

## 10056

Sample 10056 is an angular to sub-angular, medium dark grey, microbreccia. This sample originally weighed 186gm and measured 9.5x4.5x3cm. Sample was returned in ALSRC #1003 (Bulk Sample Container).

BINOCULAR DESCRIPTION      BY: Twedell      DATE: 10/3/75

ROCK TYPE: Microbreccia      SAMPLE: 10056,14      WEIGHT: 174.95gm

COLOR: Medium dark grey      DIMENSIONS: 9.2 x 4.5 x 2.8 cm

SHAPE: Angular to subangular; shaped like one-half of a flat-iron broken longitudinally (PET)

COHERENCE: Intergranular – tough  
Fracturing - few, non-penetrative, some glass lined

FABRIC/TEXTURE: Anisotropic/Microbreccia

VARIABILITY: Homogeneous

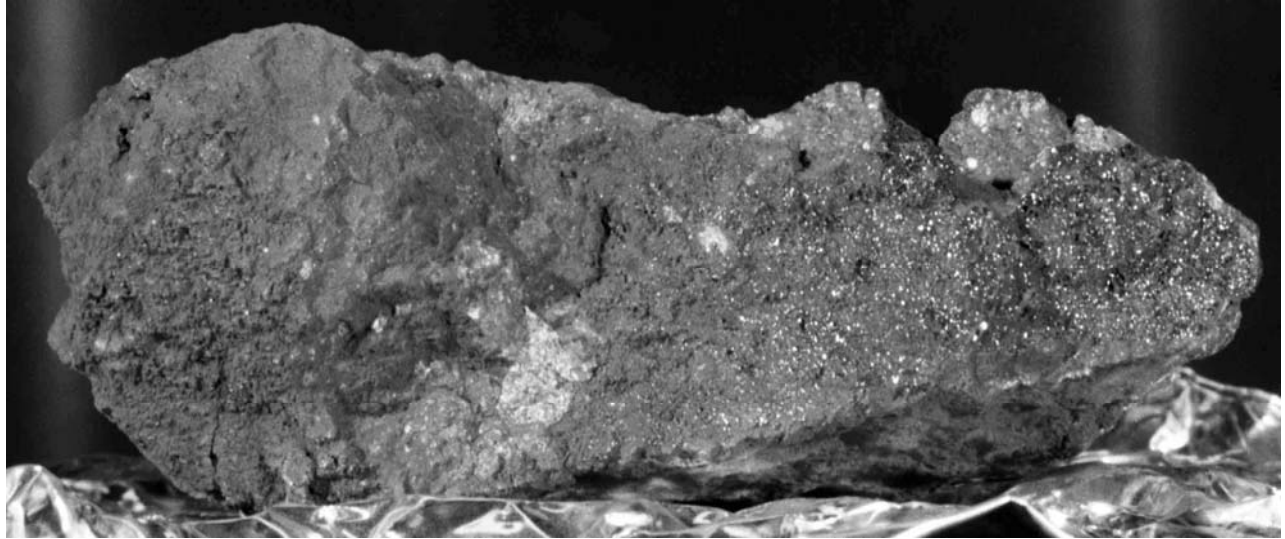
SURFACE: Surface is irregular to smooth, with a good size portion of fresh surface. S<sub>1</sub> and part of B<sub>1</sub> have a partial (<1mm thick) glass coating.

ZAP PITS: Many on part of T<sub>1</sub>, many on N<sub>1</sub>, few on E<sub>1</sub>, B<sub>1</sub>, none on W<sub>1</sub>, S<sub>1</sub>. Pits are glass lined <1mm in diameter; Pits occur on all sides of specimen (PET).

CAVITIES: Vuggy on glass surface (S<sub>1</sub>) with some cavities along the fractures on B<sub>1</sub>.

<u>COMPONENT</u>	<u>COLOR</u>	<u>% OF ROCK</u>	<u>SHAPE</u>	<u>SIZE(MM) DOM.RANGE</u>	
Matrix	Med.Dk. Grey	70	Angular to subangular	----	-----
WhiteClast <sub>1</sub>	White	23	Angular to subrounded	<1	<1-1
BasaltClast <sub>2</sub>	Hon.Brn. & White	2	Angular to subangular	4	4-10
Salt & Pepper Clast <sub>3</sub>	Blk/White	5	Angular to subangular	2.5	2-5

- 1) Evenly distributed throughout the sample. Appears to be crushed plagioclase.
- 2) Honey brown pyroxene with white plagioclase and opaque ilmenite. Possibly some cristobalite.
- 3) Appears to be the same as the basalt clast without the pyroxene component. Evenly distributed throughout the rock.



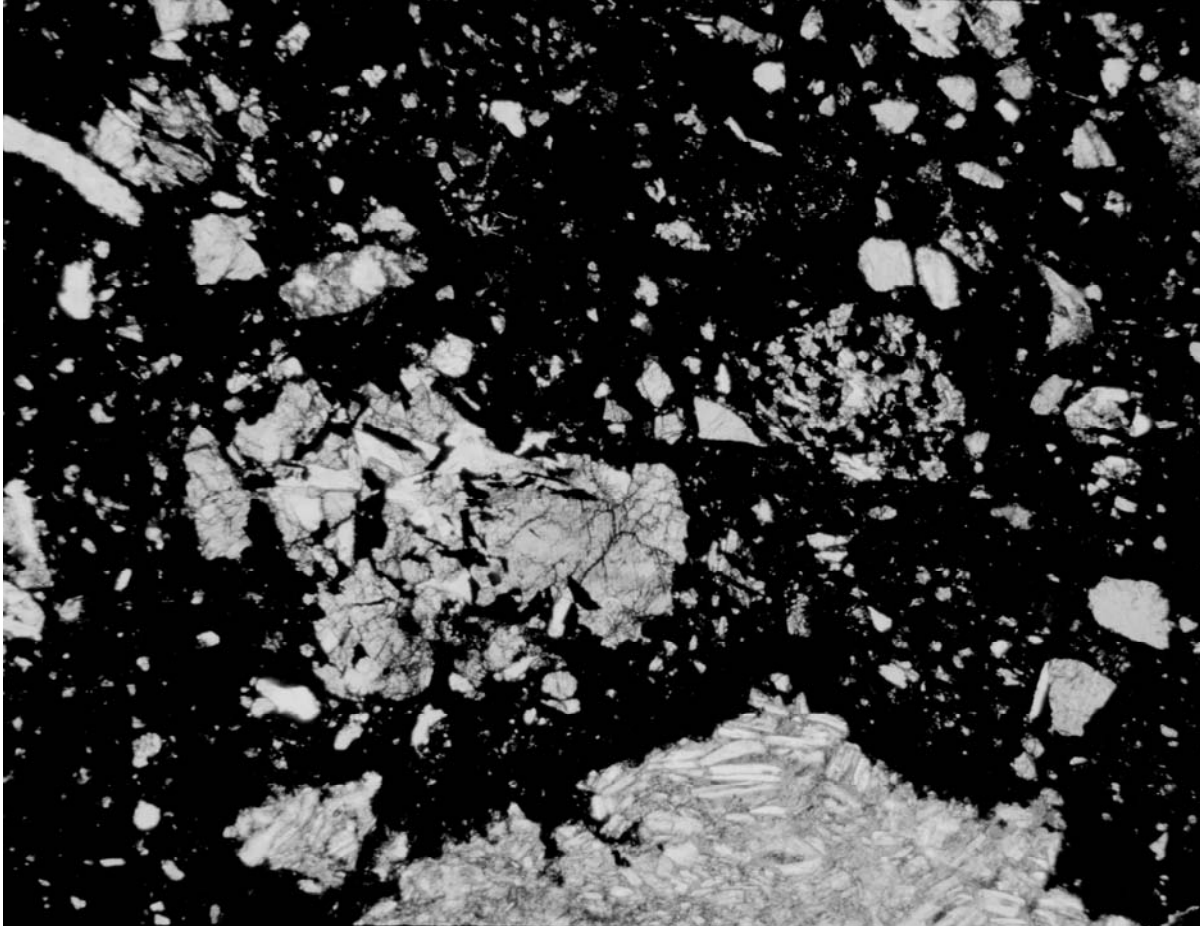
10056,0 Original PET Photo S-69-46181



10056,14 S-75-32571

**SPECIAL FEATURES:**

Sample has a high clast population, a majority of which is <1mm. This is most evident on fresh surfaces. Small areas of brown glassy spatter on exterior surfaces of sample. Most spatter has a sugary texture.



S-76-26265

SECTION: 10056,26

Width of field 2.72mm plane light

THIN SECTION DESCRIPTION

BY: Walton

DATE: 7/14/76

SECTION: 10056,26 and 10056,27

**SUMMARY:** Partly devitrified typical breccia with a high mineral clast content. Numerous large lithic clasts are also present. The rock is a recrystallized breccia with abundant crystallites and mineral clasts in the matrix.

MATRIX 66% OF ROCK

<u>PHASE</u>	<u>% SECTION</u>	<u>SHAPE</u>	<u>SIZE(MM)</u>	<u>COMMENTS:</u>
Dark Brown	100	-----	<0.001	High glass content with a very large number of small crystallites.

MINERAL CLASTS 27% OF ROCK

<u>PHASE</u>	<u>RELATIVE ABUNDANCE</u>	<u>SHAPE</u>	<u>SIZE(MM)</u>
Pyroxene <sub>1</sub>	Very abundant	Angular to irregular	0.001-0.4
Plagioclase <sub>2</sub>	Present	Blocky to irregular	0.001-0.2
Ilmenite <sub>3</sub>	Moderate	Skeletal to blocky	0.001-0.2

- 1) Most show zoning; poor optical characteristics.
- 2) Few shards; poor twins and extinctions.
- 3) Most skeletal; most in clasts.

LITHIC CLASTS 5% OF ROCK

<u>TYPE</u>	<u>RELATIVE ABUNDANCE</u>	<u>SHAPE</u>	<u>SIZE(MM)</u>
Small	Very abundant	Rounded to irregular	0.001-1.0
Large <sub>4</sub>	Eleven present	Rounded to irregular	>1.0

- 4) a. Coarse-grained basalt consisting of pyroxene, plagioclase and ilmenite. Most crystals gave poor optical characteristics.
- b. Coarse-grained basalt with off-set faults in the plagioclase giving the twin planes a "kinked" appearance.
- c. Fine-grained basalt consisting of pyroxene, plagioclase and ilmenite.
- d. Glass-rich matrix hosting small irregular plagioclase crystals.
- e. Fine-grained and glass-rich matrix hosting small crystal fragments and glass fragments.
- f. Coarse-grained basalt consisting of pyroxene, plagioclase and ilmenite. Most crystals gave poor optical characteristics.
- g. Coarse-grained basalt with only a small amount of opaques present.
- h. Coarse-grained basalt consisting of pyroxene, plagioclase and ilmenite.
- i. Glass-rich matrix hosting small rectangular to equant plagioclase crystals.
- j. Partly devitrified glass with numerous un-resolvable crystallites.
- k. Coarse-grained basalt consisting of pyroxene, plagioclase and ilmenite.

GLASS CLASTS 2% OF ROCK

<u>TYPE</u>	<u>RELATIVE ABUNDANCE</u>	<u>SHAPE</u>	<u>SIZE (MM)</u>
Yellow-Orange <sub>5</sub>	Very abundant	Angular to spherical	0.001-0.9
Dark Red <sub>6</sub>	Present	Angular to spherical	0.001-0.2
White <sub>7</sub>	Present	Angular	0.001-0.6

- 5) One large dark orange sphere; glass coating along one edge of section; some immiscible mixtures; mostly fragments.
- 6) Part spheres and a few fragments.
- 7) All fragments; some devitrification.

## HISTORY AND PRESENT STATUS OF SAMPLES - 10/29/76

10056 was removed from ALSRC #1003 and split in the Bio-Prep Lab. A 0.35gm chip was sent to PCTL for PET analysis. The parent rock was split in SPL for allocation. Remaining pristine samples were re-examined in SSPL.

### PRISTINE SAMPLES: (All BP-SPL-SSPL)

12	0.37 gm	Small chip (.37gm) representative of the sample. No pits or patina.
14	174.0 gm	Large surface piece. Four pitted surfaces.
42	3.0 gm	Small chips found in packaging of subsample 14. Ten small chips and fines. No pits observed.

### NO RETURNED SAMPLES

## CHEMICAL ANALYSES

<u>Element</u>	<u>Number of Analyses</u>	<u>Mean</u>	<u>Units</u>	<u>Range</u>
W	1	.15	PPM	0
Hf	4	13.02	PPM	5.3
Ir	1	.130	PPB	0
Au	2	.0008	PPM	.0003
Lu	2	2.52	PPM	.13
Th	1	4.03	PPM	0
La	3	11.77	PPM	2.0
Ce	4	45.92	PPM	42.3
Pr	1	12.0	PPM	0
Nd	1	57.0	PPM	0
Sm	3	17.3	PPM	11.9
Eu	4	2.78	PPM	.6
Gd	1	24.0	PPM	0
Tb	2	5.20	PPM	.4
Dy	2	35.75	PPM	8.5
Ho	2	7.75	PPM	2.5
Er	1	27.0	PPM	0
Tm	1	2.1	PPM	0
Yb	4	14.2	PPM	11.7
Lu	4	1.88	PPM	1.30
Th	1	1.4	PPM	0
U	2	.195	PPM	.03
B	1	2.0	PPM	0
Ga	2	4.65	PPM	.7
In	2	.032	PPM	.057
Ge	2	.62	PPM	1.16
Sn	1	.3	PPM	0

Element	Number of Analyses	Mean	Units	Range
Pb	1	1.2	PPM	0
N	1	70.00	PPM	0
As	2	.04	PPM	.02
Sb	1	5.00	PPB	0
O	1	41.3	PCT	0
SiO <sub>2</sub>	2	42.78	PCT	.85
Al <sub>2</sub> O <sub>3</sub>	3	11.02	PCT	.76
TiO <sub>2</sub>	4	4.34	PCT	3.84
FeO	4	17.91	PCT	2.32
MnO	3	.260	PCT	.013
MgO	2	5.55	PCT	1.82
CaO	3	13.66	PCT	2.94
Na <sub>2</sub> O	3	.42	PCT	.076
K <sub>2</sub> O	1	.113	PCT	0
P <sub>2</sub> O <sub>5</sub>	1	.07	PCT	0
Li	1	16.0	PPM	0
Rb	1	2.0	PPM	0
Cs	1	.06	PPM	0
Be	1	3.0	PPM	0
Sr	1	160.	PPM	0
Ba	2	170	PPM	140.0
Sc	4	99.4	PPM	17.4
V	2	51.5	PPM	9.0
Cr <sub>2</sub> O <sub>3</sub>	4	.200	PCT	.019
Co	3	13.63	PPM	3.10
Ni	2	32.50	PPM	34.97
Cu	1	3.8	PPM	0
Zn	1	2.7	PPM	0
Y	1	180.0	PPM	0
Zr	1	34.0	PPM	0
Nb	1	34.	PPM	0
Mo	2	.215	PPM	.37
Pd	1	.1	PPM	0
Ag	1	.2	PPM	0
Cd	1	.9	PPM	0
Ta	4	2.05	PPM	1.0
F	1	30.0	PPM	0
Cl	1	16	PPM	0
Br	1	.06	PPM	0

Analysts: Ehmann & Morgan, (1970); Morrison et al., (1970); Goles et al.,(1970); Kharkar & Turekian, (1971); Wasson & Baedeker, (1970)

No Age References