opaque specks.

77518,0



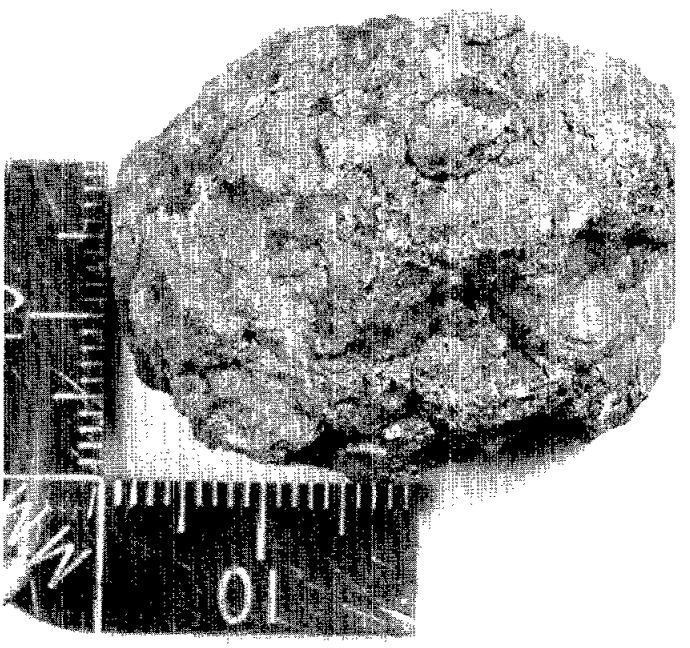
77519,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 27.4 g
DIMENSIONS: 3.5 x 2.5 x 2
COLOR: Gray (N6 to N7) with faint greenish tint
SHAPE: Blocky subrounded broken on one surface.
VARIABILITY: Irregular distribution of cavities.
COHERENCE: Intergranular - Tough
Fracturing - Some irregular penetrative fractures.
FABRIC/TEXTURE: Annealed
CAVITIES: 5%, <0.1 to 10 mm; irregular to slit-like cavities are locally aligned; biggest cavities have drusy linings except for the largest one.
SURFACE: Uneven
ZAP PITS: Zapped on all but broken face.
SPECIAL FEATURES: No blue gray clasts.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Clasts						
Lithic	Yellow gray	≤1	Subrnd		4x3	1
Lithic	Light gray	<1	Subrnd	<1	2x2 - <1	2
Maf sil	Yellow green	1	Irreg to equant	1		
Plag	Light gray	≤1	Subrnd		2x1	3
Maf sil	Honey brown	<1		1		4
Matrix		97				5

NOTES:
1. Granular aggregate (granoblastic) of yellow green mineral (40%) and plagioclase (60%) with an average grain size of 0.5 cm. A small opaque speck is in a yellow green mineral.
2. May be single plagioclase grains.
3. In aggregates with 0.3 cm grain size.
4. Pyroxene(?)
5. Annealed intergrowth of extremely fine-grained material <<0.1 mm, which consists of white and light gray, scattered fine mineral debris.

77519,0

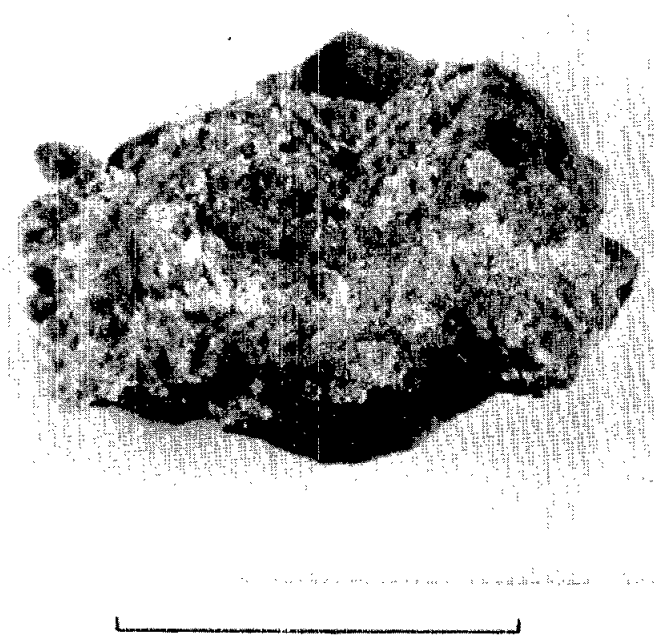


77526,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 1.07 g
DIMENSIONS: 1.5 x 1 x 0.5 cm
SHAPE: Tabular
COHERENCE: Intergranular - Tough
Fracturing - None penetrative
CAVITIES: 1%
SURFACE: Tough
ZAP PITS: Dusty and pitted on one surface
SPECIAL FEATURES: This rock resembles 77517 and is probably a chip from it.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	SIZE (mm) RANGE	NOTES
Clast	Light gray	50	Ang	1	Up to 4x3	1
Matrix	White	50		<1		2

NOTES:
1. Cryptocrystalline, sugary, appearance.
2. Fine-grained white material with dull luster, probably crushed plagioclase. One metallic spherule seen in matrix. Some 1 mm^2 areas have vitreous luster and look like maskelynite. Also cleavages flashes are locally visible.



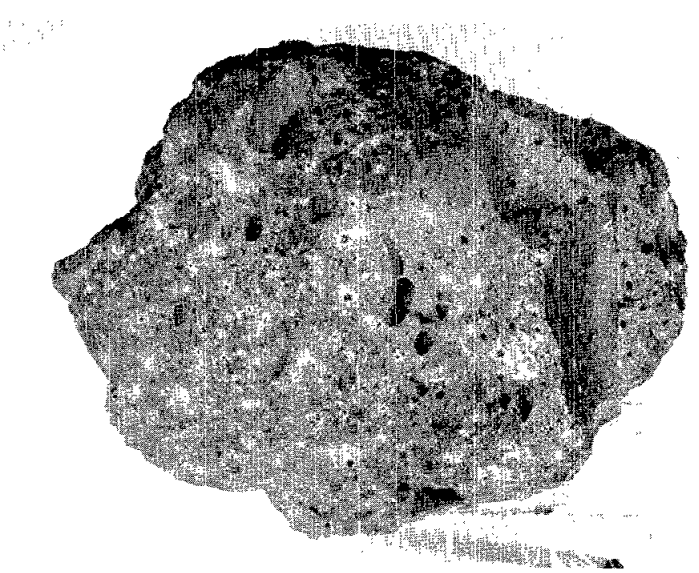
1 cm

77537,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 71.7 g
DIMENSIONS: 5 x 4.5 x 3 cm
COLOR: Tan luster (N5 to N6)
SHAPE: Somewhat tabular, wedge-shaped, subangular
VARIABILITY: Homogeneous
COHERENCE: Intergranular - Tough
Fracturing - None
FABRIC/TEXTURE: Annealed metaclastic
CAVITIES: <1 mm to 15 mm, 20-25%, ellipsoidal, have a preferred orientation, smooth-walled drusy coating with grain size smaller than matrix grain size. Metal in several cavities.
SURFACE: Hackly
ZAP PITS: Pitted all over
SPECIAL FEATURES: Walls of some of larger cavities have smaller cavities developed on them. In one case two adjacent 5 mm cavities are joined by tabular cavities penetrating a 0.1 mm thick wall. Preferred orientation of cavities.

COMPONENT	COLOR	% OF ROCK	SHAPE	DOM.	RANGE	NOTES
Clasts						
Vitreous	Gray		Tabular		2x1	
Maf sil	Yellow-green				1	
Maf sil	Waxy yellow-green		Prism		1.5x2.5	
I	Med gray		Rnd		1x1	1
Matrix		99				2

NOTES:
1. Cryptocrystalline.
2. Fine-grained, sugary intergrowth of gray (80%) and white (20%).

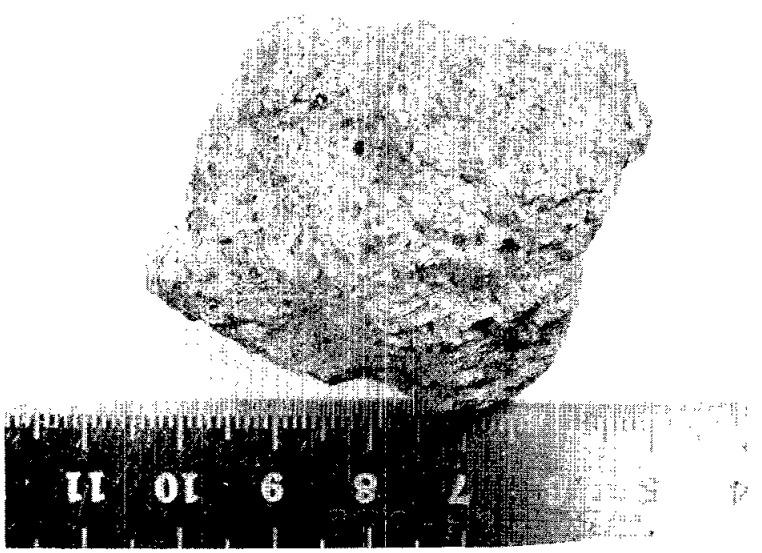


77538,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 47.2 g
DIMENSIONS: 4 x 3.5 x 3
COLOR: Very light gray (N7 to N8)
SHAPE: Subangular wedge-shaped
COHERENCE: Intergranular - Moderately coherent
Fracturing - Quite a few non-penetrative fractures (may not be annealed).
CAVITIES: None
SURFACE: Hackly
ZAP PITS: Zapped on all but one surface
SPECIAL FEATURES: Similar to knobby breccia group from Station 2 but without haloed fragments. Does not appear to be completely recrystallized and may not be annealed.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Clasts						
Lithic I	Med gray	5	Ang		<1 - 3	1
Lithic II	White	<1			2	2
Lithic III	Reddish brown	<1		1		
Matrix	Light gray	94		<1		3

NOTES:
1. Forms several fragments to nearly 3 mm; aphanitic to vitreous.
2. Very fine chalky white.
3. Matrix contains clast types in seriate sizes down to limit of resolution, plus some plagioclase debris.



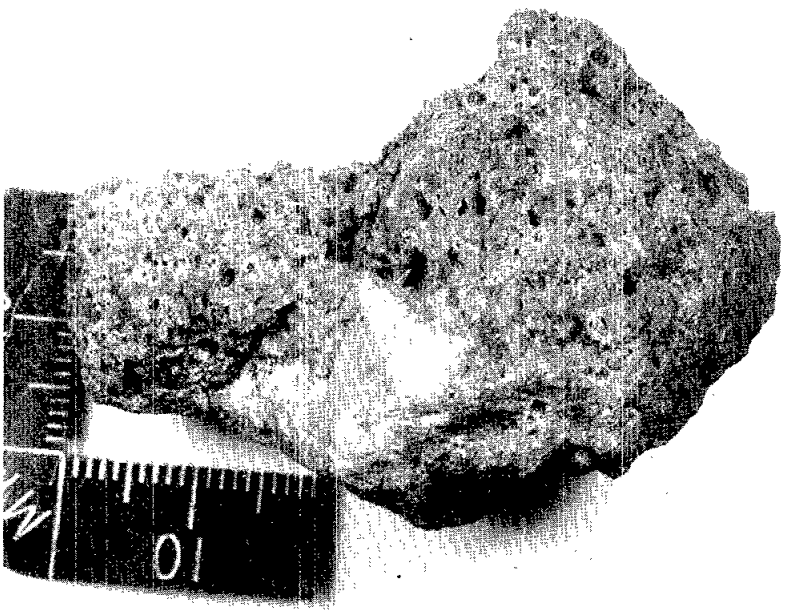
77539,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 39.6 g
DIMENSIONS: 5 x 2 x 2
COLOR: Light gray (N6 to N7) with pale tan coat
SHAPE: Slightly slabby, subangular
COHERENCE: Intergranular - Tough
Fracturing - Two penetrative features
FABRIC/TEXTURE: Annealed
CAVITIES: 15-20%, <1 mm to 11 mm, irregular to slit-like; the slit cavities are lined, have drusy coatings. In one well-exposed cavity, the drusy coating has very fine sugary material with tiny opaque grains.
SURFACE: Rough, very hackly
ZAP PITS: Zapped all over
SPECIAL FEATURES: Large single clast of very fine sugary material forms about 30% of rock.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Clasts						
Lithic I	Very light gray	30	Slabby Subang		21x14x12	1
Lithic II	Yellow green				4x3	2
Lithic III	Pale brownish gray		Subrnd		1x2 - 3x4	3
Plag		<1	Ang		<1 - 1.5	
Maf sil	Yellow green	<1	Ang		1 - 1.5	
Matrix	Gray	70		<1		4

NOTES:
1. Single large clast; very finely sugary, grain size is <0.1 mm; yellow green mineral (3%) occurs in patches up to 2 mm.
2. 65% yellow green in grains to 3 mm; 35% plagioclase in grains to 1 mm.
3. Very finely crystalline; second clast is 3x4 mm.
4. Very fine sugary intergrowth with scattered mineral debris.

77539,0



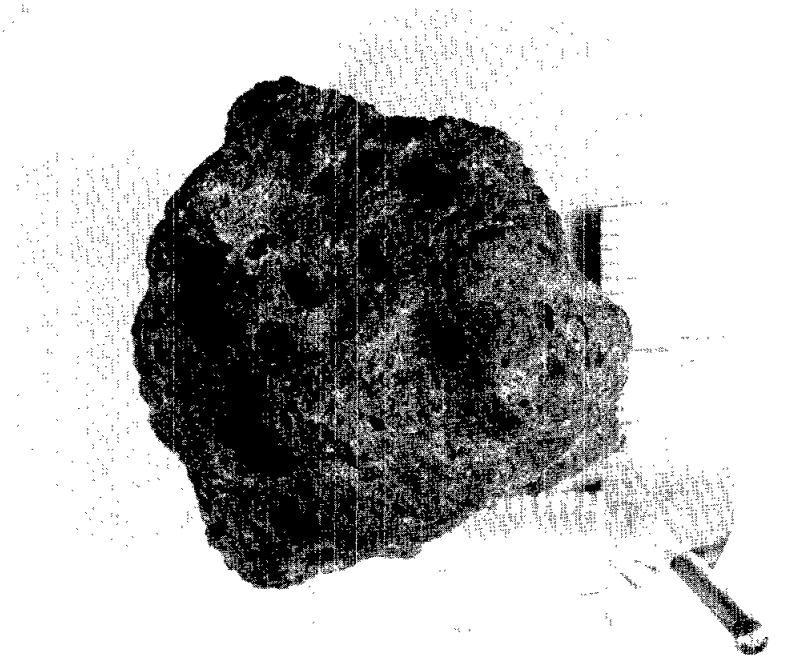
77545,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 29.5 g
DIMENSIONS: 3.5 x 3 x 2.5 cm
COLOR: Medium light gray (N6)
SHAPE: Blocky, subangular
VARIABILITY: Homogeneous
COHERENCE: Intergranular - Tough
Fracturing - None
FABRIC/TEXTURE: Fragmental and granoblastic
CAVITIES: 25%. 1 cm - size ellipsoidal to <1 mm ellipsoidal to spherical, average 4 mm. Smooth-walled. Fine druse and metal particles on some cavity walls. Yellow green mineral at edge of one cavity. Troilite and Fe in some cavities.
SURFACE: Rough
ZAP PITS: Zapped all over
SPECIAL FEATURES: No slit cavities. Well developed, very fine druses on exceptionally smooth-walled cavities, similar to 76215 in this respect.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Clasts						
Lithic I	Greenish yellow	1	Ang		6x6	1
Lithic II	Yellowish green		Ang		6x6	2
Maf sil	Yellow green	1	Blocky ang		To 1.5	
Plag	Gray				1x1	
Glass	Gray				1	
Matrix		98				3

NOTES:
1. Vitreous luster. 30% plagioclase, 20% waxy mafic silicate. Possibly pyroxene (brown) grain size up to 4 mm; plag is interstitial.
2. Fractured. All waxy mafic silicate; looks glassy, grain size 4 mm.
3. Opaque specks to 2% with very fine-grained intergrowth of white and light gray components, some mineral debris, some metal, troilite, and some vitreous blebs.

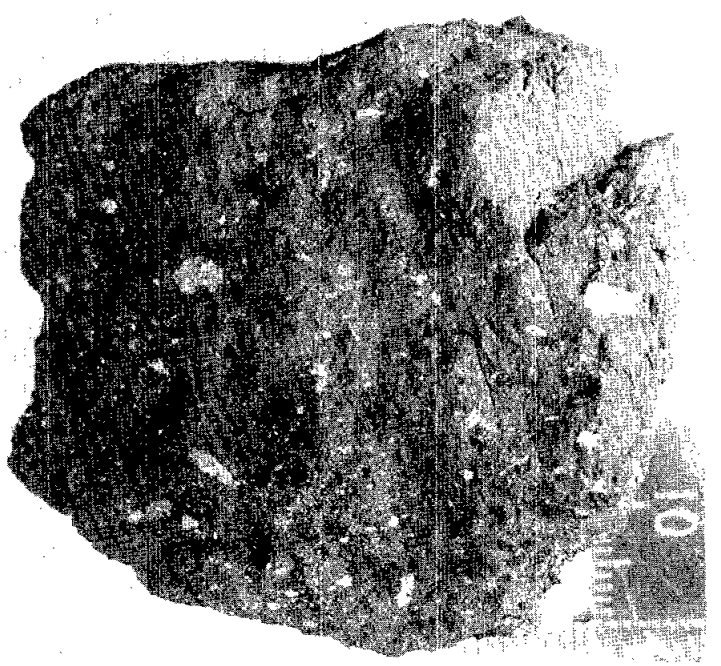
77545,0



78535,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 103.4 g
DIMENSIONS: Two pieces: (1) 6.0 x 5.0 x 4.1 cm
(2) 1.5 x 1.5 x 0.5 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Many, penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

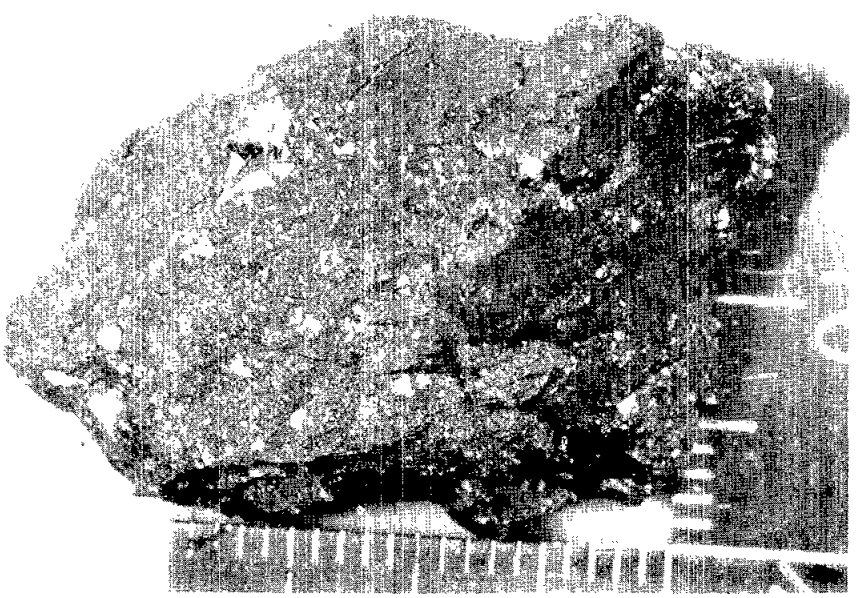
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	5	Irreg		up to 2	
Plag	White	5	Irreg		up to 2	
Matrix	Dark gray	90	Irreg	< 0.1		Not glassy



78536,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 8.67 g
DIMENSIONS: 3.0 x 1.8 x 1.3 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Many, near-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

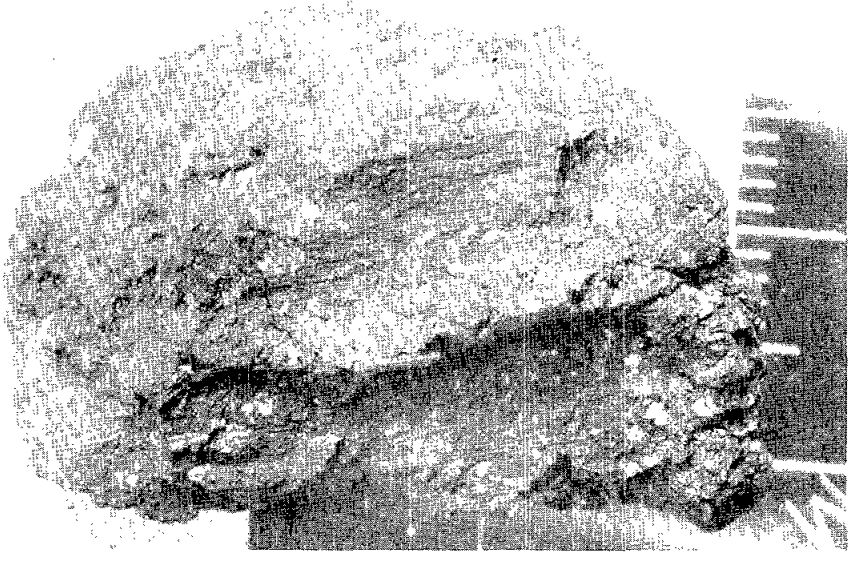
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	3	Irreg		up to 2	
Plag	White	5	Irreg		up to 2	
Maf sil	Yellow-green	<1	Irreg		up to 0.5	Olivine
Matrix	Medium dark gray	92		<0.1		



78537,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 11.76 g
DIMENSIONS: 3.0 x 2.0 x 1.9 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Many, near-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

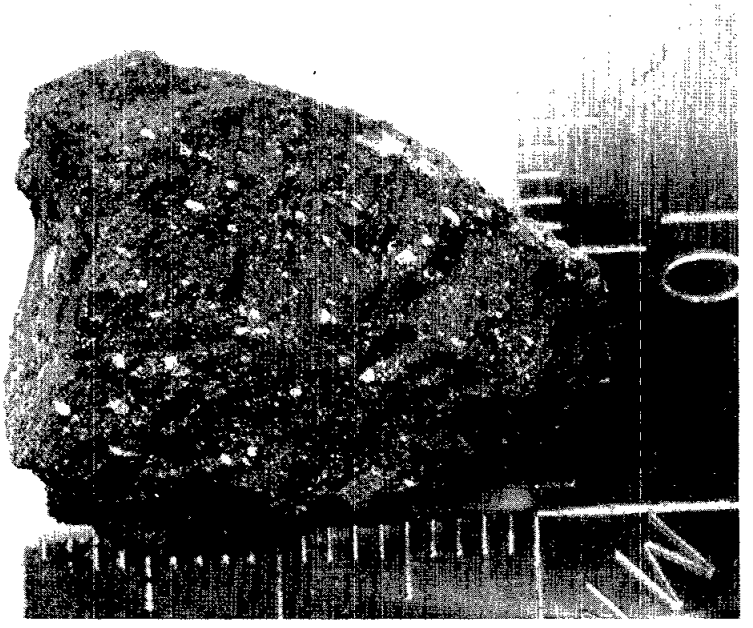
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	5	Irreg		up to 3	
Plag	White	8	Irreg		up to 8	
Matrix	Medium dark gray	87		< 0.1		Partly glassy



78538,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 5.82 g
DIMENSIONS: 2.1 x 1.8 x 1.0 cm
COLOR: Dark gray (N3)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

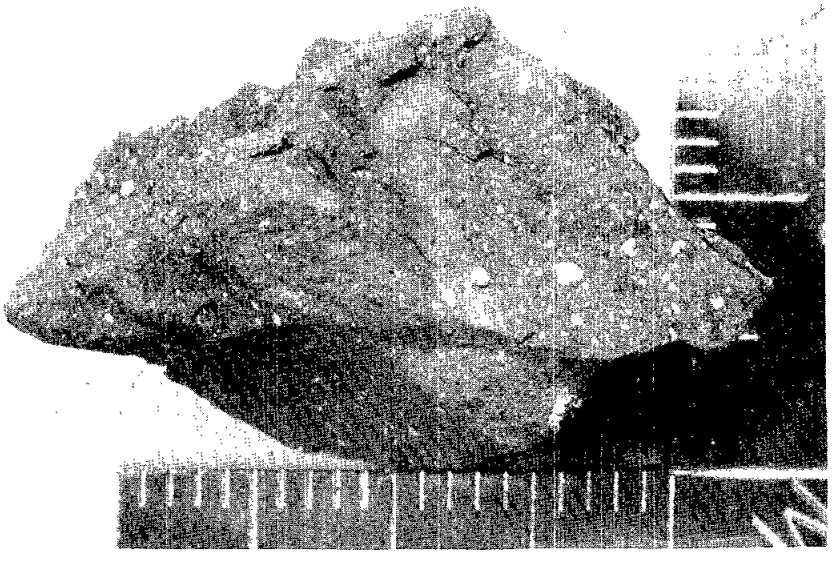
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	3	Irreg		up to 2	
Plag	White	5	Irreg		up to 2	
Maf sil	Yellow-green	<1	Irreg		up to 0.5	Olivine Partly glassy
Matrix	Dark gray	92		<0.1		



78539,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 3.73 g
DIMENSIONS: 2.4 x 1.5 x 1.1 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: Matrix is dark gray, not glassy, somewhat transitional to soil clods.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	3	Irreg		up to 2	
Plag	White	3	Irreg		up to 2	
Matrix	Medium dark gray	94		< 0.1		



78545,0

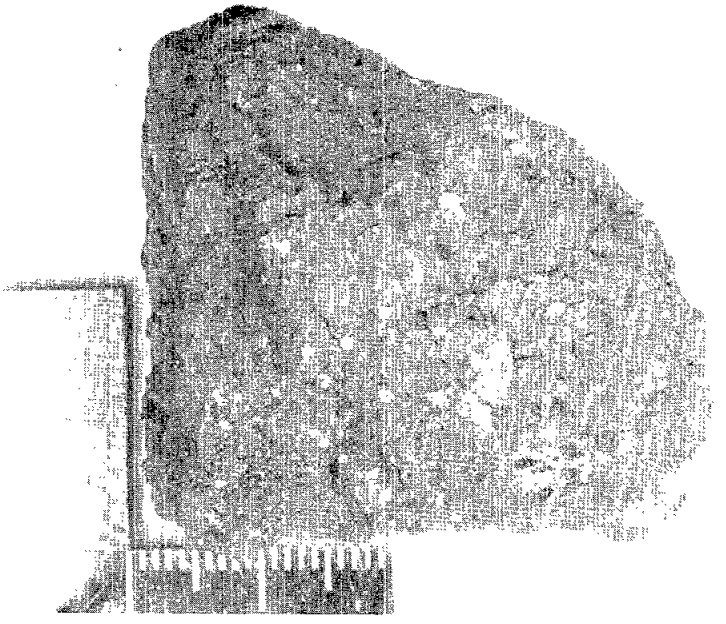
ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 8.6 g
DIMENSIONS: 2.5 x 2.0 x 2.0 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None
SPECIAL FEATURES: One large clast, mare basalt.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Lithic clasts	White to light gray	3	Irreg		0.2 - 3.0	Some anorthositic, some darker
Plag	White	2	Irreg		<0.1 - 1.0	
Maf sil	Yellow-green	<1	Irreg		0.2 - 1.0	Olivine
Matrix	Medium dark gray	95			<0.1 - 1.0	

78546,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 42.66 g
DIMENSIONS: 4.9 x 3.9 x 2.5 cm
COLOR: Medium gray (N5)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few, many on one side

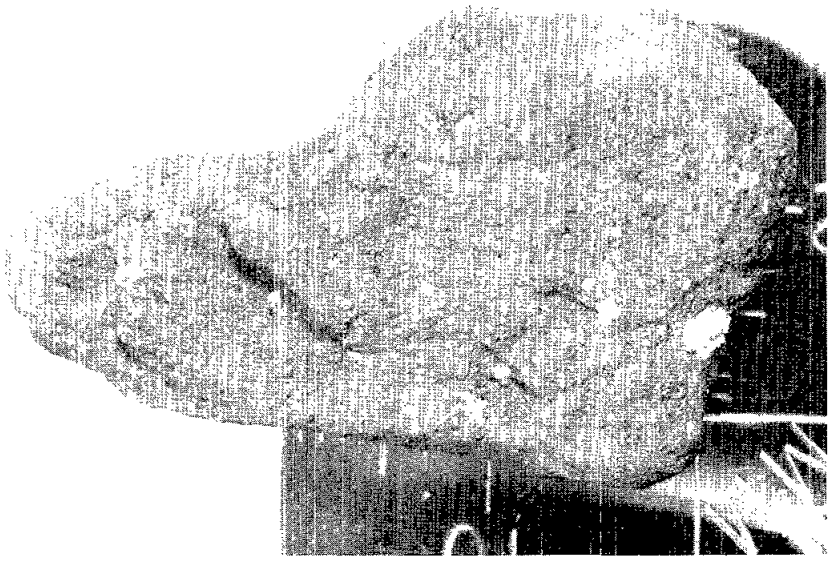
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	5	Irreg		up to 6	
Plag	White	8	Irreg		up to 2	
Maf sil	Green	< 1	Irreg		up to 2	Olivine
Matrix	Medium Gray	87				



78556,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 9.50 g
DIMENSIONS: 3.4 x 2.0 x 1.3 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: None

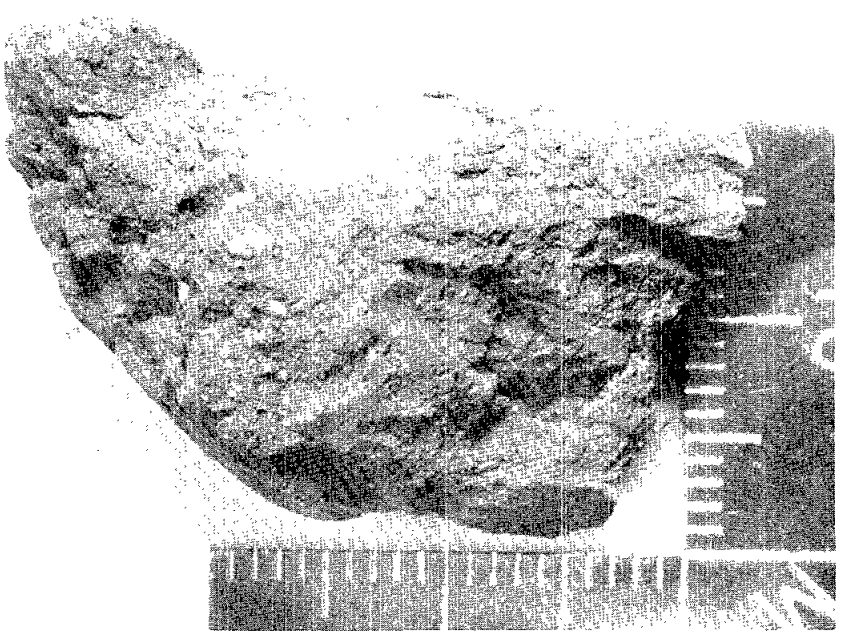
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	5	Irreg		up to 3	
Maf sil	Yellow to green	< 1	Irreg		up to 2	Olivine
Matrix	Medium dark gray	95			< 0.1	



78557,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 7.19 g
DIMENSIONS: 3.0 x 1.8 x 1.2 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Many on one side
SPECIAL FEATURES: Slickenside (shiny) on one side.

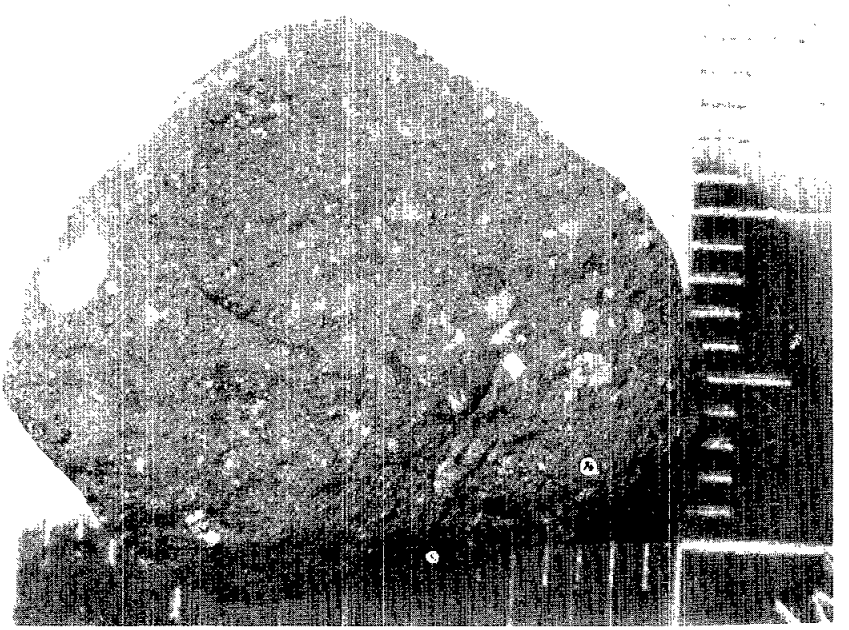
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Lithic clasts	White to gray	3	Irreg		up to 3	
Plag	White	3	Irreg		< 1	
Matrix	Medium dark gray	94			< 0.1	



78565,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 3.50 g
DIMENSIONS: 1.9 x 1.5 x 1.0 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded to subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Few

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	2	Irreg		up to 2	
Plag	White	3	Irreg		<1.5	
Maf sil	Yellow-green	<1	Irreg			Olivine
Matrix	Medium dark gray	95		<0.1		



78567,0

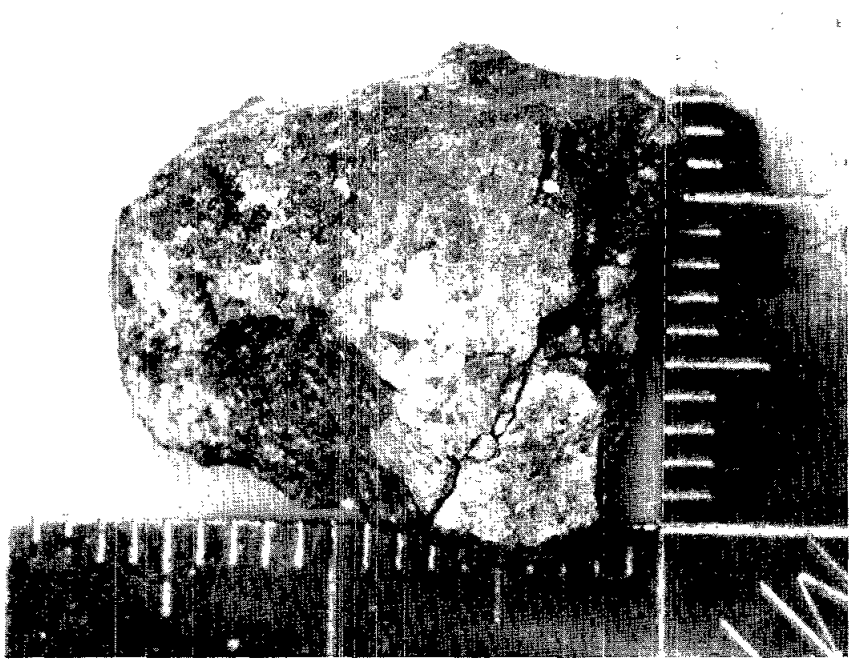
ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 18.88 g
DIMENSIONS: 3.1 x 2.4 x 2.2 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated
ZAP PITS: Many on one side

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	5	Irreg		up to 8	
Plag	White	8	Irreg		up to 3	
Maf sil	Yellow-green	<1	Irreg		up to 0.5	
Matrix	Medium dark gray	87		< 0.1		

78568,0

ROCK TYPE: Microbreccia, coherent-matrix
WEIGHT: 3.57 g
DIMENSIONS: 1.6 x 1.5 x 1.3 cm
COLOR: Medium dark gray (N4)
SHAPE: Angular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Numerous, partly penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated to glassy
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White to gray	10	Irreg		up to 3	
Plag	White	8	Irreg		up to 2	
Matrix	Black	82				Glassy

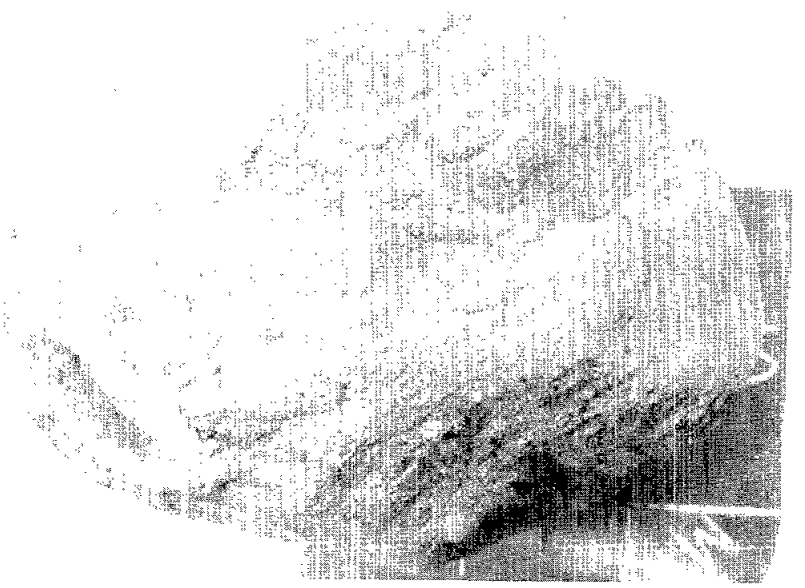


3.2.5.2 Friable-matrix microbreccia

78547,0

ROCK TYPE: Microbreccia, friable-matrix
WEIGHT: 29.91 g
DIMENSIONS: 4.0 x 2.8 x 2.4 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Friable to coherent
Fracturing -
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated to powdery
ZAP PITS: None
SPECIAL FEATURES: Some irregular grains of either glass or olivine were observed.

COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Lithic clasts	Dark to white	7	Irreg		0.2 - 7.0	Some anorthositic, some possibly mare basalts
Plag	White	2	Irreg		0.1 - 0.5	
Maf sil	Green	< 1	Irreg		0.4	Olivine
Matrix	Medium dark gray	90			<0.1 - 0.2	



78555,0

ROCK TYPE: Microbreccia, friable-matrix
WEIGHT: 6.64 g
DIMENSIONS: 2.6 x 1.8 x 1.1 cm
COLOR: Brownish gray (5YR 3/1)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Friable to coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: None
SURFACE: Granulated to powdery
ZAP PITS: None
SPECIAL FEATURES: Red, yellow, brown, green and orange clasts were also observed.

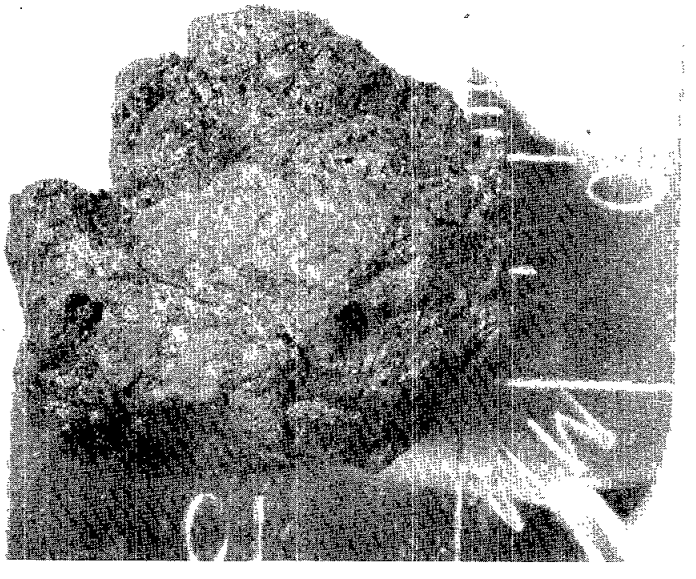
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Lithic clasts	White	5-10	Irreg		0.5 - 3.0	Mainly anorthositic
Plag	White	5	Irreg		0.2 - 1.0	
Matrix	Dark brownish gray	85			<0.1 - 0.5	

3.2.6 Green glassy rock (probably melted breccia)

78526,0

ROCK TYPE: Green glassy rock, probably melted breccia
WEIGHT: 8.77 g
DIMENSIONS: 2.2 x 1.6 x 1.6 cm
COLOR: Dark greenish gray (5GY 4/1)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - Few, non-penetrative
FABRIC/TEXTURE: Microbreccia
CAVITIES: Few
SURFACE: Glassy
ZAP PITS: Many
SPECIAL FEATURES: Possibly glassy, possibly crystalline.

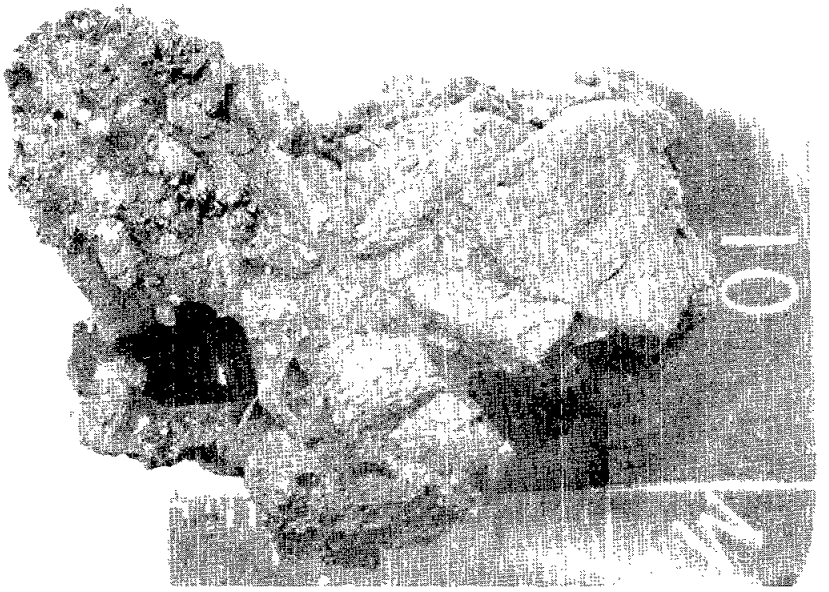
COMPONENT	COLOR	% OF ROCK	SHAPE	SIZE (mm) DOM.	RANGE	NOTES
Gray-green		100				see SPECIAL FEATURES



78525,0

ROCK TYPE: Agglutinate
WEIGHT: 5.11 g
DIMENSIONS: 2.6 x 2.1 x 1.7 cm
COLOR: Medium dark gray (N4)
SHAPE: Subangular
VARIABILITY: None
COHERENCE: Intergranular - Coherent
Fracturing - None
FABRIC/TEXTURE: Agglutinated microbreccia
CAVITIES: Very numerous vesicles
SURFACE: Glassy and granulated
ZAP PITS: None

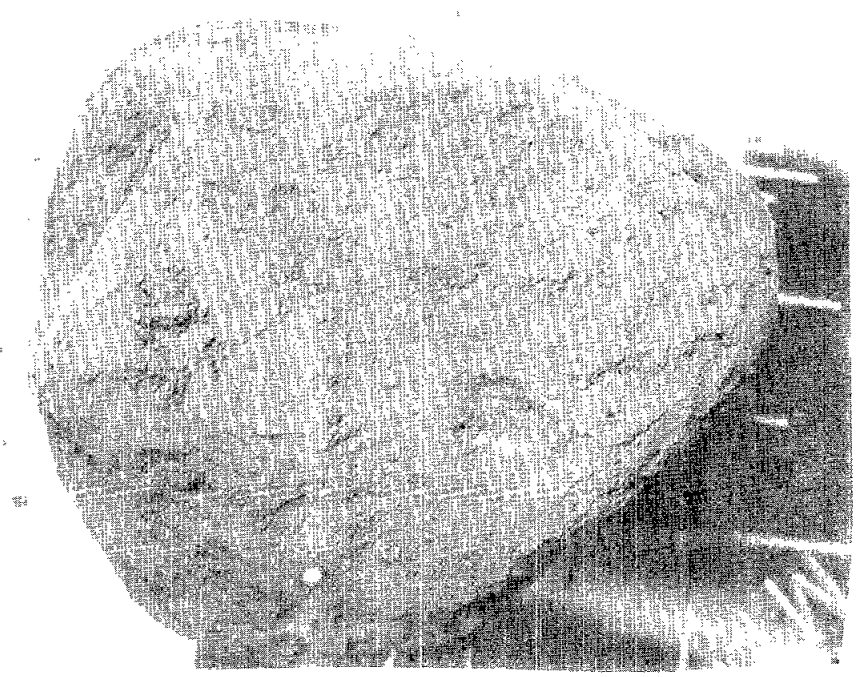
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Glass	Black	50	Irreg			Vesiculated
Micro-breccia, coherent, dark matrix	Dark gray	50	Irreg			



78548,0

ROCK TYPE: Soil clod, friable
WEIGHT: 15.95 g
DIMENSIONS: 2.6 x 2.2 x 2.1 cm
COLOR: Medium dark gray (N4)
SHAPE: Rounded
VARIABILITY: None
COHERENCE: Intergranular - Friable
Fracturing - Few
FABRIC/TEXTURE: Soil clod
CAVITIES: None
SURFACE: Powdery
ZAP PITS: None
SPECIAL FEATURES: Green glass spherule

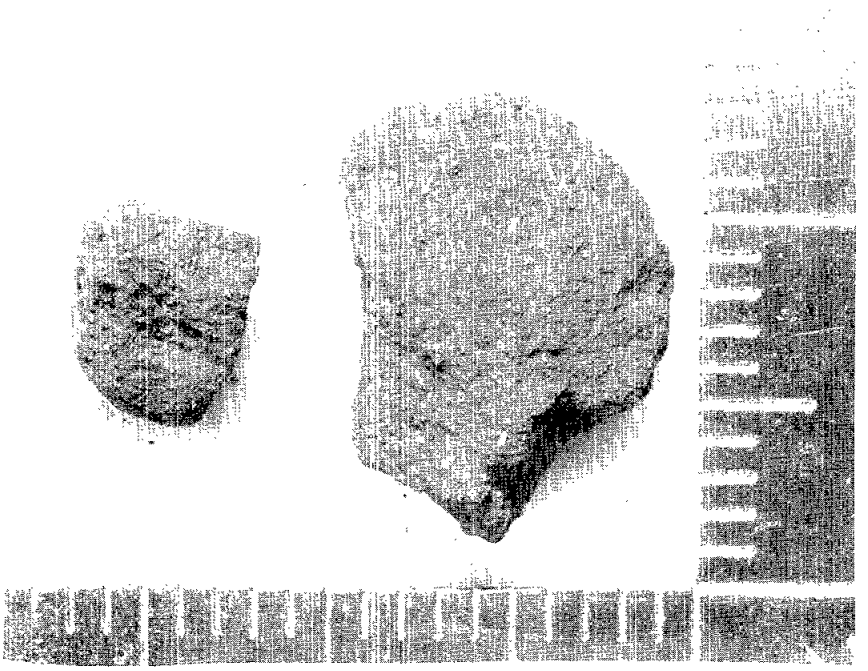
COMPONENT	COLOR	% OF ROCK	SHAPE	DOM.	SIZE (mm) RANGE	NOTES
Plag	White	1	Irreg		0.1 - 0.3	
Glass spherule	Green	<1	Rounded		0.5	
Matrix	Dark gray	98			<0.05	



78566,0

ROCK TYPE: Soil clod, friable
WEIGHT: 0.77 g
DIMENSIONS: Two pieces: (1) 1.3 x 0.7 x 0.5 cm
(2) 0.7 x 0.5 x 0.3 cm
COLOR: Medium gray (N5)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Friable
Fracturing - None
FABRIC/TEXTURE: Soil clod
CAVITIES: None
SURFACE: Powdery
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	1	Irreg	<0.5		
Matrix	Medium gray	99		<0.1		



3.2.8.2 Soil clod, transitional to friable-matrix microbreccia

78549,0

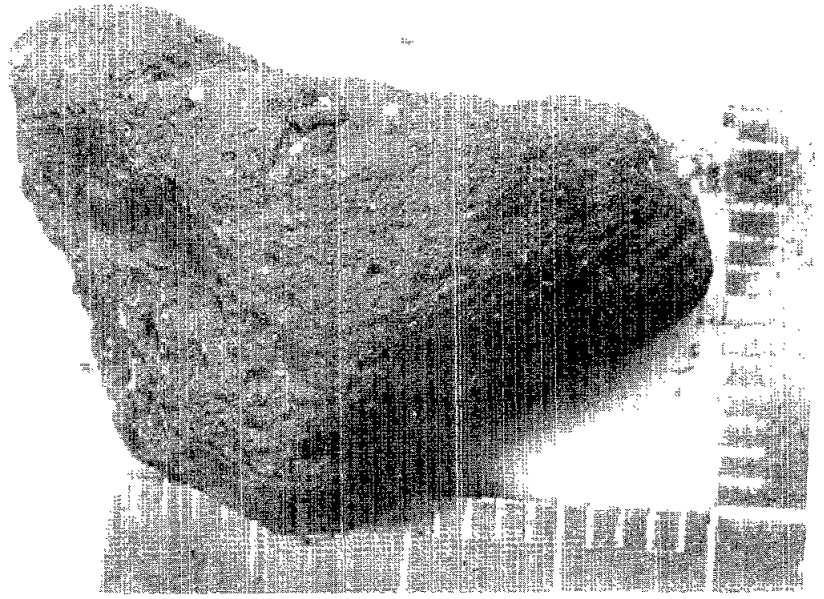
ROCK TYPE: Soil clod, transitional to friable-matrix microbreccia
WEIGHT: 16.09 g
DIMENSIONS: 3.2 x 2.6 x 1.4 cm
COLOR: Medium dark gray (N4)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Friable to coherent
Fracturing - Very few, non-penetrative
FABRIC/TEXTURE: Soil clod transitional to microbreccia
CAVITIES: None
SURFACE: Powdery
ZAP PITS: None

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	Gray to white	< 1	Irreg		up to 4 mm	
Plag	White	< 1	Irreg		< 1	
Glass spherule	Dark gray	< 1	Spherical		1	
Matrix	Medium dark gray	100			< 0.1	

78558,0

ROCK TYPE: Soil clod, transitional to friable-matrix microbrecia
WEIGHT: 3.78 g
DIMENSIONS: 2.2 x 1.5 x 1.4 cm
COLOR: Dark gray (N3)
SHAPE: Subrounded
VARIABILITY: None
COHERENCE: Intergranular - Friable
Fracturing - None
FABRIC/TEXTURE: Soil clod transitional to microbreccia
CAVITIES: None
SURFACE: Powdery
ZAP PITS: Few

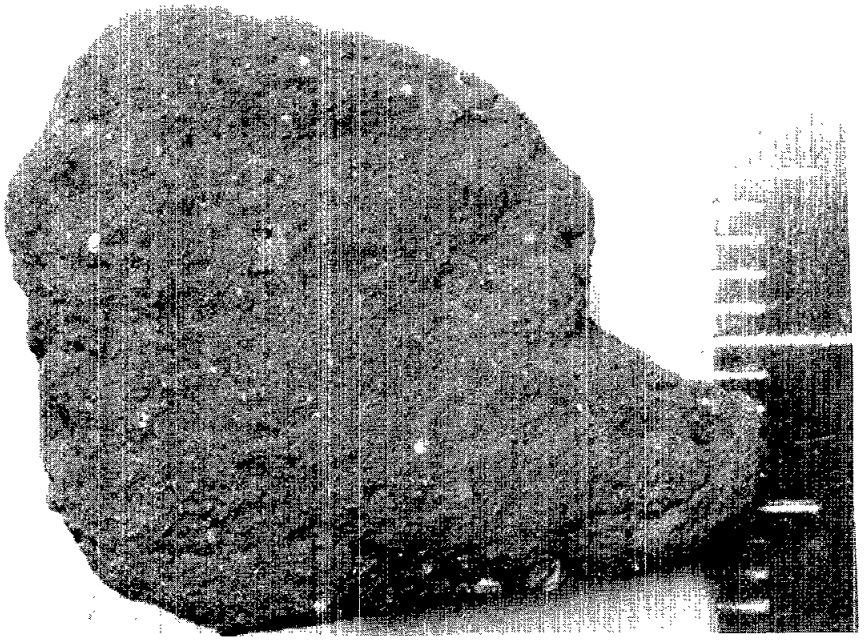
		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Plag	White	1	Irreg		<1	
Matrix	Dark gray	99			<0.1	



78559,0

ROCK TYPE: Soil clod, transitional to friable-matrix microbreccia
WEIGHT: 3.05 g
DIMENSIONS: 2.2 x 1.5 x 0.8 cm
COLOR: Dark brownish gray (5YR 3/1)
SHAPE: Subrounded
VARIABILITY: see SPECIAL FEATURES
COHERENCE: Intergranular - Friable
Fracturing - Few
FABRIC/TEXTURE: Soil clod to microbreccia
CAVITIES: None, but see SPECIAL FEATURES
SURFACE: Powdery to granulated
ZAP PITS: None
SPECIAL FEATURES: Some small areas are vesiculated and have apparently been melted.

		% OF		SIZE (mm)		
COMPONENT	COLOR	ROCK	SHAPE	DOM.	RANGE	NOTES
Lithic clasts	White	2	Irreg		0.2 - 0.5	Mainly anorthositic
Plag	White	2	Irreg		0.2 - 0.5	
Matrix	Dark brownish gray	96			< 0.1 - 0.2	



4. Numerical sample inventory and sample index

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The descriptions of samples 77515, 77516, 77517, 77518, 77519, 77526, 77535, 77536, 77537, 77538, 77539, and 77545 were taken from "Lunar Sample Information Catalog, Apollo 17", Johnson Space Center, Houston, Texas, April 1973.

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