UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

INTERAGENCY REPORT: ASTROGEOLOGY 51

# Documentation and environment of the Apollo 16 samples: A preliminary report

by

Apollo Lunar Geology Investigation Team
U.S. Geological Survey

May 26, 1972

Prepared under NASA Contract No. T-5874A

This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards and nomenclature.

Prepared by the Geological Survey for the National Aeronautics and Space Administration

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Above members of the U.S. Geological Survey with the exception of *National Aeronautics and Space Administration.

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TABLES

## INTRODUCTION

This catalog is a working document that shows the locations from which samples were collected during the Apollo 16 mission, and that provides a descriptive geologic context for each sample. It is a compilation of notes from work in progress, and supersedes an earlier report prepared by the Apollo Lunar Geology Investigation Team.[1]

The information in this report was obtained from the Air-to-Ground transcript from the astronaut crew, from lunar surface television, from 60 mm Hasselblad camera photographs, and from available LRL "mugshot" photographs of the samples. The sample descriptions are based on these sources of data, and do not reflect the more detailed examination that is presently underway in the LRL.

The report is still a preliminary study due to the short time available to review the rather copious data. The rocks have yet to be examined under collimated light and checked against the lunar surface photographs to make identification certain in all cases. The original orientation of the samples will, in time, as ascertained and photographically documented, and will be the subject of a final report on sample documentation.

The reader will find inconsistencies in the format throughout the report (and probably some errors). But we believe that it is more important to disseminate these data early rather than to delay with detailed editing sufficient to completely standardize the format.

[1]Apollo Lunar Geology Investigation Team, Progress Report: Apollo 16 sample documentation, Interagency Report: Astrogeology 49, U.S. Geol. Survey open-file report, May 10, 1972.

Nearly all of the sizes, distances, slopes, and percentages given are qualitative, visual estimates from photographs. The number of dimensions given for a sample is for the most part dependent upon the number of sides visible in the photographs. The station maps (the fold-outs in back of the report) were compiled using a perspective grid overlay on the photographs, and thus are somewhat more accurate than most other dimensional data.

The station descriptions that follow this introduction apply to the general station area (see illustration on the following page); the environment descriptions under each sample apply to an area a few meters on a side around each sample, and may or may not reflect the surface characteristics of the entire station area.

Some of the LRL numbers (supplied courtesy of Patrick Butler, Assistant Curator, Lunar Receiving Laboratory, NASA) are still somewhat tentative and subject to change as more sample containers are opened. The tentative numbers are indicated by an asterisk after the number.


*STATION LOCATIONS*

## SUMMARY OF THE GEOLOGY AT TRAVERSE STATIONS

In order to provide a context for the individual sample location descriptions, a brief description of the geologic characteristics of each sampling station is included. The interpretations in these summaries are tentative and some will almost certainly be modified after more information on the samples is available.

### Station LA (LM/ALSEP)

Station LA is located in five general areas (LM/ALSEP/station 10/ station 10' and LRV Park) ranging from about 80 m east to 180 m southwest of the LM.

The Cayley Plains in the LA region are smooth but broadly undulating with a maximum relief of several meters. Approximately 10-15 percent of the surface is covered by cobbles (3-10 cm), and a relatively large number of blocks up to .5 m are present. The largest boulder in the LA sample area exceeds several meters. The rocks are fairly uniformly distributed, buried less than a quarter of their height, poorly filleted, and most are perched; these are thought to represent ejecta from South Ray crater. However, fillets are well developed on the large rock about 45 m north of the ALSEP central station; this boulder may have been ejected from North Ray crater.

Rock types at station LA fall into three major types: (1) breccias with dark vesicular matrices and light clasts; (2) breccias with light matrices and dark clasts; and (3) white, fine-grained crystalline to chalky rocks. Type (1) appears to be the predominant material. Many samples in the LA area are at least partially glass coated. Rocks range from very angular to subrounded. In general, the fine-grained chalky to

crystalline rocks are smaller (6-12 cm range) than the breccia fragments and represent about 5 percent of the rocks observed. The soil in the LA area is generally medium gray, but scattered areas of high albedo soil were present near the ALSEP area. White soils are more abundant to the west.

Fresh 1-2 m secondary craters are common and are believed to be related to the South Ray cratering event. Larger craters are generally more subdued and range up to 30 m in diameter.

Material collected at Station LA is probably principally South Ray crater ejecta. Blocks from North Ray crater may also be present. The deep drill core and double drive tube samples taken in this area may establish the local stratigraphy.

Station 1

Station 1 is located on the east rim of Plum crater, a small crater located on the southeast rim of Flag crater. Plum and the many other small craters in the area all have low rounded rims that impart a gently rolling appearance to the terrain. The surface has the soft, smooth look of powdery soil studded with rocks up to boulder size.

Rocks larger than small cobbles are present on about one percent of the surface. A rounded, partly buried 1 to 1.5 m block, one of the largest in the area, was sampled. Most of the rocks that are visible in surface photographs and that were sampled appear to be subangular, and most were only slightly buried. Most of the angular, perched rocks are probably ray material from South Ray crater.

Samples collected here for the most part are breccias with light-colored matrices and dark clasts. Most of these resemble breccias sampled in areas thought to be North and South Ray ejecta, but others appear restricted to the Plum-Flag area. At two places on the rim of Plum crater, the crew noted that the regolith is white beneath a top 1-2 cm thick layer of gray material. Elsewhere, for example in the rake sample area, the white regolith was not noted.

Small subdued craters are common in the vicinity of station 1. These range from "rain-drop" size to about 10 m in diameter. Small craters with rocky or cloddy ejecta are uncommon and appear to be restricted in size; they range from 0.5 to 3 m in diameter. They also seem to be more common and larger to the south, which suggests that they may be secondaries from South Ray crater.

Flag crater can reasonably be assumed to have penetrated the upper layers of the Cayley Formation. North and South Ray crater ejecta may have extended to the Flag crater area, but would have been thin. Ray materials from other large craters cover the site, but the aggregate thickness probably is only a few meters and most was probably derived from Cayley materials. Flag crater has an average diameter of about 200 m, giving a calculated original penetration of about 40 m, which is probably greater than the thickness of the total regolith. The Plum crater impact was into the rim of Flag crater and penetrated to a calculated depth of 7 or 8 m. Exposure ages, and degree of erosion by impacts, should reveal the original sources of many of the samples.

## Station 2

Station 2 activities began about 50 m north of Spook crater rim, and were extended another 50 m north to the rim of Buster crater. The sampling area is dominated by ejecta from Buster crater, which is steep-sided with a well-defined rim.

Fragments up to 0.5 m but mostly smaller than 10 cm are scattered more or less evenly over the area. While the abundance of blocks around the rim of Buster crater suggests that they are local ejecta, other blocks are concentrated in a northerly trending strip across the crater walls; this may indicate the presence of South Ray crater ejecta. Fragment shapes are mainly angular with a smaller proportion of rounded blocks; most are perched on the surface or buried only slightly. Fillets are not abundant. The overall impression is that fragment population is fairly young.

Rock types (as represented by the surface texture of the fragments) seem to include both friable and compact rocks, and the samples collected here appear to be similar to those found at station 1. The soil is medium gray except for an underlying light-colored material at the LRV location. The compaction and granularity are typical of most of the lunar soil elsewhere in the area. Small craters up to 2 m in diameter are distributed fairly uniformly; they are generally subdued but a few small fresh ones have sharp rims and identifiable ejecta blankets.

The Buster crater samples should include local Cayley bedrock (rim samples) and re-excavated Spook crater ejecta. South Ray crater ejecta

no doubt exist as a thin and perhaps discontinuous surface cover, possibly diluting the Spook and Buster crater ejecta.

Station 4

The principal objective at stations 4, 5, and 6 on Stone Mountain was to obtain samples representative of Descartes materials, which form highlands bordering the Cayley Plains. The task was complicated by the apparent superposition of South Ray crater ejecta, the lack of outcrops, and the scarcity of accessible craters that definitely intersected bedrock, but a wide variety of rock types were photographed and sampled. Some of these may well have been derived from underlying Descartes materials. The contact between Cayley and Descartes material was not recognized on the ground; the crew noted a gradual increase in slope, but there was no apparent difference in color or texture of the regolith.

At station 4, highest of the three on Stone Mountain, samples were collected from two separate localities (4a and 4b), probably in the vicinity of Cinco B crater. The regional slope is approximately 10-15 degrees northwest.

The LRV was parked near the rim of a subdued crater (site 4a) about 15 m across, amid a field of blocks thought to be derived from South Ray crater. Perhaps 10-20 percent of the surface is covered by rocks up to about 30 cm, interspersed with scattered blocks as large as a meter; pebble-size rocks (<~5 cm) are abundant. Most of the blocks and cobbles are angular, but some of the smaller rocks are subrounded to rounded. Minor fillets are common, particularly around large blocks. Some fragments are apparently perched.

The rocks are mainly white, but glass and dust coatings obscure many of the rock surfaces. Clasts are readily visible in some of the blocks photographed, and the predominant rock type is probably breccia. Within the 15 m crater rocks are much less numerous on the southwest wall, which was likely shielded from South Ray crater ejecta. The regolith surface is gray, but near the rim of the 15 m crater white material, similar to that in the Cayley regolith at station 1, occurs at a depth of about a centimeter. A trench in the floor of the crater, however, exposed no white soil or evidence of layering. Four penetrometer measurements and a drive tube indicated that the material was unconsolidated to depths of at least 75 cm, but at one location (penetrometer 3) progressive resistance suggested that bedrock or more indurated regolith was approached.

The brecciated blocks and glass at station 4a are probably South Ray crater ejecta. Rake and soil samples typify regolith within the block field, formed by degradation of local impact ejecta, mixed with materials from South Ray crater.

The second sampling site (4b) was at a 20 m crater southwest of 4a (pan 4b). Angular blocks are concentrated on the northeast wall and rim of the crater, apparently continuous with a well-defined stream of blocks to the northeast. The remainder of the crater rim is relatively block free. Soil and rake samples consisting mainly of friable, poorly consolidated clods, were collected from the south rim. No white soil or evidence of layering was found beneath the surface at this location. The blocks on the northeast wall of the crater are apparently breccias with large white clasts in black matrices, and are

probably ejecta from South Ray crater. The strongly asymmetric distribution of these blocks, the lack of recognizable ejecta elsewhere around the crater, and the relatively large size of the crater suggest that it is probably not of secondary origin but formed prior to South Ray, and was subsequently mantled by ray materials. The indurated regolith samples from the block-free rim of the crater may thus have been partly derived from underlying Descartes materials, reworked by local impacts.

Station 5

Station 5, downslope and about half a km away from station 4, is located on a topographic bench about 50 m wide, which slopes north about 5 degrees. The bench was near the rim of a 15 m crater. Large angular blocks are scattered sparsely around the crater, but 10-15 cm cobbles and smaller fragments are numerically dominant, covering perhaps 10-15 percent of the surface. Block shapes are mainly subangular to subrounded, but some cobbles and small fragments are well rounded, and a few very angular, platy fragments are also present. Fillets occur around some rounded cobbles; some rocks are partly buried, others perched.

Breccias do not appear to be abundant at this station, although light-colored, fine-grained crystalline rocks appear to be scattered over the entire area sampled. Several of these are partially glass coated. Rake and soil samples are characteristically gray, although at one locality lighter soils were present beneath a gray surface.

Blocks are asymmetrically distributed within the crater, and are practically absent on the southwest wall, which apparently was shielded

from South Ray ejecta. The gray rake and soil samples from steep parts of this wall may include regolith derived largely from underlying Descartes materials, and/or brecciated ejecta from distant sources deposited on Descartes bedrock. These materials have no doubt been considerably reworked by numerous, small local impacts. Large blocks and angular cobbles are most likely to be South Ray crater ejecta, but the rounded, filleted fragments, like the regolith, may represent underlying materials.

Station 6

Station 6 is located on the lowest observable bench of Stone Mountain, near a subdued 10 m crater; the northward regional slope is somewhat less steep than at stations 4 and 5. The surface is scarred by numerous small shallow craters, with only a few as large as 10 m. Angular blocks up to about 0.5 m are scattered throughout the area, but rocks and cobbles of 5-15 cm are most common, covering perhaps 5 percent of the surface. The rock distribution within the subdued 10 m crater is apparently asymmetric; rocks are very sparse on the southwest wall, which was probably shielded from South Ray crater ejecta.

The rocks described and photographed exhibited a wide variety of shapes and sizes, ranging from angular to rounded, and pebble size to as large as .5 m. Angular, glass-coated blocks are strewn over much of the surface. Small white clasts are common in many of these rocks, suggesting that breccias are predominant. One large, unusual, very rounded, partly buried block on the southwest rim of the crater was not sampled. Fillets are moderately developed around some rocks and several appear to be partly buried, whereas others are decidedly perched. A

unique white "splotch" of indurated soil was collected from the southwest wall of the crater, but elsewhere the regolith was apparently gray throughout.

The angular blocks and fragments in this vicinity are probably ejecta from South Ray crater, whereas the rounded rocks and soil may have been derived initially from Descartes bedrock, and/or brecciated ejecta deposited on Descartes.

The relative scarcity of large, angular, clastic blocks at both stations 5 and 6 suggests that ray materials are much less prevalent than at station 4. It seems probable that station 4 samples were dominantly ejecta from South Ray crater, with the possible exception of the rake and soil samples at site 4b. At stations 5 and 6, however, a number of rounded fragments were collected, as well as regolith samples from crater walls apparently shielded from South Ray crater ejecta; these materials were possibly derived initially from underlying Descartes bedrock, exhumed by numerous local impacts. The specimens collected from Stone Mountain may provide some of the clues necessary to explain the morphologic contrasts between the Descartes Highlands and the Cayley plains.

Station 8

Station 8 is located on a light-colored ray from South Ray crater. The crew felt that they were on South Ray crater ejecta judging by the concentration of blocks and secondary craters. Nearly 30 percent of the surface is covered by fragments greater than 1 cm, of which 30 percent are larger than 3-5 cm. Blocks 0.5-2 m are scattered sparsely over the surface. Most blocks are subangular to angular, with little or

no burial. Some rounded blocks appear to have poorly developed fillets, or are partially buried.

Two major rock types are present in this area: (1) hard breccias with white clasts in a dark bluish vesicular matrix, (2) white crystalline, somewhat friable rocks with a sugary texture. The soil at station 8 is medium gray, and generally firm away from crater rims; it was reported to be firmer than on Stone Mountain. Difficulty was encountered in driving the double drive tube.

Two large craters, one 10-15 m in diameter and the other 15-20 m in diameter occur in the vicinity of the LRV park position. Craters 0.5-5 m in diameter are sparse; craters less than 0.5 m in diameter are common. Most craters are subdued with no visible ejecta. From the center of the 10-15 m crater, a concentration of blocks extends northeasterly to at least a crater diameter beyond the rim.

Although it is difficult to determine the thickness of South Ray crater ejecta, the distribution, angularity, general perched nature of the rocks, and the presence of small secondary craters suggest that most if not all samples collected at station 8 are of South Ray ejecta.

Station 9

Station 9 is about 400 m north of station 8. It is located on a gentle easterly slope in an area of relatively low albedo. About 15 percent of the surface at station 9 is covered by fragments 1 cm and larger, of which nearly 80 percent are smaller than 10 cm. Blocks larger than 0.5 m are sparse. Most of the rocks are angular, and show little or no burial, but rounded rocks do occur in all size ranges, and some

appear to be partially buried. Fillets are generally absent, although a few are present around both angular and rounded fragments.

Most blocks at this station are relatively coherent breccias. The soil is medium gray and moderately firm away from crater rims. Small, subdued craters up to 30 cm in diameter are common. Larger ones are sparse.

Although it was hoped that the station area would be free of South Ray crater ejecta, it is likely that at least some exists. The crew observed from station 4 that the low albedo areas to the south, thought to be free of South Ray material, appeared to be dark ejecta from the South Ray event. There is some photographic evidence to support this. The angularity, distribution, and generally perched nature of the scattered blocks at station 9 are similar to those in the station 8 area. Whether there is a thin coating of or a substantial thickness of South Ray ejecta in the station area is difficult to determine. Most probably, the samples collected at station 9, with the possible exception of sample 69001, represent South Ray ejecta.

### Station 11

Station 11 is located on the southeast rim of North Ray crater and is the northernmost point sampled on the Apollo 16 mission. The principal geologic objectives at this station were to collect representative samples of the rocks excavated by the North Ray event, and, if possible, to establish their relations within the crater walls.

About 230 m of the rim were traversed and sampled. Slopes to the south, away from the rim, average 5-10 degrees; the inward slope of the

southeast wall appears to be 10-15 degrees for about the first 100 m, then steepens sharply to 25-30 degrees. The crew was unable to view the bottom of the crater. Broad swales and hummocks several meters deep and 10-20 m across occur on both sides of the rim crest. Large blocks were observed and photographed on the northeast walls of the crater which extend at least a third of the way down. These tend to be dark colored, and there is a suggestion of horizontal organization.

The most notable aspects of the terrain in the area traversed are (1) the general thinness of the regolith; soils are less than a few centimeters thick everywhere except for deeper fillets around rounded boulders; (2) the rather low density of large blocks which were expected to cover a large part of the rim; their areal distribution proved to be only a few percent; (3) the generally perched nature of many blocks and fragments on all scales; and (4) the general lack of smaller craters.

Sampling was concentrated in three areas, one 50-70 m west of the LRV parking site, one from the LRV to a point 50-70 m east, and one in a rather local area over 100 m east near House Rock. In a general way, the kinds of rocks observed and collected vary from east to west. Coherent breccias with dark matrices and light clasts are dominant near House Rock; rather friable breccias with white matrices and dark clasts are the dominant rock types to the west of the LRV; between is a mixed population. Crystalline rocks are everywhere less abundant than breccias, and occur rather evenly scattered over the entire area. Rake-soil samples were taken along the rim spanning a distance of about 130 m. Some care should be taken in the interpretation of these samples inasmuch as the

friable breccias are shedding clasts in this size range. Soils are generally thin throughout the area, and tend to be whiter in the western part than in the east.

The difference in character of breccias collected along the rim suggests that a sizable thickness of strata is represented in the samples. The horizontal concentration of boulders in the crater wall suggests intercalation of more coherent dark matrix breccias with softer, more easily disaggregated breccias, but no simple stratigraphic relations are obvious at this time. Between stations 11 and 13, about one-half crater diameter from the crater rim, pieces of dark matrix breccia are reported to be rare; this indicates that some light-colored breccias may overlie dark ones in the walls of North Ray crater.

Station 13

Station 13 is located on the ejecta blanket of North Ray crater about 0.5 km southeast of the crater rim crest. The regional slope is southeast, away from North Ray crater.

The surface at station 13 is smooth but undulating. No more than 10 percent is covered by cobbles, and a few blocks up to about 8 m long are present. Rock types are similar to those observed at station 11 on the rim of North Ray crater. The cobbles, largely in the 5-10 cm size range, are mostly subangular and are commonly tabular. Most are perched on the surface. The large blocks are irregular in shape, and show coarsely clastic textures and crude layering. Degree of burial of the large rocks ranges from nearly none, as for Shadow Rock itself, to nearly total. Some of the larger rocks have fillets. A low ridge of soil

encircling Shadow Rock may be formed of debris shed from the rock. At least some of the large rocks, including Shadow Rock, are breccias.

Shadow Rock itself is breccia with a dark unusually vesicular matrix and light clasts. Soil at station 13 is medium gray. Where it was kicked up near the LRV, it is white below the surface. Subdued small craters up to 1 or 2 m in diameter are common in the station area.

Samples collected at station 13 should, for the most part, represent ejecta from North Ray crater. Shadow Rock is probably a fragment of older breccia excavated and ballistically transported to its present site by the North Ray event. If so, soil samples from below the rock overhang may represent fine North Ray ejecta undisturbed since the emplacement of the block. Rake samples away from Shadow Rock should represent gardened North Ray ejecta.

## SAMPLE DESCRIPTIONS

The sample descriptions are arranged according to ascending LRL numbers. The first digit (6, which indicates Apollo 16 sample) of the complete LRL number is omitted for brevity. The second digit, or first to appear in this report, is the station number (with 0 = LM/ALSEP area-station 10-station 10'; 7 = station 11; 3 = station 13); thus they are listed by ascending station number. Within each station, the samples are grouped according to where they occur in the documentation photographs, and therefore can only be placed in a rough ascending order. Tables 9 and 10 are page indices by container numbers and by LRL numbers. The applicable illustrations follow immediately after the sample descriptions.

SAMPLE: 0001-0007 (deep core)

Station: ALSEP (LA)

Landmark: About 175 m southwest of LM and 25 m south of ALSEP central station.

Sample type: Deep core.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Generally flat spot in an area of rolling topography.

Fragment population

Size range and distribution: Blocks up to 10-15 cm abundant (10-15%).

Color: Light gray to whitish.

Shapes: Angular to sub-rounded.

Fillets: Poorly developed.

Apparent burial: Little; mostly perched.

Dust cover: Moderate to high.

Fines

Color: Medium gray with white soil at 3 cm depth in 3 m crater 6 m southeast of drill core site.

Compaction: Generally very loose in entire ALSEP area; very dusty.

Craters

Size range and distribution: Craters up to 6 m abundant.

Shape: Majority subdued.

Ejecta: Only on fresher 1-2 m craters.

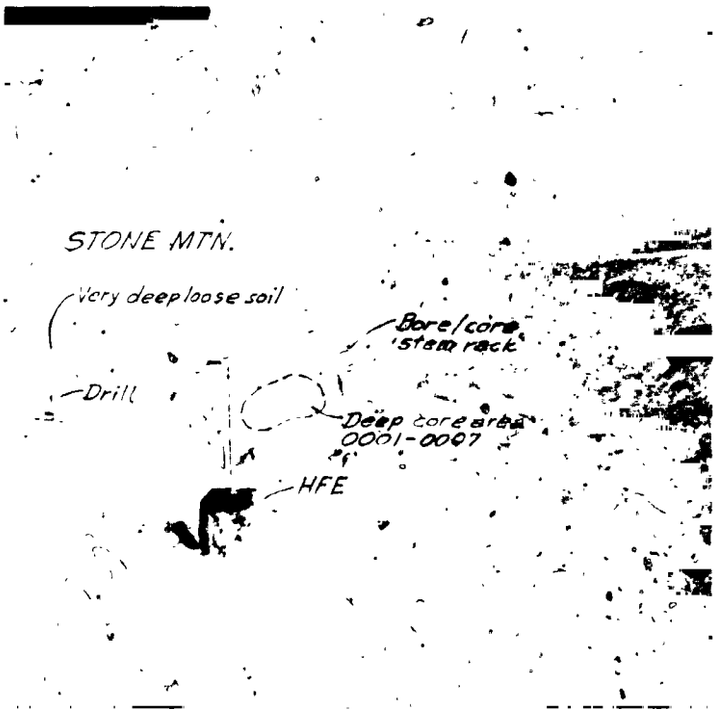
SAMPLE CHARACTERISTICS

Size: 3 m core.

Comparison with other soil in area: Soil probably typical of LM/ALSEP area.

Probable origin: Deep drill core should contain South Ray crater ejecta over North Ray crater ejecta, and perhaps pre-North Ray event regolith developed on the underlying materials.

COMMENTS: Important to note that the ALSEP deep drill area appears to have the least compacted soil and most 2-6 m sized craters in the LA station area. Core stems went easily into surface.




*Post-sampling, looking south (113-18367)*

**SAMPLE 0001-0007**

*SAMPLE: 0010/0009 (D.T. 45/54)*

*Station: 10 (LA)*

*Landmark: Taken about 6 m south-southeast of station 10 and approx. 100 m southwest of LM*

*Rock type: Drive tube*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Gentle 1-2° slopes off to west and east of core tube site*

*Fragment population*

*Size range and distribution: Mostly pea-sized; none larger than several cm*

*Color: Light gray to whitish*

*Shapes: Subangular to subrounded*

*Fillets: None*

*Apparent burial: 1/8 to 3/4*

*Dust cover: Not visible*

*Fines*

*Color: Medium gray*

*Compaction: Moderate*

*Craters*

*Size range and distribution: 50-60 cm crater just west of core tube. Core taken on rim crest*

*Shape: Round, subdued*

*Ejecta: Not visible*

*COMMENTS: Core tubes may reveal stratification reflecting ejecta from 50-60 cm crater*

*Post-sampling, looking north-northeast (115-18557)*

*DRIVE TUBE 0010/0009*

SAMPLE: 0014/0013 (27/32)

Station: 10' (LA)

Landmark: Approximately 120 m west-southwest of LM.

Rock type: Drive tube.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level.

Fragment population

Size range and distribution: 5-20 cm blocks moderately abundant; scattered 1-4 cm rocks.

Color: Many whitish rocks observed in down-sun photo; some moderately gray.

Shapes: Subrounded to irregular.

Fillets: Poorly developed.

Apparent burial: <1/8

Dust cover: Low-moderate.

Fines

Color: Medium gray.

Compaction: Moderate.

Craters

Size range and distribution: Very sparse 10-20 m craters; relatively crater free area.

Shape: Subdued.

Ejecta: None visible.

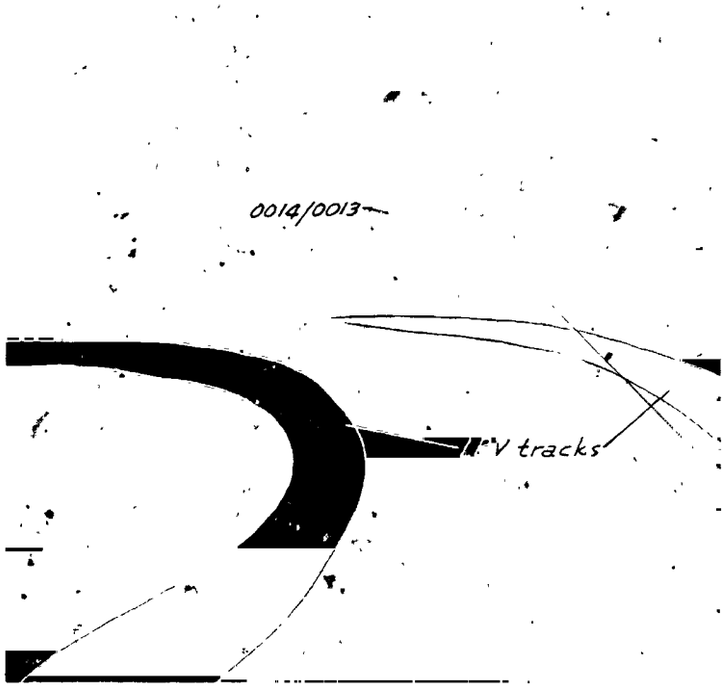
SAMPLE CHARACTERISTICS

Color: LMP noted bottom of core whitish, coarse grained.

Comparison with other soil in area: The white coarse soil noted in the bottom of the core tube was not noted on surface at station 10' but was noted at deep drill site.

Probable origin: Core tube material including white soil probably represents South Ray crater ejecta.

COMMENTS: Bottom of core may include North Ray crater ejecta as well.




*Post-sampling, looking west (116-18700)*

**SAMPLE 0014/0013**

SAMPLE: 0015*

Station: LM (LA)

Landmark: Probably collected about 30 m west-northwest of LM within view out right window.

Rock type: Glass-coated crystalline rock.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Broadly rolling.

Fragment population*

Size range and distribution: 5-15 cm cobbles abundant; 20-30 cm blocks common.

Color: Gray to white; very few dark gray.

Shapes: Angular to subrounded.

Fillets: Not visible.

Apparent burial: Some partially buried.

Dust cover: Not visible.

Fines

Color: Medium gray.

Craters

Size range and distribution: Scattered 1-3 m craters; some fresh secondaries.

Shape: Mostly subdued.

Ejecta: Not discernible.

SAMPLE CHARACTERISTICS

Size: 12 x 30 cm.

Color. Bluish glass coating.

Shape: Unknown.

Fillet: Not visible.

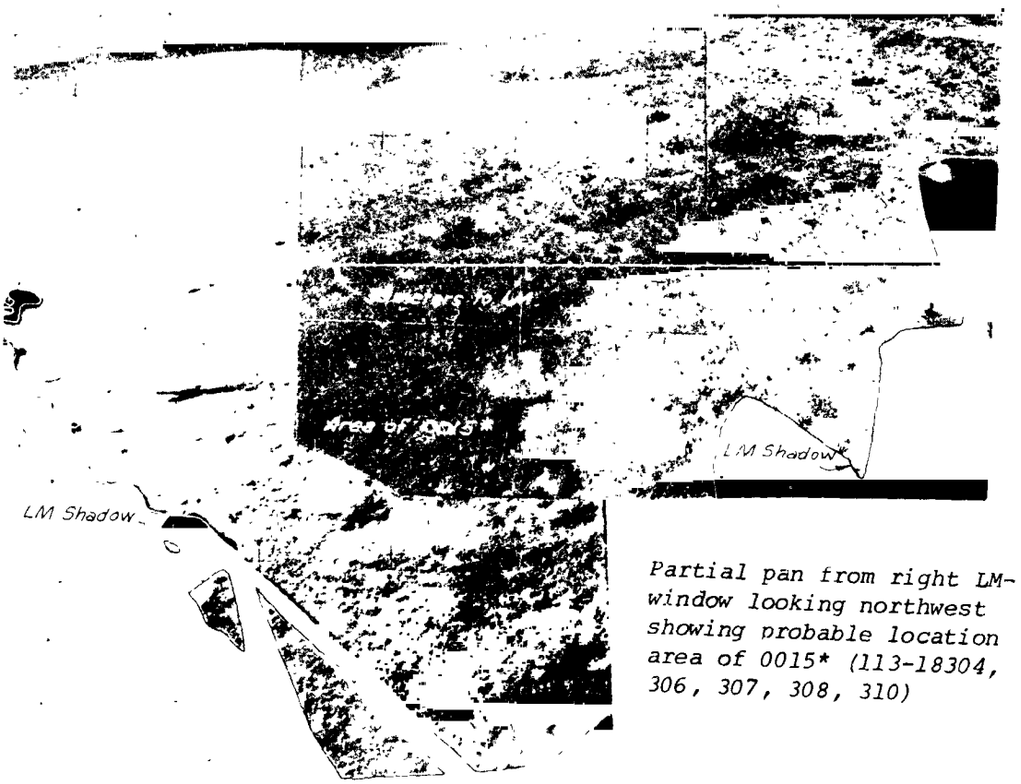
Apparent burial: Not visible.

Dust cover: Not visible.

Comparison with other fragments in area: Crystalline rocks sparse in LM/ALSEP area; nearly absent at most other stations.

Probable origin: Ejecta from South Ray.

*Fragment description refers to area shown in LM window pan; not immediate sample area.




*Partial pan from right LM-window looking northwest showing probable location area of 0015* (113-18304, 306, 307, 308, 310)*

*SAMPLE 0015**

SAMPLE: 0016 (FSR-4)

Station: LM (LA)

Landmark: 14-15 m southwest of LM

Rock type: Breccia, white matrix, small dark clasts; moderately coherent.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Nearly flat in immediate vicinity of sample.

Fragment population

Size range and distribution: Up to 20 cm size; up to 1 cm fairly abundant; up to 5 cm sparse; sample 0016 one of largest fragments in vicinity.

Color: Primarily light to whitish, dark fragments sparse.

Shapes: Rectangular; subangular to subrounded.

Fillets: Poorly developed.

Apparent burial: Most fragments >3-4 cm buried 1/8 or less.

Dust cover: Moderate to heavy.

Fines

Color: Light gray.

Compaction: Moderate.

Craters

Size range and distribution: Up to 3 cm craters sparse in near sample environment. Surface relatively unpitted and smooth. LM window view of sample shows general crater distribution.

SAMPLE CHARACTERISTICS

Size: 15 x 18 x 20 cm.

Color: White and gray; tan.

Shape: Rounded, equidimensional.

Fillet: Poorly developed.

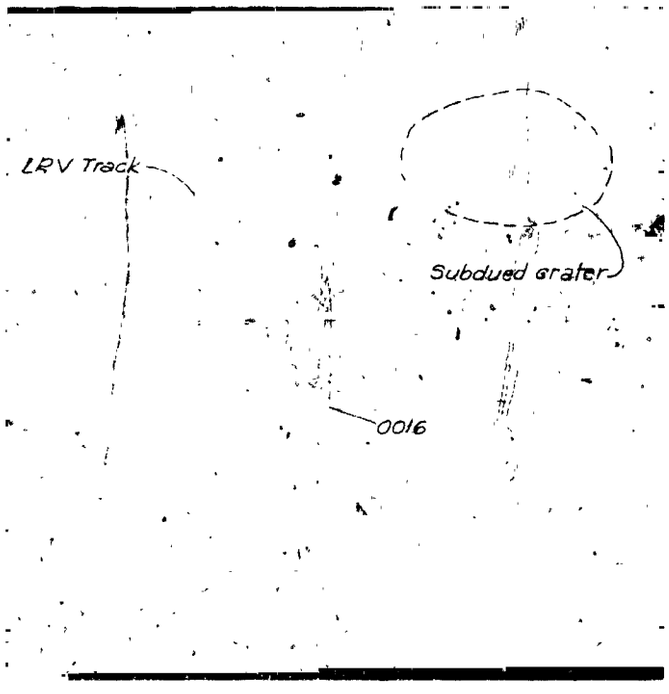
Apparent burial: <1/8 of height.

Dust cover: Moderate to heavy.

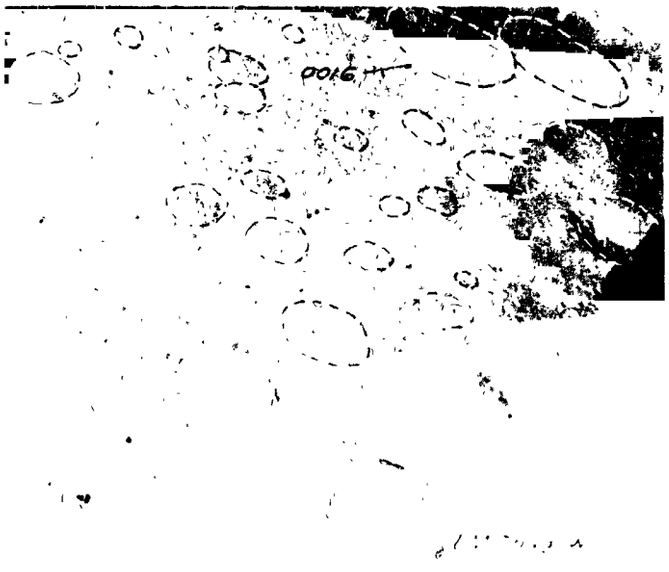
Comparison with other fragments in area: Size of 0016 appears unique for a white rock in the LM-ALSEP area.

Probable origin: Most likely representative of South Ray crater ejecta. Sample 0016 rested on the east rim of a 4 m crater from which it may have been excavated from a depth of about 1 m.

a) Pre-sampling, looking northeast (110-17867)




b) LM-window photo looking southwest (113-18303)




SAMPLE 0016

SAMPLE: 0018 (FSR-10)

Station: 10 (LA)

Landmark: 100 m southwest of LM at station 10 pan site.

Rock type: Breccia, dark matrix, light clasts; glassy.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level.

Fragment population

Size range and distribution: Two 40 or 50 cm fragments in area; up to .5 cm common; up to 10 cm sparse; small fragments not as common as in most areas.

Color: Whitish-tan to gray.

Shapes: Subrounded, irregular.

Fillets: Absent.

Apparent burial: 1/8 on large boulders; up to 1/3 on smaller, fist-sized rocks.

Dust cover: Low to moderate.

Fines

Color: Medium gray.

Compaction: Moderate, soil cakes easily.

Craters

Size range and distribution: None visible in disturbed area around sample.

SAMPLE CHARACTERISTICS

Size: 7 x 8 x 20 cm

Color: Gray-tan to whitish weathered surface; gray black on broken surface; white clasts.

Shape: Very irregular on broken surface; subrounded but rough on eroded surfaces.

Fillet: None.

Apparent burial: Perched.

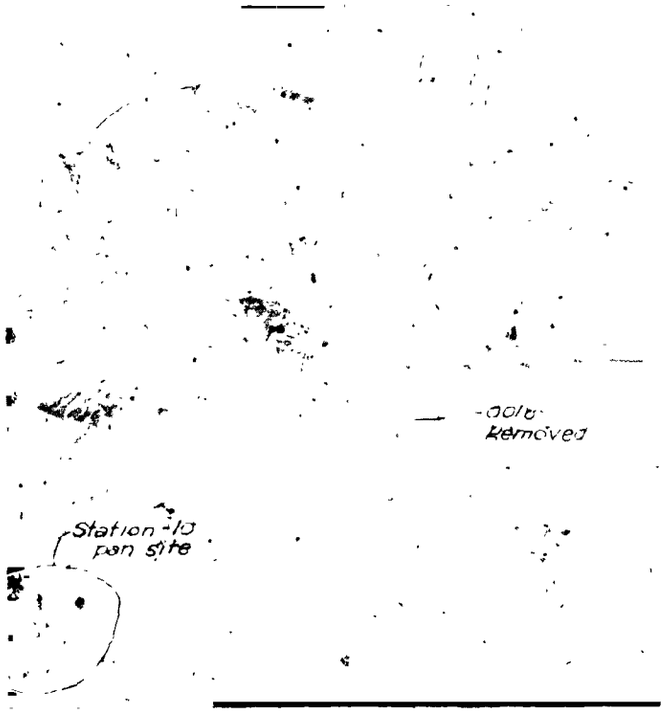
Dust cover: Appears light to moderate.

Comparison with other fragments in area: Rock from which 0018 was broken is one of two large rocks that may be of a similar type. Area too disturbed to evaluate nature of smaller fragments in vicinity.

Probable origin: South Ray crater ejecta most probable source as indicated by the number of boulders and the general lack of burial.

a) *Pre-sampling, looking east-northeast (116-18689)*


b) *Post-sampling, looking northeast (116-18691)*




***SAMPLE 0018***

SAMPLE: 0019 (FSR-11)

Station: 10' (LA)

Landmark: Probably collected near station 10'. Approximately 115 m west-southwest of LM.

Rock type: Dark breccia with white clasts; glassy coating.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level.

Fragment population

Size range and distribution: Up to 15 cm; 3 cm to 15 cm very sparse.

Color: Medium gray to whitish.

Shapes: Subrounded to angular.

Fillets: Very poorly developed.

Apparent burial: 1/8 to 1/4.

Dust cover: Moderate.

Fines

Color: Light to medium gray.

Compaction: Relatively high.

Craters

Size range and distribution: 10-15 cm diameter craters sparse.

Shape: Subdued.

Ejecta: Not visible.

SAMPLE CHARACTERISTICS

Size: 15 x 7 x 7 cm.

Color: Medium gray with white clasts.

Shape: Subrounded with knobby surface.

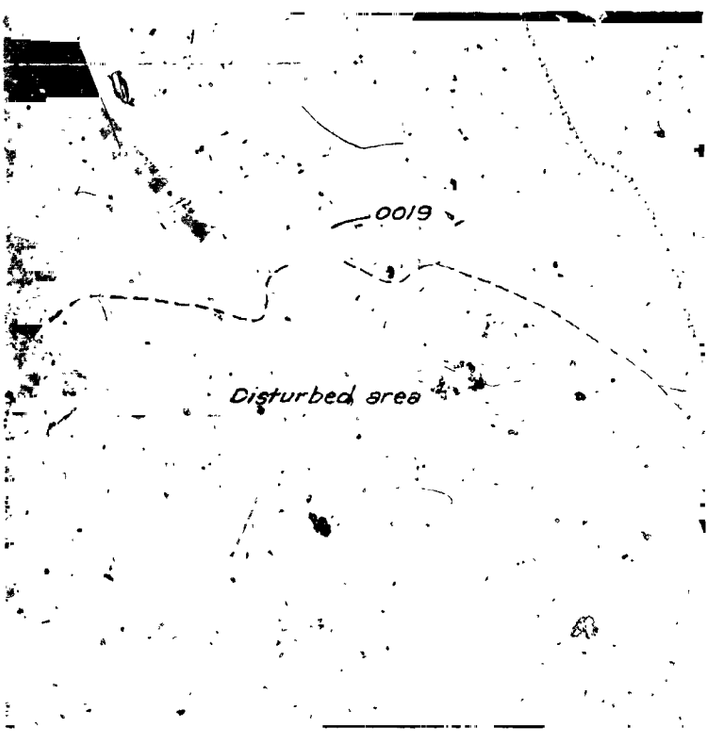
Fillet: Poorly developed.

Apparent burial: <1/4 of height.

Dust cover: Moderate.

Comparison with other fragments in area: Appears to be typical of many glass-coated breccias in LM-ALSEP area.

Probable origin: Ejecta from South Ray crater.




*Pre-sampling, looking northwest (116-18702)*

**SAMPLE 0019**

*SAMPLE: 0035* (351)*

*Station: ALSEP (LA)*

*Landmark: Approx. 190 m south-southwest of LM and 64 m south-southeast of ALSEP central station*

*Rock type: Whitish rock; probably breccia*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Level*

*Fragment population*

*Size range and distribution: Limit of resolution to approx. 10 cm (0035 spls); (no scale in photo area); pea-sized frags very abundant; >3-4 cm frays sparse*

*Color: Light gray "whitish"*

*Shapes: Larger, approx. 5-10 cm fragments semi-rounded but tabular; smaller <2 cm fragments irregular to tabular*

*Fillets: Poorly developed*

*Apparent burial: Unusually little; larger fragments 1/8-1/4*

*Dust cover: Crew reported mostly dust covered*

*Fines*

*Color: Light gray; raindrop pattern on surface well developed*

*Compaction: Low to moderate*

*Craters*

*Size range and distribution: 5-20 cm craters moderately abundant-subdued; 3 m diameter crater approx. 2 m south of 0035**

*Shape: Subdued*

*Ejecta: None visible*

*SAMPLE CHARACTERISTICS*

*Size: No scale in photo but appears to be about 15 cm.*

*Color: Whitish, mottled gray*

*Shape: Subrounded edges but tabular*

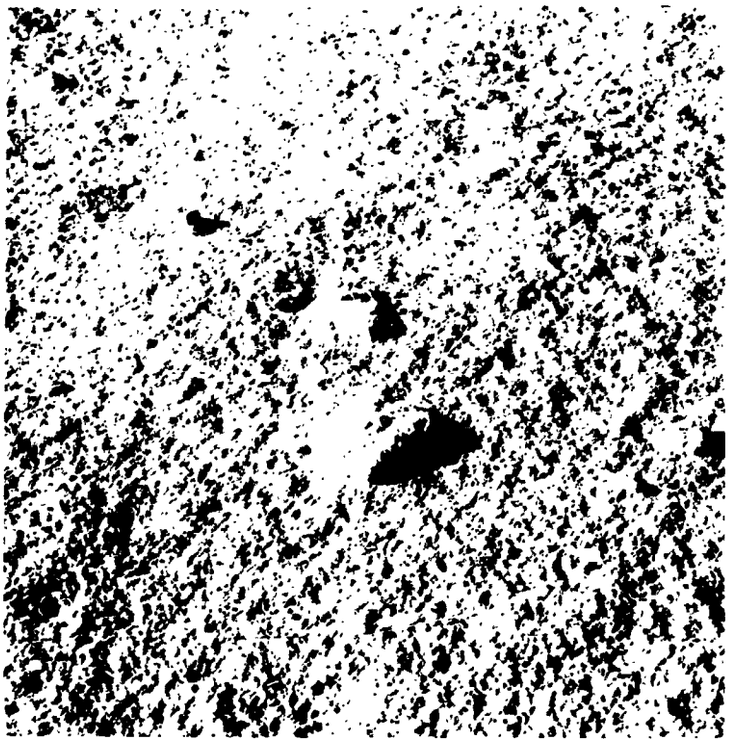
*Fillet: Poorly developed*

*Apparent burial: 1/8-1/4*

*Dust cover: Heavy*

*Comparison with other fragments in area: Crew stated "looks like typical rocks that are in this area"*

*Probable origin: Probably most recently excavated from approx. 3 m diameter crater approx. 2 m south of the sample. Sample could have previously been part of South Ray ejecta.*



*Pre-sampling, looking south (114-18384)*

*SAMPLE 0035**

*SAMPLE: 0050*, 0075* (355, 373)*

*Station: ALSEP (LA)*

*Landmark: Approx. 170 m south-southwest of LM and 50 m south-southeast of ALSEP central station*

*Rock type: Breccia with white "caliche-like" matrix (0050*); friable white rocks, probably breccias (0075*)*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Surface slopes down 3-4° to south-southwest toward floor of approximately 5 m subdued crater which is one of a doublet*

*Fragment population*

*Size range and distribution: Up to 15 cm or greater; .5 to several cm fragments very abundant; larger fragments moderately abundant*

*Color: Whitish rocks and "caliche-like" soil predominate*

*Shapes: Semi-rounded to angular and knobby*

*Fillets: Difficult to resolve; area disturbed*

*Apparent burial: Difficult to resolve; area disturbed*

*Dust cover: Probably high*

*Fines*

*Color: Light gray*

*Compaction: Loose in crater wall and floor*

*Craters*

*Size range and distribution: Area photographed too disturbed to recognize 10 cm sized craters; samples from north-northeast rim of approx. 5 m diameter subdued crater*

*SAMPLE CHARACTERISTICS FOR 0050**

*Size: Small fragments; friable*

*Color: White, "caliche-like"*

*Apparent burial: White fragments apparently lying on surface*

*Dust cover: Not visible*

*Comparison with other fragments in area: Probably representative of most fragments in the area of the crater rim*

*Probable origin: Probably material excavated from 5 m crater down to 1 m depth. Could also represent re-excavated South Ray ejecta.*

*SAMPLE CHARACTERISTICS FOR 0075**

*Size: Sample on surface was approx. 8 x 17 cm. Broken in the bag into many friable fragments*

*Color: White, friable*

*Shape: Irregular, knobby*

*Fillet: Unknown; sample was disturbed before pre-sample photo*

*Apparent burial: Most likely candidate appears disturbed prior to pre-sample photo. Burial line of soil indicates about 1/2 buried.*

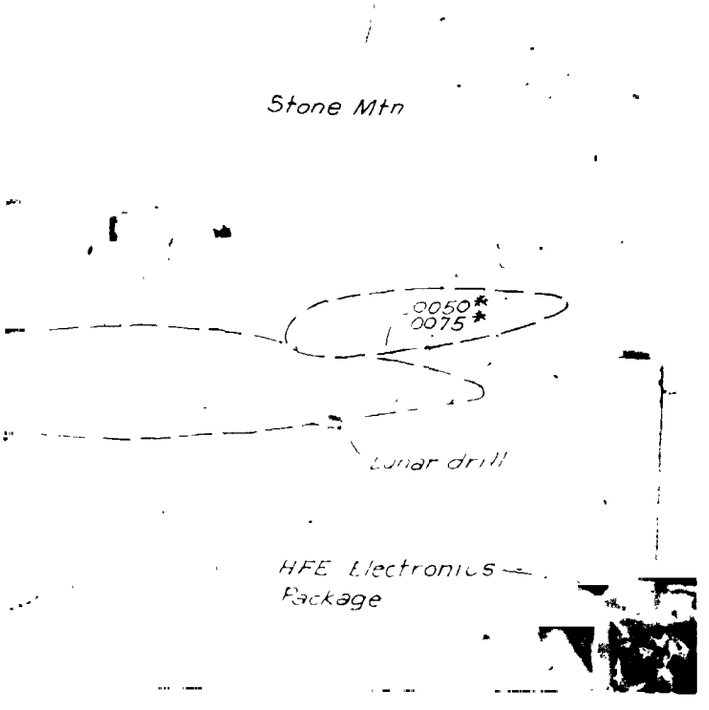
*Dust cover: Heavy*

*Comparison with other fragments in area: Apparently characteristic of many white rocks on the rim of this crater*

*Probable origin: White clast from a Cayley breccia; recently excavated from the 5 m crater, and may represent reworked South Ray ejecta*

a) Post-0050* and pre-0075* sampling, looking west-southwest (114-18386)

b) Pre-sampling, looking south (113-18366)




**SAMPLES 0050* AND 0075***

*SAMPLE: 0095* (4)*

*Station: ALSEP (LA)*

*Landmark: Collected at heat flow hole 1 site about 175 m southwest of LM.*

*Rock type: Glass ball*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Level spot between two subdued 3 m and 5 m craters region generally rolling, hummocky.*

*Fragment population*

*Size range and distribution: ALSEP area generally blocky with 5-15 cm fragments; area of deep core and sample 0095* however much less so; few rocks >5-7 cm in near vicinity.*

*Color: Medium gray.*

*Shapes: Subangular to round.*

*Fillets: Minor.*

*Apparent burial: Slight.*

*Dust cover: Probably high.*

*Fines*

*Color: Medium gray generally; white soil (3 cm down) kicked up in nearby crater.*

*Compaction: Loose in all of ALSEP-deep drill area; especially on small crater rims.*

*Craters*

*Size range and distribution: Heavily cratered area. Craters up to 5 m abundant; forms very rolling terrain.*

*Shape: Subdued.*

*Ejecta: Present around freshest 1-2 m sizes.*

*SAMPLE CHARACTERISTICS*

*Size: About 3-4 cm.*

*Color: Dark.*

*Shape: Spherical.*

*Fillet: Not visible.*

*Apparent burial: Unknown, probably kicked up during drilling.*

*Dust cover: Not visible.*

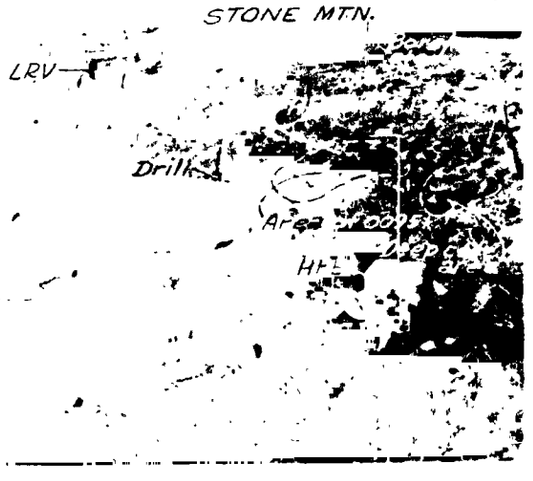
*Comparison with other fragments in area: Not common but several sampled in LA area.*

*Probable origin: Splash glass from South Ray crater.*

*COMMENTS: 0059* observed while placing heat flow probe 2 in only heat flow hole drilled.*

a) *Post-sampling, looking northwest (114-18388)*


b) *Post-sampling, looking south (113-18366)*




***SAMPLE 0095****

*SAMPLE: 0115* (381)*

*Station: 10 (LA)*

*Landmark: Location approximately 60 m southwest of LM (see figure b)*

*Rock type: Black breccia*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: 2-3° to north-northeast into subdued crater.*

*Fragment population*

*Size range and distribution: Up to 11 cm; fragments >3-4 cm unusually sparse; pea-sized fragments low to moderately abundant.*

*Color: Two distinct colors: (1) dark gray (2) whitish*

*Shapes: Tabular-subangular (darker fragments) to subrounded (whitish fragments)*

*Fillets: Poorly developed.*

*Apparent burial: Larger fragments less than 1/3.*

*Dust cover: Moderate.*

*Fines*

*Color: Medium gray to light gray.*

*Compaction: Moderately high in sample area.*

*Craters*

*Size range and distribution: Very few pit-crater-sized craters in the immediate sample vicinity. Local region of station 10 rather heavily cratered including a probable South Ray crater secondary with projectile on rim (see figure b).*

*Shape: Larger craters subdued.*

*Ejecta: None except from secondary (indicated on figure b)*

*SAMPLE CHARACTERISTICS*

*Size: 11 cm x 4 cm x 4 cm*

*Color: Black*

*Shape: Semi-tabular to angular, elongate.*

*Fillet: Poorly developed.*

*Apparent burial: Less than 1/4 to 1/3.*

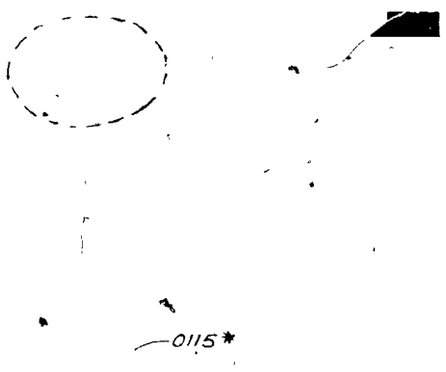
*Dust cover: Low to moderate.*

*Comparison with other fragments in area: Uniquely darker, more tabular and angular. Nearest fragments of similar size are white-chalky, irregularly shaped with knobby surfaces.*

*Probable origin: 0115* may have been most recently excavated from the 18 m crater north of the sample location. (Depth of maximum penetration about 4 m.) Sample may also represent South Ray or North Ray crater ejecta.*

a) *Pre-sampling, looking south (114-18446)*


b) *Pre-sampling, looking northeast (114-18455)*




***SAMPLE 0115****

SAMPLE: 0135* (430)

Station 10 (LA)

Landmark: Four m west of station 10 pan site; 100 m southwest of LM

Rock type: Round glass-coated rock.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level

Fragment population

Size range and distribution: Limit of resolution to 8-10 cm; pea-sized fragments abundant; few >3 cm.

Color: Light gray to whitish.

Shapes: Subrounded to subangular.

Fillets: Moderately well developed.

Apparent burial: Some of larger fragments as much as 1/4 buried; smaller fragments mostly perched.

Dust cover: High on most fragments.

Fines

Color: Light to medium gray.

Compaction: Moderately high.

Craters

Size range and distribution: None in immediate area; photographed area disturbed however.

SAMPLE CHARACTERISTICS

Size: ≈4-5 cm.

Color: Black?

Shape: Round.

Fillet: None.

Apparent burial: Perched in figure (a) but may have been kicked up.

Dust cover: Appears high in pre-sampling photos.

Comparison with other fragments in area: Appears unique in the immediate sample area but glassy fragments apparently not uncommon in the LM-ALSEP vicinity.

Probable origin: Glass coating may be impact-generated splash on rock fragment. Possible source is South Ray crater.


*Pre-sampling, looking north; (gnomon wand broken off) (116-18695)*

*SAMPLE 0135**

*SAMPLE: 0215* (13)*

*Station: 10' (LA)*

*Landmark: In vicinity of 10' station, approx. 115 m southwest of LM; exact location unknown but thought to be near LRV station 10' park position*

*Rock type: Blocky, subangular, white rock; fine grained*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Level*

*Fragment population*

*Size range and distribution: Up to 1 cm abundant; up to 10 cm common*

*Color: Medium gray to distinct whitish rocks common*

*Shapes: Subrounded to irregular, knobby*

*Fillets: Poorly developed on all sizes*

*Apparent burial: Very little on most 5-10 cm rocks; 1/4-1/2 on 0.5 m block just west of 0215**

*Dust cover: Moderately [illegible]*

*Fines*

*Color: Light gray*

*Compaction: Moderate*

*Craters*

*Size range and distribution: None in field of view of pre-sampling photo*

*SAMPLE CHARACTERISTICS*

*Size: 8 x 6 cm*

*Color: White*

*Shape: Blocky, subangular*

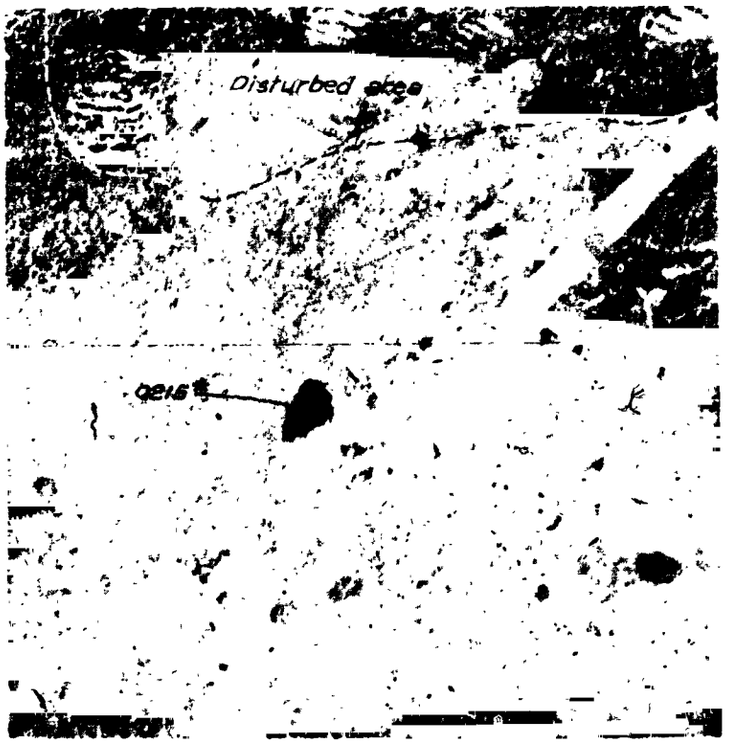
*Fillet: None on photographed face*

*Apparent burial: Almost perched*

*Dust cover: Crew reported moderate*

*Comparison with other fragments in area: Probably typical (except in size) to other light-colored rocks in vicinity; darker fragments more knobby; irregular shaped*

*Probable origin: Probably South Ray ejecta*




*Pre-sampling, looking south (116-18705)*

*SAMPLE 0215**

*SAMPLE: 0235* (15)*

*Station: LM (LA)*

*Landmark: Approx. 30-40 m south to southwest of LM -Y footpad*

*Rock type: Probably breccia with bluish-black matrix and light-colored crystalline clasts; subangular.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Locally gentle, immediate vicinity of sample, slope is several degrees to northeast into 1.5 m subdued crater*

*Fragment population*

*Size range and distribution: Up to 20 cm; pea size very abundant; up to 10 cm moderately abundant*

*Color: Moderate dark gray to light gray; two types distinct in sample area*

*Shapes: Semi-angular to knobby-irregular; semi-angular frags tend to be lighter with smoother surfaces*

*Fillets: Very little on fist-sized frags*

*Apparent burial: 0235* and rock "A" perched--rest of fist-sized and smaller moderately well buried*

*Dust cover: Appears to be moderately heavy on unperched frags*

*Fines*

*Color: Darker fragments are medium gray; lighter frags lighter than soil*

*Compaction: Loose to moderate in immediate sample area on rim of 1.5 m diameter crater*

*Craters*

*Size range and distribution: Six 8 cm to 1.5 m diameter craters in immediate sample area*

*Shape: Small 20-cm sized craters immediately south of 0235* and frag "A" appear to be very fresh, possibly secondaries; larger craters moderately subdued*

*Ejecta: Present as clods in floor and on rims of two 20-cm craters labeled secondary(?)*

*SAMPLE CHARACTERISTICS*

*Size: 5 cm*

*Color: Light gray, chalky color*

*Shape: Subangular, coherent*

*Fillet: None*

*Apparent burial: Perched.*

*Dust cover: Not visible*

*Comparison with other fragments in area: 0235* typical of the lighter colored, smaller, more subangular frags in vicinity. Other class of frags larger, darker gray with knobby surfaces.*

*Probable origin: 0235* probably came into this position as a secondary projectile from a nearby primary (probably not South Ray) due to extreme freshness of small 2[illegible]-cm crater. Sample however may represent South Ray ejecta that has been reexcavated.*

*COMMENTS: General area appears to have generally equal distribution of light (smooth) and darker gray (knobby) breccia(?) fragments.*

*Sample 0235*, pre-sampling looking southeast (117-18829)*

*SAMPLE 0235**

*SAMPLE: 0255* (17)*

*Station: LM (LA)*

*Landmark: Probably collected in vicinity of sample 0235*; indications that sample was carried prior to bagging*

*Rock type: Breccia with a dark aphanitic matrix and small white clasts*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Slope several degrees off to east-northeast in immediate sample area. 0255* overhangs in this direction (possibly into small crater)*

*Fragment population*

*Size range and distribution: Limit of resolution up to 20-cm size; pea-size fragments very abundant; 2-cm to 20-cm size moderately abundant*

*Color: Two distinct types: 1) medium gray and 2) light (whitish); Type 2) in near sample area are smaller (<5 cm) fragments*

*Shapes: Subangular with planar surfaces to subrounded with knobby surfaces*

*Fillets: Moderately developed on 10-cm size fragments; many pea-sized fragments appear perched (possibly disturbed)*

*Apparent burial: Larger fragments range from 1/4 to 1/2 burial*

*Dust cover: Appears moderate to heavy*

*Fines*

*Color: Medium to light gray*

*Compaction: Low to moderate*

*Craters*

*Size range and distribution: 8-cm to 30-cm craters present but not abundant; no sharp fresh craters in near sample area*

*SAMPLE CHARACTERISTICS*

*Size: 15 x 12 x 8 cm*

*Color: Dark aphanitic matrix with about 30% white clasts, glassy coating*

*Shape: Subrounded with some planar surfaces*

*Fillet: Moderately well developed*

*Apparent burial: 1/3 to 1/2 buried*

*Dust cover: Appears to be heavy*

*Comparison with other fragments in area: 0255* is distinct in the immediate vicinity of sample by its subrounded knobby appearance; glass coating and advanced burial. It is however typical of many such rocks in the general area.*

*Probable origin: South Ray ejecta material*

*COMMENTS: Documentation not completed by location photo. Referred to as "half a grapefruit" sample.*


*Sample 0255* pre-sampling, looking south (117-18831)*

*SAMPLE 0255**

*SAMPLE: 0275 (18)*

*Station: LM (LA)*

*Landmark: ∿4 m NNE of LM +Y footpad.*

*Rock type: Glass coated rock; may be a breccia*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Low; surface unusually flat*

*Fragment population*

*Size range and distribution: Limit of resolution to ∿12 cm; pea size abundant*

*Color: Light gray to chalky*

*Shapes: Subangular to subrounded to irregular*

*Fillets: Few on larger frags; many perched frags range from filleted to perched*

*Apparent burial: Little on 2 cm to 12 cm sized frags*

*Dust cover: Moderate to heavy on all sizes*

*Fines*

*Color: Medium gray*

*Compaction: Moderate to moderately high*

*Craters*

*Size range and distribution: None in near environment*

*SAMPLE CHARACTERISTICS*

*Size: 8 x 7 x 6 cm.*

*Color: Medium gray to white cnalky, glass coated*

*Shape: Subrounded, lumpy*

*Fillet: None*

*Apparent burial: Perched*

*Dust cover: Light to moderate*

*Comparison with other fragments in area: Appears to be typical of other perched ∿1-cm sized fragments in local area*

*Probable origin: Perched nature indicates relatively recent deposition; location of 0275 near rim of 27-m crater east of LM (fig. b) indicates it may have been excavated from a maximum of 6 m depth in the Cayley.*

*COMMENTS: May represent re-worked South Ray material.*

*SAMPLE: 0315 (20)*

*Station: LM (LA)*

*Landmark: 5 m north of LM +Y footpad*

*Rock type: Crystalline rock, white crystals or small clasts*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: None*

*Fragment population*

*Size range and distribution: Limit of resolution to 17-18 cm; 6-18 cm frags moderately abundant; <5 cm very abundant*

*Color: Light to medium gray*

*Shapes: Primarily irregular to subrounded, knobby*

*Fillets: Moderately well developed*

*Apparent burial: Extensive on majority of larger fragments; 1/8 - 3/4 burial range*

*Dust cover: Heavy*

*Fines*

*Color: Light gray*

*Compaction: Moderately high as indicated by footprints*

*Craters*

*Size range and distribution: Very sparse for all sizes*

*SAMPLE CHARACTERISTICS*

*Size 17 cm x 8 cm x 5 cm*

*Color: Medium gray*

*Shape: Very angular (sharp edges), tabular (unusually so); fractured along planar zones*

*Fillet: Poorly developed*

*Apparent burial: 1/8 or less of rock*

*Dust cover: Low to moderate*

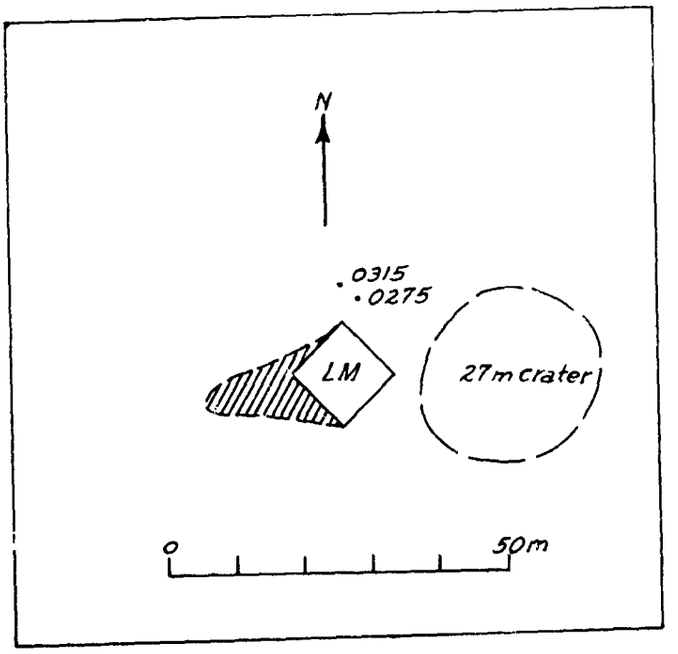
*Comparison with other fragments in area: Unique. Tabular, very angular compared to irregular shaped, knobby rocks surrounding it of similar size; 0315 not as buried as majority of larger frags*

*Probable origin: Sample may represent part of South Ray ejecta or material comprising Cayley down to 6 m below LM site. 0315 was however very likely excavated by 27 m diameter crater east of LM. (Refer to 0275, fig. b)*

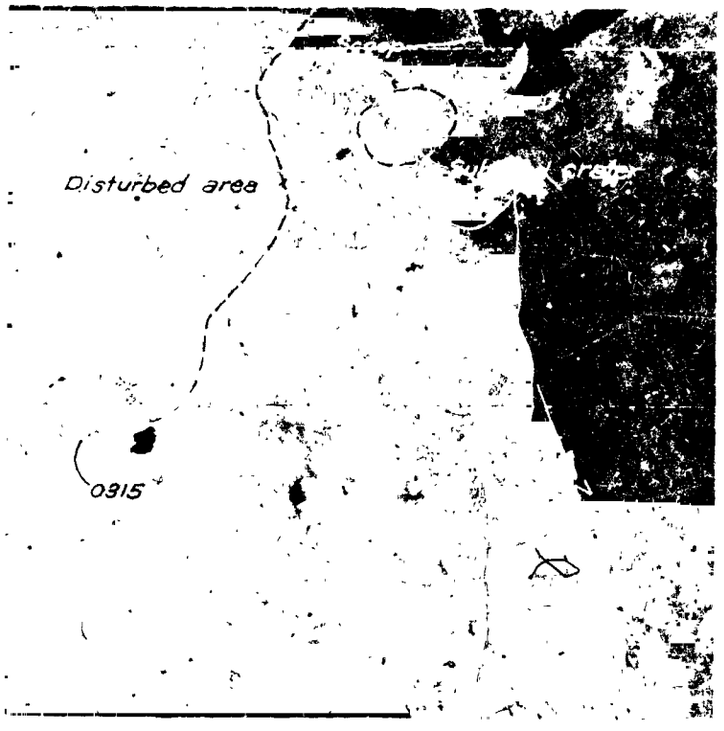
*COMMENTS: The crystalline nature of this sample makes it of unusual significance.*

a) Pre-sampling, looking southeast (117-18834)


b) Planimetric map showing samples 0275 and 0315 relative to LM and 27 m crater.




SAMPLES 0275 AND 0315




*Sample 0315, pre-sampling, looking southwest (117-18836) (refer to sample 0275, figure b)*

*SAMPLE 0315*

SAMPLE: 0335* (331)

Station: LRV park (LA)

Landmark: Approximately 70 m east-northeast of LM +Y footpad and 25 m northwest of LRV final park position.

Rock type: Hard, sugary crystalline rock.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level

Fragment population

Size range and distribution: Limit of resolution to 10 cm; pea-sized fragments abundant; very few rock >2-3 cm in immediate area.

Color: Medium gray to whitish.

Shapes: Tabular and angular to irregular and knobby.

Fillets: Poor to moderately developed.

Apparent burial: Most larger fragments 1/8 to 1/3.

Dust cover: Moderately high.

Fines

Color: Light gray.

Compaction: Rather firm.

Craters

Size range and distribution: None present >3-4 cm in immediate sample area.

SAMPLE CHARACTERISTICS

Size: 5 x 9 cm.

Color: Whitish-light gray.

Shape: Tabular, angular.

Fillet: Moderately well developed on east side.

Apparent burial: 1/3-1/2

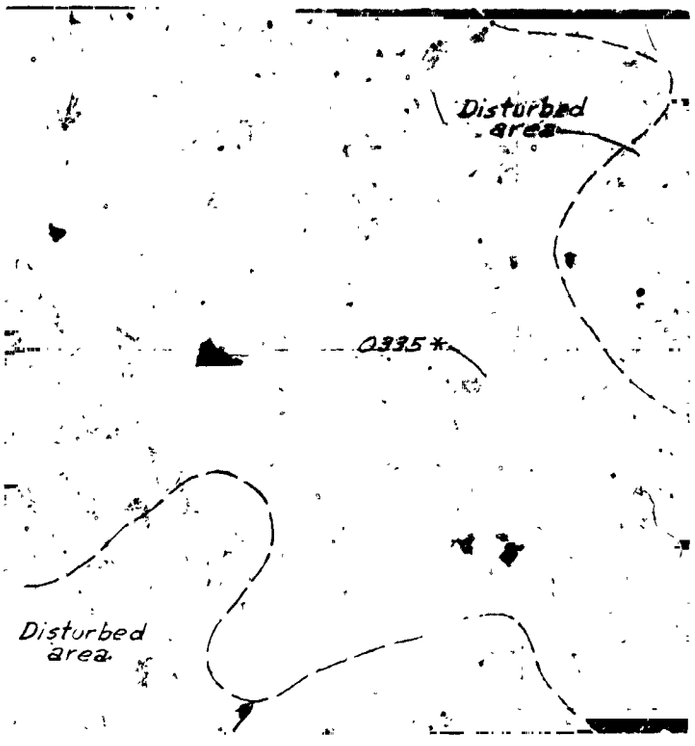
Dust cover: Moderately heavy.

Comparison with other fragments in area: 0335* is distinct in the sample area by virtue of its tabular and angular nature. Closest similar sized fragments just to the south of 0335* are darker and irregular (knobby) in shape.

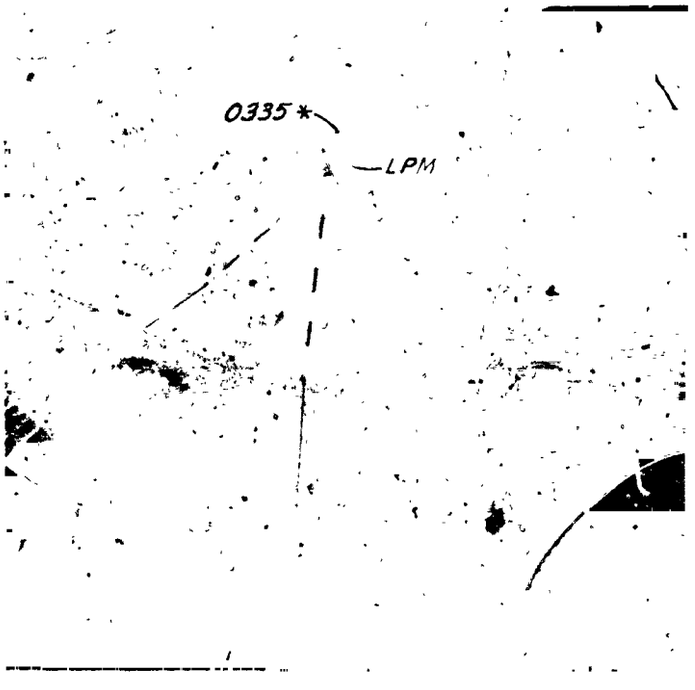
Probable origin: Most likely represents South Ray crater ejecta.

COMMENTS: This rock used for LPM measurement.

a) Pre-sampling, looking southeast (116-18713)




b) Post-sampling, on LPM looking southeast (116-18721)




SAMPLE 0335*

SAMPLE: 0500, 0510* (350, 349)

Station: 10 (LA)

Landmark: Collected about 5 m southeast of station 10 pan site approximately 100 m southwest of LM.

Rock type: Rake (0510*) - soil (0500) sample.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level

Fragment population

Size range and distribution: Up to 2-3 cm; very few pebble-sized fragments (much less than average in LM/ALSEP area).

Color: Whitish to light gray.

Shapes: Generally equidimensional; subangular to subrounded.

Fillets: Very poorly developed.

Apparent burial: 1/8-1/4 on 2-3 cm fragments.

Dust cover: Not visible.

Fines

Color: Light gray.

Compaction: Moderate.

Craters: None in vicinity.

SAMPLE CHARACTERISTICS FOR 0500

Size: <1 cm.

Color: Light to medium gray.

Comparison with other soil in area: Texture and color appear typical.

SAMPLE CHARACTERISTICS FOR 0510*

Size: 1-3 cm.

Color: Light gray to whitish.

Shape: Subangular.

Fillets: Absent to poorly developed.

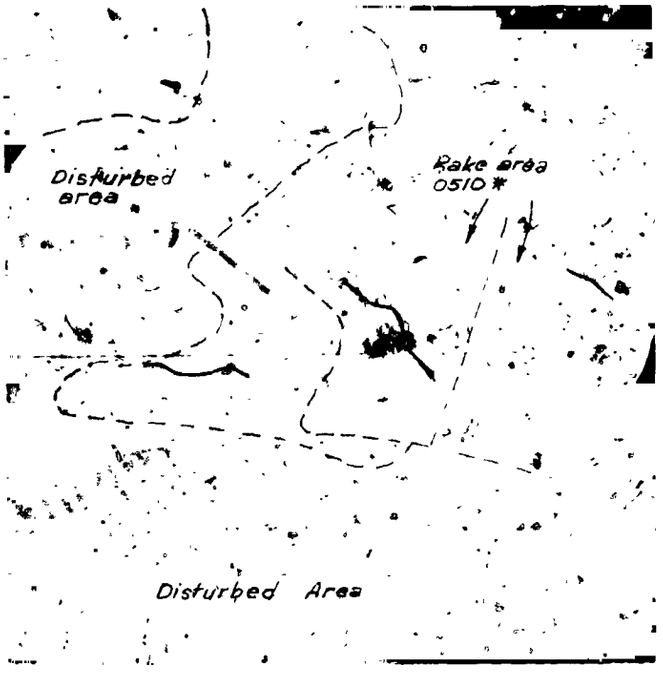
Apparent burial: Perched to slight.

Dust cover: Not visible.

Comparison with other fragments in area: Probably rake fragments are typical of the relatively few rocks in area.

Probable origin: Mostly South Ray crater ejecta and local Cayley material.

a) Pre-sampling, looking north. 0500 not identified, but from this vicinity (116-18686).




b) Post-sampling, looking north. 0500 not identified, but from this vicinity (116-18687)


SAMPLES 0500 AND 0510*

SAMPLE: 0600, 0610* (348, 347)

Station: 10' (LA)

Landmark: About 10 m northwest of LRV and 120 m southwest of LM.

Rock type: Rake (0610*) - soil (0600) sample.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level.

Fragment population

Size range and distribution: Up to 7-8 cm; 3-6 cm fragments unusually abundant.

Color: Light gray to whitish.

Shapes: Subrounded.

Fillets: None.

Apparent burial: 1/8.

Dust cover: Moderate to high.

Fines

Color: Medium gray.

Compaction: Moderate to high.

Craters: None in immediate vicinity.

SAMPLE CHARACTERISTICS FOR 0600

Size: Unknown.

Color: Light gray on surface.

Comparison with other soil in area: Typical in color and texture.

Probable origin: Contains material from South Ray and North Ray craters.

COMMENTS: Sampled to depth of 5-8 cm.

SAMPLE CHARACTERISTICS FOR 0610*

Size: ~1-6 cm in diameter.

Color: Light gray to whitish.

Shape: Primarily subrounded and irregular.

Fillet: None.

Apparent burial: 1/8 of fragment.

Dust cover: Moderately high.

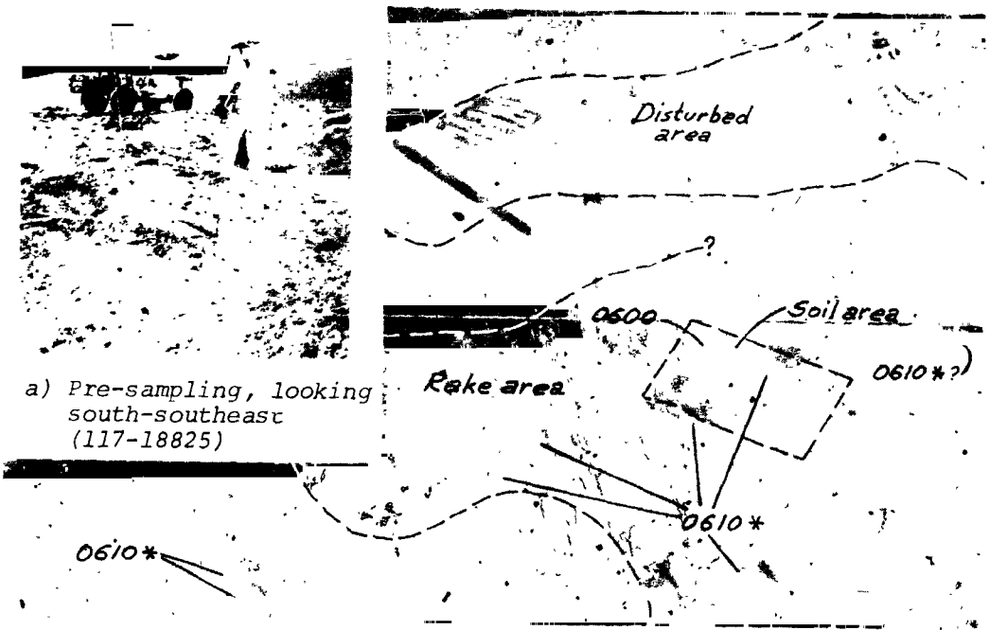
Comparison with other fragments in area: Whitish rake fragments appear typical of fist-sized rocks in local area. Some white clasts visible.

Probable origin: South Ray crater ejecta.

COMMENTS: 15 or more fragments; some glass coated.

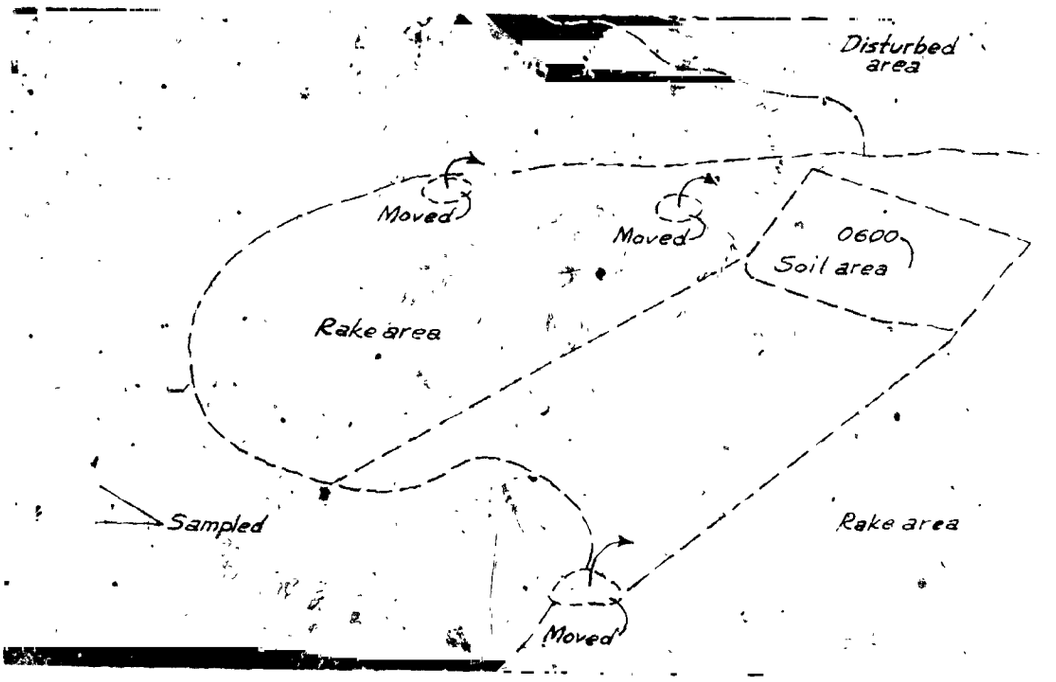


C.2




a) Pre-sampling, looking south-southeast (117-18825)

c) Post-sampling, looking north (116-18683)




b) Pre-sampling, looking north-northeast (116-18681)

SAMPLES 0600 AND 0610*

*SAMPLE: FSR-4a? (LRL number not assigned)*

*Station: LM (LA)*

*Landmark: Collected in LM area(?)*

*Rock type: Glass-covered rock.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Broadly rolling*

*Fragment population*

*Size range and distribution: Details unknown, but general area characterized by abundant (10-15%) 3-10 cm cobbles and scattered blocks up to .5 m.*

*Color: Gray*

*Shapes: Angular to subrounded.*

*Fillets: Generally poorly developed.*

*Apparent burial: Some partially buried.*

*Dust cover: Not visible.*

*Fines*

*Color: Medium gray.*

*Compaction: Firm*

*Craters*

*Size range and distribution: Scattered 1-3 m craters; larger craters up to 30 m.*

*Shape: Mostly subdued.*

*Ejecta: Not discernible.*

*SAMPLE CHARACTERISTICS*

*Size: Unknown.*

*Color: Black.*

*Shape: Unknown.*

*Fillet: Unknown.*

*Apparent burial: Unknown.*

*Dust cover: Unknown.*

*Comparison with other fragments in area: Part of population of black glass-covered rocks near LM.*

*Probable origin: South Ray crater ejecta.*

*COMMENTS: No photographic or television documentation. Thought to have been collected shortly before departure from LM early in EVA 2.*

SAMPLE: 1015* (FSR-1)

Station: 1

Landmark: Rim of Flag crater; 10 m south of Plum crater.

Rock type: Breccia with partial coating of glass on two sides; medium gray.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level

Fragment population

Size range and distribution: Up to 1 cm fairly common; 5 to 20 cm sparse; appears to be bi-modal distribution in these two size ranges; larger fragments absent in sample area.

Color: Medium gray.

Shapes: Angular to subrounded.

Fillets: Absent to poorly developed.

Apparent burial: Slightly buried to perched.

Dust cover: Appears to be some dust cover.

Fines

Color: Medium gray

Compaction: Moderate.

Craters

Size range and distribution: Up to 5 cm dense; up to 50 cm common in sample vicinity.

Shape: Subdued.

Ejecta: Not visible.

SAMPLE CHARACTERISTICS

Size: 8 x 10 x 15 cm.

Color: Medium gray.

Shape: Angular, somewhat irregular.

Fillet: None.

Apparent burial: Perched.

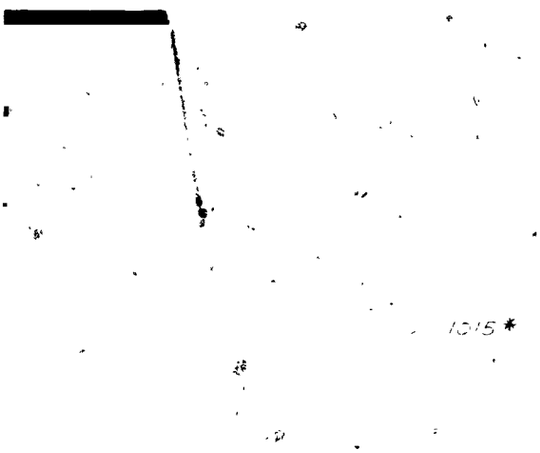
Dust cover: Appears to be somewhat dust covered.

Comparison with other fragments in area: Largest fragment in immediate vicinity; appears typical of other fragments in same size range in general area.

Probable origin: Angularity and lack of fillet and burial suggests has not been in this position for a long period of time.

a) *Pre-sampling, looking northeast (109-17810)*

b) *Pre-sampling, looking north (109-17808)*




***SAMPLE 1015****

SAMPLE: 1016* (FSR-2 "Big Muley")

Station: 1

Landmark: East rim of Plum crater

Rock type: Breccia. gray matrix, white clasts

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: At break in slope into Plum crater

Fragment population

Size range and distribution: 5-10 cm fragments common; up to 30 cm fragments sparse.

Color: Medium gray

Shapes: Mostly angular, some rounded

Fillets: Absent to poorly developed

Apparent burial: Slightly buried to perched.

Dust cover: Not visible

Fines

Color: Medium gray

Compaction: Not visible.

Craters

Size range and distribution: Not visible.

Shape: Not visible.

Ejecta: Not visible.

SAMPLE CHARACTERISTICS

Size: 25 cm.

Color: Medium gray with white clasts.

Shape: Rounded

Fillet: About 2-cm high on east side; absent on west side

Apparent burial: 1/10 of rock.

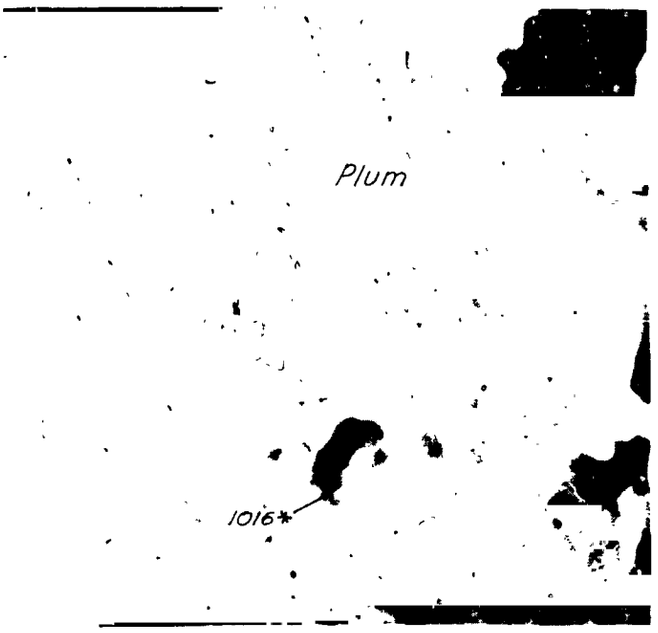
Dust cover: Not visible.

Comparison with other fragments in area: Larger and more rounded than most of fragments.

Probable origin: Rounded nature suggests ejected from one of older craters in area, and not from South Ray.

COMMENTS: No photo documentation available; above description based on television images.

a) *Pre-sampling, looking south (photo from TV image)*




b) *Pre-sampling, looking south (photo from TV image)*


***SAMPLE 1016* (see also illustration for 1220*)***

*SAMPLE: 1135*, 1180*, 1195* (362, 369, 2)*

*Station: 1*

*Landmark: Northeast rim of Plum crater*

*Rock type: 1195* is a glass-coated rock, possibly a breccia; 1135* is a light-colored breccia with white clasts; 1180* is soil.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: At break in slope into Plum crater*

*Fragment population*

*Size range and distribution: Fragments larger than 10 cm sparse; samples 1195* and 1135* are two of the three largest in immediate vicinity; .5-2 cm fragments common.*

*Color: Light gray, light to medium gray; some appear lighter than regolith.*

*Shapes: Generally angular, some rounded.*

*Fillets: Moderately well developed on fragment under gnomon (not collected); otherwise poorly developed or absent.*

*Apparent burial: Fragment under gnomon about 1/2 buried; others mostly perched on surface.*

*Dust cover: Not apparent; crew reported dust on 1135*.*

*Fines*

*Color: Medium gray at surface; crew reported light material at 1-cm depth nearby.*

*Compaction: Moderate to loose.*

*Craters*

*Size range and distribution: Greater than 1 m sparse; up to 1 m common; up to 10 cm dense.*

*Shape: Generally subdued; row of four 20-40 cm, fairly sharp craters just south of gnomon.*

*Ejecta: None recognizable except around 30-cm crater south of gnomon.*

*SAMPLE CHARACTERISTICS: Do not know which sample is 1195* and which is 1135*. Description is for sample north of gnomon leg.*

*Size: 6 cm*

*Color: Light gray*

*Shape: Angular, irregular.*

*Fillet: None visible.*

*Apparent burial: 1/4 of sample.*

*Dust cover: None visible.*

*Comparison with other fragments in area: Second largest of three largest in vicinity; less irregular than largest (not collected); otherwise appears similar to these and most smaller fragments in area.*

*Probable origin: Lack of filleting and burial, and angularity, suggest not exposed for long period of time.*

*COMMENTS: Even though angular, presence of material from South and North Ray craters, and nearness to Flag and Plum craters, suggests a difficult to interpret, and possibly a complex, history. On rim of Plum crater; part of 4-part radial sample.*

*SAMPLE CHARACTERISTICS: Do not know which sample is 1195* and which is 1135*. Description is for sample south of gnomon leg.*

*Size: 4 cm.*
*Color: Light gray.*
*Shape: Angular.*
*Fillet: None visible.*
*Apparent burial: 1/10 of sample.*
*Dust cover: None visible.*
*Comparison with other fragments in area: Smallest of three largest rocks in area; angular, but more regular than other two larger rocks; appears similar to most other fragments in area.*
*Probable origin: Lack of filleting and burial, and angularity, suggest not exposed for long period of time.*

*COMMENTS: Even though angular, presence of material from South and North Ray craters, and nearness to Flag and Plum craters, suggests a difficult to interpret, and possibly a complex, history. On rim of Plum crater; part of 4-part radial sample.*

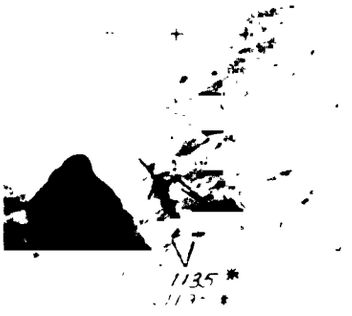
*SAMPLE CHARACTERISTICS FOR 1180*.*

*Size: Unknown.*
*Color: Medium gray.*
*Comparison with other soil in area: Appears typical in color and granularity.*
*Probable origin: Largely a mixture of ejecta from North Ray, South Ray, Flag, and Spook craters.*

*COMMENTS: Should be several small pebble-size fragments in sample. Exposure age probably representative of, or skewed toward, South Ray crater age. On rim of Plum crater; part of 4-part radial sample.*


a) Pre-sampling, looking south (114-18405)

b) Pre-sampling, looking southeast (109-17800)




c) Pre-sampling, looking west (109-17799)

**SAMPLES 1195*, 1135*, 1180***

SAMPLE: 1155*, 1500*[1] (371, 363)

Station: 1

Landmark: 30 m east of Flag crater, 35 m northeast of Plum crater.

Rock type: 1500* is soil; 1155* consists of four fragments (probably breccias)

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level

Fragment population

Size range and distribution: Up to 1 cm abundant; up to 4 cm common; larger fragments absent in sample area.

Color: Light gray.

Shapes: Angular to rounded.

Fillets: Absent to poorly developed.

Apparent burial: Most fragments perched; a few slightly buried except for some that look like indurated regolith, which may be up to 1/2 buried.

Dust cover: Crew reported everything covered.

Fines

Color: Medium gray.

Compaction: Moderate.

Craters

Size range and distribution: Up to 5 cm abundant; up to 50 m common; larger are sparse.

Shape: Subdued, except for 15 cm crater just north of photometric chart which is sharp with moderately raised rim.

Ejecta: Not visible.

SAMPLE CHARACTERISTICS FOR 1500*

Size: Unknown.

Color: Medium gray.

Comparison with other soil in area: Appears typical of other soil in area.

Probable origin: Includes material ejected from North Ray, South Ray, Flag, and Plum craters.

COMMENTS: About 3/4 crater diameter away from Plum crater; farthest out in 4-part radial sample of Plum crater.

SAMPLE CHARACTERISTICS FOR 1155*. Apparently four fragments were collected and because all four fragments are so similar, description will apply to all four.

Size: 4 cm

Color: Light gray

Shape: Subangular

Fillet: None

Apparent burial: Perched

Dust cover: Crew reported dust covered; not visible in photos.

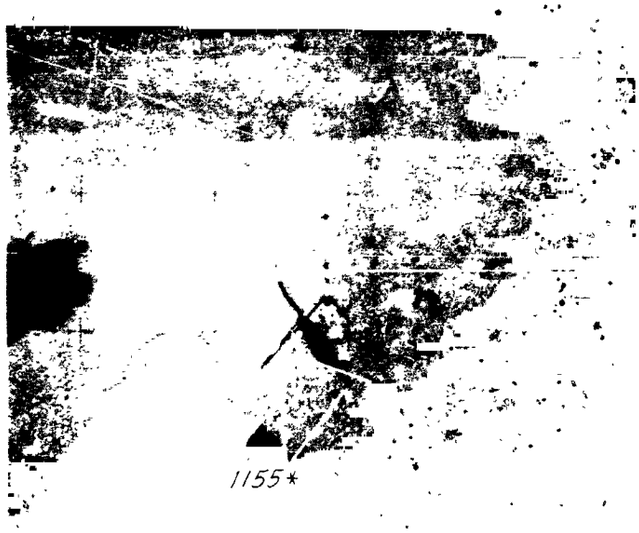
Comparison with other fragments in area: Typical of the more angular fragments in area; one fragment in cluster by gnomon leg is rounded, but was not collected.

Probable origin: Angularity, and lack of fillets and burial, suggests fragments have been in this position for a short period of time.

COMMENTS: About one crater diameter away from Plum crater; farthest out in 4-part radial sample of Plum crater.

[1]Since preparation of this data, the LRL number of sample 61500 has been changed to 61140.

a) Pre-sampling, looking west (109-17796)




b) Post-sampling, looking south (114-18397)


SAMPLES 1155* AND 1500*

a) *Pre-sampling, looking north (11-18396)*

b) *Enlargement of above*

*SAMPLES 1155* AND 1500**

SAMPLE: 1120*[1], 1510* (354, 372)

Station: 1

Landmark: 20 m east of Flag crater

Rock type: Rake (1510*)-soil (1120*) sample

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Level

Fragment population

Size range and distribution: Up to 1 cm common; up to 10 cm sparse; none larger in immediate area.

Color: Medium gray.

Shapes: Angular to rounded.

Fillets: Poorly developed to absent.

Apparent burial: Slightly buried to perched; several 2-cm angular fragments in and near 1-m crater north of gnomon markedly perched.

Dust cover: Not visible.

Fines

Color: Medium gray.

Compaction: Moderate.

Craters

Size range and distribution: Up to 5 cm dense; up to 3 m fairly common.

Shape: Generally subdued; one 1-m crater just north of gnomon with sharp, raised rim.

Ejecta: None visible.

SAMPLE CHARACTERISTICS FOR 1120*

Size: <1 cm

Color: Medium gray soil and fragments.

Shape: One 4-cm fragment apparently collected, subrounded.

Fillet: Moderately well developed on 4-cm fragment.

Apparent burial: 4-cm fragment 1/4 buried.

Dust cover: Not visible on fragments.

Comparison with other soil in area: Appears typical in color and granularity; 4-cm fragment intermediate in rounding; appears to be somewhat more buried and has better-developed fillet.

Probable origin: Includes contributions from North Ray, South Ray, Flag, and Plum craters.

COMMENTS: About 1/3 crater diameter away from Plum crater; second closest to rim in 4-part radial sample.

SAMPLE CHARACTERISTICS FOR 1510*

Size: Mostly >1 cm

Shape: Angular to rounded.

Fillets: Poorly developed to absent.

Apparent burial: Slightly buried to perched.

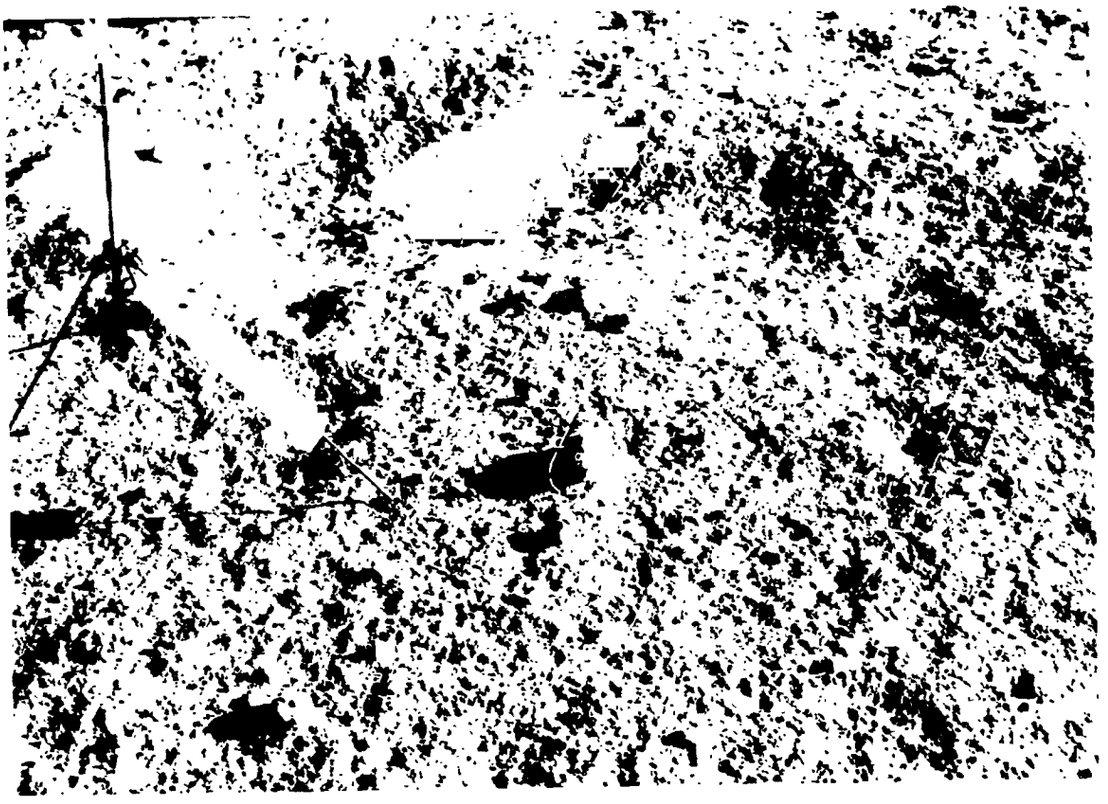
Dust cover: Not visible.

Comparison with other fragments in area: Appear typical of smaller fragments outside rake area.

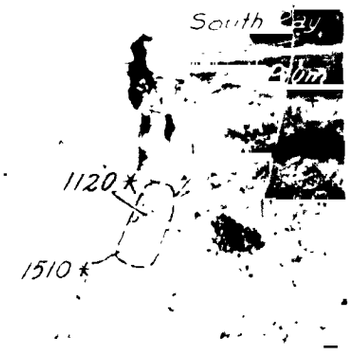
Probable origin: Includes contributions from North Ray, South Ray, Flag, and Plum craters.

COMMENTS: About 1/3 crater diameter away from Plum crater; second closest to rim in 4-part radial sample.

[1]Since preparation of this data, the LRL number of sample 61120 has been changed to 61500.



a) Pre-sampling, looking north (114-18390)




b) Pre-sampling, looking south (109-17795)


c) Post-sampling, looking north (114-18395)

SAMPLES 1120* AND 1510*

*SAMPLE: 1160*, 1175* (356, 364)*

*Station: 1*

*Landmark: Northeast rim of Plum crater*

*Rock type: 1160* is soil; 1175* is breccia*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Level*

*Fragment population*

*Size range and distribution: Up to 1 cm common; 1-3 cm sparse; two 5-cm in vicinity including sample 1175*; .75 m boulder about 2 m north of sample.*

*Color: Light to medium gray; appear slightly lighter than regolith.*

*Shapes: Generally angular, irregular*

*Fillets: Poorly developed to absent; .75 m boulder has no fillets--overhangs surface.*

*Apparent burial: Slightly buried to perched; .75 m boulder is perched.*

*Dust cover: Crew reported dust covered; some dust visible on .75 m boulder.*

*Fines*

*Color: Medium gray at surface*

*Compaction: Loose*

*Craters*

*Size range and distribution: Up to 5 cm dense; up to .5 m common; up to 2 m sparse.*

*Shape: Subdued*

*Ejecta: None visible.*

*SAMPLE CHARACTERISTICS FOR 1175**

*Size: 6 cm*
*Color: Light gray*
*Shape: Rounded*
*Fillet: None visible*
*Apparent burial: Perched*
*Dust cover: Covered (crew description)*
*Comparison with other fragments in area: More rounded; color, lack of burial and fillet typical.*
*Probable origin: Appears more rounded than fragments that appear to be ejecta from South Ray crater; may be from one of older craters in the area.*

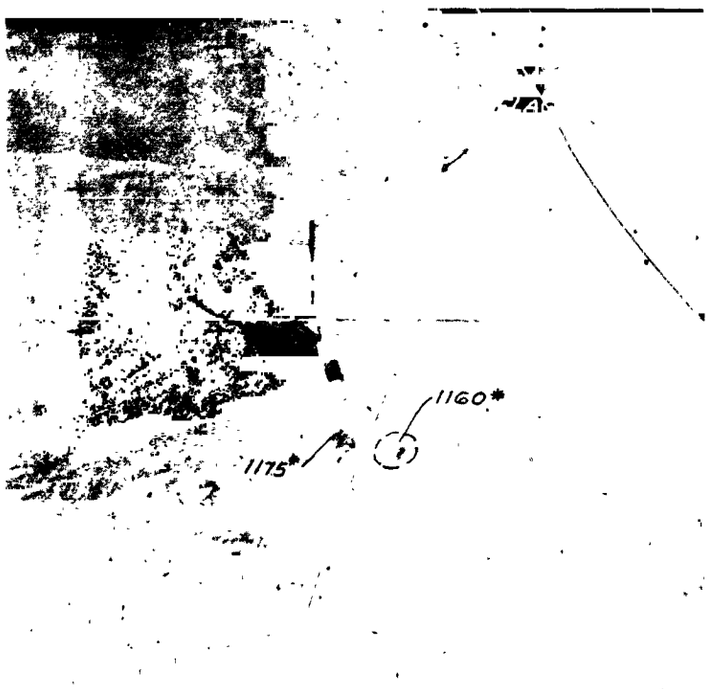
*COMMENTS: About 1/2 crater diameter away from Plum crater; second farthest out in 4-part radial sample.*

*SAMPLE CHARACTERISTICS FOR 1160**

*Size: Unknown*
*Color: Medium gray*
*Comparison with other soil in area: From spot where disturbed by footprint, but appears typical in granularity and color.*
*Probable origin: From rim of 10-cm crater; may contain material from North Ray, South Ray, Flag, and Plum craters.*

*COMMENTS: Should contain several pebble size fragments. About 1/2 crater diameter away from Plum crater; second farthest out in 4-part radial sample.*

a) *Pre-sampling, looking northwest (109-17798)*




b) *Pre-sampling, looking north (114-18401)*

*SAMPLES 1160* AND 1175**

*SAMPLE: 1220*, 1240*; 45*-49*; 1255* (357, 352)*

*Station: 1*

*Landmark: East rim of Plum crater*

*Rock type: 1240* is soil from top of trench; 1220* is soil from bottom of trench. Both contain rock chips. Those in bag 352 are numbered 1245*-49* and 1255*.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: At break in slope into Plum crater*

*Fragment population*

*Size range and distribution: Fragments larger than 10 cm sparse in general area; vicinity of sample .5 cm-2 cm common, larger are absent.*

*Color: Medium gray.*

*Shapes: Generally angular; some rounded.*

*Fillets: Poorly developed.*

*Apparent burial: Generally perched.*

*Dust cover: Not visible.*

*Fines*

*Color: Medium gray at surface, light gray just below surface*

*Compaction: Loose*

*Craters*

*Size range and distribution: Greater than 1 m sparse; up to 1 m common; up to 10 cm dense.*

*Shape: Generally subdued*

*Ejecta: None recognizable*

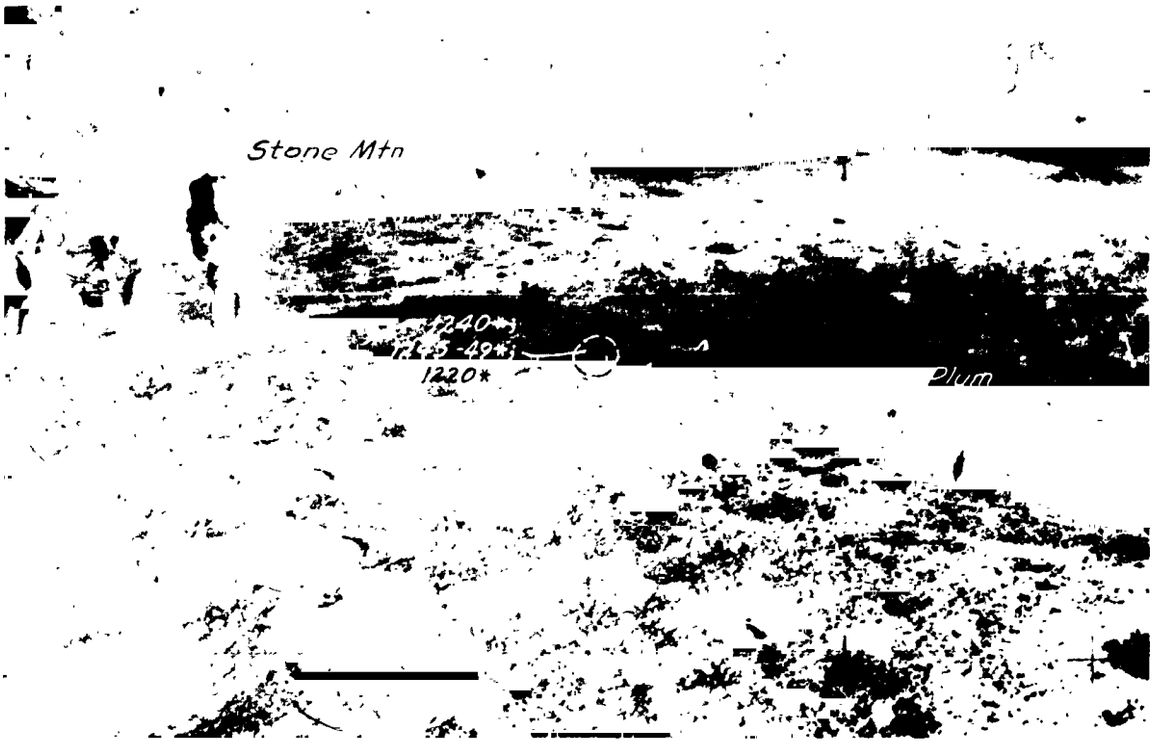
*SAMPLE CHARACTERISTICS*

*Size: Unknown*

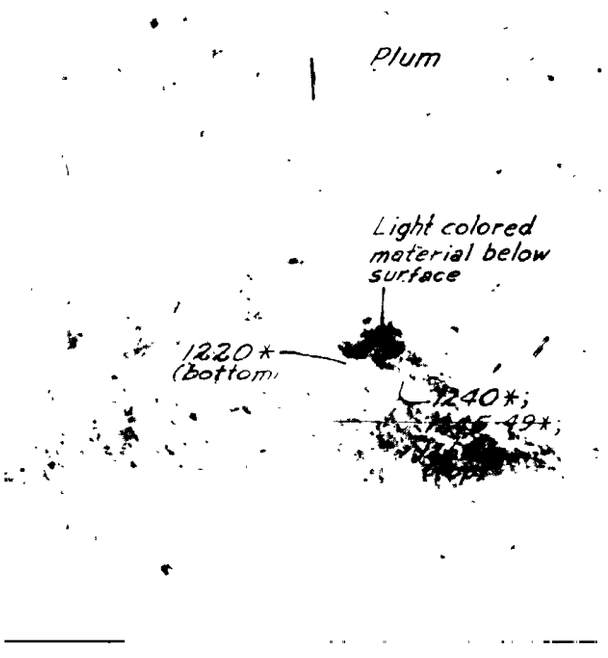
*Color: 1240* is medium gray; 1220* is light gray*

*Comparison with other soil in area: Texture and albedo of soil where 1240* taken appears typical of area; cannot tell from present data if lighter material such as 1220* is continuous in subsurface.*

*Probable origin: Ejecta from Plum crater; likely originally North Ray ejecta that has darkened at surface; probably small amount of South Ray ejecta at surface but not enough to lighten the surface appreciably.*




a) Pre-sampling, looking south (109-17789)




b) Post-sampling, looking southwest (109-17801)

SAMPLES 1220*; 1240*; 1245-49*; (AND 1016*)

*SAMPLE: 1295*, 1280* (353, 368)*

*Station: 1*

*Landmark: Southeast rim of Flag crater, southwest rim of Plum crater.*

*Rock type: 1295* is from breccia boulder, gray matrix, white clasts and green clasts; 1280* is soil sample of fillet around boulder.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: At break in slope into Plum crater*

*Fragment population*

*Size range and distribution: Sample 1295* from 2-m (largest in area) boulder; up to 1-cm fragments abundant; up to 5-cm fragments common; larger are sparse.*

*Color: Light to medium gray*

*Shapes: Generally angular; 2-m boulder rounded.*

*Fillets: Absent to poorly developed, except well developed, about 10 cm high, fillet on boulder.*

*Apparent burial: Generally perched, except boulder 4/5 buried.*

*Dust cover: Not apparent, except boulder appears to be mostly covered.*

*Fines*

*Color: Medium gray at surface; light gray in subsurface, at least in some spots.*

*Compaction: Moderate to loose*

*Craters*

*Size range and distribution: Sparse in immediate vicinity of sample.*

*Shape: One 2-m fresh, blocky (cloddy?) irregular and sharp-rimmed crater 5 m north of boulder.*

*Ejecta: Some of perched angular fragments in vicinity of sample site possibly from sharp crater.*

*SAMPLE CHARACTERISTICS FOR 1295**

*Size: 6 cm*

*Color: Light gray*

*Shape: Rounded on exposed surface*

*Fillet: Well developed around boulder*

*Apparent burial: None of sampled portion of boulder buried*

*Dust cover: Probably moderate on upper part of sample*

*Comparison with other fragments in area: Boulder more rounded than most of the smaller fragments in area.*

*Probable origin: Too rounded to be from South Ray crater; could be from any older craters in area.*

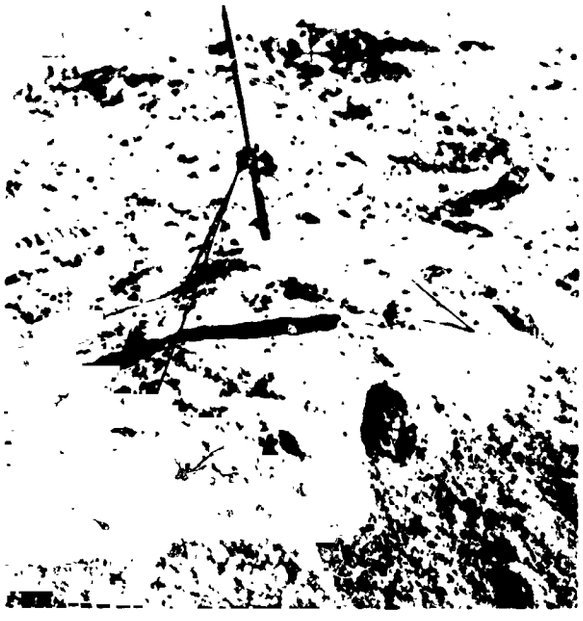
*SAMPLE CHARACTERISTICS FOR 1280**

*Size: Unknown*

*Color: Medium gray*

*Comparison with other soil in area: From fillet on 2-m boulder; looks similar to other soil in area; cannot tell from photos or transcript if it is lighter in the subsurface at the spot sampled.*

*Probable origin: Mixture of ejecta from North Ray, South Ray, Flag, and Plum craters, plus material eroded from sampled boulder.*



a) Pre-sampling, looking north (114-18412)

b) Post-sampling, looking north (114-18414)

c) Pre-sampling looking east (109-17 4)

d) P sampling, looking (109-17802)

SAMPLES 0* AND 1295*

a) *Pre-sampling 1280*; post-sampling 1295*, looking north (114-18414)*

b) *Pre-sampling, looking west (109-17802)*

***SAMPLES 1280* AND 1295****

SAMPLE: 2235*-37*, 2240* (5, 6)

Station: 2

Landmark: Southeast rim of Buster crater.

Rock type: 2235*-37* consists of three rock fragments; 2240* is soil. Two of the rock fragments are whitish, one is angular to subrounded and dusty.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: On rim of Buster; surface slopes gently to south toward LRV.

Fragment population

Size range and distribution: Up to 20 cm.

Color: Gray, same as soil.

Shapes: Mainly angular to subround.

Fillets: None obvious.

Apparent burial: About half are perched; other half buried up to 50%.

Dust cover: Crew reported dust; not visible in photo.

Fines

Color: Gray, same as fragments.

Compaction: Footprints sink about 1 cm; fine-grained material forms small clods where compact.

Craters

Size range and distribution: 2 cm and smaller very common; sample area dominated by 0.3-0.5 m craters.

Shape: Subdued.

Ejecta: None visible.

SAMPLE CHARACTERISTICS FOR 2235*-37*

Size: Consists of three fragments. Largest is about 6 cm; the other two are smaller.

Color: Largest gray; the other two are whitish.

Shape: Angular; surface texture on largest appears smoother than the other two.

Fillet: None visible.

Apparent burial: Largest is perched; other two buried about one third.

Dust cover: Largest (nearest scoop) is dust covered.

Comparison with other fragments in area: Angularity and surface texture are similar to other fragments.

Probable origin: Uncertain, but may be related to Buster.

SAMPLE CHARACTERISTICS FOR 2240*

Color: Gray, about same color as fragments.

Comparison with other soil in area: Appears typical of soil in area. Probably contains some small fragments.

a) *Pre-sampling, looking south (109-17838)*


b) *Post-sampling of 2235*-37*, looking south (109-17840)*


***SAMPLES 2235*-37* AND 2240****

SAMPLE: 2255* (7)

Station: 2

Landmark: Rim of Buster crater.

Rock type: Elongate, angular breccia; light clasts visible.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: On rim of Buster, surface slopes gently to south.

Fragment population

Size range and distribution: Up to 20 cm; mainly 1-2 cm.

Color: Gray, lighter than soil.

Shapes: Very angular.

Fillets: None visible.

Apparent burial: Two largest fragments about 1/4-1/3 buried, burial of small fragments not visible.

Dust cover: Not visible.

Fines

Color: Gray

Compaction: Not apparent.

Craters

Size range and distribution: Up to .5 m, but mainly less than 5 cm.

Shape: All subdued except one fresh crater about .25 m south of scoop.

Ejecta: None visible except around fresh crater .25 m south of scoop.

SAMPLE CHARACTERISTICS

Size: 17-20 cm long estimated from comparison with scoop.

Color: Gray, patchy; slightly lighter than soil.

Shape: Angular, blocky.

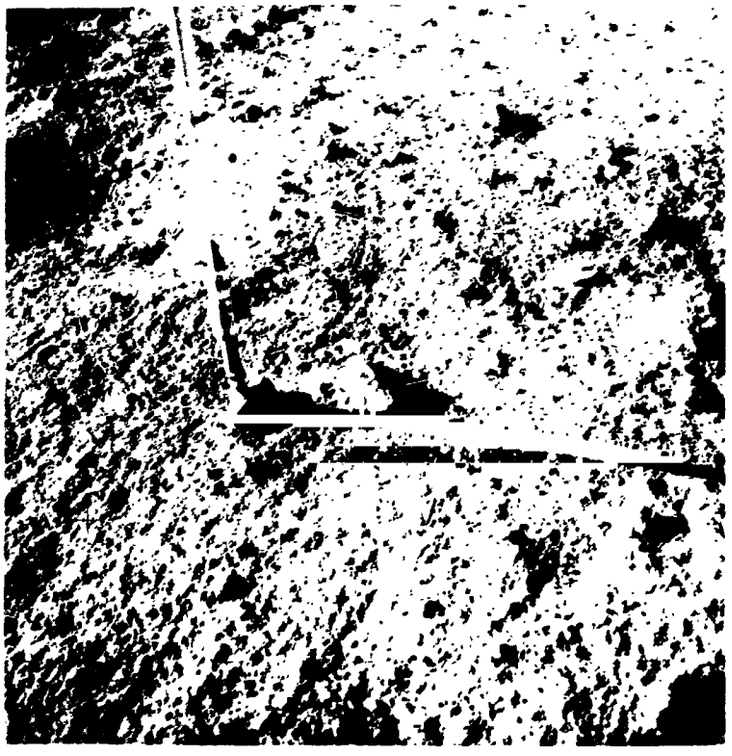
Fillet: None visible.

Apparent burial: Looks perched, but bottom edge may be impressed into soil.

Dust cover: No evidence.

Comparison with other fragments in area: Other fragments are too small for comparison.

Probable origin: Angularity suggests the sample was recently exposed or freshly broken from larger block.



*Pre-sampling, looking south (109-17844)*

*SAMPLE 2255**

*SAMPLE: 2275* (9)*

*Station: 2*

*Landmark: Southeast flank of Buster crater midway between LRV and Buster rim*

*Rock type: Breccia with friable white matrix*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: On slope south of Buster*

*Fragment population*

*Size range and distribution: Up to 10-20 cm; 2-5 cm fragments*

*Color: Gray; some blocks appear to be lighter colored than the local soil*

*Shapes: Angular to subangular*

*Fillets: Absent*

*Apparent burial: Smaller fragments perched to slightly buried; larger fragments generally about 1/10-1/5 buried*

*Dust cover: None visible*

*Fines*

*Color: Gray*

*Compaction: Fairly compact; footprints lightly impressed*

*Craters*

*Size range and distribution: Up to .5 m*

*Shape: Subdued*

*Ejecta: Not visible*

*SAMPLE CHARACTERISTICS*

*Size: 4 x 10 cm*

*Color: White*

*Shape: Blocky; roughly parallel sides; fractured*

*Fillet: Apparent fillet around the north end covers about 1/3 of the height of the sample*

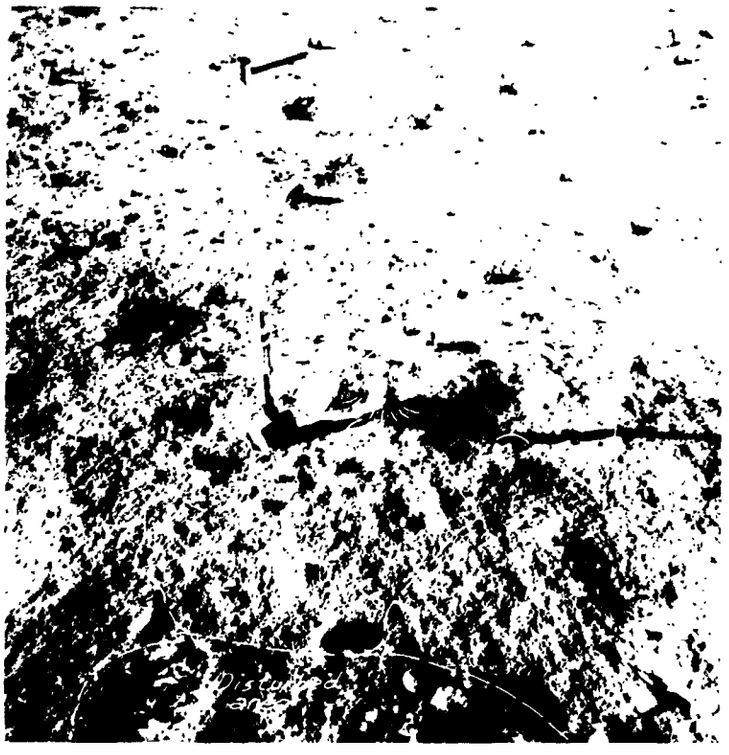
*Apparent burial: About 1/4 buried*

*Dust cover: None*

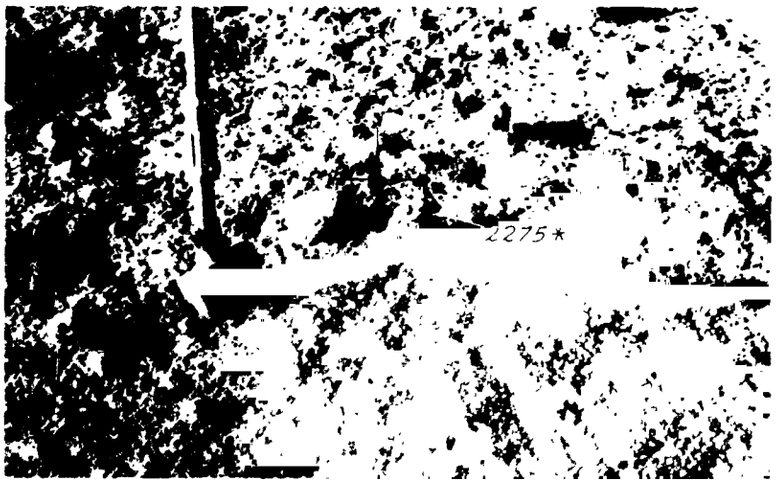
*Comparison with other fragments in area: Rough looking surface texture is similar to other fragments in the foreground.*

*Probable origin: Sample 2275* may not be related to South Ray ejecta; it is not associated with light-colored soil, and it is buried and filleted more than many other fragments.*

*COMMENTS: Sample was collected from an area of fine-surface texture that may be dust spray kicked by a boot; may give a good exposure age comparison between its exposed part, its buried part, and the fresh part (where sample broke during collection).*



*a) Pre-sampling, looking south (109-17845).*




*b) Enlargement of above.*

*SAMPLE 2275**

SAMPLE: 2280*, 2295* (11, 10)

Station: 2

Landmark: About 20 m north-northwest of LRV.

Rock type: Soil (2280*), and gray angular coherent breccia (2295*).

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: On slope south of Buster crater.

Fragment population

Size range and distribution: Up to 10 cm; mostly 5 cm or less.

Color: Same as fine-grained material.

Shapes: Most are angular.

Fillets: Fragments too small to observe filleting.

Apparent burial: Most fragments appear perched or just slightly buried.

Dust cover: None visible.

Fines

Color: Gray.

Compaction: Soil at this station appears less compact than elsewhere; bootprints are about twice as deep.

Craters

Size range and distribution: Up to .3 m, mostly 5-10 cm.

Shape: Subdued; a few well defined.

Ejecta: None visible.

SAMPLE CHARACTERISTICS FOR 2295*

Size: 8 x 4 cm.

Color: Gray.

Shape: Angular; tabular with sharp edges.

Fillet: None.

Apparent burial: Perched.

Dust cover: Not visible.

Comparison with other fragments in area: Smooth surface texture and angularity unlike the other large fragment just to south.

Probable origin: Has not been on surface very long; lacks a fillet, is not buried, and is very angular.

COMMENTS: Should have young exposure age.

SAMPLE CHARACTERISTICS FOR 2280*

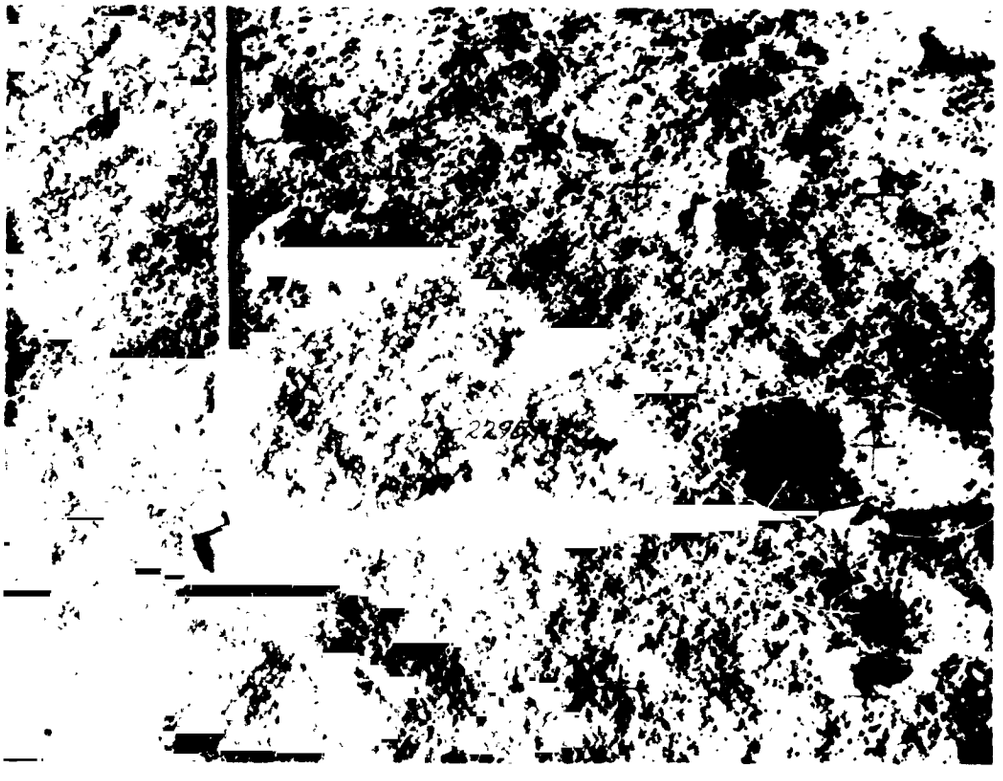
Size: Unknown.

Color: Gray, no high-albedo soil below surface.

Probable origin: Most likely a mixture of material from North Ray, South Ray, Spook, and Buster craters. Lack of high-albedo material suggests South Ray crater contribution is small.

COMMENTS: Not located on photographs.

a) Pre-sampling, looking south (109-17847). Rock at upper left can be found in the locator for 2235* just behind the top of the extension handle.




b) Enlargement of above photo.

SAMPLES 2295*

*SAMPLE: 4002/4001* (43/38)*

*Station: 4a*

*Landmark: Vicinity of Cinco B crater, downslope from rim of 15 m crater (LRV parking area), ≈3 m in front of LRV.*

*Rock type: Drive tube sample.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Regional slope ≈10°-15° northwest.*

*Fragment population*

*Size range and distribution: Few scattered cobbles 5-10 cm; fragments <5 cm common; surface fragments primarily ≈1 cm to sand size.*

*Color: Gray.*

*Shapes: Small fragments mainly angular and platy; well rounded 10 cm cobble west of drive tube; few small fragments subround.*

*Fillets: Apparent only on rounded fragments.*

*Apparent burial: 10 cm cobble (west of drive tube) partly buried; elsewhere nil.*

*Dust cover: Probably light on most fragments.*

*Fines*

*Color: Gray.*

*Compaction: Loose*

*Craters*

*Size range and distribution: Scattered craters of 1/2 to several meters diameter in general area; small (≈1/2 m diameter) crater, just southwest of drive tube.*

*Shape: Mainly subdued, but small one near drive tube, sharp and apparently fresh, with cloddy rim materials and somewhat concentric inner ring of clods.*

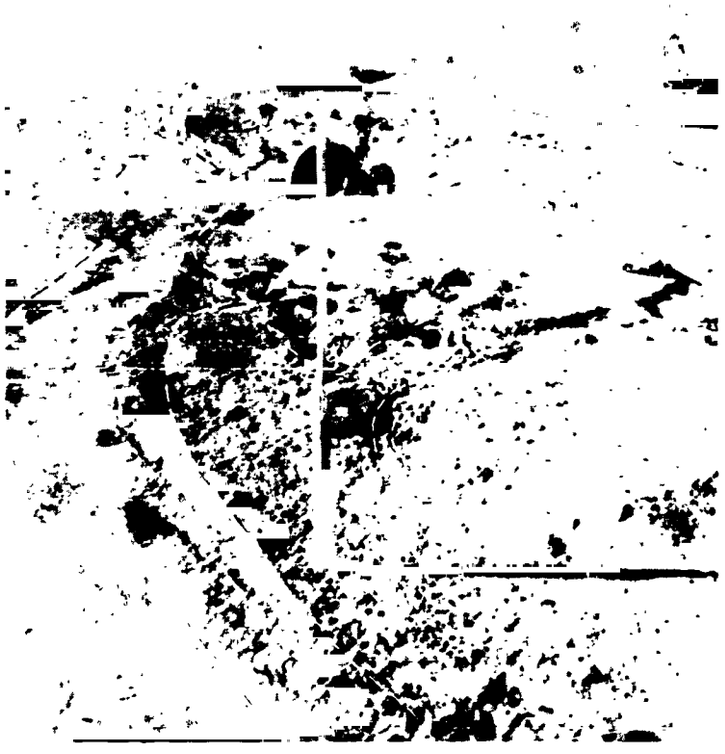
*Ejecta: Cloddy ejecta around small crater, possibly included in uppermost part of drive tube sample.*

*SAMPLE CHARACTERISTICS*

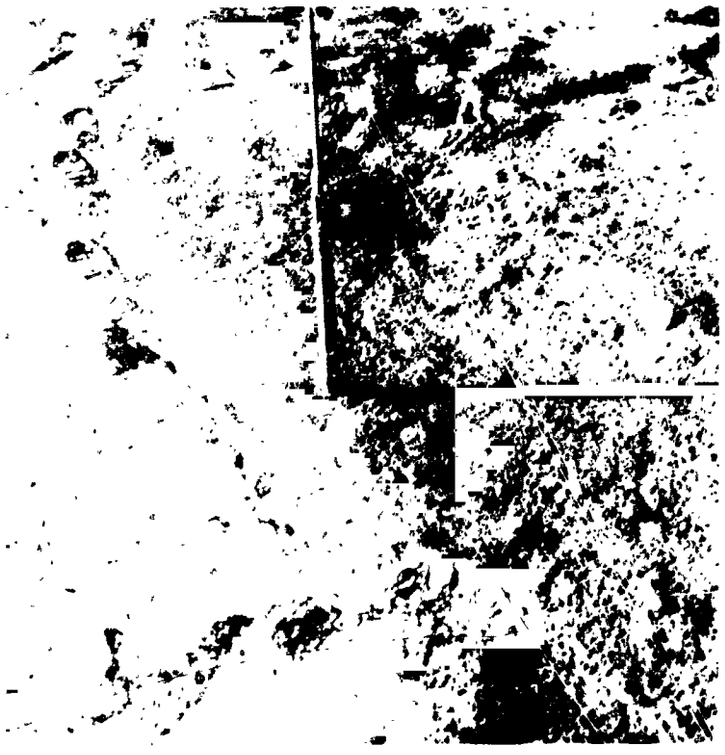
*Size: Double drive tube*

*Probable origin: Regolith, possibly including Descartes material at depth.*

a) *During-sampling, looking south (110-17951)*



b) *During-sampling, looking south (110-17950)*



***SAMPLES 4002/4001****

SAMPLE: 4420*, 4475* (399,398)

Station: 4a

Landmark: Near Cinco B crater, ≈5 m from LRV, on floor of subdued 15 m crater.

Rock type: Soil (4420*) and dust-covered rock (4475*) probably breccia.

SAMPLE CHARACTERISTICS OF SAMPLE AREA

Slopes: Regional slope northwest off Stone Mountain; locally nearly horizontal.

Fragment population

Size range and distribution: 5-10 cm (and less) abundant; 20-40 cm common; meter-size blocks sparsely scattered (majority <30 cm).

Color: Light gray · whitish clasts where visible in large rocks.

Shapes: Mainly angular; some small rounded rocks.

Fillets: Practically nil around large blocks, slight around small rocks.

Apparent burial: Slight or nil.

Dust cover: Generally widespread.

Fines

Color: Gray; no subsurface layering reported.

Compaction: Loose

Craters

Size range and distribution: Scattered craters 1/2 to several meters diameter in general area; few small (≈ 1/2 m) craters in local area.

Shape: Round, subdued, generally shallow.

Ejecta: None distinguished (except from South Ray crater)

SAMPLE CHARACTERISTICS FOR 4420*

Size: Soil

Color: Gray (no white layer)

Comparison with other soil in area: Apparently typical regolith.

Probable origin: Regolith probably derived mainly from South Ray ejecta, but possibly mixed with underlying Descartes materials.

COMMENTS: Soil taken from bottom of trench.

SAMPLE CHARACTERISTICS FOR 4475*

Size: 5-10 cm.

Color: Light gray.

Shape: Angular.

Fillets: None.

Apparent burial: None.

Dust cover: Prominent (as reported by crew)

Comparison with other fragments in area: Apparently typical; near large rock containing obvious clasts, and therefore probably a similar breccia.

Probable origin: Ejecta from South Ray.

b) Pre-sampling, looking northwest (107-17453)

a) Post-sampling, looking Northeast (110-17962)

c) Pre-sampling, looking south (107-17452)

d) Post-sampling, looking south (107-17461)

SAMPLES 4420*, 4475*

SAMPLE: 4435* (394)

Station: 4a

Landmark: Vicinity of Cinco B crater, ≈3 m from LRV, on wall of subdued 15 m crater.

Rock type: Hard (type obscured by dust cover)

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Regional slope ≈10°-15° northwest off Stone Mountain; slightly steeper at sample locality.

Fragment population

Size range and distribution: Up to 10 cm abundant; up to 40 cm common; up to 1 m sparse.

Color: Whitish cast on most rocks.

Shapes: Majority very angular.

Fillets: Moderately well developed around most blocks and cobbles.

Apparent burial: Not visible.

Dust cover: Variable; not apparent on large blocks.

Fines

Color: Gray.

Compaction: Loose.

Craters

Size range and distribution: Scattered craters of 1/2 to several meters in general area; few small (≈1/2 m or less) craters barely visible in local area.

Shape: Circular, subdued, shallow.

Ejecta: Not visible (except from South Ray crater).

SAMPLE CHARACTERISTICS

Size: 10 cm.

Color: Light gray.

Shape: Subangular.

Fillet: Slight.

Apparent burial: Probably nil.

Dust cover: Present.

Comparison with other fragments in area: Apparently typical of adjacent rocks; somewhat less angular than larger blocks.

Probable origin: Ejecta from South Ray crater, and therefore probably a sample of the Cayley Formation.

COMMENTS: Possibly glass coated.

a) *Pre-sampling, looking northwest (107-17445)*

b) *Pre-sampling, looking northeast (107-17444)*

*SAMPLE 4435**

SAMPLE: 4455* (397)

Station: 4a

Landmark: Vicinity of Cinco B crater, near rim of subdued 10 m crater.

Rock type: Glass spatter.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Regional slope ≈10°-15° northwest off Stone Mountain.

Fragment population

Size range and distribution: Up to 10 cm abundant; up to 40 cm common; up to 1 m sparse. Few scattered blocks (10-20 cm) within 1/2 meter radius of sample area.

Color: Whitish cast.

Shapes: Blocks angular to subangular; cobble size and smaller mainly subround.

Fillets: Well developed around large blocks (15-20 cm); minor around cobbles.

Apparent burial: Large blocks partly buried; negligible elsewhere.

Dust cover: Variable; not apparent on large block.

Fines

Color: Gray surface

Compaction: Loose

Craters

Size range and distribution: Scattered craters of 1/2 to several meters in general area; few small ( 1/2 m or less) craters barely visible in local area.

Shape: Circular, subdued, shallow.

Ejecta: Not visible (except from South Ray crater).

SAMPLE CHARACTERISTICS

Size: ≈5-8 cm.

Color: Probably dark, but not clear in photo.

Shape: Rounded, but sample not conclusively identified.

Fillet: Not visible.

Apparent burial: Not visible.

Dust cover: Probably light.

Comparison with other fragments in area: Most other fragments probably breccia.

Probable origin: Shock-melted glass from South Ray crater.

COMMENTS: Sample not identified conclusively in photographs.

a) *General location of 4455*, looking northeast (110-17961)*

b) *Pre-sampling, looking northeast (glass spatter collected from under rock--probably the one indicated) (107-17456)*


*SAMPLE 4455**

*SAMPLE: 4500*, 4510* (396, 395)*

*Station: 4a*

*Landmark: Vicinity of Cinco B crater, near rim of subdued 15 m crater.*

*Rock type: Rake (4510*) - soil, (4500*) sample; rock types obscured by dust and glass.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Regional slope ≈10°-15° northwest off Stone Mountain.*

*Fragment population*

*Size range and distribution: Up to 10 cm abundant, up to 40 cm common; up to 1 m sparse.*

*Color: Whitish cast.*

*Shapes: Large blocks very angular; cobble size and smaller mainly subangular; few small rocks (<10 cm) subrounded.*

*Fillets: Moderately well developed.*

*Apparent burial: Small rocks slightly buried.*

*Dust cover: Variable; not apparent on large blocks.*

*Fines*

*Color: Gray surface layer (≈1 cm) underlain by white material.*

*Compaction: Loose*

*Craters*

*Size range and distribution: Scattered craters of 1/2 to several meters in general area; few small (≈1/2 m or less) craters barely visible in local area.*

*Shape: Circular, subdued, shallow.*

*Ejecta: Not visible (except from South Ray crater)*

*SAMPLE CHARACTERISTICS FOR 4500*

*Size: <1 cm*

*Color: Gray surface, underlain by white layer*

*Comparison with other soil in area: Probably typical of local soil.*

*Probable origin: Regolith, possibly ejecta from South Ray crater, or derived from that ejecta and mixed with local Descartes materials.*

*SAMPLE CHARACTERISTICS FOR 4510*

*Size: Surface fragments 10 cm or less; mostly greater than 1 cm.*

*Color: Most fragments white.*

*Shape: Subangular to subrounded.*

*Fillets: None apparent.*

*Apparent burial: Some surface fragments slightly buried; total sample depth up to ≈5 cm.*

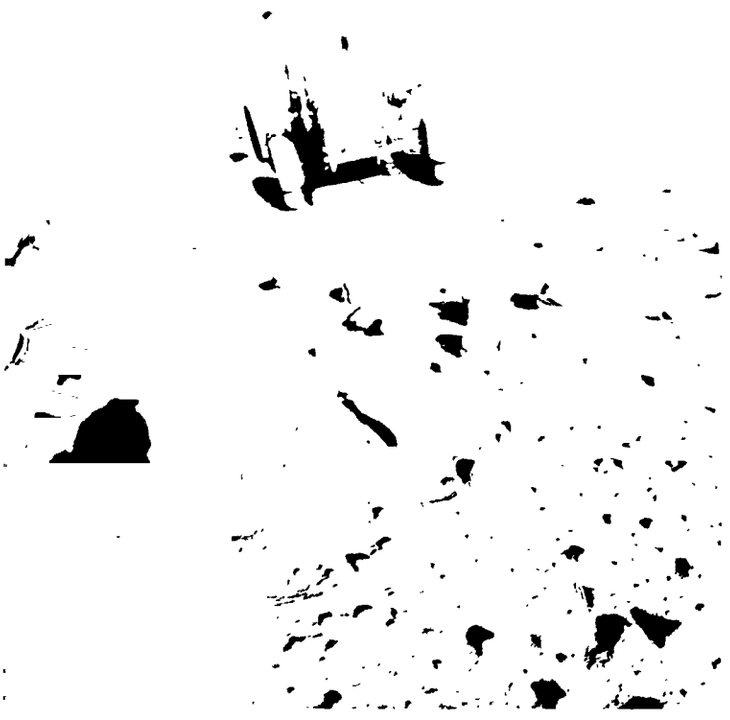
*Dust cover: Prevalent.*

*Comparison with other fragments in area: Apparently typical of small surface fragments.*

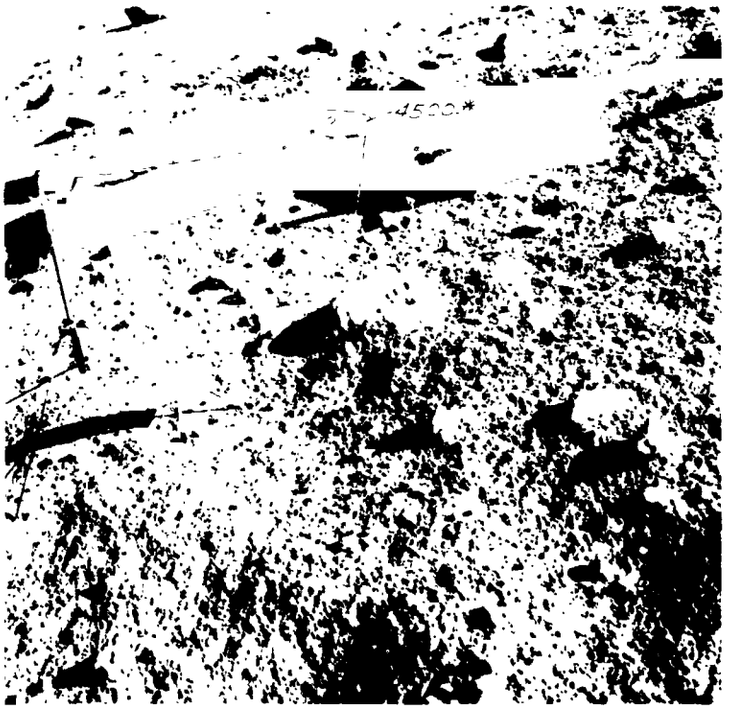
*Probable origin: Ejecta from South Ray crater (possibly derived from Cayley Formation).*

*COMMENTS: Most fragments glass and/or dust coated, obscuring rock type, but samples probably breccias as suggested by association with larger rocks containing visible clasts.*

a) *Pre-sampling, looking west (110-17948)*



b) *Pre-sampling, looking north (107-17449)*




*SAMPLES 4500*, 4510**

SAMPLE: 4600*, 4610* (400, 401)

Station: 4b

Landmark: Rim of 20 m crater

Rock type: Rake (4610*) - soil (4600*) sample

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Regional slope WNW off Stone Mountain; probably about 10° in local sample area.

Fragment population

Size range and distribution: Local concentration of blocks and cobbles covering 80-90% of NE wall of main crater, continuing on surface to E; 20-50 cm blocks common, <20 cm abundant; elsewhere, regolith surface relatively smooth except for scattered cobbles; rocks <5 cm absent in sample area.

Color: Mainly gray, but large white clasts apparent in blocks on NE wall of crater.

Shapes: Angular

Fillets: None apparent.

Apparent burial: Nil; some blocks obviously perched.

Dust cover: Not evident.

Fines

Color: Gray

Compaction: Loose

Craters

Size range and distribution: Apparently random distribution of various size craters; in sample area, small rounded ≈1-2 m crater superposed on prominent 15-20 m crater; numerous small ≈1/2 m craters.

Shape: Mainly circular and subdued.

Ejecta: Slightly raised rims; concentrated blocks probably ejecta from South Ray.

SAMPLE CHARACTERISTICS FOR 4600*

Size: Less than 1 cm.

Color: Gray

Comparison with other soil in area: Probably typical local regolith.

Probable origin: Regolith, possibly derived mainly from underlying Descartes materials, but possibly also including fine ejecta from South Ray.

COMMENTS: Sample taken from block-free area of crater (west rim); blocks concentrated on NE wall probably South Ray ejecta.

SAMPLE CHARACTERISTICS FOR 4610*

Size: (≈15 fragments). Mostly greater than 1 cm.

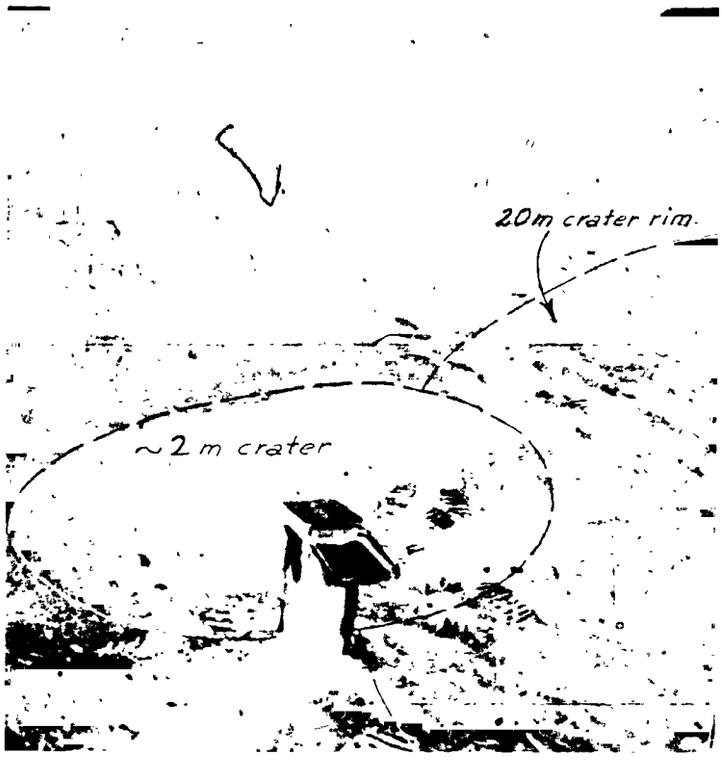
Color: Gray.

Shape: Subround to subangular; clods very friable.

Comparison with other fragments in area: Typical of rim materials; fragments mainly clods.

Probable origin: Regolith, possibly derived mainly from underlying Descartes materials; clods possibly indurated by local crater impacts.

a) *Sample location immediately below foreground; on rim of 20 m crater; looking northeast (107-17474)*




b) *Post-sampling 4600*, pre-sampling 4610*, looking northeast (107-18465)*

*SAMPLES 4600*, AND 4610**

*SAMPLE: 5015 (FSR-5)*

*Station: 5*

*Landmark: Probably within 15 m of LRV during station activities, and outside of 20 m crater at station*

*Rock type: Crystalline rock*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Regional slope ≈10° northwest off Stone Mountain*

*Fragment population*

*Size range and distribution: Fragments <5 cm abundant; 5-15 cm cobbles common, widely distributed; >15 cm blocks sparsely scattered.*

*Color: Gray*

*Shapes: Fragments <5 cm round to angular; some cobbles (≈5-15 cm) round, but mainly subround; large blocks subangular to subround.*

*Fillets: Common around most cobbles and fragments*

*Apparent burial: Some fragments partially buried, some perched.*

*Dust cover: Prevalent*

*Fines*

*Color: Gray*

*Compaction: Loose*

*Craters*

*Size range and distribution: 1/2-2 m craters abundant; widely distributed; 3-5 m craters common; larger craters visible in landscape*

*Shape: Mainly rounded and subdued; few small craters with raised rims still visible*

*Ejecta: Rim deposits generally subdued*

*SAMPLE CHARACTERISTICS*

*Size: 12 cm long*

*Color: White, greenish-blue cast in sunlight*

*Shape: Angular, with triangular "viper-shaped head"*

*Probable origin: Angularity suggests rock may be fragment of South Ray crater ejecta*

*COMMENTS: No photographic or television documentation*

*SAMPLE: 5035*-5310* (404-405)*

*Station: 5*

*Landmark: Interior wall of 20 m crater, near rim of superposed 2 m crater*

*Rock type: Rock, partly glass coated (5035*); rake sample (5310*)*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Crater wall sloping 20° N into 20 m crater*

*Fragment population*

*Size range and distribution: Scattered cobbles, very few blocks as large as 20-30 cm; surface covered mainly by fragments and clods approx. 2 cm or less*

*Color: Gray*

*Shapes: Mainly subangular to subround*

*Fillets: Not apparent*

*Apparent burial: Slight*

*Dust cover: Prevalent*

*Fines*

*Color: Gray*

*Compaction: Extremely loose*

*Craters*

*Size range and distribution: Numerous 1/2-2 m craters superposed on interior wall of 20 m crater; sample locality near (but outside) rim of 2 m (+) crater*

*Shape: Generally shallow, subdued*

*Ejecta: Slightly raised rim visible around crater at sample locality*

*SAMPLE CHARACTERISTICS OF 5035*

*Size: Approx. 10 cm*

*Color: Light gray*

*Shape: Rounded*

*Fillet: If any, destroyed prior to taking photo*

*Apparent burial: None*

*Dust cover: Covered*

*Comparison with other fragments in area: Slightly more rounded than most other rocks in area, but a few almost spherical fragments nearby*

*Probable origin: Possibly derived from Descartes materials, glass coated by local impact; alternatively, ejecta from distant source deposited on Descartes highlands and subsequently "reworked" by local impacts; round shape not typical of South Ray ejecta*

*COMMENTS: Sample disturbed before photo documentation*

*SAMPLE CHARACTERISTICS OF 5310*

*Size: Mostly >1 cm; rocks probably up to several cm*

*Color: Mainly dark fragments, but at least 2 whitish rocks also included (no white soil reported)*

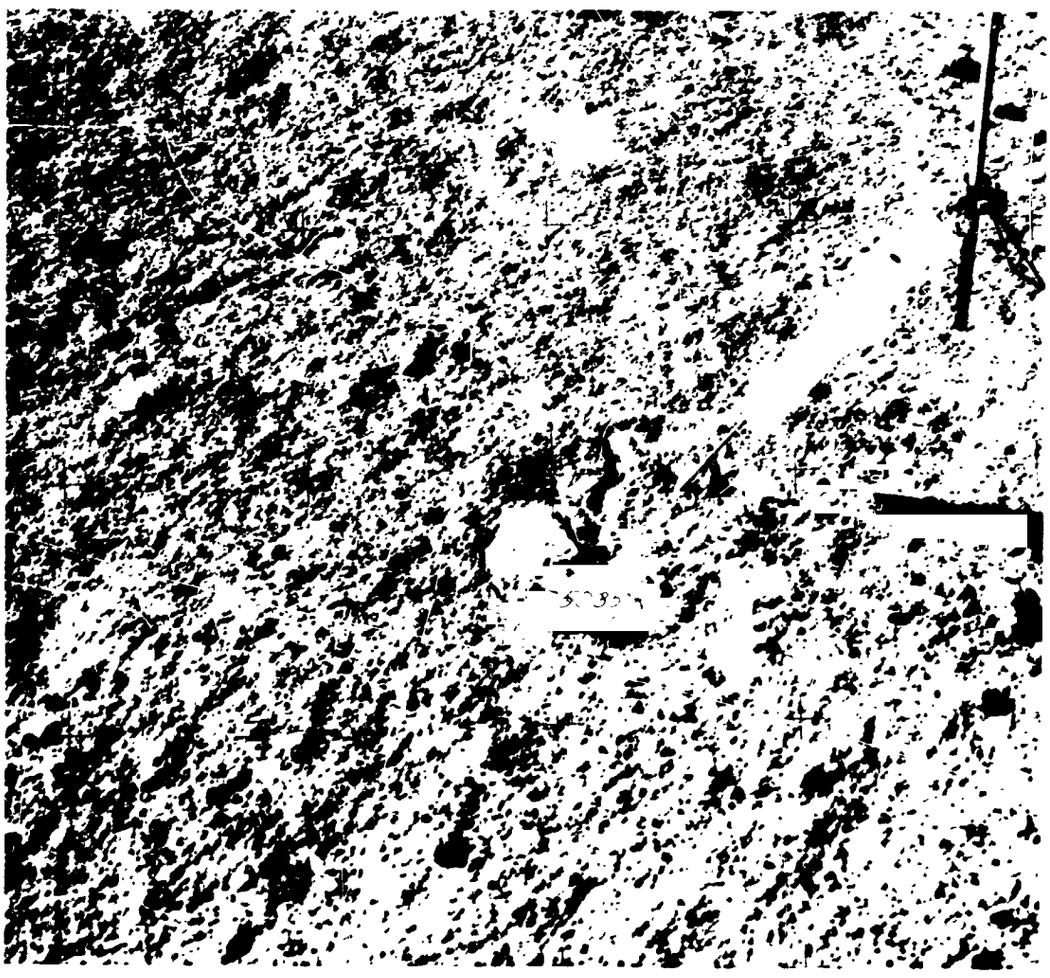
*Shape: Most fragments rounded*

*Dust cover: Covered*

*Comparison with other fragments in area: Hard fragments apparently more common in rake sample than in nearby crater wall which contains mainly friable clods*

*Probable origin: Crater wall somewhat shadowed from South Ray ejecta, and therefore the regolith fragments may be derived from underlying Descartes materials*

*a) Pre-sampling, looking south (110-18013)*



*b) Pre-sampling, 5035* disturbed prior to photo documentation (110-18023)*

*SAMPLES 5035* AND 5310**

SAMPLE: 5033* (3)

Station: 5

Landmark: Rim of 20 m crater, about 3 m in front of LRV; samples at edge of subdued 1 m crater.

Rock type: Two documented rocks.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Local slope ≈5°, regional slope ≈10° northwest off Stone Mountain.

Fragment population

Size range and distribution: Fragments <5 cm abundant; 5-15 cm cobbles common, widely distributed; >15 cm blocks sparsely scattered.

Color: Gray.

Shapes: Fragments <5 cm round to angular; some cobbles (≈5-15 cm) round, but mainly subround; large blocks subangular to subround.

Fillets: Common around most cobbles and fragments.

Apparent burial: Some fragments partially buried, some perched.

Dust cover: Prevalent.

Fines

Color: Gray.

Compaction: Loose.

Craters

Size range and distribution: 1/2-2 m craters abundant, widely distributed; 3-5 m craters common; larger craters visible in landscape.

Shape: Mainly rounded and subdued; few small craters with raised rims still visible.

Ejecta: Rim deposits generally subdued.

SAMPLE CHARACTERISTICS

Size: 10 cm and 4 cm.

Color: Probably gray.

Shape: Round to subround, probably friable.

Fillet: Slight.

Apparent burial: Larger rock 20% buried; smaller rock slightly buried.

Dust cover: Covered.

Comparison with other fragments in area: Apparently typical of local rock population.

Probable origin: Descartes rocks ejected from local 20 m crater; round shape probably not characteristic of South Ray crater ejecta.

*a) Pre-sampling, looking southeast (110-18010)*

*b) Pre-sampling, looking south (110-18029)*

*SAMPLE 5055**

SAMPLE: 5075* (403)

Station: 5

Landmark: Interior wall of 20-m crater

Rock type: Fine-grained crystalline rock, grain size ≈1 mm; white, with a partial glass rind

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Crater wall sloping approx. 20° northeast into 20-m crater

Fragment population

Size range and distribution: Large blocks (up to approx. 1/2 m) sparsely distributed outside 20-m crater rim: cobbles 10-15 cm common in and around crater; in local sample area, cobbles rare; fragments mainly <2 cm

Color: Gray

Shapes: Large blocks angular; cobbles subangular to round, but predominantly subround in sample area

Fillets: Minor to none

Apparent burial: A few blocks are partly buried, but most are not

Dust cover: Prevalent

Fines

Color: Gray

Compaction: Loose

Craters

Size range and distribution: Several 1/2-1 m craters on larger crater wall

Shape: Generally subdued

Ejecta: Slightly raised rims visible around some craters

SAMPLE CHARACTERISTICS

Size: 10-cm rock

Color: White

Shape: Rounded cobble, highly fractured and friable

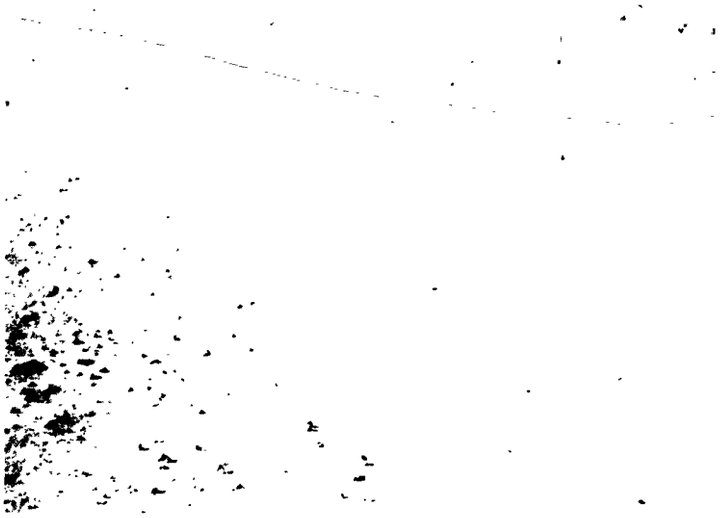
Fillet: Slight

Apparent burial: Probably about half buried

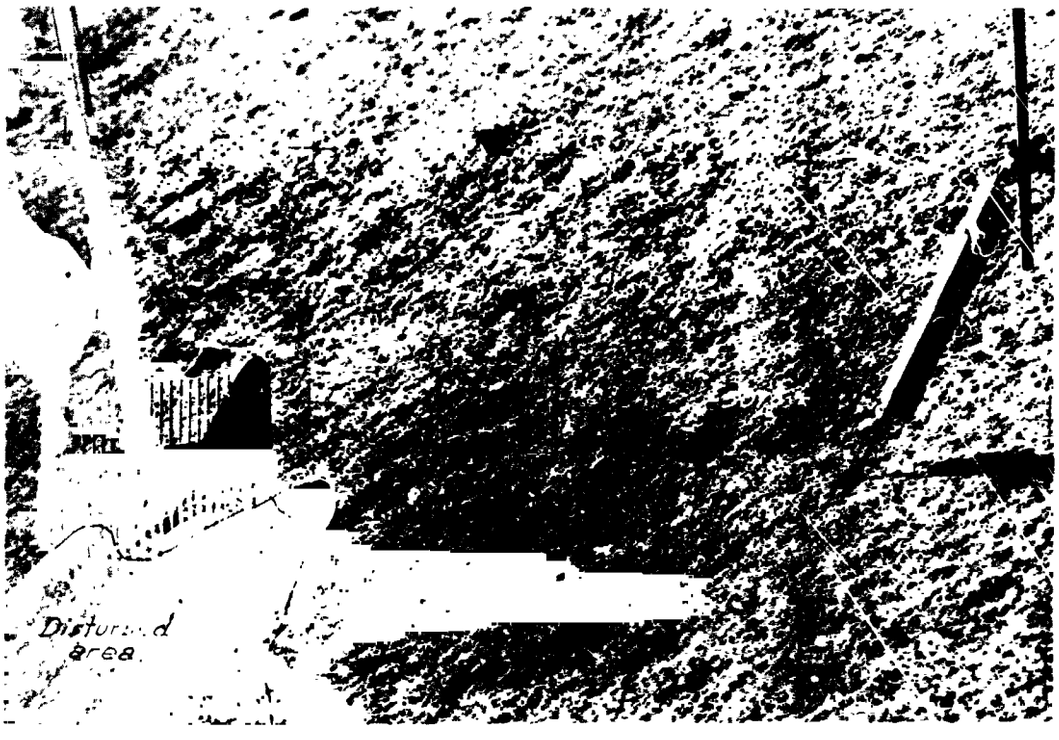
Dust cover: Prevalent

Comparison with other fragments in area: More fractured than any other rock in local area

Probable origin: Fragment of Descartes material, fractured by local impact; rounded shape not characteristic of South Ray ejecta



*a) Pre-sampling, looking south (110-18015)*




*b) Pre-sampling, looking southeast (107-17500)*

*SAMPLE 5075**

SAMPLE: 5095* (336)

Station: 5

Landmark: Rim of 20 m crater, ≈3 m in front of LRV

Rock type: Dusty rounded rock with white streaks; fist-sized.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Local slope ≈5°, regional slope ≈10° northwest off Stone Mountain.

Fragment population

Size range and distribution: Fragments >5 cm abundant; 5-15 cm cobbles common, widely distributed: <15 cm blocks very sparsely scattered.

Color: Gray.

Shapes: Fragments <5 cm round to angular; some cobbles (≈5-15) round, but mainly subround; large blocks subangular to subround; several distinctly platey, angular fragments, 8-10 cm.

Fillets: Common around most cobbles and small fragments.

Apparent burial: Perched to 1/4 of fragment.

Dust cover: Prevalent.

Fines

Color: Gray.

Compaction: Loose.

Craters

Size range and distribution: 1/2 to 2 m craters abundant, widely distributed; 3-5 m craters common; larger craters visible in landscape.

Shape: Mainly rounded and subdued; few small craters with raised rims visible.

Ejecta: Rim deposits generally subdued.

SAMPLE CHARACTERISTICS

Size: 8 cm

Color: White streaks.

Shape: Rounded, somewhat egg-shaped, apparently spalled and fractured.

Fillet: Poorly developed.

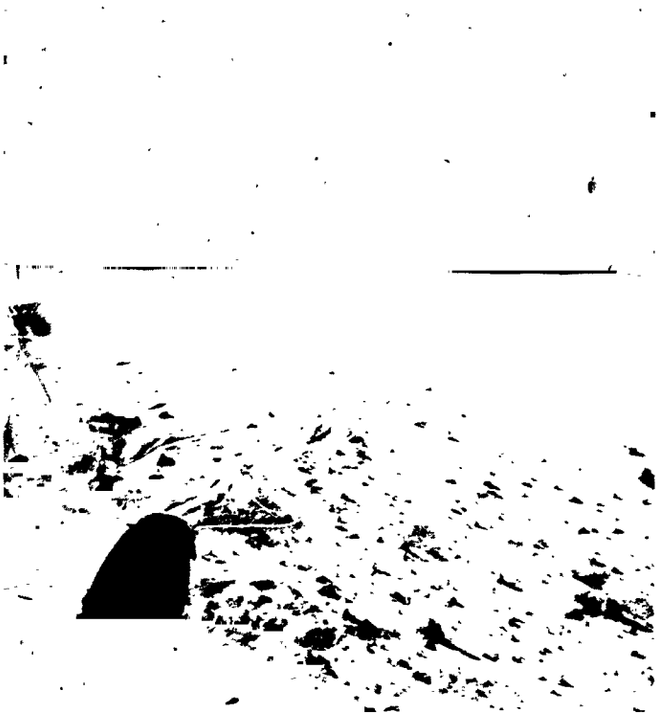
Apparent burial: One-fourth.

Dust cover: Present.

Comparison with other fragments in area: Typical of most rounded cobbles nearby.

Probable origin: Shape unlike typical angular blocks of South Ray crater ejecta; possibly representative of Descartes materials, "reworked" by local impacts.

a) *Pre-sampling, looking southeast (110-18010)*



b) *Pre-sampling, looking south (110-18027)*


*SAMPLE 5095**

*SAMPLE: 5500, 5510 (333, 332)*

*Station: 5*

*Landmark: Bench approx. 50 m wide, rim of 20-m crater*

*Rock type: Rake (5510) - soil (5500) sample*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Local slope 5°; regional slope 10° to the northwest on flank of Stone Mountain*

*Fragment population*

*Size range and distribution: Meter-size blocks absent; few scattered blocks approx. 30 cm; 10-20 cm cobbles common and widely distributed; surface mainly sand size up to 5 cm; some cobbles highly fractured*

*Color: Gray*

*Shapes: Large blocks (>20 cm) angular to subangular; cobble size and smaller mainly subround to round*

*Fillets: Slight to none*

*Apparent burial: No burial of large blocks; some rounded cobbles and pebbles partly buried*

*Dust cover: Most prevalent on smaller, rounded rocks; probably light on large blocks*

*Fines*

*Color: Gray surface; whitish subsurface*

*Compaction: Loose*

*Craters*

*Size range and distribution: Numerous small 1/2-1 m size craters superposed on 20-m crater; sample apparently taken from small (1 1/2 m) crater near rim*

*Shape: Small craters relatively distinct with slightly raised rims; larger (>2 m) craters mainly shallow and subdued*

*Ejecta: Clods around small craters probably locally derived; rounded cobbles probably ejecta from large craters; angular blocks possibly ejecta from South Ray crater*

*SAMPLE CHARACTERISTICS FOR 5500:*

*Size: Mostly <1 cm*

*Color: Gray surface, lighter beneath (not as white as subsurface soil on Cayley plain at station 1)*

*Comparison with other soil in area: Probably typical of local soil composition, but possibly more indurated as result of small impact at sample locality; light color unique among soil samples from station 5*

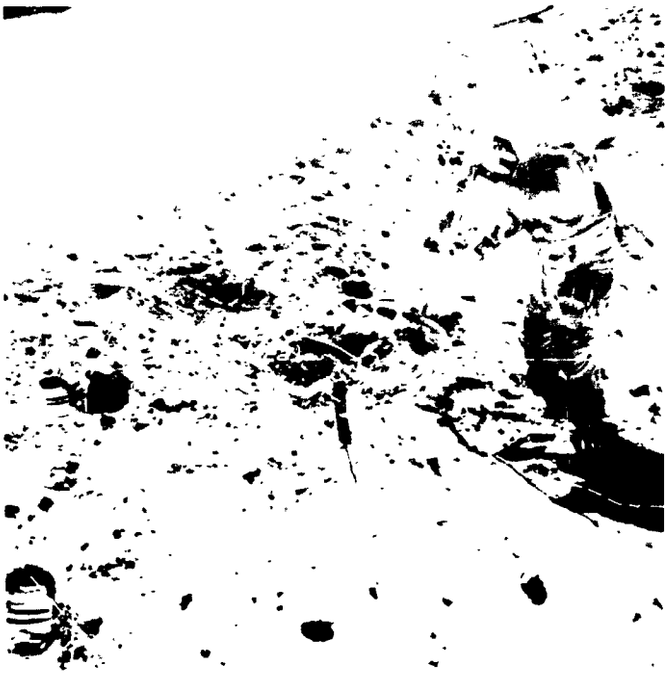
*Probable origin: Regolith possibly derived from underlying but reworked Descartes materials as well as ejecta superposed on Descartes*

*COMMENTS: Friable clods included in sample*

*SAMPLE CHARACTERISTICS FOR 5510:*

*Size: Mostly >1 cm*
*Color: Gray at surface, lighter fragments underneath*
*Shape: Subround to subangular clods; very friable*
*Comparison with other fragments in area: Typical, but formation of glass and induration of clods possibly caused by local small impact*
*Probable origin: Regolith derived from underlying reworked Descartes material as well as superposed ejecta from distant impact craters; rounded fragments. Probably not South Ray ejecta.*

a) *During-sampling, looking east (110-18020)*



b) *Pre-sampling, looking west (110-18019)*


***SAMPLES 5500 AND 5510***

SAMPLE: 5600*, 5610* (402, 334)

Station: 5

Landmark: Interior wall of 20 m crater

Rock type: Rake (5610*) - soil (5600*) sample

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Crater wall sloping 20° northeast into 20-m crater

Fragment population

Size range and distribution: Large blocks (up to approx. 1/2 m) very sparsely distributed outside 20-m crater rim; cobbles 10-15 cm common in and around crater; in local sample area, cobbles rare; fragments mainly <2 cm

Color: Gray, no subsurface white material

Shapes: Large blocks angular; cobbles subangular to rounded, but predominantly subrounded in sample area; some rocks very crumbly and friable

Fillets: Poorly developed

Apparent burial: Most cobbles not buried; crumbly rocks partly buried; few rocks perched

Dust cover: Prevalent

Fines

Color: Gray

Compaction: Very loose

Craters

Size range and distribution: Few 1/2-1 m craters on larger crater wall

Shape: Generally subdued

Ejecta: Slightly raised rims visible around some craters

SAMPLE CHARACTERISTICS FOR 5600*

Size: <1 cm

Color: Gray; white material not present below surface, in contrast to that in sample 5500

Comparison with other soil in area: Apparently typical of most soil on crater wall

Probable origin: Derived from underlying reworked Descartes material

SAMPLE CHARACTERISTICS FOR 5610*

Size: Generally greater than 1 cm; up to several cm

Color: Whitish

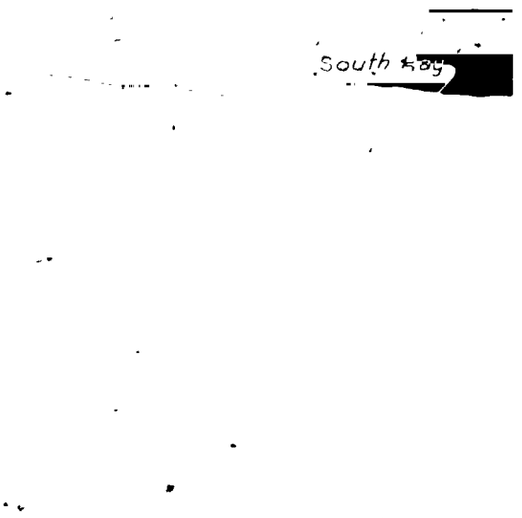
Shape: Mostly rounded, a few angular fragments

Dust cover: Covered

Comparison with other fragments in area: Probably typical of fragments in this size range

Probable origin: Regolith derived in part from underlying Descartes material, much "reworked"; rounded fragments probably not South Ray crater ejecta

COMMENTS: Slight glass coating on one fragment




a) Pre-sampling, looking southwest (110-18016)

b) Post-sampling, looking northwest (107-17497)


c) Post-sampling, looking south (110-18022)

SAMPLES 5600* AND 5610*

*SAMPLE: 5700*, 5710* (406, 335)*

*Station: 5*

*Landmark: Interior wall of 20-m crater, just west of small superposed crater (? m)*

*Rock type: Rake (5710*) - soil (5700*) sample*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Steep part of crater wall, probably W 20° - 25°*

*Fragment population*

*Size range and distribution: Few scattered cobbles 5-10 cm on otherwise sandy surface; no large blocks near sample locality*

*Color: Gray*

*Shapes: Subangular*

*Fillets: Not apparent*

*Apparent burial: None*

*Dust cover: Prevalent*

*Fines*

*Color: Gray*

*Compaction: Extremely loose*

*Craters*

*Size range and distribution. Numerous 1/2-2 m craters superposed on interior wall of 20-m crater; sample locality west of small (≈2 m) crater*

*Shape: Generally shallow, subdued*

*Ejecta: Slightly raised rims visible around some craters*

*SAMPLE CHARACTERISTICS OF 5700**

*Size: Soil, mostly <1 cm; probably several larger fragments as well*

*Color: Gray soil; rock possibly whitish*

*Comparison with other soil in area: Apparently typical regolith soil; occasional white splotch observed in rake pit, but no white layer reported*

*Probable origin: Possibly derived from underlying Descartes material, "reworked" by numerous local impacts; crater wall at this locality apparently shielded from South Ray crater ejecta*

*SAMPLE CHARACTERISTICS OF 5710**

*Size: Mostly >1 cm*

*Color: Gray, occasional white splotch in sample pit*

*Shape: Irregular clods*

*Comparison with other soil in area: Marked scarcity of rocks compared with rake sample 5050* taken 2-3 m east*

*Probable origin: Indurated regolith, possibly derived initially from underlying Descartes materials, "reworked" by numerous local impacts; crater wall at this locality apparently shielded from South Ray crater ejecta*

a) *Pre-sampling, looking south (110-18014)*

b) *Post-sampling, looking southeast (107-17509)*

***SAMPLES 5700* AND 5710****

SAMPLE: 6030*, 6040, 6055* (407, 338, 408)

Station: 6

Landmark: 10 m crater rim, on lowest "bench" of Stone Mountain; near base.

Rock type: Rounded rock (6030*), angular rock (6055*); soil (6040)

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Gentle regional slope northwest off Stone Mountain; local slope 2-3°.

Fragment population

Size range and distribution: >30 cm blocks very sparse; 15-30 cm blocks relatively common; 5-15 cm cobbles relatively abundant; <5 cm fragments abundant.

Color: Generally dark with white clasts.

Shapes: All sizes angular to subround; few rocks rounded.

Fillets: Few rocks with poorly developed fillets.

Apparent burial: Majority of blocks and cobbles perched; few large blocks partly buried.

Dust cover: Probably slight.

Fines

Color: Gray.

Compaction: Relatively firm, compared to looser regolith at stations 4 and 5.

Craters

Size range and distribution: <5 m common; 5-10 m sparse, >10 m not visible in general area.

Shape: Generally shallow, subdued.

Ejecta: Not discernible.

SAMPLE CHARACTERISTICS FOR 6030*

Size: 8 cm rock; soil mostly <1 cm.

Color: Apparently gray with small white clasts.

Shape: Subrounded.

Fillet: Apparently slight.

Apparent burial: Perched.

Dust cover: Slight.

Comparison with other fragments in area: Apparently breccia, similar to most local rocks.

Probable origin: Local ejecta, derived initially from underlying Descartes material, but source crater not obvious; possibly South Ray crater ejecta, but breccia blocks smaller and somewhat less angular, with much smaller clasts, than those more obviously related to South Ray at station 4.



C.3

*SAMPLE CHARACTERISTICS FOR 6040*

*Size:* Mostly <1 cm.
*Color:* Gray (no white subsurface material)
*Comparison with other soil in area:* Presumably typical of local regolith.
*Probable origin:* Degradation of local impact ejecta, probably derived from underlying Descartes materials; alternatively, parent breccias deposited from distant impact craters.

*SAMPLE CHARACTERISTICS FOR 6055**

*Size:* 15 cm.
*Color:* Gray.
*Shape:* Angular.
*Fillets:* Poorly developed.
*Apparent burial:* Probably slight.
*Dust cover:* Not detectable.
*Comparison with other fragments in area:* Apparently typical of angular rocks, but breccia clasts not readily detectable.
*Probable origin:* Ejected from South Ray crater, but adjacent breccia blocks smaller and somewhat less angular, with much smaller clasts, than those more obviously related to South Ray at station 4.

a) Pre-sampling, looking west (108-17627)


b) Pre-sampling, looking southwest (107-17512)


SAMPLES 6030*, 6040, 6055*

*SAMPLE: 6075 (409)*

*Station: 6*

*Landmark: 10 m crater (southwest wall), on lowest "bench" of Stone Mountain, near base.*

*Rock type: Subrounded, white, dust-covered breccia.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Gentle regional slope northwest; 10°(?) northeast at sample locality on crater wall, near rim.*

*Fragment population*

*Size range and distribution: Rocks 2-5 cm relatively common in immediate sample area; few cobbles 5-10 cm; few scattered blocks up to 50 cm in surrounding area.*

*Color: Predominantly light gray.*

*Shapes: Mainly subround to subangular.*

*Fillets: Moderately developed around large blocks, variable around smaller rocks.*

*Apparent burial: Variable; some rocks perched, some partly buried.*

*Dust cover: Prevalent.*

*Fines*

*Color: Gray.*

*Compaction: Loose.*

*Craters*

*Size range and distribution: <5 m common, 5-10 m sparse, >10 m not visible in general area; 0.5-1 m craters on local crater wall.*

*Shape: Generally shallow, subdued.*

*Ejecta: Not discernible.*

*SAMPLE CHARACTERISTICS*

*Size: 8 cm.*

*Color: Whitish.*

*Shape: Subround.*

*Fillet: Slight.*

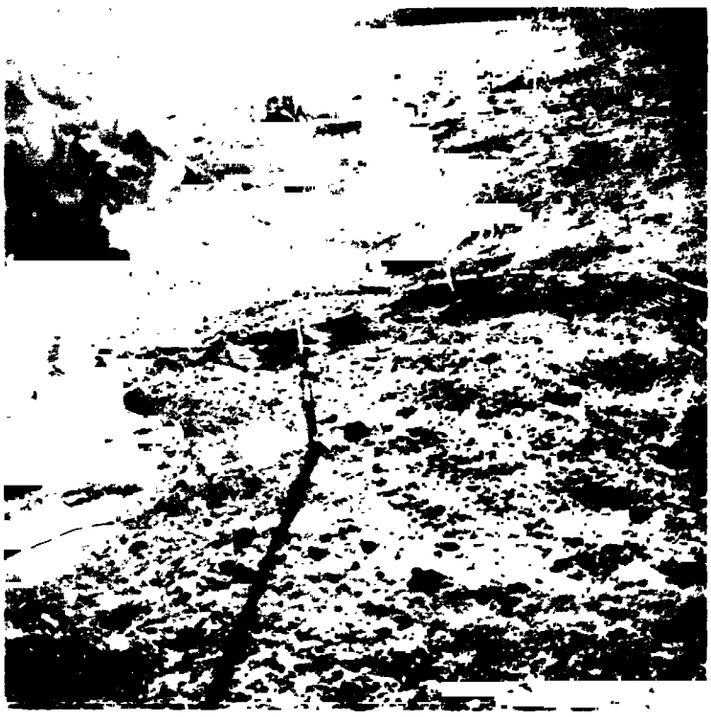
*Apparent burial: Slight.*

*Dust cover: Present.*

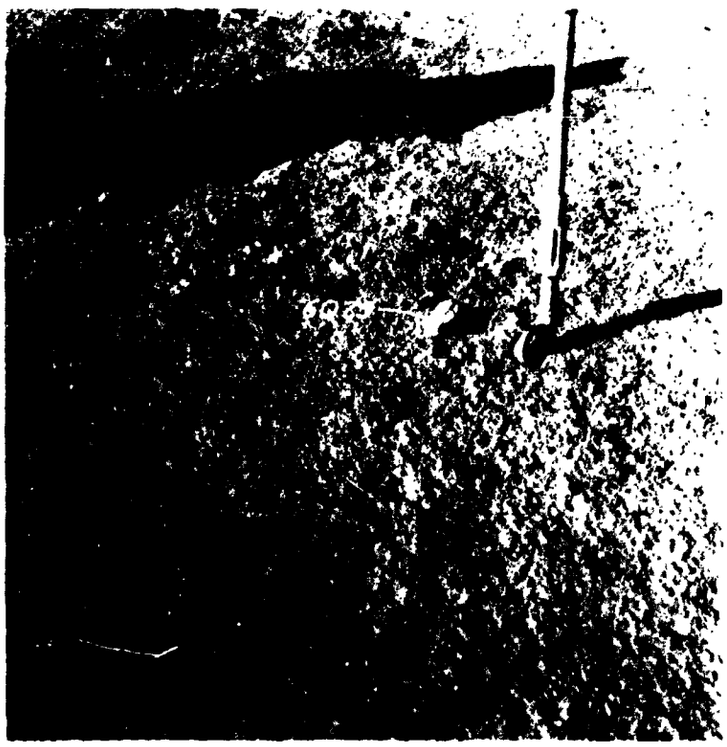
*Comparison with other fragments in area: Small clasts visible; probably representative of breccia fragments in local area.*

*Probable origin: Locally derived impact ejecta*

a) *Pre-sampling, looking east (108-17631)*



b) *Pre-sampling, looking southwest (107-17522)*



*SAMPLE 6075*

*SAMPLE: 6080, 6085 (339)*

*Station: 6*

*Landmark: 10 m crater (southwest wall) on lowest "bench" of Stone Mountain, near base.*

*Rock type: Soil (6080); fragment in soil sample (6085).*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Gentle regional slope northwest; 10-15° northeast at sample locality on crater wall.*

*Fragment population*

*Size range and distribution: Fragments mainly <5 cm, very few rocks >5 cm in immediate sample area; cobbles 5-15 cm widely distributed in surrounding area with few scattered blocks up to 50 cm.*

*Color: Gray.*

*Shapes: Mainly subround, large blocks subangular.*

*Fillets: Moderately developed around large blocks.*

*Apparent burial: Probably slight.*

*Dust cover: Probably present.*

*Fines*

*Color: Gray.*

*Compaction: Generally loose.*

*Craters*

*Size range and distribution: <5 m common, 5-10 m sparse, >10 m not visible in general area; 0.5-1 m craters on local crater wall.*

*Shape: Generally shallow, subdued.*

*Ejecta: Not discernible.*

*SAMPLE CHARACTERISTICS*

*Size: Indurated fragments >1 cm as well as soil <1 cm.*

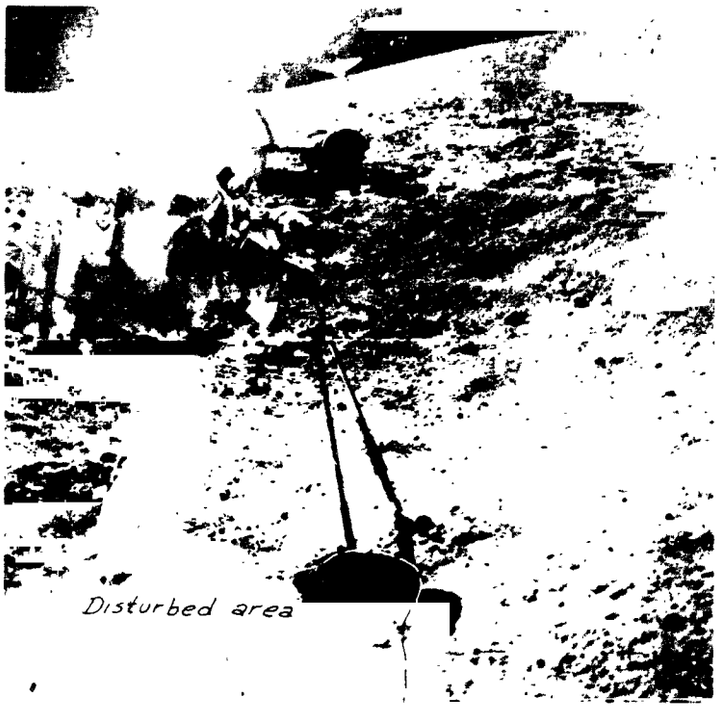
*Color: White.*

*Shape: Angular fragments.*

*Apparent burial: Mostly buried.*

*Comparison with other soil in area: Apparently unique; an indurated clod of white impact ejecta; possibly from South Ray crater, but location generally "shadowed" from South Ray crater ejecta.*

a) *Pre-sampling, looking east (108-17629)*




b) *Pre-sampling, looking west (108-17628)*

***SAMPLES 6080 AND 6085***

*SAMPLE: 6095* (410)*

*Station: 6*

*Landmark: 10 m crater (south rim) on lowest "bench" of Stone Mountain, near base*

*Rock type: Breccia with crystals*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Gentle regional slope northwest; very gentle local slope to north*

*Fragment population*

*Size range and distribution: Several blocks 20-50 cm in local area; cobbles 5-20 cm relatively common; fragments <5 cm common*

*Color: Gray*

*Shapes: Angular to rounded in all size ranges*

*Fillets: Present around some large blocks*

*Apparent burial: Large rounded rock partly buried; none elsewhere*

*Dust cover: Prevalent*

*Fines*

*Color: Gray*

*Compaction: Firmer than on crater wall (LRV tracks and footprints were more shallow than at stations 4 and 5)*

*Craters*

*Size range and distribution: <5 m common, 5-10 m sparse, >10 m not visible; small (<1 m) craters visible in local area*

*Shape: Shallow and subdued*

*Ejecta: Not discernible*

*SAMPLE CHARACTERISTICS*

*Size: Two fragments, 10-15 cm, from upper surface of large block 50 cm x 25 cm x 15 cm*

*Color: Grayish-bluish with white clasts*

*Shape: Fragments subrounded, each with one fracture face; parent block rectangular*

*Fillet: Minor around parent block*

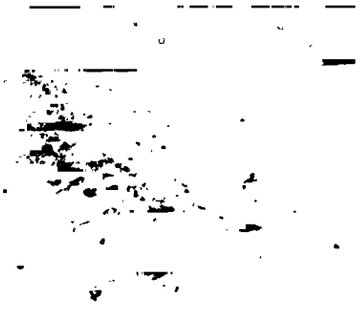
*Apparent burial: Probably slight (parent block)*

*Dust cover: Prevalent*

*Comparison with other fragments in area: Rectangular shape of parent rock atypical, but possibly similar in composition and texture to other angular blocks; large, rounded, partly buried block apparently unique in general area*

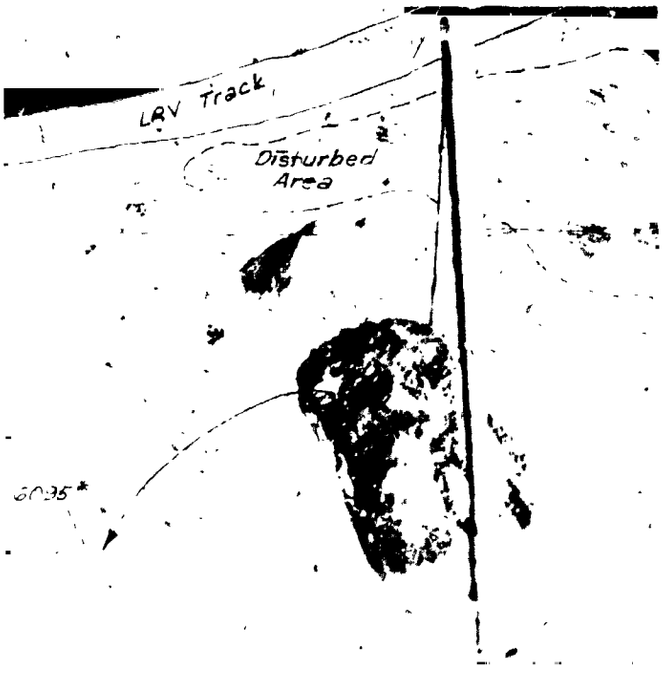
*Probable origin: Ejected from South Ray crater, as suggested by angularity, lack of burial, and brecciated appearance*

*COMMENTS: Fine-grained, bluish matrix, with whitish (plagioclase?) inclusions and needle-like black crystals; white clasts also apparent*



a) Pre-sampling, looking south (108-1724)

b) During-sampling, looking northeast (107-17523)




c) During-sampling, looking southeast (108-17633)

SAMPLE 6095*

*SAMPLE: 8002/8001* (D.T. U29/L36)*

*Station: 8*

*Landmark: West of the LRV 10-15 m*

*Rock type: Drive tube*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: 3-5° regional slope northeast. Locally on a slope of a 10-15 m crater*

*Fragment population*

*Size range and distribution: Up to 1 cm abundant, 1-3 cm common; 3-5 cm sparse*

*Color: Medium gray*

*Shapes: Generally rounded, a few angular*

*Fillets: None visible*

*Apparent burial: Several fragments appear partially buried*

*Dust cover: None visible*

*Fines*

*Color: Medium gray*

*Compaction: Loose*

*Craters*

*Distribution: Up to 4-5 cm common; larger ones sparse*

*Shape: Subdued*

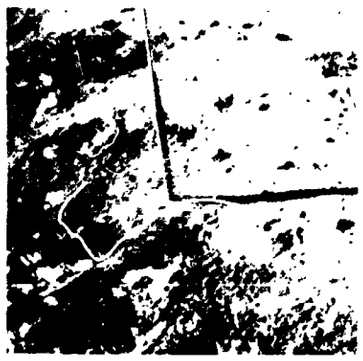
*Ejecta: None visible*

*SAMPLE CHARACTERISTICS*

*Comparison with other soil in area: Surface around the drive tube appears typical of the area*

*Probable origin: Locale suggests South Ray ejecta*

*a) During-sampling, first attempt, looking west (107-17529)*



*b) During-sampling looking south showing first attempt and final location (108-17683)*

*c) During-sampling, final location, looking south (108-17684)*

***DRIVE TUBE 8002/8001****

SAMPLE: 8035*, 8500*, 8510* (413, 412, 411)

Station: 8

Landmark: On north rim of a 10-15 m crater in vicinity of visible rays from South Ray crater.

Rock type: Rake (8510*)-soil (8500*) sample; black, glassy rock (8035*).

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Locally sloping north off rim of 10-15 m crater.

Fragment population

Size range and distribution: Up to 1 cm abundant; 1-2 cm sparse; 2-5 cm rare.

Color: Medium gray.

Shapes: Generally rounded, some angular.

Fillets: None visible.

Apparent burial: Some of the more rounded fragments are partially buried.

Dust cover: None visible.

Fines

Color: Medium gray.

Compaction: Generally firm.

Craters

Size range and distribution: Up to 3 cm common, larger ones sparse.

Shape: Subdued.

Ejecta: None visible.

SAMPLE CHARACTERISTICS FOR 8035*

Size: 3-4 cm.

Color: Black.

Shape: Angular.

Comparison with other fragments in area: Several other glass fragments are scattered over the surface in this area. This one reflected red and green in the sunlight.

Probable origin: Locale, similarity to surrounding surface, suggests ejecta from South Ray.

SAMPLE CHARACTERISTICS FOR 8500*

Size: Mostly less than 1 cm.

Color: Medium gray.

Comparison with other fragments in area: Several other glass fragments are scattered over the surface in this area. This one reflected red and green in the sunlight.

Probable origin: Locale, similarity to surrounding surface, suggests ejecta from South Ray.

SAMPLE CHARACTERISTICS FOR 8510*

Size: (≈10 fragments), mostly greater than 1 cm; some possibly 3-4 cm.

Color: Medium gray.

Shape: Rounded.

Comparison with other fragments in area: Shape and color of material in rake area appears similar to the surrounding area.

Probable origin: Locale, similarity to surrounding surface, suggests ejecta from South Ray.

*a) Pre-sampling, looking south (107-17528)*

*b) During-sampling, looking north (107-17537)*

*c) During-sampling, looking northwest (107-17533)*

*SAMPLES 8035*, 8500* AND 8510**

SAMPLE: 8115, 8120 (340, 374)

Station: 8

Landmark: From a 1 m boulder on the southeast rim of a 10-15 m crater.

Rock type: Breccia with a dark (blue) matrix and white crystalline clasts (8115). Fillet (8120) from base of 8115 boulder.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Regionally a 3-5° slope northeast.

Fragment population

Size range and distribution: Up to 2 cm abundant. 3 cm to 15 cm common, 15 cm to 2 m sparse.

Color: Generally medium gray, a few light gray.

Shapes: Mostly angular, some rounded.

Fillets: Some of the more rounded rocks have poorly developed fillets on the south face. Within the 10-15 m crater most fragments have well developed fillets on the uphill (northeast) side.

Apparent burial: Mostly perched

Dust cover: None visible except on small fragments.

Fines

Color: Medium gray.

Compaction: Moderately firm away from crater rims.

Craters

Distribution: Up to 20 cm abundant. 20 cm and larger common. One 20-25 m and one 10-15 m crater are in the immediate area.

Shape: Subdued.

Ejecta: None recognizable.

SAMPLE CHARACTERISTICS FOR 8115

Size: 10 x 18 cm

Color: Medium gray.

Shape: Boulder is subangular to rounded.

Fillets: Possibly a poorly developed fillet.

Burial: Perched.

Dust cover: None visible.

Comparison with other fragments in area: Similar in angularity, color, and burial to most of the smaller fragments in the area.

Probable origin: Perched nature; similarity to other fragments in the area, and location suggest the boulder was ejected from South Ray.

COMMENTS: A small crater south of the boulder is possibly a secondary formed by it. On at least two sides (south and west) of the rock is a ridge of soil. Two possible explanations of these ridges south and west are 1) formed by the boulder pushing the soil up as it landed and settling back. 2) material sloughing off the sides of the boulder. Because of the orientation of the ridges, the first explanation is most probable.

SAMPLE CHARACTERISTICS FOR 8120

Color: Medium gray

Comparison with other soil in area: Soil and small fragments similar to surrounding area.

Probable origin: Two possible origins: 1) material has been shoved up by the boulder as it came to rest; 2) formed by material sloughing off the face of the boulder.

a) Pre-sampling, looking southeast (108-17676)

b) Pre-sampling, looking southwest (108-17690)


c) Post-sampling, looking southeast (107-17547)

SAMPLES 8115 and 8120

*SAMPLE: 8415,1,2 (342, 341); 8416 (342)*

*Station: 8*

*Landmark: Chips from a .5 m boulder on the outside rim of a 5 m crater.*

*Rock type: White crystalline rock; feldspathic, sugary texture. somewhat friable, zap pits. Two fragments in different bags (8415,1,2) finer grained than third fragment (8416).*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Regional slope of 3-5° locally a 5-8° slope east off the 5 m crater.*

*Fragment population*

*Size range and distribution: Up to 2 cm abundant. 2 cm to 10 cm common. Larger blocks sparse.*

*Color: Light gray to white.*

*Shapes: Generally angular, some well rounded.*

*Fillets: Generally absent. 20 cm southeast of the boulder is a subrounded rock with a well-developed fillet.*

*Apparent burial: Some more rounded fragments partially buried.*

*Dust cover: None visible.*

*Fines*

*Color: Medium gray.*

*Compaction: Loose.*

*Craters*

*Size range and distribution: Up to 10 cm common; 10 cm to 1 m sparse.*

*Shape: Generally subdued.*

*Ejecta: None visible.*

*SAMPLE CHARACTERISTICS*

*Size: 3 small chips; one is about 4 x 10 cm, one about 4 x 6 cm, and one about 3 x 6 cm.*

*Color: Light gray to white.*

*Shape: Boulder is angular.*

*Fillets: The boulder is generally perched on the rim of the crater. On the side of the rock away from the crater, the soil appears to lap up on it.*

*Apparent burial: Perched.*

*Dust cover: None visible.*

*Comparison with other fragments in area: Crew reported several other fragments scattered around the area that had the same general characteristics.*

*Probable origin: Perched nature and angularity, comparison with other fragments in the area, suggests that the boulder originated from South Ray crater.*

*COMMENTS: Possible planar contact in photograph of boulder separates two sampled areas. A second contact may also be present; textures below the lower contact appear similar to those above the upper contact.*

a) Pre-sampling, looking west (108-17697)


b) Pre-sampling, looking southeast (107-17549)


c) Post-sampling, looking southeast (108-17698)

SAMPLES 8415,1,2 AND 8416

*SAMPLE: 8815,1, 8815, 2, 8820*, 8840* (FSR-6, 343, 375, 344)*

*Station: 8*

*Landmark: Chip from 1 m rock east of the LRV*

*Rock type: Dense breccias with dark vesicular matrices (8815, 1, 2); "fillet" from same boulder (8820*); reference soil (8840*) for "fillet."*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: 3-5° regional slope northeast.*

*Fragment population*

*Size range and distribution: Up to 1 cm abundant. 1-3 cm common; 3 cm to 1 m sparse.*

*Color: Medium gray.*

*Shapes: Generally angular. Smaller fragments are rounded.*

*Fillets: Generally small or absent.*

*Apparent burial: Generally perched.*

*Dust cover: Crew noted absence of dust.*

*Fines*

*Color: Medium gray*

*Compaction: Loose*

*Craters*

*Size range and distribution: Up to 5 cm common; larger ones sparse.*

*Shape: Subdued.*

*Ejecta: None visible.*

*SAMPLE CHARACTERISTICS OF 8815, 1, 2*

*Size: 20-25 cm chip from a 1 m boulder.*

*Color: Medium gray.*

*Shape: Angular.*

*Fillets: Boulder has small fillet on north side.*

*Apparent burial: Boulder is generally perched. Partially covered by fillet.*

*Dust cover: None.*

*Comparison with other fragments in area: Similarity in angularity, texture, and color to other rocks in the area.*

*Probable origin: The angularity of this boulder and its perched nature as well as comparison with other fragments in the area suggests it was ejected from South Ray crater. The rock is similar to sample 8115, which was collected approximately 50 m away.*

*SAMPLE CHARACTERISTICS OF 8820**

*Size: Unknown.*

*Color: Medium gray.*

*Comparison with other soil in area: Soil and fragments appear similar in color and texture to surrounding area.*

*Probable origin: Crew reported an absence of dust on top of rock which suggests soil was not a fillet. Possibly it was pushed up in front of boulder as it came to rest.*

*SAMPLE CHARACTERISTICS FOR 8840**

*Size: Soil.*

*Color: Medium gray.*

*Comparison with other soil in area: Appears typical of soil in this area.*

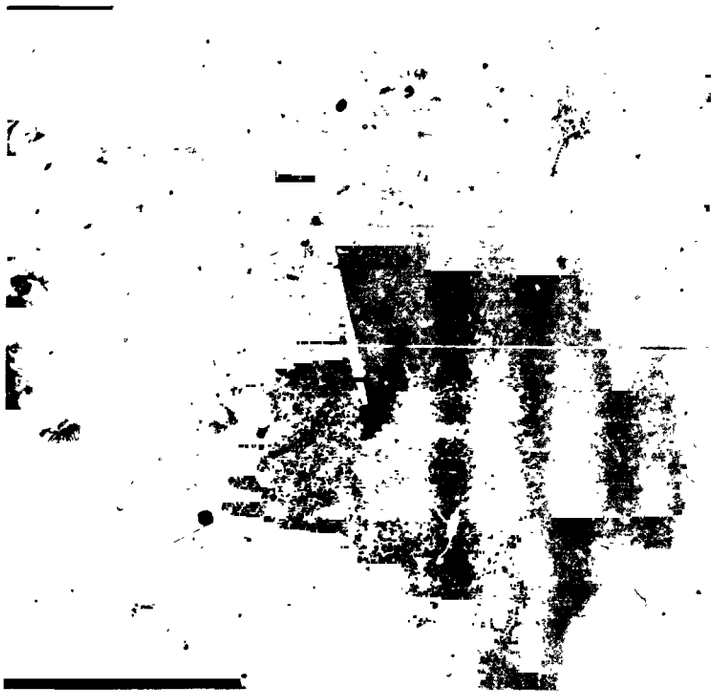
*Probable origin: Locale and similarity to soil of nearby areas suggests South Ray crater ejecta.*


a) Pre-sampling, looking east (108-17672)


b) During-sampling, looking southwest (108-17701)

SAMPLES 8815,1, 8815,2 AND 8820*

a) During-sampling, looking west (108-17702)



b) During-sampling, looking north (107-17555)

SAMPLE 8840*

*SAMPLE: 9001 (34)*

*Station: 9*

*Landmark: In relatively smooth area 20 m north of a 30-50 m subdued crater*

*Rock type: Drive tube*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Level*

*Fragment population*

*Size range and distribution: Up to 1 cm common; larger ones sparse. Largest fragment in vicinity of drive tube is 4-5 cm*

*Color: Medium gray*

*Shapes: Mostly rounded, a few angular*

*Fillets: None visible*

*Apparent burial: Mostly perched. Some small fragments are partially buried*

*Dust cover: None visible*

*Fines*

*Color: Medium gray*

*Compaction: Loose around footprints*

*Craters*

*Size range and distribution: Up to 3 cm common; larger ones sparse*

*Shape: Subdued*

*Ejecta: Not visible*

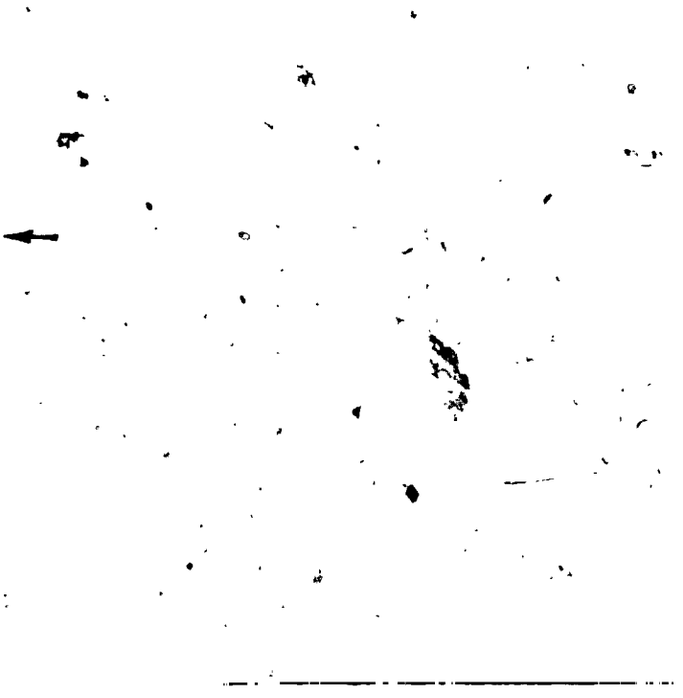
*SAMPLE CHARACTERISTICS*

*Probable origin: If South Ray ejecta is thin or absent, the drive tube may contain regolith derived from the Cayley Formation*

*COMMENTS: Appears to have been driven into regolith material that is typical for this area*

a) *During sampling; arrow marks rock that shows in photo below (108-17742)*

b) *Locator; arrow marks rock near drive tube which is just off left edge of photo (107-17560)*



***SAMPLE 9001***

*SAMPLE: 9003*, 9004* (surface samplers), 9920*, 9935*, 9940*, 9955*, 9960* (376, 378, 377, 380, 379)*

*Station: 9*

*Landmark: Surface samplers (9003*, 9004*) .5 m block (9935*) on north rim of a 30-50 m crater. 9920*, 9940* in shadowed area immediately west of block; chip (9955*) from bottom of same .5 m boulder; soil (9960*) from beneath boulder.*

*Rock type: Hard breccia (9935*); soil (9920*, 9940*, 9960*) rock (9955*) with 5 mm bluish crystals and black glass in fractures.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Gentle regional slope to northeast. Locally southwest into a 30-50 m crater.*

*Fragment population*

*Size range and distribution: Up to 1 cm abundant; 1-3 cm common; larger fragments sparse.*

*Color: Medium gray.*

*Shapes: Generally angular, several rounded in all size fractions.*

*Fillets: None visible.*

*Apparent burial: Generally perched. Some rounded fragments are partially buried.*

*Dust cover: None visible.*

*Fines*

*Color: Medium gray.*

*Compaction: Moderately firm.*

*Craters*

*Size range and distribution: Up to 5 cm abundant; 5-30 cm common; large ones sparse.*

*Shape: Subdued.*

*Ejecta: None visible.*

*SAMPLE CHARACTERISTICS FOR 9935**

*Size: 5-cm chip.*

*Color: Medium gray.*

*Shape: Boulder angular.*

*Fillets: Boulder not filleted.*

*Apparent burial: Boulder perched on rim of small (0.5-1.0 m) crater.*

*Dust cover: Not visible.*

*Comparison with other fragments in area: Angularity, color and perched nature appears similar to most blocks in local area.*

*Probable origin: Angularity, lack of a fillet, perched nature and resemblance to blocks at station 8 suggest that the block is from South Ray crater. It is perched on the northeast rim of what appears to be its own secondary crater.*

*COMMENTS: 9555* chipped from bottom of same 0.5 m boulder.*

*SAMPLE CHARACTERISTICS FOR 9920*, 9940*, 9003*, 9004**

*Size: Unknown.*

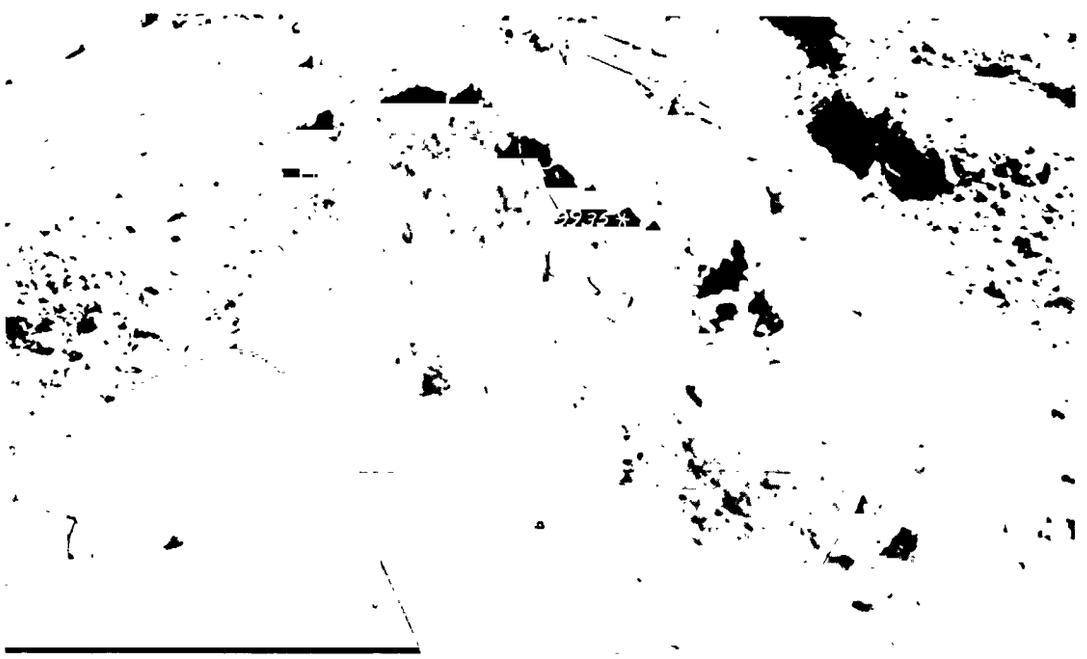
*Color: Medium gray.*

*Comparison with other soil in area: Texture and color appear typical of soil in surrounding area.*

*Probable origin: Similarity of blocks in local area with those at station 8 suggests surface is mantled by South Ray crater material.*

a) Pre-sampling, looking northeast (107-17560)


b) Pre-sampling, looking north (107-17559)



c) Post-sampling, looking northeast (107-17572)

SAMPLES 9920*, 9935*, AND 9940*

*SAMPLE CHARACTERISTICS FOR 9955**

*Size: 4-cm.*
*Color: Medium gray.*
*Shape: Boulder is generally angular. Bottom of boulder is not appreciably less rounded than the top.*
*Dust cover: Bottom of boulder appears dust covered.*
*Comparison with other fragments in area: Angularity, color and perched nature appears similar to most blocks in local area.*
*Probable origin: Angularity, lack of a fillet, perched nature and resemblance to blocks at station 8 suggest that the block is from South Ray crater. It is perched on the northeast rim of what appears to be its own secondary crater.*

*SAMPLE CHARACTERISTICS FOR 9960**

*Size: Unknown.*
*Color: Medium gray.*
*Comparison with other soil in area: Soil from beneath boulder has same general color as surrounding soil.*
*Probable origin: Similarity of blocks in local area to those at station 8 suggests surface is mantled by South Ray crater material.*

a) Pre-sampling, after rolling, looking north (107-17574)

b) Post-sampling, after rolling, looking northwest (107-17579)

9955*

c) Pre-sampling, after rolli. ;, looking west (107-17575)

SAMPLES 9955* AND 9960*

*SAMPLE: 7015 (FSR-7)*

*Station: 11*

*Landmark: Southeast rim of North Ray crater.*

*Rock type: Breccia, white matrix, dark clasts.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Average slope to northwest.*

*Fragment population*

*Size range and distribution: Greater than 10 cm, sparse; 5-10 cm common; 0.5 to 5 cm abundant.*

*Color: White to medium gray.*

*Shapes: Subrounded to subangular.*

*Fillets: Generally none, but fillet may be present on one 25 cm rock to north.*

*Apparent burial: Few larger rocks of 10-25 cm size are partly buried.*

*Dust cover: Not apparent.*

*Fines*

*Color: Light gray.*

*Compaction: Fairly firm; bootprints penetrate less than 1 cm.*

*Craters: None observed.*

*SAMPLE CHARACTERISTICS*

*Size: 8 x 12 cm.*

*Color: White matrix; gray clasts.*

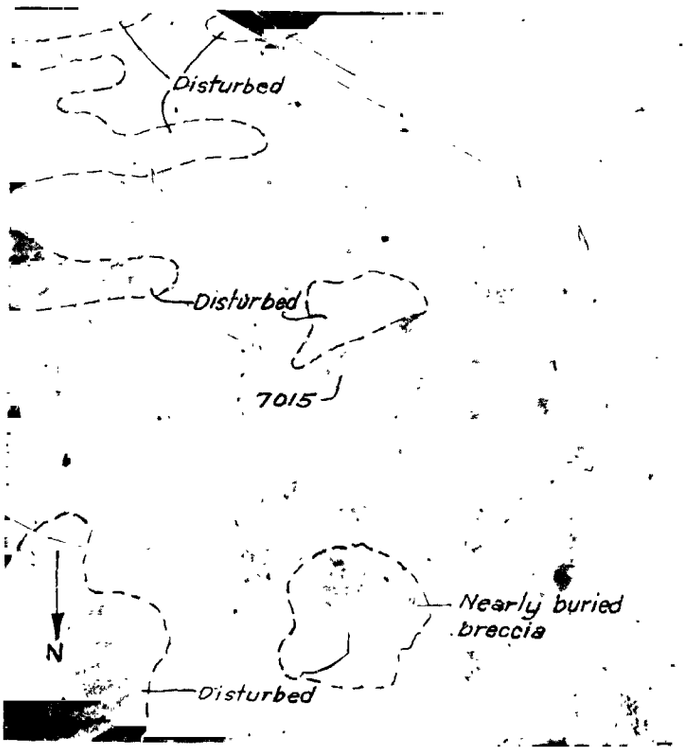
*Shape: Subrounded.*

*Fillet: Not apparent.*

*Apparent burial: Approximately half buried.*

*Dust cover: None visible.*

*Comparison with other fragments in area: Similar in color and shape to majority of fragments in vicinity, roughly equals median size. A few fragments are lighter in color. One is darker and more angular. Ejecta from North Ray crater.*




Pre-sampling, looking south (116-18621)

SAMPLE 7015

*SAMPLE: 7035 (382)*

*Station: 11*

*Landmark: Southeast rim of North Ray crater.*

*Rock type: Breccia; white matrix, dark clasts.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Down about 10° to northwest; locally down to southwest.*

*Fragment population*

*Size range and distribution: 0.5-2 m boulders common (5-10 within 10 m radius); 10-50 cm rocks also common; 1-10 cm abundant;*

*Color: Most fragments are light gray to white; few are dark.*

*Shapes: Angular to subrounded.*

*Fillets: Poorly to moderately well-developed; steep against boulder just north of sample site.*

*Apparent burial: Generally 1/10 to 1/5 of fragments.*

*Dust cover: Not visible.*

*Fines*

*Color: Light gray.*

*Compaction: Firm; bootprints less than 1 cm deep.*

*Craters: None observed.*

*SAMPLE CHARACTERISTICS*

*Size: 2 pieces about 2 x 6 cm, and about 20 smaller pieces, less than 1 cm.*

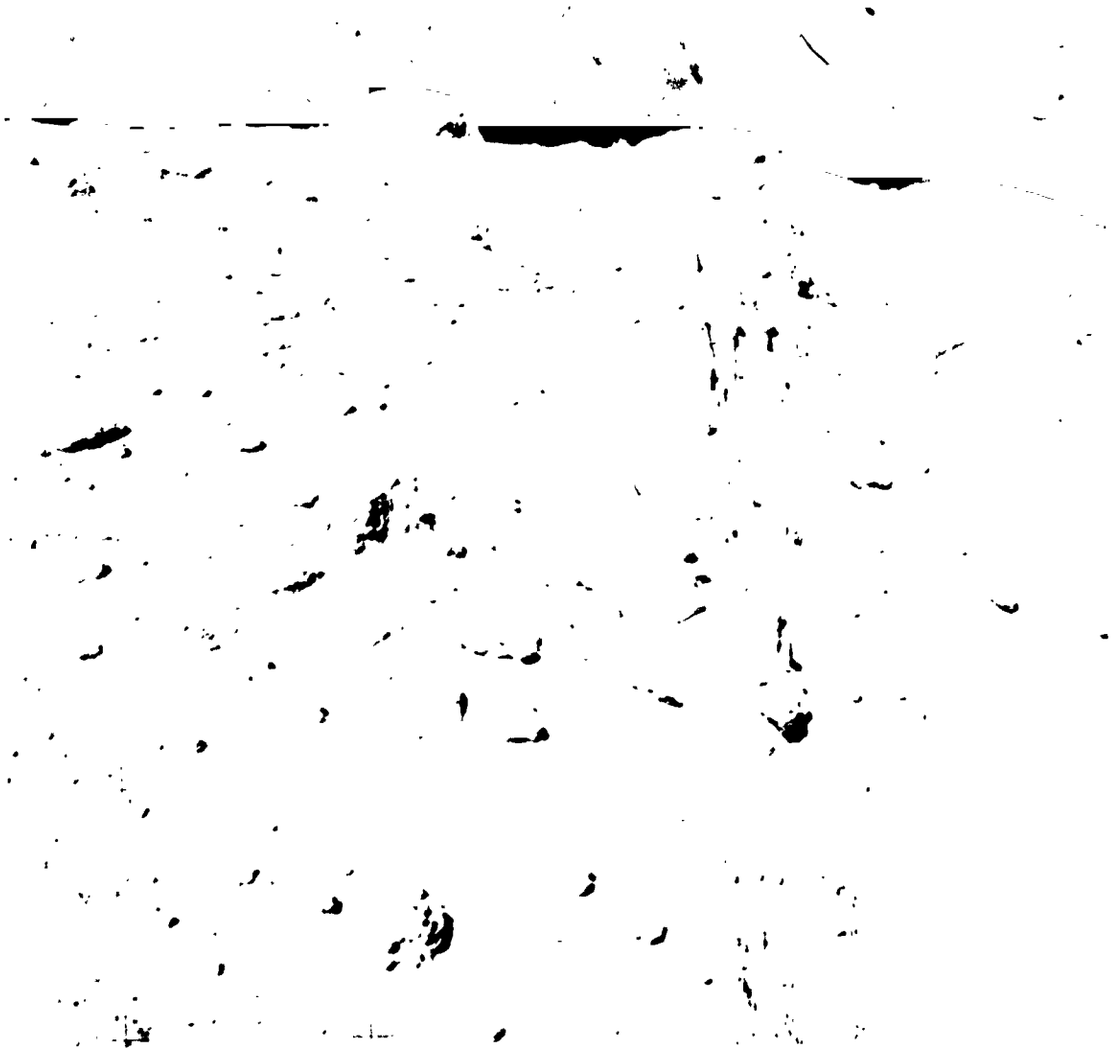
*Color: Light gray matrix, with dark and white clasts.*

*Shape: Rounded to subrounded.*

*Comparison with other fragments in area: Probably typical of boulders and small fragments in this vicinity.*

*Probable origin: North Ray crater ejecta.*

*COMMENTS: Sample is one of the farthest inside North Ray crater wall that was collected.*



*Pre-sampling, looking northwest (116-18610)*

*SAMPLE 7035*

*SAMPLE: 7055 (383)*

*Station: 11*

*Landmark: Rim of North Ray crater, approximately 100 m southwest of House Rock.*

*Rock type: Breccia; white matrix, dark clasts; few white clasts.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Not measured*

*Fragment population*

*Size range and distribution: 3-10 cm clods are sparse; under 1 cm, abundant.*

*Color: Light gray*

*Shapes: Subangular (larger clods) to rounded (smaller ones)*

*Fillets: None visible*

*Apparent burial: One possible rock, 30-40 cm, appears almost completely buried.*

*Dust cover: Most fragments look dust covered.*

*Fines*

*Color: Light gray*

*Compaction: High to low; bootprints penetrate 2 cm to <0.5 cm.*

*Craters*

*Size range and distribution: None visible in field of photos*

*Shape: NA*

*Ejecta: NA*

*SAMPLE CHARACTERISTICS*

*Size: 7 x 5 x 4 cm, 221 g*

*Color: White matrix, dark gray clasts*

*Shape: Chunky clod with loose subangular to subrounded clasts*

*Fillets: Perched--no fillet*

*Burial: None*

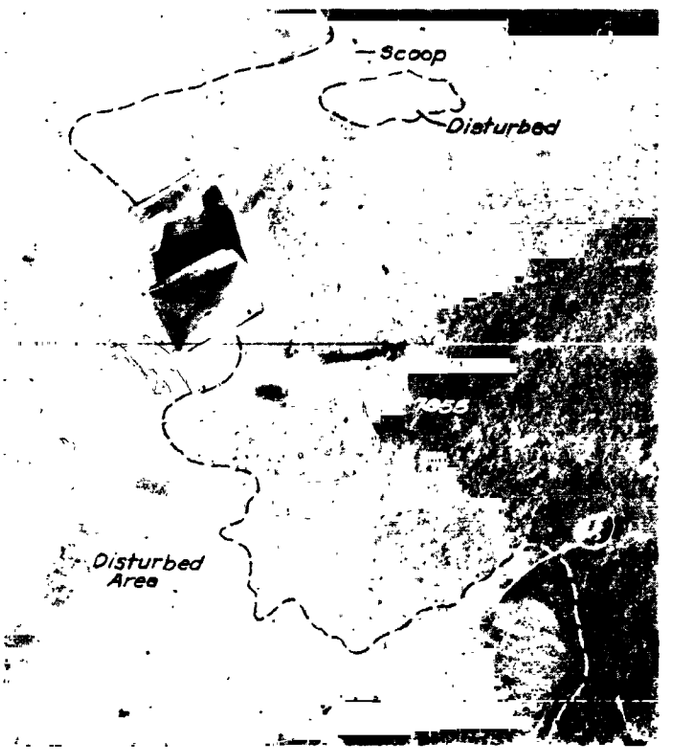
*Dust cover: Dust covered*

*Comparison with other fragments in area: Larger than any of 5 or 6 others in vicinity, but appears to be typical in shape and texture. Not as white as one or two fragments.*

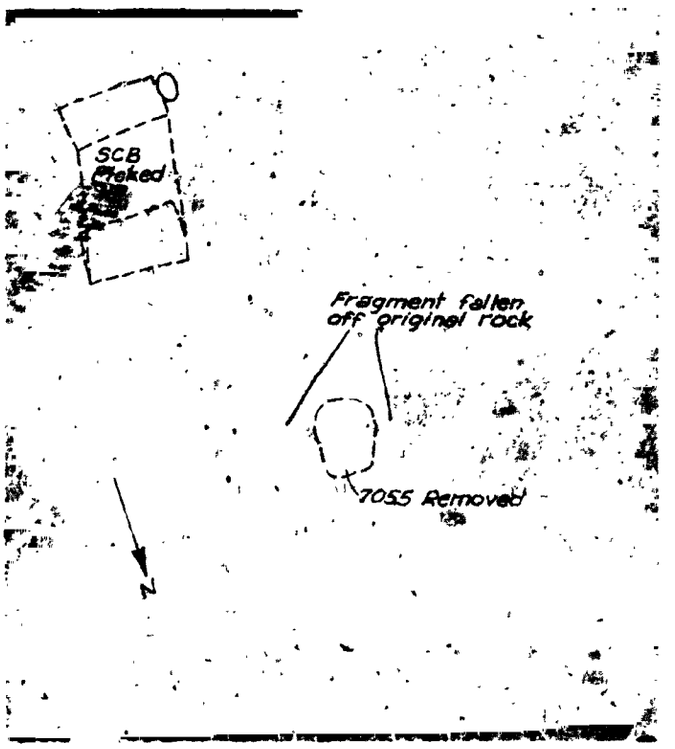
*Probable origin: North Ray crater ejecta.*

*COMMENTS: Crew saw 50% dark clasts.*

a) *Pre-sampling, looking south (116-18616)*




b) *Post-sampling, looking south (116-18618)*




*SAMPLE 7055*

SAMPLE: 7075 (384)

Station: 11

Landmark: Southeast rim of North Ray crater

Rock type: "White shocked rock", friable, fine-grained, possibly shattered crystalline rock.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Not determined

Fragment population

Size range and distribution: Two visible 1/2 to 1 m boulders; 1-2% of area covered by 1-10 cm fragments; 30% covered by <1 cm clods.

Color: Medium gray

Shapes: Most are rounded to subrounded.

Fillets: Small fillet on 1 m boulder to the south. No others apparent.

Apparent burial: None

Dust cover: Possibly on smoother surfaces

Fines

Color: Medium gray.

Compaction: Perched fragments indicate compact surface.

Craters

Size range and distribution: None visible in photographs of immediate area.

Shape: NA

Ejecta: NA

SAMPLE CHARACTERISTICS

Size: Originally 2 fragments, each 5-8 cm diameter.

Color: White

Shape: Subrounded; angular at fracture corners

Fillet: Perched, no fillet.

Apparent burial: None

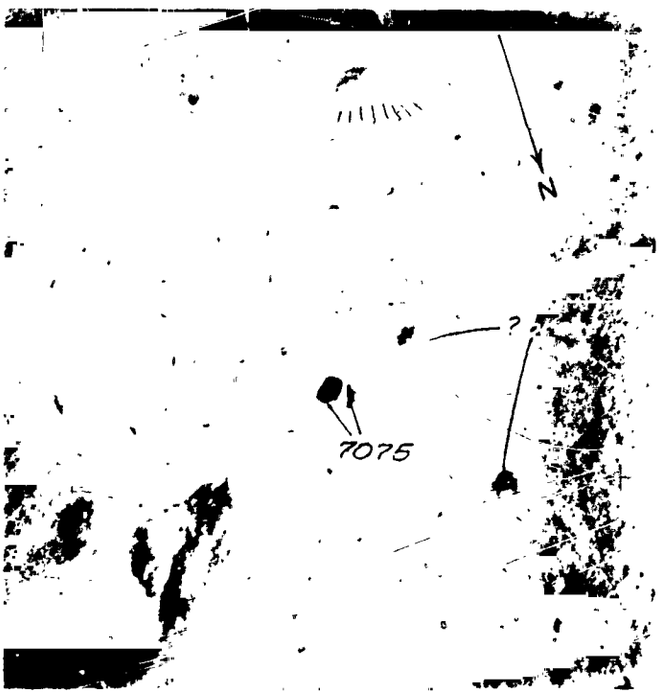
Dust cover: Possibly on smaller fragments to right (north).

Comparison with other fragments in area: Two others in area are mottled and look like breccias. Remainder are uniform gray and rounded clods or dust-covered breccias.

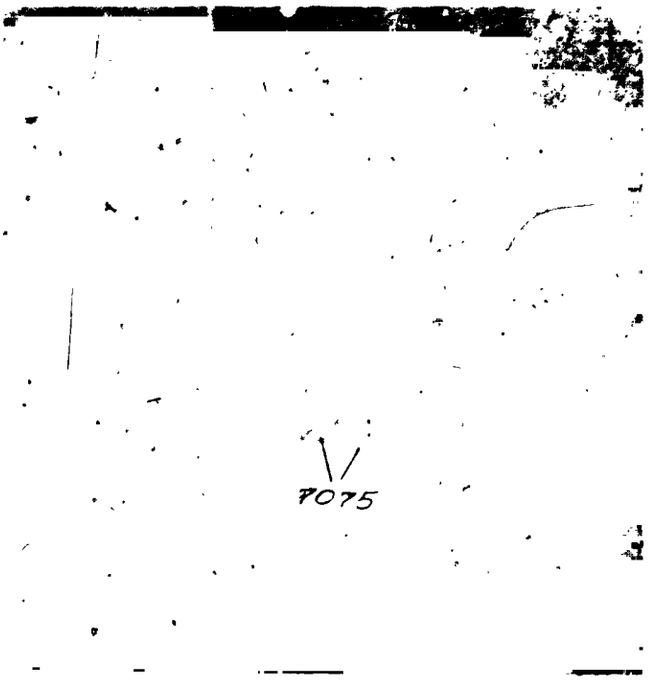
Probable origin: Unique in local area indicates possible exotic origin; although sample may be typical of white rock breccias 150 m to west and therefore is ejecta from North Ray.

COMMENTS: Broke into several pieces in bag; very friable rock.

a) *Pre-sampling photo (106-17318)*




b) *Sample area in above photo twice enlarged*




**SAMPLE 7075**

SAMPLE: 7095, 7115 (385, 386)

Station: 1

Landmark: Southeast rim of North Ray crater

Rock type: 7095 is black glass-covered rock; probably breccia beneath. 7115 is breccia, gray to white matrix, black clasts.

SAMPLE CHARACTERISTICS OF SAMPLE AREA

Slopes: Possibly gentle slope down to northwest on North Ray rim.

Fragment population

Size range and distribution: 30% of surface is covered by 5-20 cm clods; one 0.5 m boulder. 40% of surface is covered by <1 cm rocks.

Color: Light gray; only 1 or 2 fragments are white.

Shapes: Rounded to angular.

Fillets: Not observed except on single 0.5 m boulder

Apparent burial: Singular large breccia boulder is almost completely buried.

Dust cover: Can't determine.

Fines

Color: Light gray; similar to most of the clods.

Compaction: Poorly developed; bootprints are several cm deep.

Craters

Size range and distribution: None visible in immediate area.

SAMPLE CHARACTERISTICS FOR 7095

Size: Approximately 4 x 7 x 13 cm.

Color: Light gray with black glass; similar to surrounding soil.

Shape: Angular, slab-shaped rock.

Fillet: None

Apparent burial: Perched.

Dust cover: Crew described as dust covered.

Comparison with other fragments in area: Typical of same size and smaller fragments.

Probable origin: North Ray crater ejecta.

SAMPLE CHARACTERISTICS FOR 7115

Size: 4 x 4 x 7 cm

Color: Light gray on untouched surface.

Shape: Rounded.

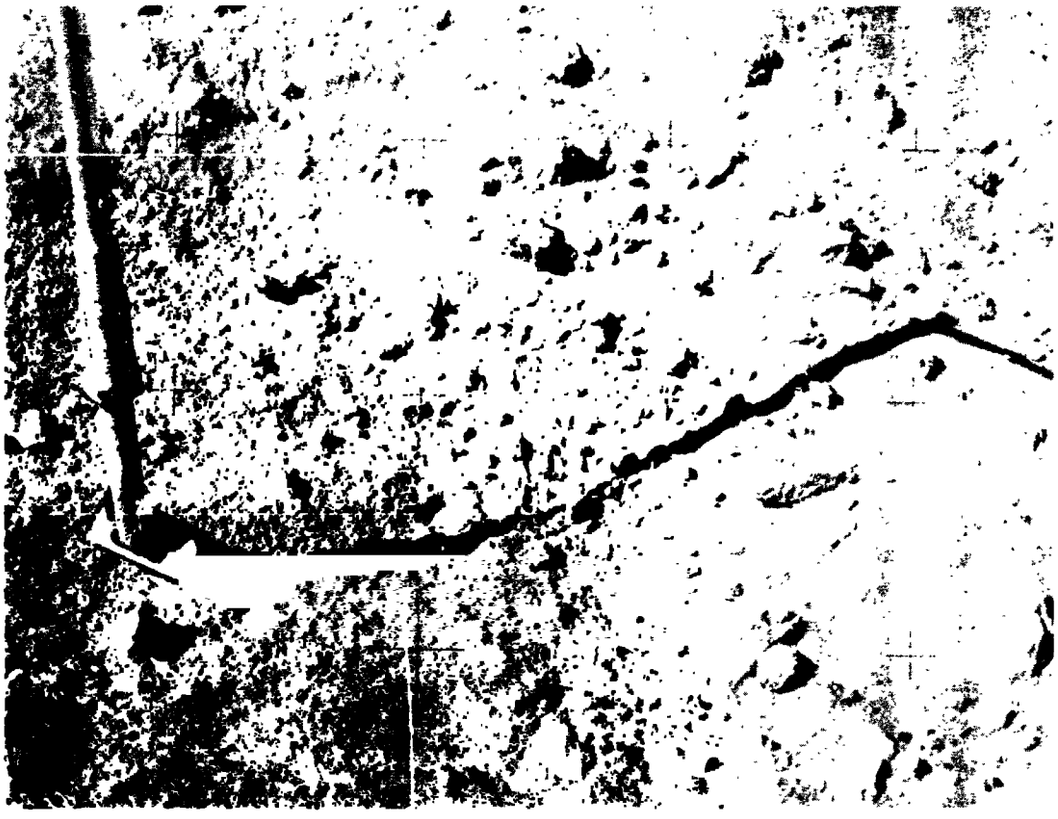
Fillet: None.

Apparent burial: None.

Dust cover: Crew described as dust covered.

Comparison with other fragments in area: More rounded that most; typical in size and color.

Probable origin: North Ray crater ejecta.



*Pre-sarpling (116-18626)*

*SAMPLES 7095 AND 7115.*

SAMPLE: 7215* (Padded bag 1)

Station: 11

Landmark: Southeast rim of North Ray crater.

Rock type: Hard rock.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Approximately level.

Fragment population

Size range and distribution: One boulder of approximately meter size; several 5-50 cm rocks; 2-5 cm common, <2 cm abundant.

Color: Light to medium gray.

Shapes: Most are subrounded to rounded; few are angular.

Fillets: On two rounded 10 cm rocks with low profiles.

Apparent burial: Crew described area as having lots of rocks under about 3 cm of soil.

Dust cover: Slight on 30 cm perched rock, possibly thrown up by Rover.

Fines

Color: Light gray.

Compaction: Moderately firm; bootprints are about 1 cm deep.

Craters

Size range and distribution: One 50 cm secondary in area of photographs.

Shape: Low-rimmed but fresh appearing.

Ejecta: Broken clod in bottom; few fragments on rim.

SAMPLE CHRACTERISTICS

Size: Approximately 3 x 8 cm.

Color: Mottled light and medium gray.

Shape: Subrounded.

Fillet: None in photos; may have existed before moving.

Apparent burial: None in photos; may have existed before moving.

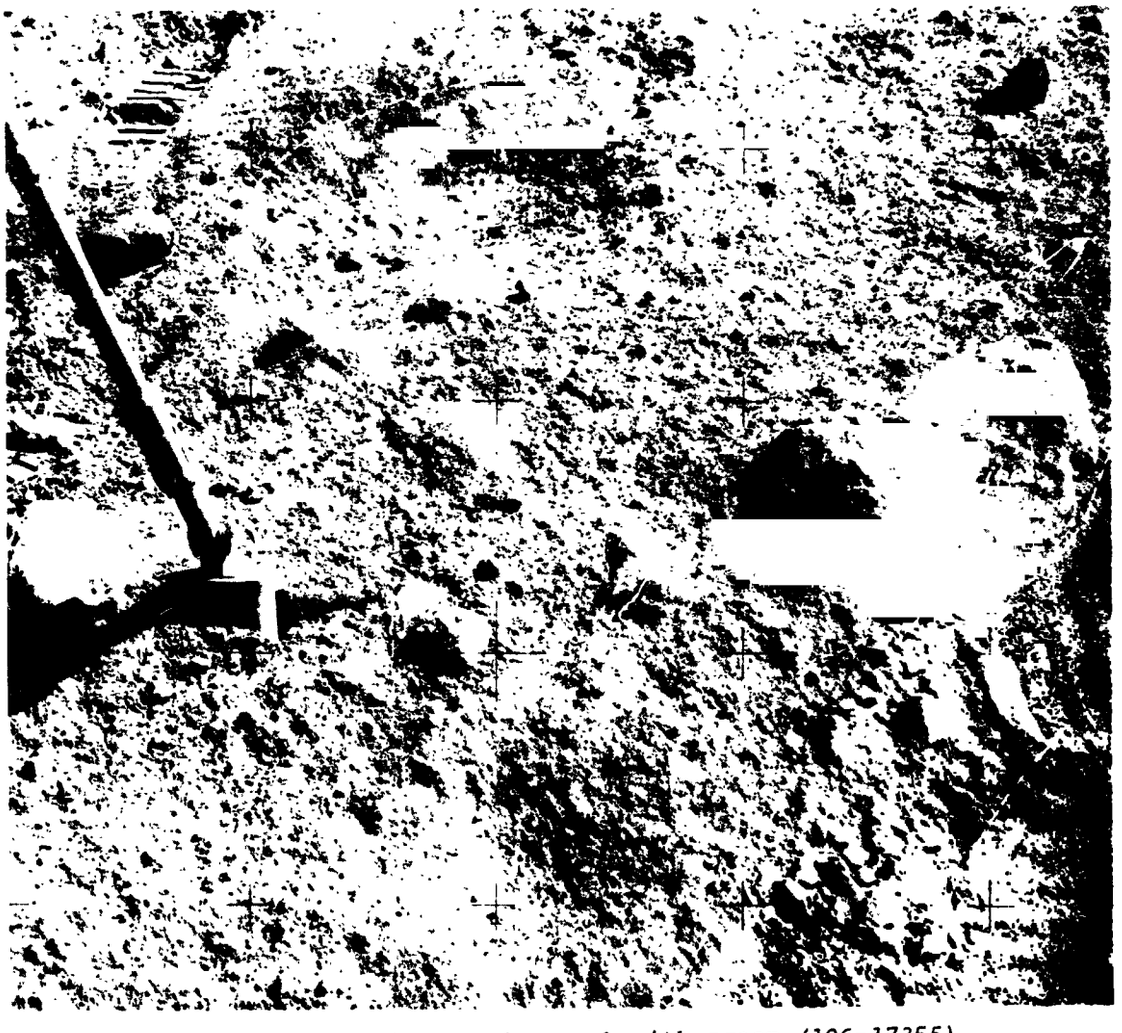
Dust cover: Partly covered, possibly due to movement.

Comparison with other fragments in area: Similar in appearance, but smaller than most fragments in local area.

Probable origin: North Ray crater ejecta.

COMMENTS: Sample moved before photographed.

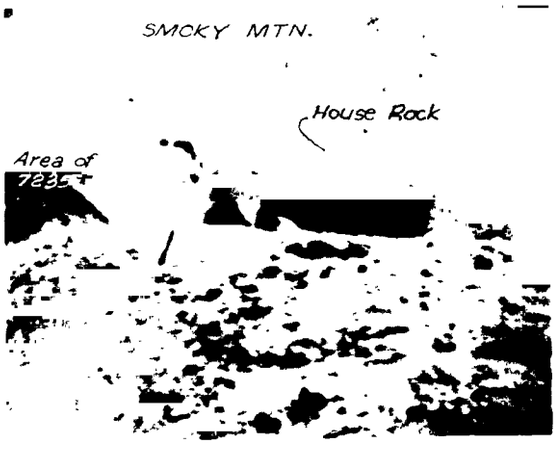
a) Pre-sampling, looking southeast (TV documentation)

b) Pre-sampling after moving rock with scoop (106-17355)

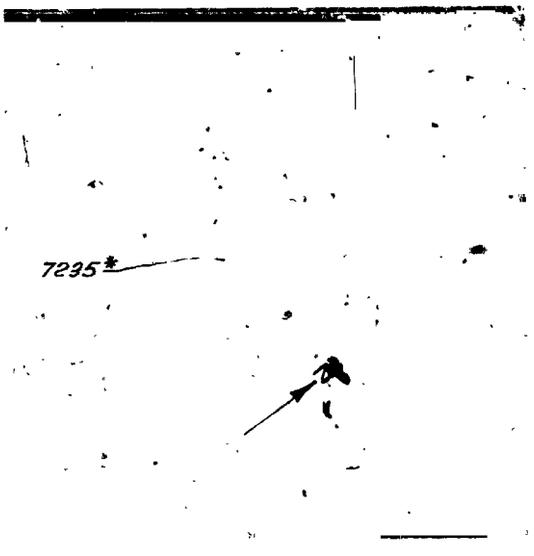
SAMPLE 7215*

SAMPLE: 7235* (Padded bag #2)
Station: 11
Landmark: Southeast rim of North Ray crater
Rock type: Not determined
SURFACE CHARACTERISTICS OF SAMPLE AREA
Slopes: Gentle slope down to northeast
Fragment population
Size range and distribution: 5-20 cm rocks cover less than 1% of area; 2-5 cm, 2-3%; 0.5-2 cm, 20-30%
Color: Light gray
Shapes: Subangular to subrounded
Fillets: None visible
Apparent burial: None visible
Dust cover: Too disturbed to determine
Fines
Color: Light gray
Compaction: Firm; most bootprints less than 1 cm deep
Craters
None visible
SAMPLE CHARACTERISTICS
Size: 10 x 20 cm
Color: Light gray to white
Shape: Elongate, subangular
Fillet: None
Apparent burial: Perched
Dust cover: Not visible
Comparison with other fragments in area: More angular and lighter in color than the majority of larger fragments
Probable origin: North Ray crater ejecta
COMMENTS: Surface largely disturbed




a) After sampling, looking north-east (TV documentation)

b) Pre-sampling (116-18656)




c) Pre-sampling (116-18654)

SAMPLE 7235*

SAMPLE: 7415*

Station: 11

Landmark: White breccia boulders on southeast rim of North Ray crater.

Rock type: Crystalline, white, fine-grained rock; may be white breccia matrix.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Not visible on photography.

Fragment population

Size range and distribution: Sparse clods, 5-10 cm, less than 1 % of surface. Abundant clods, under 5 cm, 30-40% of surface.

Color: Light gray (may be dust covered) and white.

Shapes: Rounded to subangular.

Fillets: None on near-field clods.

Apparent burial: None.

Dust cover: Nearly ubiquitous.

Fines

Color: Light gray.

Compaction: Soft; boot impressions are several centimeters deep.

Craters: None visible.

SAMPLE CHARACTERISTICS

Size: Approximately 10 x 10 cm.

Color: Light gray, similar to soil; white patches showing through.

Shape: Rounded on top surface. Angular on broken (north) face.

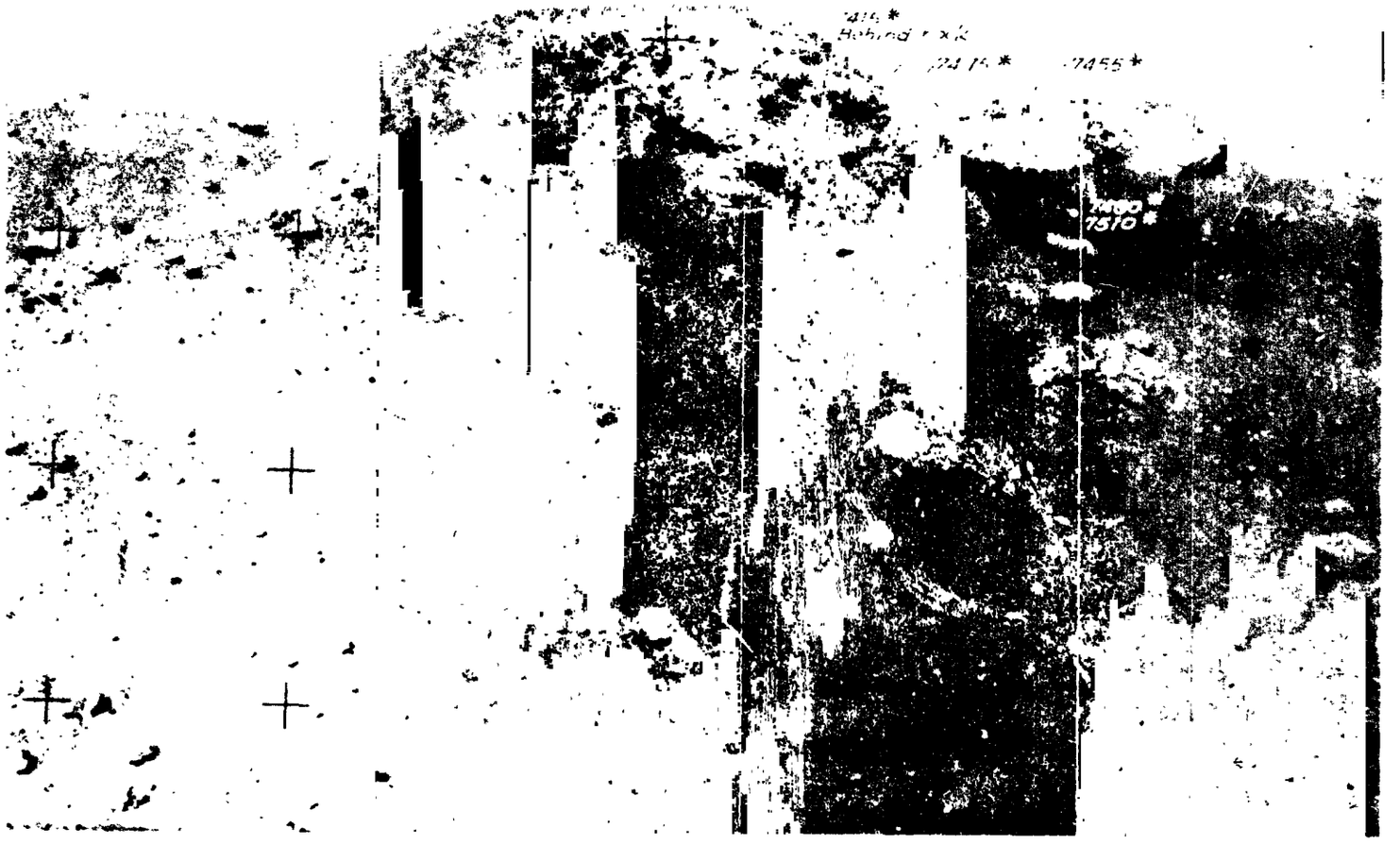
Fillet: None.

Apparent burial: Perched.

Dust cover: Crew described as dust covered.

Comparison with other fragments in area: Similar to largest ones observed.

Probable origin: Ejected from North Ray crater. May have broken off adjacent large white breccia boulder.

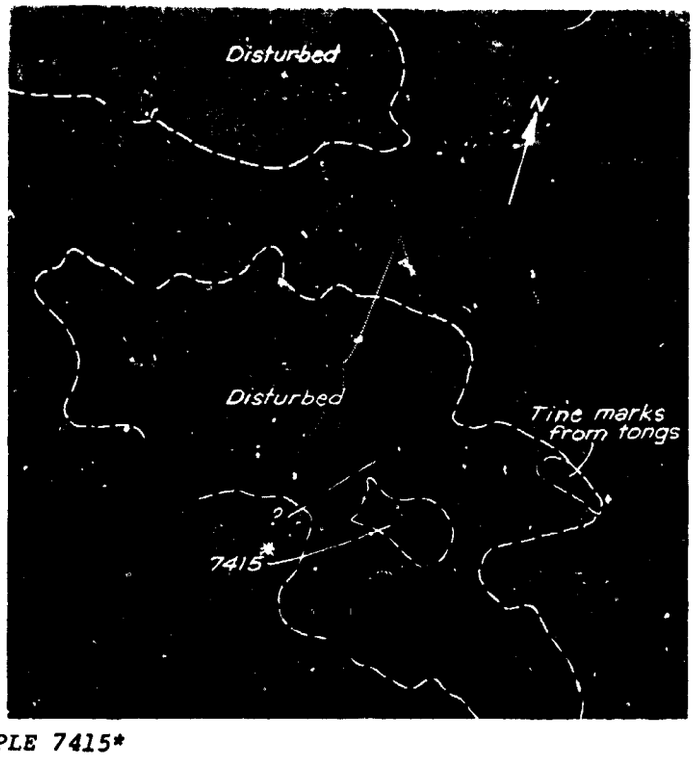



Pre-sampling, looking east (106-17323-24)

SAMPLES 7415*, 7455*, 7460*, 7475*, 7480*, AND 7510*.

a) Pre-sampling (116-18636)

b) Pre sampling (116-18634)




SAMPLE 7415*

*SAMPLE: 7435* (415)*

*Station: 11*

*Landmark: Southeast rim of North Ray crater.*

*Rock type: Breccia; glass coated, hackly-looking rock.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Up to east toward white breccia boulders*

*Fragment population*

*Size range and distribution: 0.5-1 m boulders sparse; 2-10 cm fragments common; <2 cm clods abundant.*

*Color: Light gray to white.*

*Shapes: Angular to subrounded.*

*Fillets: Only around rounded 1-2 m rock to south.*

*Apparent burial: Substantial burial on larger rocks.*

*Dust cover: Not apparent*

*Fines*

*Color: Light gray.*

*Compaction: Moderately soft; about 1 cm deep bootprints.*

*Craters*

*Size range and distribution: One 1-2 m crater in available photographs.*

*Shape: Round, subdued.*

*Ejecta: Few blocks; probably a secondary.*

*SAMPLE CHARACTERISTICS*

*Size: 4 x 8 cm.*

*Color: Light gray.*

*Shape: Blocky, angular, hackly.*

*Fillet: None.*

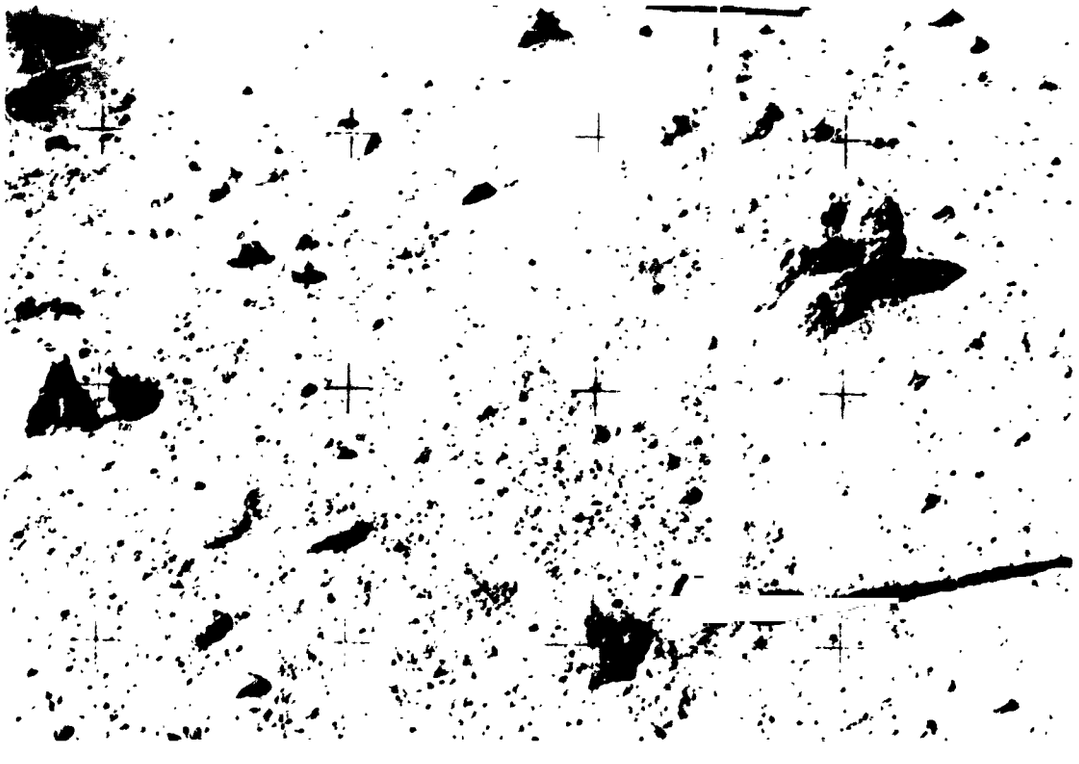
*Apparent burial: Perched.*

*Dust cover: Not visible.*

*Comparison with other fragments in area: Typical of most fragments in immediate area. A very few fragments are more angular.*

*Probable origin: North Ray crater ejecta.*


a) Location of LMP while collecting sample. (TV documentation seen from Rover) Looking southwest.



b) Pre-sampling (106-17321)

SAMPLE 7435*

SAMPLE: 7455* (416)

Station: 11

Landmark: White breccia boulders on southeast rim of North Ray crater.

Rock type: Breccia, white matrix, dark clasts; friable, in several pieces.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Slopes are down in all directions from this local high point.

Fragment population

Size range and distribution: Four blocks loose on top of boulder are approximately 2, 4, 12, and 22 and abundant centimeter-size fragments occur on the surface surrounding boulder.

Color: Light gray to white.

Shapes: Subrounded to subangular.

Fillets: Steep fillet at base of boulder.

Apparent burial: Partial burial of larger white boulders.

Dust cover: None visible.

Fines

Color: Light to medium-gray on surrounding surface.

Compaction: Soft on adjacent soil surface. Bootprints are several centimeters deep.

Craters

Size range and distribution: None visible.

SAMPLE CHARACTERISTICS

Size: Larger fragment approximately 6 x 10 cm; smaller fragment 2 x 2 cm. Both may have been collected.

Color: Light matrix with medium to dark gray clasts.

Shape: Subrounded, friable.

Dust cover: Fines occur under rounded edges of sampled fragments.

Comparison with other fragments in area: Typical of larger loose fragments on top, and of the boulder as a whole.

Probable origin: Broken, but nearly in place on larger boulder which is probable ejecta from the deeper levels of North Ray crater.

COMMENTS:

This sample represents the largest boulder of the white matrix type from which samples were collected.

a) *Pre-sampling close-up photo (electronically dodged) of 7455* on top of white breccia boulder, showing surface texture enhanced.*


b) *Enlargement of sample in same photo as above (normal print) looking west-northwest (106-17332)*

***SAMPLE 7455****

SAMPLE: 7460* (417)

Station: 11

Landmark: White breccia boulders on southeast rim of North Ray crater.

Rock type: White soil fillet sample.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Down in all directions from this local highpoint.

Fragment population

Size range and distribution: 2 cm to 0.5 m fragments are sparse; <cm-size fragments are abundant.

Color: Light gray to white.

Shapes: Subrounded to subangular.

Fillets: Steep fillets on larger white boulders.

Apparent burial: Partial burial of larger white boulders.

Dust cover: Finer debris has settled on shallow sloping surfaces of large boulder.

Fines

Color: Light to medium gray.

Compaction: Soft; bootprints are several centimeters deep.

Craters

Size range and distribution: A few shallow depressions to the east.

Shape: Irregular, subdued; may not be craters.

Ejecta: None observed.

SAMPLE CHARACTERISTICS

Size: Soil from fillet.

Color: White.

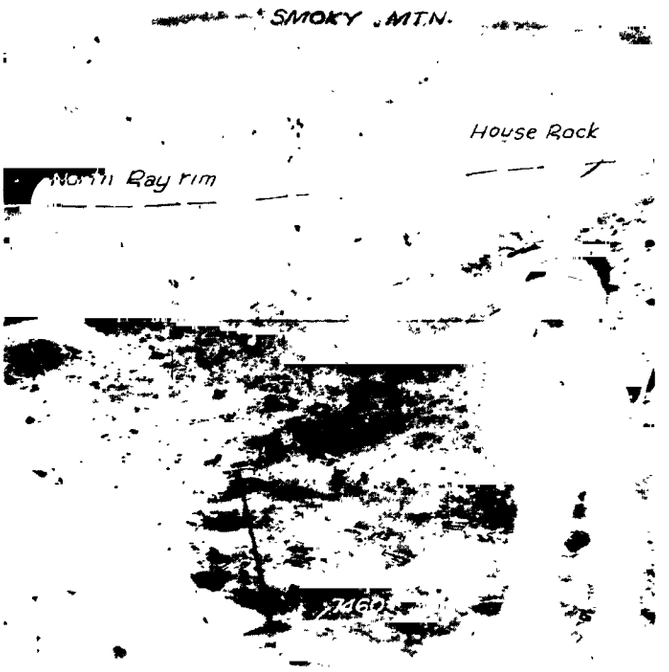
Fillet: Moderately well developed, with steep, sharp contact with base of boulder.

Comparison with other soil in area: Similar in color and texture to adjacent soil.

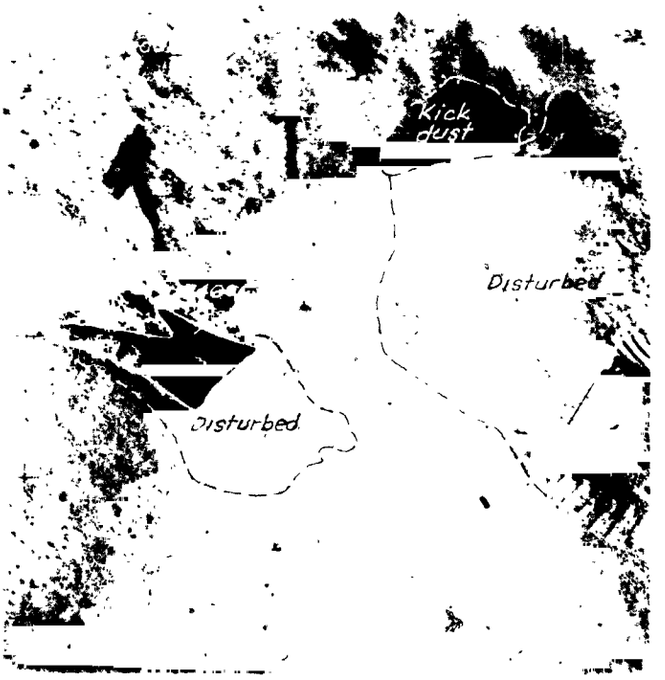
Probable origin: Derived from disintegrating white matrix breccias in this area.

COMMENTS: Sample should contain some resistant dark gray clasts, if representative of the breccias.

a) Post-sampling, looking east (106-17336).




b) Post-sampling, looking northwest (106-17335).




SAMPLE 7460*

SAMPLE: 7475* (418)

Station: 11

Landmark: White breccia boulders on southeast rim of North Ray crater.

Rock type: Aphanitic, black rock; probably a large clast from a breccia.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Down in all directions from this local high point.

Fragment population

Size range and distribution: Rubbly 0.5 to 1 cm (approx.) fragments on upper boulder surface; 2 cm to 0.5 m fragments and abundant cm-size and smaller fragments occur on surface surrounding boulder.

Color: Light gray to white.

Shapes: Subrounded to subangular.

Fillets: Steep fillet at base of boulder.

Apparent burial: Partial burial of larger white boulders.

Dust cover: Finer debris has settled on shallow sloping surfaces of large boulder.

Fines

Color: Light to medium gray on surrounding surface.

Compaction: Soft on adjacent soil surface; bootprints are several centimeters deep.

Craters

Size range and distribution: Abundant "zap pits" on boulder surface. No larger craters in vicinity.

SAMPLE CHARACTERISTICS

Size: Approximately 5 cm.

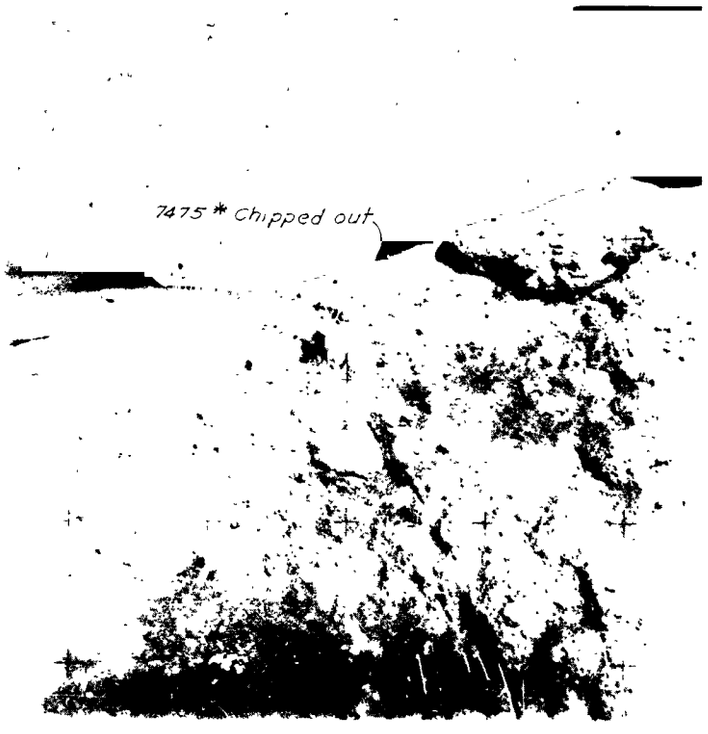
Color: Black.

Shape: Residual material on boulder looks angular.

Comparison with other fragments in area: Unusual; collected to represent dark clasts within white breccia boulder.

Probable origin: North Ray crater ejecta.

COMMENTS: Clast appears to have been located on the trend of a vertical west-northwest-striking fracture plane crosscutting the boulder.




*Post-sampling, looking northwest (106-17337)*

*SAMPLE 7475**

*SAMPLE: 7480*, 7510* (419, 420)*

*Station: 11*

*Landmark: Southeast rim of North Ray crater, in area of white breccia boulders.*

*Rock type: Rake (7510*) - soil (7480*) sample.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: In local north-south swale.*

*Fragment population*

*Size range and distribution: Greater than 10 cm, sparse; 2-10 cm common; less than 2 cm abundant.*

*Color: Light gray.*

*Shapes: Subrounded; larger blocks are subangular.*

*Fillets: None visible.*

*Apparent burial: Some partially buried; most of area too disturbed to tell.*

*Dust cover: Area largely disturbed; dust cover not visible.*

*Fines*

*Color: Light gray.*

*Compaction: Soft; crew reported "sinking in on the slopes about 6 inches."*

*Craters: None observed.*

*SAMPLE CHARACTERISTICS FOR 7480**

*Size: Less than 1 cm.*

*Color: Light gray.*

*Comparison with other soil in area: Typical of local soil.*

*Probable origin: Derived from underlying North Ray crater ejecta, probably white matrix breccia in this area.*

*COMMENTS: Soil sample was collected prior to rake (7510*); normal procedure is the reverse.*

*SAMPLE CHARACTERISTICS FOR 7510**

*Size: Most are greater than 1 cm; one fragment is about 8 cm (may not be in sample).*

*Color: Light gray.*

*Shape: Subrounded.*

*Fillet: None visible.*

*Apparent burial: Not visible.*

*Dust cover: Not visible.*

*Comparison with other fragments in area: Appears typical of local fragments in area.*

*Probable origin: Derived from underlying North Ray crater ejecta; probably includes white matrix breccias and individual resistant clasts.*

*COMMENTS: Rake sample followed collection of soil (7480*); normal procedure is the reverse.*

*Post-sampling (soil) and pre-sampling (rake) (116-18639)*

*SAMPLES 7480* AND 7510**

*SAMPLE: 7600*; 7605*, 7610* (422, 421)*

*Station: 11*

*Landmark: Southeast rim of North Ray crater.*

*Rock type: Rake (7610*) - soil (7600*) sample; 7605* a fragment from the soil sample.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: In bottom of "Little Hollow"*

*Fragment population*

*Size range and distribution: 10-50 cm rocks are sparse in area of photos; 2-10 cm common; <2 cm abundant.*

*Color: Light gray and mottled; a few are white.*

*Shapes: Subangular to subrounded.*

*Fillets: Few steep fillets on rounded 5-10 cm rocks.*

*Apparent burial: Partial on rounded 20-30 cm rock to north*

*Dust cover: Not apparent.*

*Fines*

*Color: Light gray.*

*Compaction: Moderately firm; bootprints about 1 cm deep.*

*Craters: None visible.*

*SAMPLE CHARACTERISTICS FOR 7600* (soil) (includes fragment 7605* not identified in photos)*

*Size: Less than 1 cm.*

*Color: Light gray.*

*Comparison with other soil in area: Typical of local soil.*

*Probable origin: Derived from North Ray crater ejecta, and probably similar to adjacent white matrix breccia boulder.*

*SAMPLE CHARACTERISTICS FOR 7610* (rake)*

*Size: Most greater than 1 cm; a few may be 5 cm.*

*Color: Light gray.*

*Shape: Fragments at surface are subangular.*

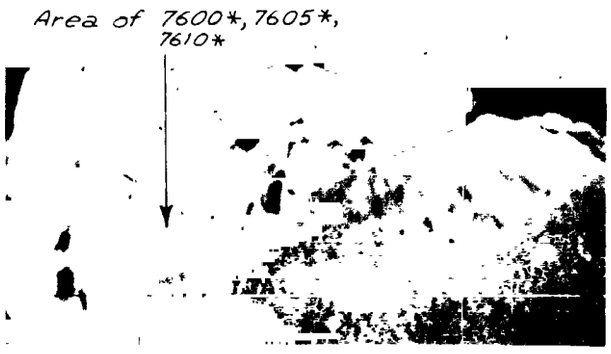
*Fillet: Steep fillet on south side of one 5 cm fragment.*

*Apparent burial: Some partly buried.*

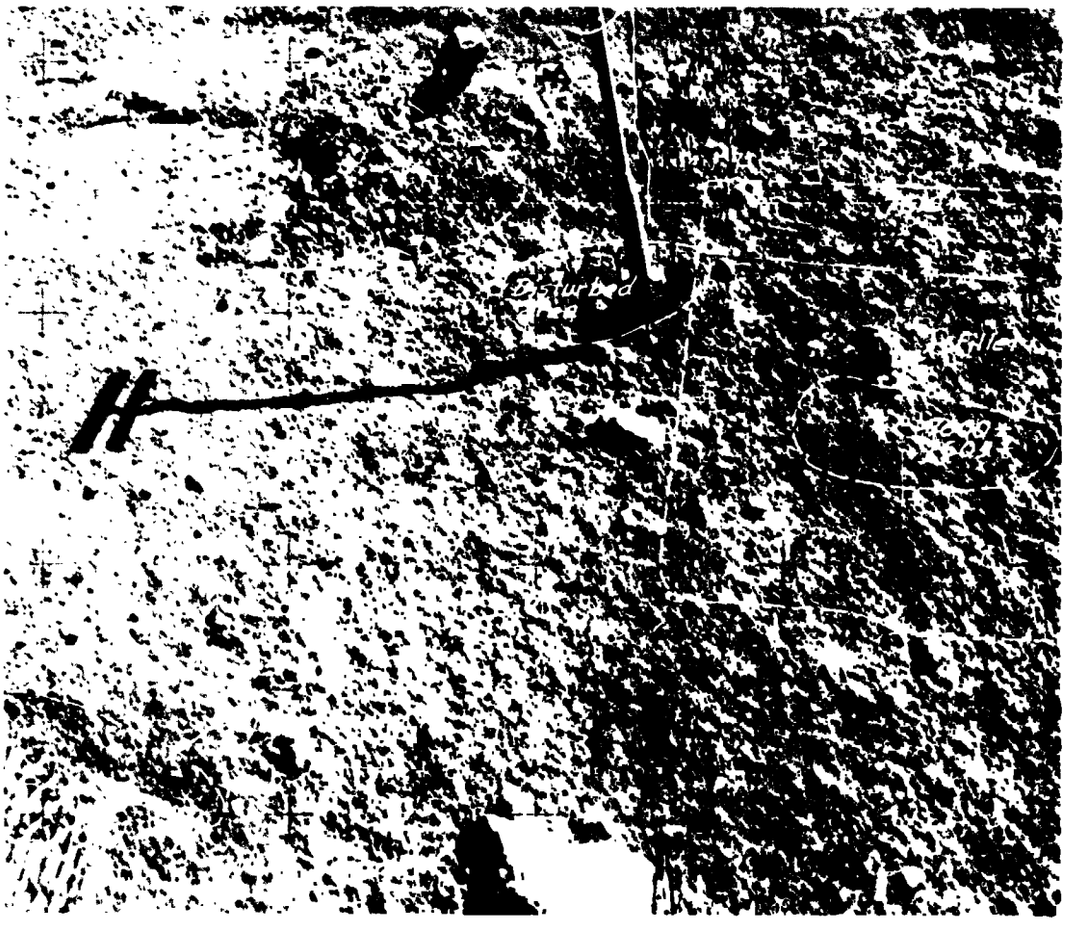
*Dust cover: Not visible.*

*Comparison with other fragments in area: Appear typical of rock population (under 10 cm).*

*Probable origin: Derived from underlying North Ray crater ejecta.*




a) Pre-sampling, looking west-northwest (TV documentation)



b) Pre-sampling, looking north (116-18642)

SAMPLES 7600*, 7605*, AND 7610*

*SAMPLE: 7700; 7705-08; 7710* (423, 388)*

*Station: 11*

*Landmark: Southeast rim of North Ray crater*

*Rock type: Rake (7710*), soil (7700, 7705-08)*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Gentle downslope to northeast.*

*Fragment population*

*Size range and distribution: 10-30 cm fragments, sparse; 2-10 cm common but less than 1% of surface; 0.5-2 cm 20-30% of surface.*

*Color: Light gray; few of smallest are white.*

*Shapes: Most larger than several centimeters are subangular.*

*Fillets: None.*

*Apparent burial: None.*

*Dust cover: Not visible.*

*Fines*

*Color: Light gray.*

*Compaction: Crew described as hard; possibly on top of a large white rock. Rake would not penetrate.*

*Craters*

*Size range and distribution: One 40-50 cm cloddy secondary in center of rake sample area.*

*Shape: Raised rim.*

*Ejecta: Five clods, broken clod in bottom*

*SAMPLE CHARACTERISTICS FOR 7700; 7705-08*

*Size: Mostly less than 1 cm.*

*Color: Very light gray.*

*Probable origin: Derived from thin regolith on North Ray crater ejecta. In part disaggregated material from nearby or underlying white friable rock.*

*SAMPLE CHARACTERISTICS FOR 7710**

*Size: Mostly >1 cm.*

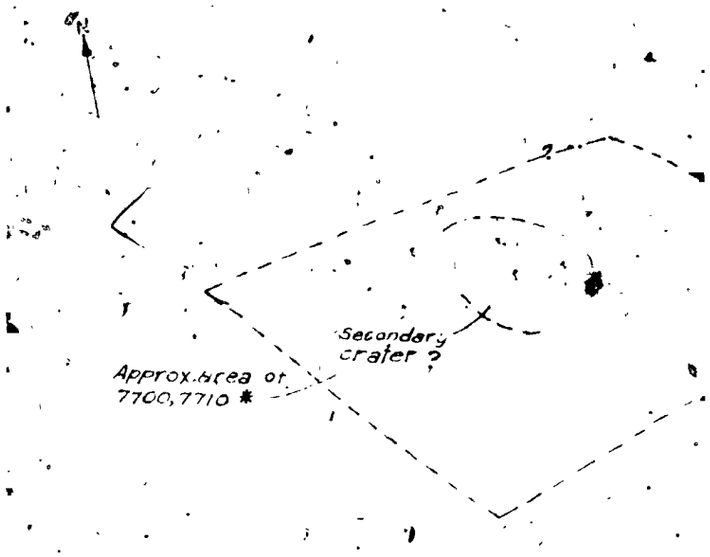
*Color: Dusty gray and friable white fragments.*

*Comparison with other fragments in area: Probably typical.*

*Probable origin: Derived from adjacent large white rock or from underlying hard surface.*

a) During-sampling, looking southwest (106-17340)

b) Pre-sampling (116-18644)




SAMPLES 7700, 7710*

SAMPLE: 7915, 7935-37, 7955-57, (FSR-8, 389, 425)

Station: 11

Landmark: House Rock area on southeast rim of North Ray crater

Rock type: Breccia, dark matrix, white clasts. Large sample that includes white clast (7915); several chips including a piece of the "Shatter Cone" (7935-37); several chips of matrix and clasts (7955-57).

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Fragments broken off near-vertical east face of boulder on south end of House Rock.

Clast population

Size range and distribution: Under 0.5 cm to 20 cm in field of view.

Color: Light gray to white; large boulder from which samples taken is gray with white clasts.

Shapes: Rounded to angular; large boulder from which samples taken rounded except under overhang, knobby.

Fillets: Fillet on large boulder poorly developed--nearly absent.

Apparent burial: Boulder essentially perched on surface.

Dust cover: None visible.

Matrix

Color: Medium to dark gray.

SAMPLE CHARACTERISTICS FOR 7915

Size: 23 x 22 x 10 cm.

Color: Gray matrix; white and gray clasts.

Shape: Angular where broken off; rounded on original surfaces.

Dust cover: None.

Comparison with other fragments in area: Typical of south boulder and probably of adjacent House Rock.

Probable origin: Collected to represent deepest material from North Ray crater. Splay fractures and lineations indicate recent shock effects from spalled surface nearby.

COMMENTS: Should be examined closely for multiple shock events and orientation prior to subsampling.

SAMPLE CHARACTERISTICS FOR 7935-37 (389)

Size: 3 fragments, total more than 100 g.

Color: Light gray, medium gray, and black glass over speckled gray and white.

Shape: Probably angular.

Dust cover: None

Comparison with other fragments in area: Probably typical of south boulder and adjacent House Rock.

Probable origin: Material from deepest part of North Ray crater.

COMMENTS: Should be similar to parts of 7915 and 7955-57. Samples include a piece of the "Shatter Cone."

SAMPLE CHARACTERISTICS FOR 7955-57 (425)

Size: 7955 is 6 x 6 x 2 cm plus 3 smaller pieces; 7956 is 1-2 cm? 7957 is 1-2 cm.

Color: 7955 light gray to white; 7956 and 7957 dark gray.

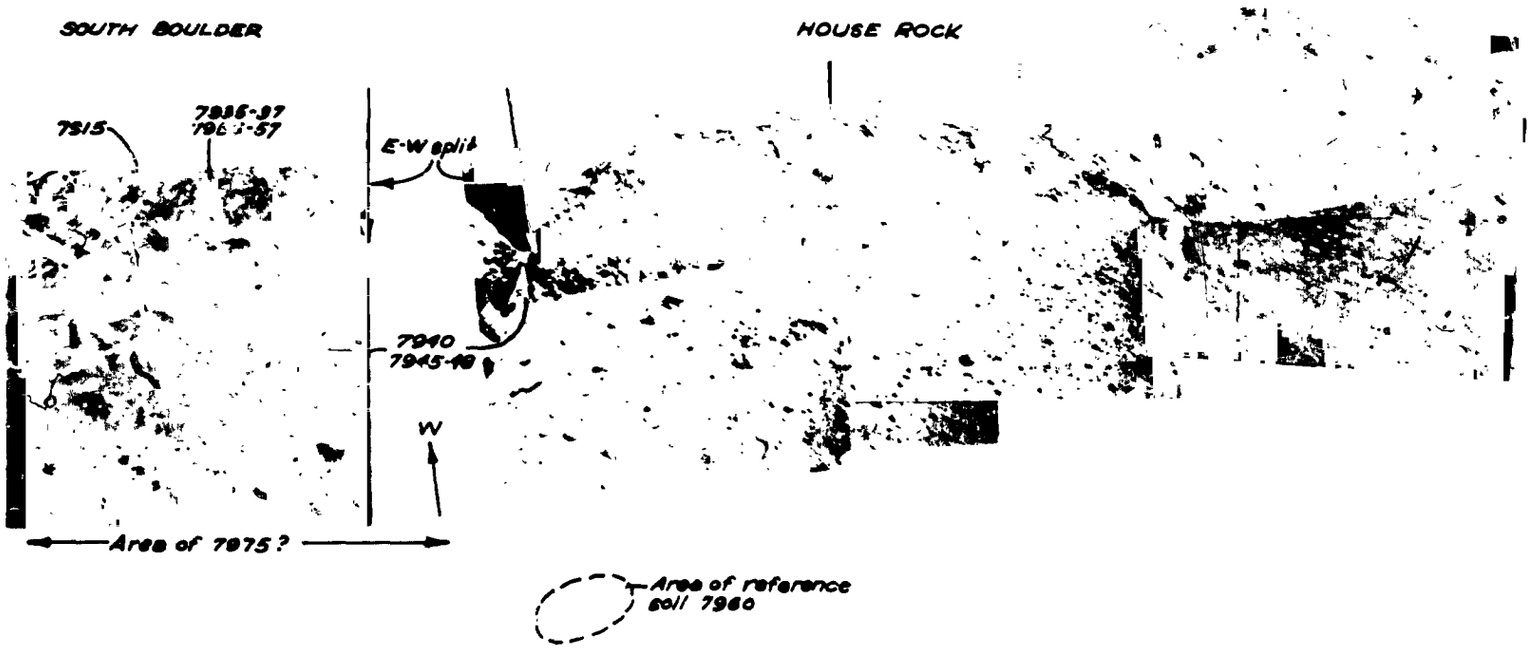
Shape: Angular to rounded.

Dust cover: None

Comparison with other fragments in area: White pieces probably typical of white clasts in south boulder and adjacent House Rock.

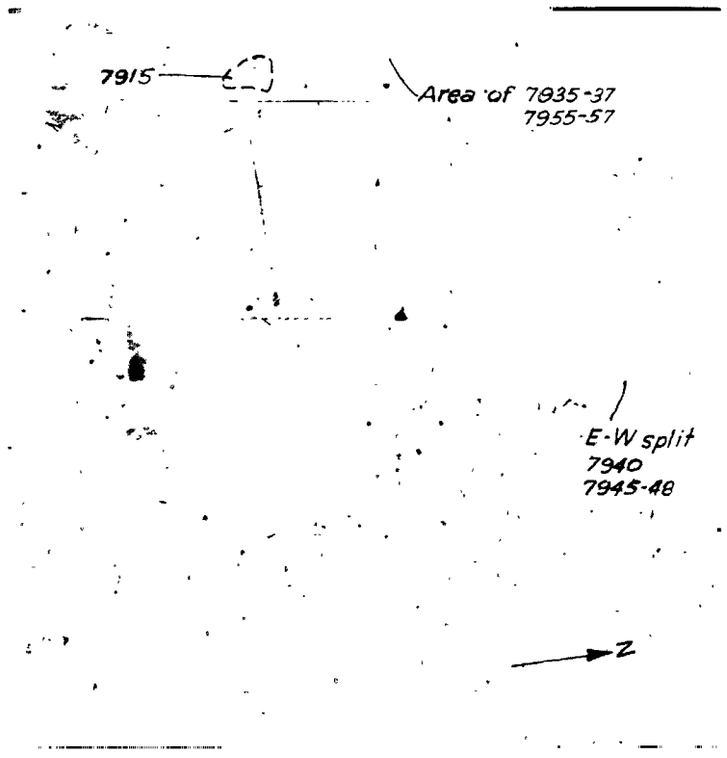
Probable origin: Collected to represent white clasts that were not as shocked as neighboring samples 7915 and 7935-37. 7956 and 7957 are dark matrix breccias similar to 7915.

COMMENTS: Should be similar to clasts in samples 7915 and 7935-37.

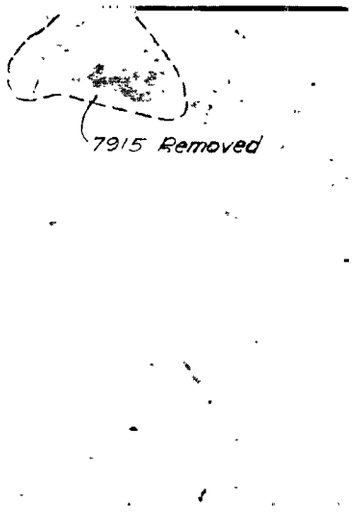



House Rock area showing localities of samples collected and relation to adjacent South Boulder. (116-18653 left; 106-17349 to 17354 right to left)

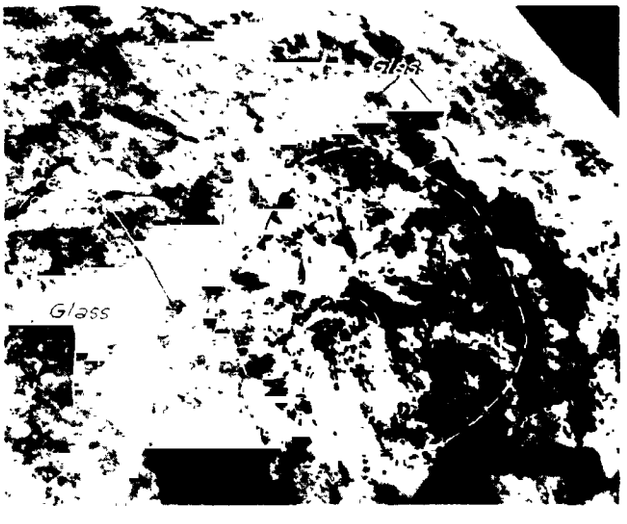
SAMPLES 7915, 7935-37, 7940, 7945-48, 7955-57, 7960, AND 7975.




a) Boulder south of House Rock, east face, during sampling (116-18653)




b) Post-sampling photo of of above boulder (106-17345)




c) Pre-sampling photo of above boulder (106-17345)

SAMPLES 7915, 7935-37, 7940, 7945-48, 7955-57



C.4

*SAMPLE: 7940, 45-48; 7960; 7975; (390, 391, 392)*

*Station: 11*

*Landmark: House Rock area on southeast rim of North Ray crater.*

*Rock type: Soil samples; "east-west crack" (7940, 45-48), and "reference" soil (7960). 7975 is a breccia with white matrix, "frothy," glass coated.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA: Observable for reference soil only (7960)*

*Slopes: On crest of North Ray rim, sloping down toward northwest.*

*Fragment population: (in addition to House Rock and South Boulder)*

*Size range and distribution: Sparse 10-30 cm fragments, abundant 5-10 cm fragments, and abundant centimeter-size fragments (or clods).*

*Color: Light to medium gray.*

*Shapes: Angular (most larger fragments) to rounded.*

*Fillets: Moderately developed on uphill sides of larger rounded rocks.*

*Apparent burial: Slight.*

*Dust cover: Not visible.*

*Fines*

*Color: Light gray.*

*Compaction: Very hard just beneath area of 7960.*

*SAMPLE CHARACTERISTICS FOR 7960*

*Size: 12 g.*

*Color: Light gray.*

*Comparison with other soil in area: Typical of very thin soil cover described in much of station area by the crew.*

*Probable origin: Derived from local rocks of North Ray crater ejecta.*

*COMMENTS: Should be examined for dark components which appear to characterize larger rocks in this area. (Sample 7940, 45-48, not documented, weighs 175 g.)*

*SAMPLE CHARACTERISTICS FOR 7975*

*Size: 8 x 15 cm*

*Color: White matrix breccia*

*Shape: Irregular, hackly*

*Comparison with other fragments in area: "Frothy" character implies uniqueness in this area; may be more glassy or vesicular than most local rocks.*

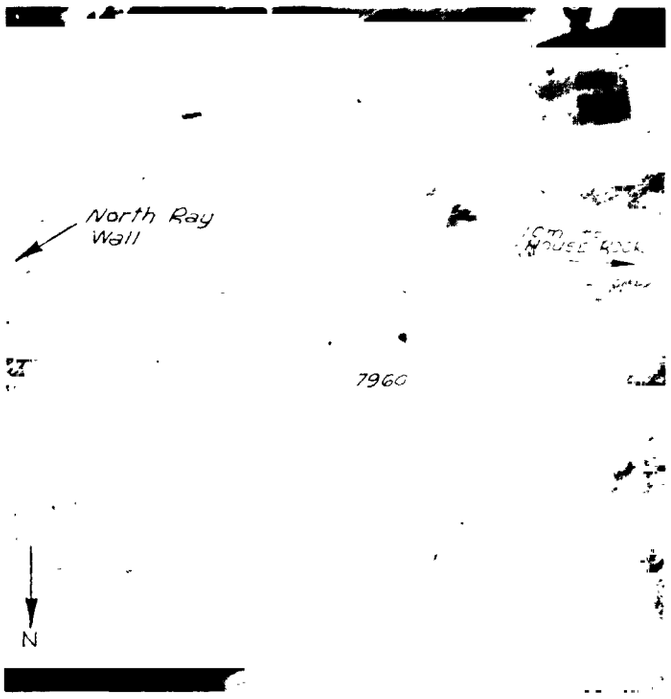
*Probable origin: Ejecta from North Ray crater.*

*COMMENTS: No photographic documentation.*

*SAMPLE CHARACTERISTICS FOR 7940, 7945-48*

*A soil and 4 rocks collected from "east-west crack."*

*COMMENTS: No photographic documentation.*




*Pre-sampling, looking south (106-17347)*

*SAMPLE 7960 (which is the "reference soil" for 7940, 7945-48, not shown)*

*SAMPLE: FSR-8b (LRL number not assigned)*

*Station: 11*

*Landmark: Southeast rim of North Ray crater.*

*Rock type: Breccia, white matrix, dark clasts.*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Nearly level.*

*Fragment population*

*Size range and distribution: 10-20 cm fragments are sparse; 2-5 cm fragments common; fragments <2 cm, abundant.*

*Color: Light gray to white.*

*Shapes: Subangular to subrounded.*

*Fillets: None.*

*Apparent burial: None.*

*Dust cover: None visible.*

*Fines*

*Color: Light gray.*

*Compaction: Hard; depression by bootprints and Rover wheels, less than 1 cm.*

*Craters: None in photographs.*

*SAMPLE CHARACTERISTICS*

*Size: 20 x 10 x 5 cm; crew described as broken, with white clasts up to 3 cm.*

*Color: White to light gray.*

*Shape: Subangular.*

*Fillet: None.*

*Apparent burial: Perched.*

*Dust cover: None visible.*

*Comparison with other fragments in area: Largest rock in area of photographs and more angular than most.*

*Probable origin: Looks shocked. North Ray crater ejecta.*

*Pre-sampling, looking north (116-18658). Inset is pre-sampling, looking east (116-18660).*

*SAMPLE FSR-8b*

SAMPLE: 3320*, 3335*, 3340*, 3355*-57*, 0017[1], (426, 428, 427, 429, FSR-9)

Station: 13

Landmark: Shadow Rock, located on southeast part of North Ray crater ejecta blanket, approximately 550 m from crater rim crest.

Rock type: Breccia with black matrix and dark and white clasts (0017, 3335*, 3355*-57*). Soil, shadowed (3320*); soil (3340*) control sample from below 3320*.

SURFACE CHARACTERISTICS OF SAMPLE AREA

Slopes: Southeast slope on flank of North Ray crater.

Fragment population

Size range and distribution: Abundant 5-10 cm cobbles scattered on surface. Scattered blocks up to about 5 m.

Color: Light to medium gray.

Shapes: Generally subangular, many of the cobbles are tabular; large blocks are hackly and irregular with crudely developed layering.

Fillets: Fillets developed only on large rocks.

Apparent burial: Cobbles largely perched. Large blocks range from perched (Shadow Rock) to nearly completely buried.

Dust cover: Negligible.

Fines

Color: Medium gray, white below surface by LRV.

Compaction: Firm; boots leave distinct but shallow impression.

Craters

Size range and distribution: Abundant .5-1 m craters in immediate station area.

Shape: Subdued.

Ejecta: Indistinct.

SAMPLE CHARACTERISTICS FOR 0017[1], 3335*, 3355*-57*

Size: Chips from ≈5 m diameter boulder. One is 9 x 17 cm (0017); another sample (3355*-57*) consists of 5 chips larger than 1 cm (largest) is approximately 3 x 8 cm) and many smaller chips.

Color: Dark and white clasts in black matrix.

Shape: Irregular, hackly to crudely layered, angular to subangular.

Fillet: Fillet represented by low ridge of soil encircling Shadow Rock on south and southeast sides.

Apparent burial: Perched.

Dust cover: None.

Comparison with other fragments in area: Largest fragment in immediate area. Like other large fragments it is irregularly shaped, coarsely clastic, and crudely layered.

Probable origin: Breccia block ejected from North Ray crater. Breccia emplaced in North Ray crater area prior to North Ray event.

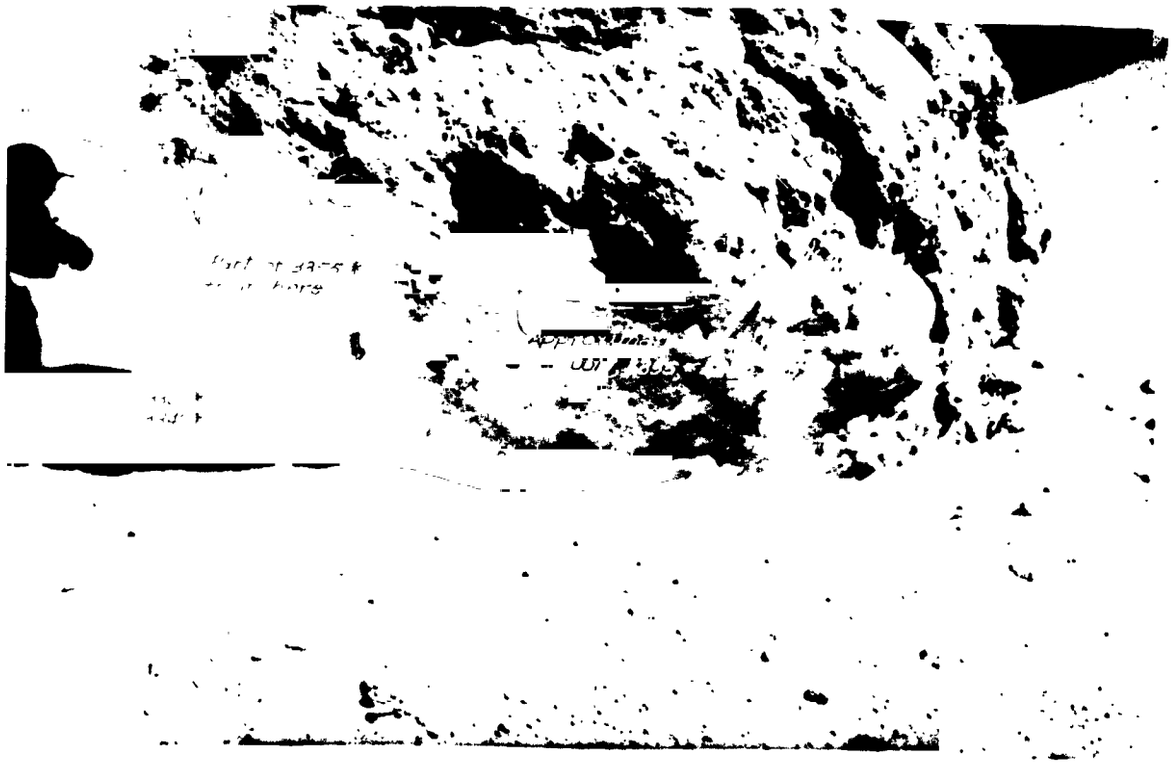
SAMPLE CHARACTERISTICS FOR 3320* AND 3340*

Size: 351 g (3320*); 180 g (3340*)

Probable origin: Fine-grained ejecta from North Ray crater. If Shadow Rock was ejected from North Ray crater, these samples have been virtually undisturbed since the North Ray event.

[1]COMMENTS: To the best of our present judgment, sample 0017 was collected at station 13. If correctly located, the sample may be renumbered.

*a) Partial panorama, Shadow Rock to north (106-17390 to 97)*



*b) Partial panorama, looking north (106-17413 to 15)*

***SAMPLES 0017, 3335*, 3355*-57*, 3320*, AND 3340****

*SAMPLE: 3500, 3505-09, 3515, 3510* (346, 345)*

*Station: 13*

*Landmark: 5 m west-northwest of Shadow Rock*

*Rock type: Rake (3510*)-soil (3500, 3505-09, 3515)*

*SURFACE CHARACTERISTICS OF SAMPLE AREA*

*Slopes: Regional slope to southeast off North Ray crater. Local slopes undulating but averaging about 5°*

*Fragment population*

*Size range and distribution: Small rocks (2-10 cm) covering 5% of surface; clotting of soil by bootprints makes the surface appear to have a higher rock percentage than in undisturbed areas.*

*Color: In immediate area of sample, all are of same dull gray*

*Shapes: Clasts in view are all subrounded if at 10 cm end of size scale and subangular at 2-3 cm end of size*

*Fillets: Not visible*

*Apparent burial: None*

*Dust cover: None identifiable*

*Fines*

*Color: Same as rocks*

*Compaction: Less compacted than soil at North Ray crater*

*Craters*

*Size range and distribution: Random 1-2 m fresh to subdued craters in local area. None recognizable within 2 m of sample area*

*Shape: Circular with low rims*

*Ejecta: Slightly raised rims, material expected to be part of North Ray crater ejecta blanket*

*SAMPLE CHARACTERISTICS for 3500, 3505-09, 3515*

*Size: Mostly less than 1 cm, but contains at least 6 larger fragments*

*Color: Gray*

*Comparison with other soil in area: Probably typical regolith*

*Probable origin: Regolith derived from North Ray crater ejecta*

*COMMENTS: Sample area on North Ray ejecta blanket that is away from obvious local fresh craters*

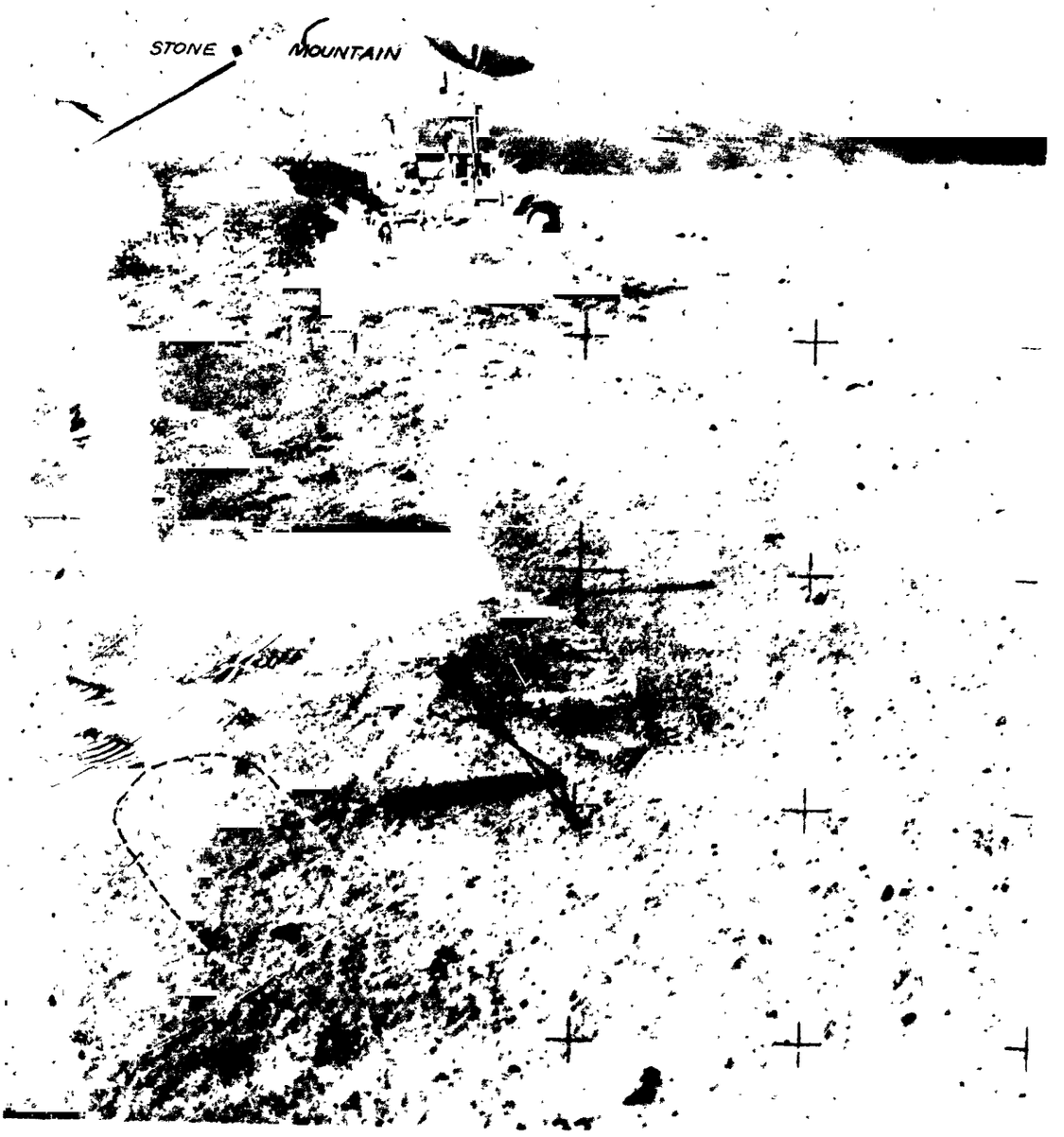
*SAMPLE CHARACTERISTICS FOR 3510**

*Size: (approx. 20 fragments). Mostly greater than 1 cm*

*Color: Gray*

*Shape: Unknown*

*Probable origin: Regolith derived from North Ray crater*




*Pre-sampling, looking south (106-17409)*

*SAMPLES 3500, 3505-09, 3515, 3510**

Table 1.--Contents of SCB-7 (opened in NNPL, 1 May)

| Container number | LRL number | Station | AET | Type[1] |
|---|---|---|---|---|
| 382 | 67035 | 11 | 06 22 52 30 | breccia |
| 383 | 67055 | 11 | 06 23 02 56 | breccia |
| FSR-7 | 67015 | 11 | 06 23 07 54 | breccia |
| 384 | 67075 | 11 | 06 23 12 02 | white rock |
| 385 | 67095 | 11 | 06 23 11 20 | glassy rock |
| 386 | 67115 | 11 | 06 23 15 44 | rock |
| FSR-10 | 60018 | 10 | 07 01 31 30 | breccia |
| FSR-4 | 60016 | LM | 05 23 15 08 | breccia |
| 18 | 60275 | LM | 07 01 55 23 | glassy rock |
| 20 | 60315 | LM | 07 01 56 44 | "igneous" rock |
| FSR-9? | 60017[2] | 13? | 07 00 40 23 | vesicular rock |
| D.T. 27/ | 60014 | 10' | 07 01 35 10 | drive tube |
| 32 | 60013 | 10' | 07 01 35 10 | drive tube |
| Residue | 67010 | | | |

D.T. indicates drive tube

One, two, and three digit numbers indicate documented bags

FSR indicates loose (unbagged) sample

? indicates tentative identification

[1]As reported by the Apollo 16 crew and, for the most part, confirmed by very preliminary examinations in the Lunar Receiving Laboratory.

[2]To the best of our present judgment, sample 60017 was collected at station 13. If correctly located, the sample may be re-numbered.

Table 2.--Contents of SRC-2 (opened in SNAP, 2 May)

| Container number | LRL number | Station | AET | Type[1] |
|---|---|---|---|---|
| 332 | 65510 | 5 | 06 01 09 41 | rake fragments |
| 333 | 65500 | 5 | 06 01 23 08 | rake soil |
| 338 | 66040 | 6 | 06 02 15 55 | soil |
| 339 | 66080;85 | 6 | 06 02 17 15 | soil |
| 409 | 66075 | 6 | 06 02 20 02 | white rocks |
| 340 | 68115 | 8 | 06 03 08 01 | breccia |
| 374 | 68120 | 8 | 06 03 10 11 | soil |
| 341 | 68415,1;68416 | 8 | 06 03 15 57 | crystalline rocks |
| 342 | 68415,2 | 8 | | crystalline rock |
| 343 | 68835,2 | 8 | 06 03 27 36 | breccia |
| FSR-6 | 68815 | 8 | 06 03 24 35 | breccia |
| D.T. 45/ | 60010 | LM | 06 04 59 44 | drive tube |
| 54 | 60009 | LM | | drive tube |
| D.T. 43 | 64002* | 4 | 06 00 37 23 | drive tube |
| D.T. 29 | 68002* | 8 | 06 02 48 58 | drive tube |
| D.T. 34 | 69001 | 9 | 06 04 08 33 | drive tube (CSVC) |
| Residue | 68810 | | | |

D.T. indicates drive tube

One, two, and three digit numbers indicate documented bags

FSR indicates loose (unbagged) sample

? indicates tentative identification

*indicates provisional number unlisted in the Curator's Lunar Sample Data Inventory as of May 12, 1972.

[1]As reported by the Apollo 16 crew and, for the most part, confirmed by very preliminary examinations in the Lunar Receiving Laboratory.

Table 3.--Contents of SCB-4 (opened in NNPL, 5 May)

| Container Number | LRL number | Station | AET | Type[1] |
|---|---|---|---|---|
| 423 | 67710* | 11 | 06 23 35 46 | rake fragments |
| 388 | 67700; 05-08 | 11 | 06 23 39 09 | rake soil |
| 389 | 67935-37 | 11 | 06 23 42 03 | house rock |
| FSR-8 | 67915 | 11 | 06 23 46 15 | house rock |
| 425 | 67955-57 | 11 | 06 23 47 58 | house rock |
| 390 | 67940; 45-48 | 11 | 06 23 49 07 | soil |
| 391 | 67960 | 11 | 06 23 51 34 | soil |
| 392 | 67975 | 11 | 06 23 53 07 | rock |
| FSR-11 | 60019 | LM | 07 01 37 13 | glassy rock |
| 345 | 63510* | 13 | 07 00 23 58 | rake fragments |
| 346 | 63500; 05-09; 63515 | 13 | 07 00 26 46 | rake soil |
| 347 | 60610* | 10' | 07 01 20 44 | rake fragments |
| 348 | 60600 | 10' | 07 01 24 51 | rake soil |
| 349 | 60510* | 10 | 07 01 26 29 | rake fragments |
| 350 | 60500 | 10 | 07 01 29 57 | rake soil |
| Residue | 67910 | | | |

One, two, and three digit numbers indicate documented bags

FSR indicates loose (unbagged) sample

*indicates provisional number unlisted in the Curator's Lunar Sample Data Inventory as of May 12, 1972

[1]As reported by the Apollo 16 crew and, for the most part, confirmed by very preliminary examinations in the Lunar Receiving Laboratory.

Table 4. -Contents of SCB-6 (opened in NNPL, 12 May)

| Container number | LRL number | Station | AET | Type[1] |
|---|---|---|---|---|
| 415 | 67435* | 11 | 06 23 18 23 | glassy rock |
| 416 | 67455* | 11 | 06 23 16 31 | breccia |
| 417 | 67460* | 11 | 06 23 20 35 | soil |
| 418 | 67475* | 11 | 06 23 26 00 | breccia |
| 387 | 67415* | 11 | 06 23 27 38 | white rock |
| 419 | 67480* | 11 | 06 23 28 48 | soil |
| 420 | 67510* | 11 | 06 23 30 07 | rake fragments |
| 421 | 67610* | 11 | 06 23 31 35 | rake fragments |
| 422 | 67600* | 11 | 06 23 34 41 | rake soil |
| padded bag 1 | 67215* | 11 | 07 00 01 31 | rock |
| padded bag 2 | 67235* | 11 | 07 00 57 11 | rock |
| 426 | 63320* | 13 | 07 00 27 49 | shadowed soil |
| 427 | 63340* | 13 | 07 00 32 21 | soil |
| 428 | 63335* | 13 | 07 00 35 37 | shadow rock |
| 429 | 63355*-57* | 13 | 07 00 40 23 | shadow rock |
| 430 | 60135* | 10' | 07 01 33 15 | glass ball |
| 13 | 60215* | 10' | 07 01 45 49 | white rock |
| 15 | 60235* | LM | 07 01 47 29 | breccia |
| 17 | 60255* | LM | 07 01 49 28 | breccia |
| 331 | 60335* | LRV | 07 02 32 05 | LPM rock |

One, two, and three digit numbers indicate documented bags

[1]As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report· Astrogeology 48, April 27, 1972.

Table 5.--Contents of SRC-1 (opened in SNAP, 12 May)

| Container number | LRL number | Station | AET | Type[1] |
|---|---|---|---|---|
| 351 | 60035* | ALSEP | 05 02 37 02 | white rock |
| 355 | 60050* | ALSEP | 05 02 44 15 | soil |
| 373 | 60075* | ALSEP | 05 02 46 28 | white rocks |
| 372 | 61510* | 1 | 05 03 29 02 | rake fragments |
| 354 | 61120*[2] | 1 | 05 03 34 15 | rake soil |
| 371 | 61155*-58* | 1 | 05 03 37 42 | mixed rocks |
| 363 | 61500*[3] | 1 | 05 03 39 25 | soil |
| 364 | 61175* | 1 | 05 03 40 45 | breccia |
| 356 | 61160* | 1 | 05 03 42 31 | soil |
| 362 | 61135* | 1 | 05 03 45 28 | breccia |
| 2 | 61195* | 1 | 05 03 47 44 | glassy rock |
| 369 | 61180* | 1 | 05 03 50 01 | soil |
| 352 | 61240*; 45*-49*; 61255* | 1 | 05 03 50 59 | soil |
| 357 | 61220* | 1 | 05 03 53 57 | soil |
| 353 | 61295* | 1 | 05 03 57 29 | breccia |
| 368 | 61280* | 1 | 05 04 01 05 | soil |
| FSR-1 | 61015* | 1 | 05 04 04 08 | breccia |
| 5 | 62235*-37* | 2 | 05 04 32 33 | mixed rocks |
| 6 | 62240* | 2 | 05 04 36 20 | soil |
| 7 | 62255* | 2 | 05 04 37 08 | breccia |
| 9 | 62275* | 2 | 05 04 40 44 | white rock |
| 10 | 62295* | 2 | 05 04 44 07 | breccia |
| 11 | 62280* | 2 | 05 04 45 18 | soil |
| Residue | 61010 | | | |

One, two, and three digit numbers indicate documented bags

FSR indicates loose (unbagged) sample

*indicates provisional number unlisted in the Curator's Lunar Sample Data Inventory as of May 12, 1972

[1]As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972.

[2]Since preparation of these data the LRL number of sample 61120 has been changed to 61500

[3]Since preparation of these data the LRL number of sample 61500 has been changed to 61140.

Table 6.--Contents of SCB-5 (opened in NNPL, 19 May)

| Container number | LRL number | Station | AET | Type[1] |
|---|---|---|---|---|
| FSR-3 | 60015* | LM | 05 05 02 36 | bluish "genesis" |

Contents of BSLSS (opened in NNPL, 19 May)

| | | | | |
|---|---|---|---|---|
| FSR-2 | 61016* | 1 | 05 04 07 30 | "Muley" |
| FSR-8B | not assigned | 11 | 07 00 07 53 | breccia |

*indicates provisional number unlisted in the Curator's Lunar Sample Data Inventory as of May 12, 1972

FSR indicates loose (unbagged) sample

[1]As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972.

Table 7.--Probable contents of SCB-1 and SCB-3 (not opened as of 21 May)

| Container number | LRL number | Station | AET | Type[1] |
|---|---|---|---|---|
| 394 | 64435* | 4 | 06 00 16 05 | glassy rock |
| 395 | 64510* | 4 | 06 00 20 05 | rake fragments |
| 396 | 64500* | 4 | 06 00 23 22 | rake soil |
| (?)[2] | not assigned | 4 | | breccia |
| 397 | 64455* | 4 | 06 00 29 08 | glass spatter |
| 398 | 64475* | 4 | 06 00 25 57 | dusty rocks |
| 399 | 64420* | 4 | 06 00 35 31 | soil |
| 400 | 64600* | 4 | 06 00 45 09 | soil |
| 401 | 64610* | 4 | 06 00 51 37 | rake fragments |
| (?) | not assigned | 5 | | glass beads |
| (?) | not assigned | 5 | | glass-covered rock |
| 334 | 65610* | 5 | 06 01 22 27 | rake fragments |
| 402 | 65600* | 5 | 06 01 26 35 | rake soil |
| 403 | 65075* | 5 | 06 01 29 05 | crystalline rock |
| 404 | 65035* | 5 | 06 01 30 34 | glassy rock |
| 405 | 65310* | 5 | 06 01 32 33 | rake fragments |
| 335 | 65710* | 5 | 06 01 34 29 | rake clods |
| 406 | 65700* | 5 | 06 01 39 04 | soil with rock |
| 336 | 65095* | 5 | 06 01 44 35 | round rock |
| 337 | 65055* | 5 | 06 01 49 32 | 2 documented rocks |
| (?) | not assigned | 6 | | rock |
| 407 | 66030* | 6 | 06 02 05 06 | soil and rock |
| 408 | 66055* | 6 | 06 02 14 53 | angular rock |
| 410 | 66095* | 6 | 06 02 21 56 | two crystalline rocks |
| 4 | 60095* | LM | 05 01 53 19 | glass ball |
| FSR-5 | 65015* | 5 | 06 01 47 08 | white rock |
| 411 | 68510* | 8 | 06 02 47 05 | rake fragments |
| 412 | 68500* | 8 | 06 02 53 50 | rake soil |
| 413 | 68035* | 8 | 06 02 56 13 | black glass |
| L36 | 68001* | 8 | 06 02 48 58 | drive tube |
| 375 | 68820* | 8 | 06 03 21 30 | soil |
| 344 | 68840* | 8 | 06 03 29 34 | soil |
| Surface sampler 1 | 69003* | 9 | 06 03 56 45 | soil |
| Surface sampler 2 | 69004* | 9 | 06 03 56 45 | soil |
| 376 | 69920* | 9 | 06 04 06 05 | soil |
| 377 | 69940* | 9 | 06 04 06 48 | soil |
| 378 | 69935* | 9 | 06 04 11 46 | breccia |

Table 7 (con't)

| Container number | LRL number | Station | AET | Type[1] |
|---|---|---|---|---|
| 379 | 69960* | 9 | 06 04 13 14 | soil |
| 380 | 69955* | 9 | 06 04 16 29 | chip |
| 381 | 60115* | 10 | 06 05 11 36 | breccia |
| (?) | not assigned | 10 | | glass ball |
| L38 | 64001* | 4 | 06 00 37 23 | drive tube |
| FSR-4A(?) | not assigned | LM | 05 23 28 21 | rock |

One, two, and three digit numbers indicate documented bags

FSR indicates loose (unbagged) sample

? indicates tentative identification

*indicates provisional number unlisted in the Curator's Lunar Sample Data Inventory as of May 12, 1972

[1]As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972

[2](?) indicates questionable sample.

TABLE 8

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 1 - STATION: ALSEP** | | | | | | |
| | | DEEP DRILL | TELEVISION | 05 01 25 36 | LMP | OKAY, STARTING ON THE DEEP DRILL. |
| | | | DOCUMENTATION | 05 01 25 46 | LMP | MARK. |
| 60007 | 105.7 | (TOP) | ONLY | 05 01 25 51 | LMP | MARK. THAT ONE WENT IN LIKE GANGBUSTERS! |
| 60006 | 165.6 | | | 05 01 29 21 | LMP | OKAY, TONY; I HAD A TOUGH TIME GETTING THE |
| 60005 | 76.1 | | | | | BIT OFF THE FIRST STEM. GOT A LITTLE |
| 60004 | 202.7 | | | | | DUSTY IN THERE, BUT I GOT IT CLEANED OUT. |
| 60003 | 215.5 | | | 05 01 31 56 | LMP | THE PROBLEM IS THAT THE BIT WON'T STAY |
| 60002 | 211.8 | | | | | STUCK IN THE GROUND, AND WHEN I TRY TO GET |
| 60001 | 30.1 | (BIT) | | | | THIS STUFF ON, IT SPINS THE WHOLE DEAL |
| | | (BOTTOM) | | | | INSTEAD OF THE - - |
| | | | | 05 01 33 19 | LMP | OKAY, SECOND ONE GOING IN, TONY. |
| | | INSERTED IN PAIRS: | | 05 01 33 24 | LMP | MARK. |
| | | | | 05 01 33 32 | CC | RIGHT. DON'T HURRY IT. |
| | | STEM WAS BROKEN | | 05 01 33 33 | LMP | I'M HOLDING BACK ON IT THIS TIME. |
| | | BETWEEN 3RD AND | | 05 01 34 16 | LMP | MARK. OKAY, THE SECOND ONE WENT IN WITH NO PROB- |
| | | 4TH SECTIONS FOR | | | | LEM, TONY. |
| | | RETURN TO EARTH | | | | - - - |
| | | | | 05 01 36 47 | LMP | OKAY, LAST ONE GOING ON, TONY. |
| | | | | 05 01 37 04 | LMP | BOY, THAT'S ALL THE SECTIONS |
| | | | | | | ARE LIKE THAT FIRST ONE, PULL IT - RIGHT OUT OF THE |
| | | | | | | GROUND. BUT I DON'T THINK THAT'S TRUE. |
| | | | | | | - - - |
| | | | | 05 01 38 19 | LMP | OKAY, LAST ONE, TONY. |
| | | | | 05 01 38 21 | LMP | MARK. |
| | | | | 05 01 38 38 | LMP | SLOWLY GOING IN. WHAT I'M DOING IS LET IT DO |
| | | | | | | THE WORK. |
| | | | | 05 01 39 44 | LMP | MARK. |
| | | | | 05 01 41 52 | LMP | WE REALLY SINK IN ON THAT RIM OF THAT LITTLE CRATER |
| | | | | 05 01 44 04 | LMP | OKAY, TONY. THE TOP OF THE DEEP CORE HAS |
| | | | | | | GOT CAP NUMBER A. |
| | | | | | | - - - |
| | | | | 05 02 28 56 | CC | CHARLIE, WHAT WAS THE CAP ON THE BOTTOM END? |
| | | | | | | WE MISSED THAT. |
| | | | | 05 02 29 02 | LMP | BAKER. |
| | | | | 05 02 29 06 | LMP | IT'S ALL FULL, TONY. |
| | | | | 05 02 29 43 | LMP | DELTA AND BAKER ON THE BOTTOM. |
| | | | | 05 02 29 54 | LMP | YOU'RE LOSING A LITTLE BIT OUT OF THE THIRD |
| | | | | | | SECTION HERE. GET THE CAP ON. |
| | | | | 05 02 30 14 | LMP | AND ECHO IS ON THE BOTTOM OF THE THIRD SECTION. |

| | | | | | |
|---|---|---|---|---|---|
| BAG 4<br>60095* | BLACK GLASS BALL | TELEVISION DOCUMENTATION ONLY | 05 01 53 19 | LMP | WAIT A MINUTE. I GOT THE MOST BEAUTIFUL THING HERE. I GOT TO PICK THIS UP - BEFORE I LOSE IT. |
| | | | 05 01 54 14 | LMP | LET ME PUT THIS OVER HERE.<br>- - - |
| | | | 05 02 24 57 | LMP | DID YOU SEE WHAT I HELD JUST IN FRONT OF THE CAMERA, TONY? |
| | | | 05 02 25 04 | LMP | IT WAS A SOLID PIECE OF GLASS, SPHERICAL AND PART OF IT'S BROKEN AWAY, BUT IT REALLY MOST UNIQUE PIECE OF GLASS I'VE SEEN IN ALL THE SAMPLES. |
| | | | 05 02 25 33 | LMP | IT'S A SOLID PIECE OF GLASS. |
| | | | 05 02 25 42 | LMP | AND IT WAS RIGHT OUT HERE BY THE DRILL.<br>- - - |
| | | | 05 04 09 40 | LMP | OKAY, TONY, I'M GONNA PUT THAT LITTLE GLASS BALL - THAT I HAVEN'T SACKED YET - LOOK AT THAT, JOHN. |
| | | | 05 04 09 52 | CDR | YEAH, IT IS A BIG PIECE OF GLASS. (FROM ALSEP SITE) |
| | | | 05 04 09 53 | LMP | SOLID GLASS. |
| | | | 05 04 09 55 | CDR | BLACK GLASS. |
| | | | 05 04 09 57 | LMP | GOING INTO BAG - 4. |
| | | | 05 04 10 27 | CDR | WE GOT TO DO SOMETHING WITH THIS BAG BEFORE WE LEAVE, CHARLIE. |
| | | | 05 04 10 43 | LMP | PUT IT UNDER YOUR SEAT. UNDER MY SEAT. |
| BAG 351<br>60035* | ROCK(S) | 114-18383 XSB<br>114-18384 XSB | 05 02 37 02 | LMP | OKAY, TONY. I'M GOING TO GET A COUPLE OF GRAB SAMPLES OUT HERE IN FRONT OF THE ROVER ABOUT 15 FEET. LOOK LIKE TYPICAL ROCKS THAT ARE IN THIS AREA. THEY'RE MOSTLY DUST COVERED HERE, BUT I CAN PICK UP A COUPLE THAT ARE WHITISH, AND I'LL GET A COUPLE OF CROSS-SUNS BEFORE. |
| | | | 05 02 40 55 | CDR | I CAN'T BELIEVE HOW FULL OF HOLES THIS PLACE IS- A GENERAL COMMENT. YOU GOT THE CAMERA, CHARLIE? |
| | | | 05 02 41 02 | LMP | NO, IT'S ON THE CENTRAL STATION. |
| | | | 05 02 41 15 | LMP | OKAY, BAG 351 HAS GOT A GRAB SAMPLE. AND I WON'T TAKE AN AFTER.<br>- - - |
| | | | 05 02 41 43 | LMP | MY FIRST ROCK - EVEN THOUGH I HAD TO FALL DOWN TO GET IT. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 1 - STATION: ALSEP** | | | | | | |
| BAG 355<br>60050* | | SCOOPED SOIL | 114-18385 XSA<br>114-18386 XSA<br>114-18387 LOC<br>114-18388 LOC | 05 02 44 15 | LMP | I'M GOING OVER TO THIS CRATER AND GET YOU SOME OF THIS WHITE SOIL. I THINK IT IS COMING OFF OF THIS ROCK HERE, BUT IT LOOKS LIKE CALICHE. I NEVER THOUGHT I'D USE THAT WORD UP HERE, BUT THAT'S WHAT THE COATING LOOKS LIKE. |
| | | | | 05 02 44 35 | LMP | COME AND LOOK AT IT, JOHN. IT MIGHT BE JUST A TOTAL WHITE ROCK; THE CROSS SUN, OH, MAN, ARE YOUR SETTINGS GOING TO BE TERRIBLE. |
| | | | | 05 02 45 15 | LMP | GET A LITTLE SHOVELFUL OF THAT STUFF. |
| | | | | 05 02 45 25 | CDR | GOSH, CHARLIE, IT DOES LOOK LIKE CALICHE. |
| | | | | 05 02 45 27 | LMP | DOESN'T IT LOOK LIKE CALICHE? |
| | | | | 05 02 45 28 | CDR | YEAH, BUT IT'S JUST A BUNCH OF WHITE FRAGS, I BELIEVE. |
| | | | | 05 02 45 33 | LMP | I'M GOING TO GET THIS ROCK HERE, TOO. |
| | | | | 05 02 45 36 | CDR | PUT THAT IN THERE? |
| | | | | 05 02 45 37 | LMP | NO, GO AHEAD, I'LL GET ANOTHER BAG FOR THAT. |
| | | | | 05 02 45 49 | CDR | OKAY, THAT - SAMPLE OF WHITE MATERIAL IS GOING IN BAG 355. |
| BAG 373<br>60075* | | ROCK | SAME AS BAG 355 | 05 02 46 28 | LMP | OKAY, TONY. IT'S A WHITE MATRIX IN THIS ROCK WITH SOME CLASTS - IT'S A ONE-ROCK BRECCIA. ONE OF THE CLASTS JUST FELL OUT. BUT IT REALLY LOOKS LIKE A CALICHE MATRIX. SORT OF FRIABLE. |
| | | | | | | - - - |
| | | | | 05 02 47 28 | LMP | OKAY. THIS WHITE ROCK - THAT I PICKED UP IS IN BAG 373. |
| | | | | | | - - - |
| | | | | 05 02 50 29 | CDR | THAT BIG ROCK RIGHT THERE IS A BRECCIA- LOOK AT ALL THOSE CLASTS IN THERE. |
| | | | | 05 02 50 33 | LMP | I KNOW IT - MOST OF THEM IN HERE ARE BRECCIAS. |
| | | | | 05 02 50 40 | LMP | I PICKED UP ONE. |
| | | | | 05 02 50 43 | CDR | YEAH, THAT'S ABOUT A TWO-ROCK BRECCIA THERE. |
| | | | | 05 03 04 23 | CC | THOSE ROCKS THAT YOU COLLECTED; WERE THEY ALL BRECCIAS, OR COULD YOU TELL? |
| | | | | 05 03 04 32 | LMP | I'M NOT SURE, TONY. I THINK THEY WERE BRECCIAS, BUT THEY WERE SORT OF REALLY DUST COVERED, SO I COULDN'T TELL YOU, REALLY. |

**EVA 1 - STATION: 1**

| | | | | | | |
|---|---|---|---|---|---|---|
| **BAG 372** | **RAKE FRAGMENTS** | 109-17794 DSB | 05 03 29 02 | LMP | WE'RE GOING UP TO WHERE IT'S MORE COBBLY, |
| **61510*** | | 114-18389 XSB | | | TONY, TO GET THE RAKE SAMPLE. IT'S PRETTY |
| | | 114-18390 XSB | | | SMOOTH RIGHT HERE. |
| | | 114-18391 XSB | 05 03 29 18 | CC | OKAY, THE RAKE SAMPLE SHOULD BE ONE CRATER |
| | | 114-18392 XSA | | | DIAMETER AWAY FROM PLUM. |
| | | 114-18393 XSA | 05 03 29 25 | CC | AND IT DOESN'T HAVE TO BE TOO COBBLY THERE. |
| | | 114-18394 XSA | 05 03 29 29 | LMP | OKAY, THIS IS ABOUT IT THEN. |
| | | 109-17795 LOC | 05 03 29 35 | CDR | YEAH, BUT I DON'T THINK ANY OF - THE ROCKS |
| | | | | | FROM HERE MAY HAVE COME FROM PLUM, BUT THEY |
| | | | | | MAY BE SOME OTHER PLACE, TOO. |
| | | | 05 03 29 49 | CDR | HOW ABOUT RIGHT OUT THERE, IN MY SHADOW? THERE'S |
| | | | | | SOME RIGHT THERE THAT MIGHT BE - |
| | | | 05 03 29 55 | CDR | I'M SURE GOING TO GET THEM. |
| | | | | | - - - |
| | | | 05 03 30 03 | CDR | RIGHT HERE, CHARLIE? |
| | | | 05 03 30 05 | LMP | YEAH, THAT'S FINE. |
| | | | | | - - - |
| | | | 05 03 30 40 | LMP | THERE'S THE LOCATOR. AND WE'LL START THE |
| | | | | | OLD RAKE, FOR THE FIRST TIME. GET THAT BEAUTY |
| | | | | | RIGHT THERE. LOOK AT IT COME THROUGH THAT |
| | | | | | REGOLITH, WOULD YOU? |
| | | | 05 03 31 38 | LMP | MOVE OUT AND LET'S GET AROUND OUT OF THE WAY THERE |
| | | | | | ANOTHER RAKE. |
| | | | 05 03 32 24 | LMP | HEY, MAN, I'M LOSING ALL OF THOSE. |
| | | | 05 03 32 26 | CDR | YEAH. |
| | | | 05 03 32 27 | LMP | THERE'S THREE LITTLE ONES, NOW. |
| | | | 05 03 32 36 | CDR | HEY, BETTER GET ANOTHER ONE. |
| | | | 05 03 32 54 | CDR | THERE'S A PRETTY GOOD ONE. |
| | | | 05 03 32 57 | LMP | JOHN, THERE'S A GLASSY ONE RIGHT THERE. I CAN'T |
| | | | | | TELL WHAT THE OTHER ONES ARE. |
| | | | 05 03 33 02 | CDR | I CAN'T EITHER. THEY'RE ALL DUST COATED. |
| | | | 05 03 33 12 | LMP | OKAY, TONY, WE GOT ABOUT A HALF A SACKFUL GOING |
| | | | | | IN BAG - |
| | | | | | - - - |
| | | | 05 03 33 22 | LMP | 372 WITH THREE RAKES. |
| | | | 05 03 33 30 | LMP | AND THERE WERE LOTS OF SMALLER ONES, BUT THEY |
| | | | | | GOT - MORE SMALLER ONES BUT THEY FELL THROUGH THE |
| | | | | | TINES. |

| | | | | | | |
|---|---|---|---|---|---|---|
| **BAG 354** | **RAKE SOIL** | 109-17794 DSB | 05 03 34 15 | LMP | OKAY, JOHN, IF YOU'LL STEP ASIDE, I'LL GET A |
| | | 114-18395 XSA | | | SOIL SAMPLE. |
| **61120*** | **(LRL NUMBER HAS** | 109-17795 LOC | 05 03 34 54 | LMP | THAT'S ABOUT A KILO. ONE MORE SCOOPFUL? |
| **(61500)** | **BEEN CHANGED BY** | | 05 03 34 56 | CDR | YEAH. A LITTLE ONE. |
| | **CURATOR TO 61500)** | | 05 03 34 59 | LMP | OKAY. |
| | | | 05 03 35 02 | LMP | ROCK. |
| | | | 05 03 35 06 | CDR | ALMOST LOOKS LIKE BLACK SOIL. |
| | | | 05 03 35 10 | LMP | OKAY. MAN, IT'S REALLY SOFT HERE, TONY ON THE |
| | | | | | RIM. YOU DON'T SINK FAR, BUT WHEN YOU WALK ON |
| | | | | | IT, IT GETS VERY - |
| | | | | | - - - |
| | | | 05 03 35 40 | LMP | OKAY, THIS IS 354. GOING IN BAG 354, HOUSTON. |
| | | | 05 03 35 58 | LMP | WE OUGHT TO START FROM HERE, JOHN, AND DO A |
| | | | | | RADIAL SAMPLING IN TOWARDS PLUM. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 1 - STATION: 1** | | | | | | |
| BAG 371 | | 4 ROCKS | 109-17796 DSB | 05 03 37 42 | LMP | WHAT ARE YOU PICKING UP? THAT LITTLE OLD THING? |
| 61155* | | | 114-18396 XSB | 05 03 37 45 | CDR | CHARLIE, THAT'S AS GOOD AS ANY OF THEM. |
| 61156* | | | 114-18397 XSB | 05 03 37 47 | LMP | IT LOOKS LIKE IT IS GONNA COME APART, THOUGH, |
| 61157* | | | 114-18398 XSA | | | TO ME. |
| 61158* | | | 109-17797 LOC | 05 03 37 52 | CDR | IT MIGHT. THERE'S THREE OR FOUR SAMPLES RIGHT THERE WE CAN GET. |
| | | | | 05 03 37 57 | LMP | I'LL GET THESE IN THE SHOVEL. |
| | | | | 05 03 38 02 | CDR | OKAY. |
| | | | | 05 03 38 04 | LMP | IF YOU DON'T GET OUT OF THAT - IF YOU DON'T GET THAT THING IN THE - |
| | | | | 05 03 38 16 | CC | OKAY, ARE ALL OF THESE ROCKS LOOKING PRETTY MUCH THE SAME? |
| | | | | 05 03 38 21 | LMP | THEY ARE ALL COVERED, TONY. |
| | | | | 05 03 38 27 | LMP | DUST. |
| | | | | | | - - - |
| | | | | 05 03 38 41 | CDR | THEY'RE ANGULAR. |
| | | | | 05 03 38 43 | LMP | ALL ANGULAR, THOUGH, I'LL TELL YOU THAT. HERE'S ONE WITH A WHITE STREAK, LOOKS LIKE A CALICHE STREAK THROUGH IT. LEAVE IT. THAT'S ALL; IT'S A WHITE ROCK. |
| | | | | 05 03 39 05 | LMP | YOU HAVE FOUR SAMPLES, JOHN. IS THAT GOOD ENOUGH? |
| | | | | 05 03 39 08 | CDR | YEAH. THAT'S IN BAG 371. |
| BAG 363 | | SOIL | 109-17796 DSB | 05 03 39 25 | LMP | HEY, WAIT A MINUTE; WE NEED A SOIL FROM THERE. |
| 61500* | | (LRL NUMBER HAS | 114-18399 XSA | | | - - - |
| (61140) | | BEEN CHANGED BY CURATOR TO 61140) | 109-17797 LOC | 05 03 40 17 | CDR | THAT'S GOING IN BAG 363. |
| BAG 364 | | ROCK | 109-17798 DSB | 05 03 40 45 | LMP | OKAY. HERE'S ONE RIGHT HERE, JOHN, THAT'LL MAKE A GOOD ONE. SEE THAT ONE RIGHT THERE BY THAT FOOTPRINT? THAT'S A GOOD SAMPLE SIZE. ABOUT 5 CENTIMETERS ACROSS? |
| 61175* | | | 114-18400 XSB | | | |
| | | | 114-18401 XSB | | | |
| | | | 114-18402 XSA | | | |
| | | | 114-18403 XSA | 05 03 41 02 | CDR | THAT ONE RIGHT? |
| | | | | 05 03 41 04 | LMP | NO, THAT ONE RIGHT HERE TO THE RIGHT OF MY SHADOW. SEE, RIGHT THERE. LET ME SHOW YOU. |
| | | | | 05 03 41 10 | CDR | RIGHT THERE. |
| | | | | | | - - - |
| | | | | 05 03 41 16 | LMP | OKAY. IT'S AN ANGULAR SUBANGULAR ROCK, HOUSTON. 5 CENTIMETERS. I CAN SEE SOME WHITE CLAST SHINING THROUGH IT. |
| | | | | 05 03 41 30 | CDR | BET IT'S DUST COVERED AGAIN. |
| | | | | 05 03 41 32 | LMP | IT'S ALL - EVERYTHING HERE IS DUST COVERED. |
| | | | | 05 03 41 43 | LMP | GOT THAT BEAUTY. |
| | | | | | | - - - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | 05 03 41 56 | CDR | OKAY, CHARLIE. |
| | | | | 05 03 41 59 | LMP | OKAY, TONY, IT'S A WHITE MATRIX; IT'S A BRECCIA, LOOKS LIKE, WHITE CLAST WITH SOME GREENISH-LOOKING VERY SMALL MILLIMETER-SIZED PHENOCRYSTS IN A BLACK MATRIX. |
| | | | | 05 03 42 16 | CDR | GOES IN BAG 364, HOUSTON. |
| BAG 356 | | SOIL | SAME AS BAG 364 | 05 03 42 31 | CDR | OKAY. LET ME GET THAT SOIL SAMPLE. |
| 61160* | | | | | | - - - |
| | | | 109-17798 DSB | 05 03 44 02 | LMP | OKAY, COMING UP. |
| | | | 114-18400 XSB | | | |
| | | | 114-18401 XSB | 05 03 44 24 | CDR | IT'S GOING IN BAG 356, HOUSTON. SOIL SAMPLE. |
| | | | 114-18402 XSA | | | - - - |
| | | | 114-18403 XSA | | | |
| BAG 362 | | ROCK | 109-17799 DSB | 05 03 45 28 | CDR | WANT TO GET SOME OF THESE HERE, CHARLIE? |
| 61135* | 245.1 | WHITE-CLAST BRECCIA | 114-18404 XSB | 05 03 45 30 | LMP | YEAH, THAT'S GREAT - THAT DEFINITELY IS A BRECCIA RIGHT THERE, JOHN. |
| | | | 114-18405 XSB | | | |
| | | | 114-18406 XSA | 05 03 45 34 | CDR | YES, SEE THE CLAST IN IT. |
| | | | 114-18407 XSA | 05 03 45 35 | LMP | YES. |
| | | | 114-18408 XSA | | | - - - |
| | | | 109-17800 DCC | 05 03 46 37 | LMP | THOSE ROCKS DON'T LOOK AS DUST COVERED AS THESE. UH-OH, I MISSED. WAIT A MINUTE. |
| | | | | | | - - - |
| | | | | 05 03 46 56 | LMP | WELL, IT WASN'T DUST COVERED. WELL, WE MISSED IT. |
| | | | | | | - - - |
| | | | | 05 03 47 09 | CDR | MY FIRST GUESS IS IT IS A BRECCIA WITH WHITE CLAST IN IT. AND I SEE LINEATIONS ALL ALONG IT, IN THE BRECCIA. IT'S A WHITE CLAST BRECCIA IS WHAT IT IS I SEE NO OTHER CLAST IN IT. OF COURSE, ONCE YOU GET THE DIRT OFF OF IT MIGHT ALL BE WHITE. AT FIRST CUT, IT WOULD BE A WHITE CLAST BRECCIA. GOING INTO 362. |
| BAG 2 | | ROCK | SAME AS BAG 362 | 05 03 47 44 | LMP | OKAY, TONY. THIS ONE IS A - SAME SPOT - IS A BRECCIA WITH A WHITE MATRIX - IS GLASS COATED ON ONE SIDE AND THEN TYPICAL GLASS - LUNAR-SURFACE GLASS COATING. |
| 61195* | 587.9 | | | | | - - - |
| | | | | 05 03 48 33 | CDR | OKAY, THOSE ARE BIG CLASTS, AREN'T THEY? |
| | | | | 05 03 48 36 | LMP | YES. SEE THAT GLASS RIGHT THERE, ON THE TOP? |
| | | | | 05 03 48 39 | CDR | YEAH. |
| | | | | | | - - - |
| | | | | 05 03 49 26 | CDR | THAT'S ROCK BAG 352, HOUSTON. |
| | | | | 05 03 49 36 | CDR | I TAKE IT BACK; THAT'S ROCK BAG NUMBER 2. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 1 - STATION: 1** | | | | | | |
| BAG 369 | | SOIL | SAME AS | 05 03 50 01 | LMP | OKAY, SOIL SAMPLE COMING UP. .... |
| 61180* | | | BAGS 362,2 | 05 03 50 23 | CDR | OKAY, THAT SOIL SAMPLE'S IN BAG 369, HOUSTON. |
| | | | 109-17799 DSB | | | |
| | | | 114-18404 XSB | | | |
| | | | 114-18405 XSB | | | |
| | | | 114-18406 XSA | | | |
| | | | 114-18407 XSA | | | |
| | | | 114-18408 XSA | | | |
| | | | 109-17800 LOC | | | |
| BAG 352 | | TRENCH SOIL (TOP) | 109-17801 DSA | 05 03 50 59 | LMP | NOW, JOHN! LOOK AT THAT FOOTPRINT. LOOK |
| | | | 114-18409 XSA | | | UNDERNEATH THAT REGOLITH. WHEN YOU KICKED THAT |
| | | | 114-18410 XSA | | | UP A CENTIMETER OR SO, UNDER IT IS WHITE, ABSOLUTELY |
| 61240* | 155.0 | RESERVE FINES | 114-18411 XSA | | | WHITE, RIGHT HERE. |
| 61241 | 247.1 | < 1 MM | | | | - - - |
| 61242 | 17.26 | 1-2 MM | | 05 03 51 45 | LMP | OKAY, TONY, LET ME DESCRIBE WHAT IT IS. THE TOP |
| 61243 | 13.8 | 2-4 MM | | | | CENTIMETER OF THE REGOLITH IS GRAY, AND YOU GET |
| 61244 | 13.25 | 4-10 MM | | | | DOWN UNDER THAT, AND IT'S WHITE. |
| 61245 | 8.25 | FRAGMENT | | 05 03 51 59 | LMP | ... DIFFERENT ALBEDO - THREE SHADES DIFFERENT. |
| 61246 | 6.05 | FRAGMENT | | 05 03 52 09 | LMP | I'LL DIG YOU A LITTLE TRENCH HERE. BOY, |
| 61247 | 2.48 | FRAGMENT | | | | THAT'S GOING TO BE A HARD JOB, JOHN. WE'LL SAMPLE |
| 61248 | 1.71 | FRAGMENT | | | | RIGHT THERE AND GET YOU A SCOOPFUL OF THIS UNDER- |
| 61249 | 1.17 | FRAGMENT | | | | LYING REGOLITH. |
| 61255 | 1.13 | FRAGMENT | | 05 03 52 30 | LMP | IT'S A DIFFERENT ALBEDO; IT'S AMAZING. |
| | | | | 05 03 52 33 | CC | CHARLIE, WE CAN SEE THAT HERE. WHY DON'T YOU GO |
| | | | | | | AHEAD AND GET A BAG OF THE DARK AND A BAG OF THE |
| | | | | | | LIGHT, AND THEN WE'LL PRESS ON TO THAT BLOCK FROM |
| | | | | | | THE NORTHWEST SIDE. |
| | | | | 05 03 52 42 | LMP | ALL RIGHT. |
| | | | | 05 03 53 00 | CDR | OKAY; LET ME GET A SHOVELFUL |
| | | | | | | OF THIS, RIGHT OFF THE TOP HERE. THERE WE GO. |
| | | | | 05 03 53 40 | CDR | THAT IS GOING - THAT TOP SCOOP IS GOING IN BAG 352 |
| | | | | | | HOUSTON. |
| BAG 357 | | TRENCH SOIL | SAME AS | 05 03 53 57 | LMP | AH! TRY TO GET WAY DOWN THERE, JOHN, AND GET A - |
| 61220* | | (BOTTOM) | BAG 352 | 05 03 54 20 | CDR | UH-OH, WHAT? |
| | | | 109-17801 DSA | 05 03 54 21 | LMP | I JUST - HAD A GOOD SCOOPFUL, AND I LOST IT. LET |
| | | | 114-18409 XSB | | | ME DIG OUT A LITTLE - ANOTHER LITTLE TRENCH. |
| | | | 114-18410 XSB | | | THERE SHE BE. COMING UP ALL WHITE. THAT'S ALL |
| | | | 114-18411 XSA | | | THAT'S IN THERE, JOHN. |
| | | | | 05 03 55 11 | CDR | OKAY. AND IT'S GOING INTO BAG 357. |

| | | | | | |
|---|---|---|---|---|---|
| **BAG 353** | **CHIP FROM** | 109-17802 DSB | 05 03 57 29 | CDR | LOOK AT THAT, CHARLIE! |
| **61295** | **BOULDER** | 109-17803 DSB | 05 03 57 31 | LMP | WHAT'S THAT? |
| | | 114-18412 XSB | 05 03 57 32 | CDR | THAT THING HAS - GREENISH-BLACK CLAST IN IT. |
| | | 114-18413 XSB | | | RIGHT THERE IN THAT BOULDER, THERE? |
| | | 114-18414 XSA | 05 03 57 40 | LMP | LOOKS LIKE IT TO ME, TOO, YEAH. LET'S SEE IF WE |
| | | 109-17805 XSA | | | CAN GET A PIECE OF THAT. OKAY, TONY, THIS IS A |
| | | 109-17804 LOC | | | SUBROUNDED ROCK - BOULDER THAT'S A METER TO A METER |
| | | | | | AND A HALF ACROSS, IT HAS A PREDOMINANT FRACTURE |
| | | | | | SET OF 20 CENTIMETERS ON THE SIDE THAT RUN HERE, |
| | | | | | SOUTHWEST NORTHEAST. IT'S |
| | | | | | THE PREDOMINANT FRACTURE SET. |
| | | | 05 03 58 06 | LMP | AND IT'S PARTIALLY BURIED. |
| | | | 05 03 58 12 | LMP | OKAY. AND JOHN, OVER HERE ALSO AS WE MOVE AROUND, |
| | | | | | THAT VERY WHITE MATERIAL IS RIGHT UNDER JOHN'S FEET |
| | | | | | I'LL TAKE A PICTURE OF THAT. AND HE'S REALLY |
| | | | | | CHANGED THE ALBEDO BY KICKING INTO THIS LITTLE |
| | | | | | CRATER BY THIS BIG ROCK. GOING TO GET ALL - AH, |
| | | | | | HERE HE COMES, FOLKS. HE'S GOT THE HAMMER OUT, I |
| | | | | | KNEW HE COULDN'T RESIST. |
| | | | 05 03 58 52 | CDR | I DON'T KNOW IF THIS WILL WORK OR NOT, CHARLIE, |
| | | | | | BUT IT COULDN'T PICK A BETTER SPOT. HERE WE GO. |
| | | | 05 03 58 58 | LMP | GOING TO DO IT. THERE'S A PIECE. LET ME HOLD YOU |
| | | | | | DOWN A LITTLE BIT. HOT DOG! HE DID IT. IT'S A |
| | | | | | VERY FRIABLE ROCK, APPARENTLY, HOUSTON. |
| | | | | | - - - |
| | | | 05 03 59 22 | LMP | I GOT IT. LEANING ON THE SHOVEL. OKAY, HOUSTON, |
| | | | | | IT'S GOT SOME GREEN CLAST, SOME WHITE CLAST, A |
| | | | | | GRAYISH MATRIX. THE CLASTS ARE MILLIMETER SIZE |
| | | | | | AND MAKE UP 5 PERCENT OF THE ROCK. ONE BIG CRYSTA |
| | | | | | 5 MILLIMETERS ACROSS, BUT I CAN'T TELL WHAT IT IS. |
| | | | | | BUT IT'S A BEAUTY. |
| | | | 05 03 59 58 | CC | OKAY; YOU THINK THEY'RE STILL BRECCIA? |
| | | | 05 04 00 05 | LMP | I'M NOT SURE I THINK IT MIGHT BE - YEAH, I THINK |
| | | | | | IT'S A BRECCIA, REALLY, VERY FRIABLE. |
| | | | 05 04 00 13 | CDR | YEAH, IT'S A BRECCIA, HOUSTON. |
| | | | 05 04 00 17 | CDR | WELL, NO - IT'S NOT REALLY. IT'S A BRECCIA, AND |
| | | | | | I CAN SEE AT LEAST - LIKE CHARLIE SAID, THERE ARE |
| | | | | | TWO OR THREE DIFFERENT TYPE CLASTS IN IT. IT'S |
| | | | | | JUST A ONE-STAGE BRECCIA, THOUGH, IT LOOKS LIKE. |
| | | | | | IT'S GOING INTO BAG 353. |
| | | | | | - - - |
| | | | 05 04 01 11 | LMP | BOULDER. JOHN, YOU JUST WHACKED THAT BEAUTY RIGHT |
| | | | | | OFF OF THERE. |
| | | | 05 04 01 19 | CDR | LIKE YOU SAY, IT'S FRIABLE. I HIT IT ON A FRACTURE |
| | | | | | SET, TOO. |
| | | | | | - - - |
| | | | 05 04 02 08 | CDR | MY GUESS IS THAT THE ROCK IS THE WAY - IT'S LAID |
| | | | | | IN HERE, IT'S PROBABLY FROM THE BOTTOM OF PLUM, |
| | | | | | SOMEHWERE, OR DOWN THERE SOMEWHERE. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 1 - STATION: 1** | | | | | | |
| BAG 368 61280* | | FILLET SOIL FROM SAME BOULDER AS BAG 353 | SAME AS BAG 353 | 05 04 01 05 | LMP | OKAY, I'M TAKING A SOIL SAMPLE OF THE FILLET AROUND THIS ROCK. |
| | | | | | | - - - |
| | | | | 05 04 01 28 | CDR | 368 THIS STUFF IS GOING INTO, HOUSTON. |
| | | | | 05 04 01 31 | CC | OKAY, 368, THE SOIL. |
| | | | | 05 04 01 35 | LMP | OKAY, I'LL GET THE AFTER ON THAT, JOHN. OKAY? |
| | | | | 05 04 01 39 | CDR | CHARLIE'S GETTING THE AFTER ON THAT SOIL IN 368. |
| FSR-1 61015* | 1803.0 | ROCK | 109-17808 XSB<br>109-17809 XSB<br>109-17810 LOC | 05 04 04 08 | LMP | TONY, I'LL DOCUMENT THIS ONE WHILE JOHN - COMING OVER WITH THE SCOOP. IN PLACE IS A GNOMON. |
| | | | | 05 04 04 36 | CDR | DID YOU GET THAT BIGGY, CHARLIE? |
| | | | | 05 04 04 38 | LMP | THAT ONE RIGHT THERE IS WHAT I'M GONNA GET. THINK IT WILL GO IN THE BAG? |
| | | | | 05 04 04 41 | CDR | NO. |
| | | | | | | - - - |
| | | | | 05 04 04 59 | LMP | DON'T WANT TO TRY IT? OKAY; THIS ANGULAR ROCK IS TOO BIG FOR A BAG, AND IT'S GOT SOME GLASS ON IT AND IT THINK IT'S A BRECCIA ALSO, TONY. IT'S GOING IN JOHN'S SRC. |
| FSR-2 61016* | | ROCK "MULEY" | | 05 04 07 30 | CC | AS YOU COME AROUND THERE, THERE IS A ROCK IN THE NEAR FIELD ON THIS RIM THAT HAS SOME WHITE ON THE TOP OF IT. WE'D LIKE YOU TO PICK IT UP AS A GRAB SAMPLE. |
| | | | | 05 04 07 39 | LMP | THIS ONE RIGHT HERE? |
| | | | | 05 04 07 41 | CC | THAT'S IT. |
| | | | | 05 04 07 44 | LMP | THIS ONE RIGHT HERE? |
| | | | | 05 04 07 45 | CC | THAT'S IT. YOU GOT IT, RIGHT THERE. |
| | | | | 05 04 07 50 | CDR | THAT'S A FOOTBALL-SIZE ROCK. |
| | | | | 05 04 07 52 | LMP | IT'S A "DAVE SCOTT" SIZE. |
| | | | | 05 04 08 03 | CDR | THAT'S 20 POUNDS OF ROCK RIGHT THERE. |
| | | | | 05 04 08 05 | LMP | OKAY. IT HAS SOME BIG CLASTS IN IT, JOHN. |
| | | | | 05 04 08 13 | CDR | IT SURE HAS. |
| | | | | 05 04 08 27 | LMP | IF I FALL INTO PLUM CRATER GETTING THIS ROCK MUEHLBERGER HAS HAD IT. |
| | | | | 05 04 08 39 | LMP | OKAY; I'VE GOT IT. THAT'S 20 POUNDS OF ROCK! |
| | | | | 05 04 08 56 | LMP | OH, TONY, IT'S GOT SOME BEAUTIFUL CRYSTALS IN IT THOUGH. |
| | | | | 05 04 09 07 | LMP | OKAY, PUT IT IN THERE, JOHN. |
| | | | | 05 04 09 10 | CDR | PUT IT IN WHERE? |
| | | | | 05 04 09 11 | LMP | IN YOUR SCB. |
| | | | | 05 04 09 13 | CDR | I DON'T THINK IT'LL FIT. |
| | | | | 05 04 09 23 | LMP | IT AIN'T GONNA FIT. |
| | | | | 05 04 09 27 | CDR | PUT IT UNDER YOUR SEAT. |
| | | | | 05 04 09 30 | LMP | YEA. KIND OF DUSTY. |
| | | | | | | - - - |

05 05 24 53 LMP TONY, I TAKE THAT BACK. THAT ROCK WE PICKED UP, THE BIG - THE MULEY IS - OH, I WAS GOING TO SAY GLASS CRYSTALS, BUT TAKE THAT BACK. PART OF IT SEEMS TO BE SHOCKED, AND IT'S A CRYSTALLINE ROCK ON THE INSIDE UNDER ALL THE DUST. WHATEVER IT IS.

05 05 25 14 CC OKAY, FINE. WE'LL TAKE IT.

05 05 25 28 LMP OKAY. I DROPPED IT ONTO THE STRUT; PART OF IT BROKE OFF. I'M SORRY.

- - -

05 05 48 19 CDR WHEW! THAT OTHER BIG MULEY WE'LL GET WHEN THE - WITH A BIG ROCK BAG LATER ON.

- - -

05 08 24 07 CC YOU FIRST DESCRIBED THE MULEY ROCK AS A CRYSTALLINE AND THEN SWITCHED TO A - CORRECTION. YOU FIRST DESCRIBED IT AS A BRECCIA, THEN SWITCHED TO A CRYSTALLINE. I WONDER IF YOU COULD HAVE SOME THIRD OF FOURTH THOUGHTS ON THAT?

05 08 24 34 LMP I'D SAY WHEN I PICKED IT UP, IT WAS PRETTY DUST COVERED, AND ONLY HAD A COUPLE OF SPOTS TO - THAT I COULD LOOK. ONE AREA LOOKED LIKE A CRYSTALLINE ROCK. IF IT WAS A BRECCIA, THEN THAT CLAST IS PRETTY LARGE, A CENTIMETER OR SO. IF IT'S A CRYSTALLINE ROCK, THEN IT'S A SORT OF A FELDSPAR-LOOKING TYPE CRYSTAL. THE OTHER, WHEN I TURNED IT OVER, IT HAD ANOTHER ONE OF THOSE WHITE SPECKS THAT MOST OF THE BRECCIAS HAVE AROUND HERE, AND THAT'S WHEN I SWITCHED. SO IT COULD BE A COMBINATION, TONY.

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 1 - STATION: 2** | | | | | | |
| BAG 5 | | 3 ROCKS, RIM OF | 109-17837 XSB | 05 04 32 33 | LMP | IF THAT IS A SECONDARY, THAT IS A BIG ROCK THAT HI |
| 62235* | | BUSTER CRATER | 109-17838 XSB | | | IN THERE. |
| 62236* | | | 109-17839 XSA | 05 04 32 38 | LMP | THE ROCKS DOWN THERE ARE VERY FRACTURED, THOUGH. |
| 62237* | | | 109-17840 LOC | | | THE ROCKS DOWN THERE ARE EXTREMELY FRACTURED - |
| | | | 109-17841 LOC | | | YOU CAN SEE A MAJOR FRACTURE SET RUNNING - DIPPING ABOUT NORTH 30 DEGREES ON ONE ROCK. THE OTHER ONE IS SUBHORIZONTAL, SO IT'S A - JUST A VERY IMPRESSI SIGHT AS FAR AS THE BOULDER GOES. THEY'RE ALL ANGULAR. SOME OF THEM - WELL, I CALL SOME OF THEM SUBROUNDED, BUT THE MAJORITY OF THEM ARE ANGULAR, AND THEY HAVE A GRAYISH TEXTURE TO THEM AND THAT'S ABOUT ALL I CAN TELL. I GOT A PARTIAL PAN FROM UP HERE ON THE RIM. AND I'M GONNA START SAMPLING. |
| | | | | | | - - - |
| | | | | 05 04 34 26 | LMP | OK, THERE'S A SORT OF ANGULAR TO SUBROUNDED BLOCK GOING IN BAG NUMBER 5, TONY. |
| | | | | 05 04 34 33 | LMP | IT'S DUST COVERED SO THAT'S ALL I CAN SAY ABOUT IT. I GOT ANOTHER LITTLE ONE, SAME SPOT; AND IT'S GOT A WHITISH CAST TO IT, AND ANOTHER LITTLE ONE THAT'S GOT A WHITISH CAST TO THE UNDERSIDE OF IT. ALL THAT IN BAG 5. |
| BAG 6 | | SOIL | SAME AS | 05 04 36 20 | LMP | OK, TONY. FROM HERE IS A SOIL SAMPLE GOING INTO |
| 62240* | | | BAG 5 | | | BAG 6. THIS IS ON THE RIM OF BUSTER. |
| | | | 109-17838 XSB | | | |
| | | | 109-17842 XSA | | | |
| BAG 7 | | ROCK, RIM OF | 109-17843 XSB | 05 04 37 08 | LMP | THAT'S THE ROCK I WANT, BUT IT'S TOO BIG FOR THE |
| 62255* | 1192.0 | BUSTER CRATER | 109-17844 XSB | | | BAG. BUT IT MIGHT GO IN THE BAG. |
| | | | | | | - - - |
| | | | | 05 04 38 11 | LMP | THERE'S ANOTHER ROCK GOING INTO BAG 7. |
| | | | | 05 04 38 20 | LMP | DUST COVERED. OK, I'M GOING ABOUT A QUARTER OF A DIAMETER AWAY FROM BUSTER AND SAMPLE SOME MORE. |

| | | | | | |
|---|---|---|---|---|---|
| **BAG 9**<br>**62275***<br> | **ROCK, 1/4 DIA.**<br>**FROM BUSTER CRATER** | **109-17845 XSB**<br>**109-17846 XSB** | 05 04 40 44<br>05 04 40 52 | LMP<br>LMP | OK, TONY, THE ROCK I'VE GOT HERE - -<br>- - IS A VERY FRIABLE ROCK, AND IT'S THE MOST SHOCKED ROCK I'VE EVER SEEN; IT'S JUST PURE WHITE. THE WHOLE MATRIX IS PURE WHITE. AND IT'S NOT A BRECCIA. HEY, JOHN, I HATE TO TELL YOU THIS BUT I DROPPED MY BAG. |
| | | | 05 04 41 26<br>05 04 41 50 | CDR<br>LMP | THIS IS REALLY SOME ROCK, REALLY SHOCKED.<br>TONY, ON THIS FRIABLE ROCK - THIS SHOCKED ONE; IT'S VERY FRIABLE AND I'M GONNA TRY AND GET IT IN THE BAG BUT I'M NOT SURE IT'S GONNA GO. AND IF I DON'T GET IT IN THE BAG, I DON'T THINK IT'S GOING TO SURVIVE. WELL, THERE'S PART OF IT IN THE BAG, ANYWAY. |
| | | | 05 04 42 12<br>05 04 42 22 | LMP<br>LMP | IT BROKE IN TWO IN MY HAND.<br>OK, AND THAT'S IN BAG NUMBER 9. |
| **BAG 10**<br>**62295*** | **ROCK** | **109-17847 XSB**<br>**109-17848 XSB** | 05 04 44 07<br>05 04 44 12 | LMP<br>LMP | OKAY, BAG NUMBER 10, IS ANOTHER ONE.<br>IT'S AN ANGULAR ROCK.<br>- - - |
| | | | 05 04 46 02 | LMP | HOUSTON, I HATE TO TELL YOU THIS, BUT THOSE ROCKS, THESE LIGHT ONES HERE, THEY LOOK LIKE CALICHE TO ME. |
| **BAG 11**<br>**62280*** | **SOIL** | **SAME AS BAG 10** | 05 04 45 18<br>05 04 45 30 | LMP<br>LMP | WE GOT SOIL SAMPLES AND ABOUT - THAT SAMPLE IS GOING INTO BAG 11, TONY.<br>THAT'S A SACKFUL, JOHN. I DON'T SEE THE HIGH ALBEDO STUFF UNDERNEATH. |
| **EVA 1 - STATION: LM** | | | | | |
| **FSR-3**<br>**60015*** | **ROCK**<br>**"BLUE GENESIS"** | | 05 05 02 36 | LMP | TONY, THE ROCKS IN THIS RAY NEAR THE LUNAR MODULE ARE ENTIRELY DIFFERENT FROM THE ONES WE'VE BEEN SAMPLING. THEY'RE JUST DIFFERENT. WE'RE GONNA HAVE TO MAKE A STOP HERE - IN STATION 10 - AND CALL STATION 10 HERE, RIGHT IN FRONT OF THE LUNAR MODULE AND SAMPLE HERE.<br>- - - |

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| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 1 - STATION: LM** | | | | | | |
| **FSR-3** | | | | 05 05 08 40 | LMP | OKAY, HOUSTON. THESE ROCKS - I PICKED UP ONE -- |
| **60015*** | | | | 05 05 08 44 | LMP | - - RIGHT OUT HERE THAT I DESCRIBED THAT BLUE - |
| | | | | 05 05 08 50 | LMP | - - THAT BLUE ONE THAT I DESCRIBED FROM THE LUNAR MODULE WINDOW, AND BY BLUISH COLOR IS BECAUSE IT'S GLASS COATED, BUT UNDERNEATH THE GLASS, IT'S A CRYSTALLINE ROCK THAT, TO ME, HAS THE SAME TEXTURE AS THE GENESIS ROCK, AND IT'S NOT A BRECCIA. AT LEAST I CAN'T - THE PART I'M LOOKING ABOUT -- IS IT'S NOT A BRECCIA - MAYBE JUST ONE BIG CLAST. BUT THE PART I'M LOOKING AT IS A ONE SOLID - IT'S AN IGNEOUS, PLUTONIC ROCK. |
| | | | | 05 05 09 29 | CC | OKAY. HOW BIG WAS IT? |
| | | | | 05 05 09 33 | LMP | IT'S ABOUT FOOTBALL SIZE, LITTLE BIT SMALLER. |
| | | | | | | - - - |
| | | | | 05 05 34 27 | LMP | TONY, ONE OF THOSE BIG ROCK BAGS I MEAN, THOSE BIG ROCKS I COULD PUT INTO THE SRC. IT'S AN UNDOCUMENTED ROCK - GRAB SAMPLE. I DON'T MEAN THE SRC, BUT THE SCB. WHY DON'T WE JUST LEAVE IT THERE AND GET IT FOR NEXT TIME, TONY? |
| | | | | 05 05 34 51 | LMP | I TELL YOU WHAT, I'M GONNA GET IT. BAG 5. |
| | | | | | | - - - |
| | | | | 05 05 48 06 | CDR | OKAY. HARDLY NOTHING IN THE SCB, RIGHT? |
| | | | | 05 05 48 08 | LMP | ONE BIG ROCK IS ALL. |
| | | | | 05 05 48 54 | LMP | OKAY, TONY. WE'RE BRINGING SCB NUMBER 5 IN WITH A BIG ROCK. |
| | | | | | | - - - |
| | | | | 05 07 14 06 | LMP | OKAY, HOUSTON. SCB NUMBER 5 IS IN SAMPLE CONTAINMENT BAG NUMBER 5, AND IT WEIGHS 14 POUNDS. |
| | | | | 05 07 14 44 | LMP | THAT WAS ONLY ONE ROCK, AND THAT WAS A GRAB SAMPLE THAT I GOT ABOUT 30 METERS IN FRONT OF THE LM. OVER. |

**EVA 2 - STATION: LM**

| | | | | | |
|---|---|---|---|---|---|
| | | | 05 23 08 56 | LMP | I GOT TO GET A PAN, JOHN. SO IT'LL BE A FEW MINUTES. WHY DON'T YOU RUN AROUND AND PICK UP A ROCK. |
| | | | 05 23 09 02 | CDR | HEY! OUTSTANDING SUGGESTION. GIVE ME A ROCK BAG, CHARLIE. |
| | | | 05 23 10 13 | CC | AND JOHN, IF YOU'RE PICKING UP A ROCK, COULD YOU GET THAT - - |
| | | | 05 23 10 17 | CC | - - THE VESICULAR BASALT UNDERNEATH THE ENGINE BELL? |
| | | | 05 23 10 24 | CDR | YEP. SURE COULD DO THAT. |
| | | | 05 23 10 27 | LMP | TONY, THAT IS A DOUBLE MULEY - THAT ROCK. |
| | | | 05 23 10 59 | CC | JUST FORGET THAT BIG ROCK FOR NOW. THAT'S TOO BIG TO HANDLE. |
| | | | 05 23 11 07 | CDR | IT'S INACCESSIBLE; IT'S UNDERNEATH THE ENGINE COVER. |
| | | | 05 23 11 15 | CDR | BUT THERE'S PROBABLY ANOTHER NICE ROCK - I'M SURE THERE'S ANOTHER GOOD ROCK AROUND HERE THAT I'VE BEEN EYING OUT MY WINDOW I WANTED TO GET ANYWAY. |
| | | | 05 23 11 27 | LMP | I HATE TO TELL YOU, BUT I NEED YOUR CAMERA FOR THE - HERE, TAKE MINE WITH THE BLACK-AND-WHITE AND LET ME HAVE YOURS FOR THE PAN. |
| | | | 05 23 12 12 | LMP | PAN QUAD III. WELL, GUESS WHAT? I'M ON THE WRONG SIDE. IF YOU WANT SOME OF THIS BLACKISH ROCK, JOHN, A SMALL ONE THAT'S BAGABLE, THERE'S A BUNCH RIGHT OUT HERE THAT LOOK JUST LIKE WHAT I CALL THAT BASALT. IN FACT, THERE'S HUNDREDS OF THEM. |
| | | | 05 23 13 08 | CDR | YEAH. THEY'RE OUT FROM THAT LITTLE IMPACT CRATER WE JUST LANDED BEYOND. AND I WANT TO GET THIS NICE WHITE ONE RIGHT HERE. |

| | | | | | |
|---|---|---|---|---|---|
| **FSR 4**<br>**60016** **4307.0** | **ROCK** | **109-17866 XSB**<br>**109-17867 XSB**<br>**109-17868 DSA**<br>**113-18303 LOC** | 05 23 15 08 | CDR | OKAY. HOUSTON. I JUST PICKED UP THIS ROCK. IT'S A WHITE ROCK, A VERY WHITE ROCK, BUT IT HAS A BLACK GLASS LAYER ON THE BACK OF IT, OR WHAT APPEARS TO BE BLACK GLASS - A THICK BLACK GLASS; AND IT'S ABOUT A HAND-SIZE SPECIMEN. I CAN'T GET IT IN THE BAG, BUT I'LL GET IT ANYWAY. AND IT HAS A LOT OF ZAP CRATERS IN IT, AND LINING THE ZAP CRATERS ARE SOME WHITISH SUBSTANCE. |

| | | | | | |
|---|---|---|---|---|---|
| **SAMPLE 4A?** | **MAY REFER TO FSR-3** | | 05 23 28 21 | CDR | LOOK AT THE ROCKS AROUND THERE, CHARLIE. |
| | | | 05 23 28 26 | CDR | THERE'S YOUR BASALTS AND THINGS. THOSE ARE BLACK. THEY'RE PROBABLY GLASS COVERED, DON'T YOU THINK? |
| | | | 05 23 28 31 | LMP | THEY ARE. I PICKED UP ONE OUT THERE. SEE WHERE MY FOOTPRINTS GO? |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 4** | | | | | | |
| BAG 394 64435* | | ROCK | 107-17443 XSB<br>107-17444 XSB<br>107-17445 XSB,<br>107-17447 XSA<br>107-17446 LOC<br>107-17445 LOC | 06 00 16 05 | CDR | MOST OF THESE ROCKS HAVE A WHITISH CAST TO THEM, HOUSTON, BUT -<br>- - - |
| | | | | 06 00 17 08 | LMP | LOOK UPSLOPE, TONY. OK, LOOK ON UPSLOPE, AND YOU SEE ALL THIS ROCK FIELD THAT WE'RE IN HERE.<br>- - - |
| | | | | 06 00 17 19 | CDR | OK. I WAS JUST GOING TO GET THIS ONE SAMPLE.<br>- - - |
| | | | | 06 00 18 38 | CDR | I'VE GOT A HARD ROCK. I THINK IT'S GLASS COATED, BUT IT'S SO DUST COVERED I CAN'T TELL, AND IT'S GOING IN BAG 394. |
| | | | | 06 00 19 02 | LMP | THE BLOCK POPULATION HERE IN THIS IMMEDIATE AREA IS 60 TO 70 PERCENT, WITH THE BIGGEST ONE BEING RIGHT IN OUR LITTLE CRATER HERE THAT'S A METER OR SO. THEY'RE ALL VERY ANGULAR BUT THE MAJORITY OF THEM<br>ARE LESS THAN, OH, LESS THAN 30 CENTIMETERS OR SO, THOUGH THERE'S A GOOD PROPORTION OF 50 - - |
| | | | | 06 00 19 35 | CDR | LET ME PUT THIS IN YOUR BAG, CHARLIE. |
| | | | | 06 00 19 37 | LMP | MOST OF THEM ARE DUST<br>COVERED. WELL, NOT MOST OF THEM; IN FACT, MOST OF THEM ARE NOT DUST COVERED. |
| BAG 395 64510* | | RAKE FRAGMENTS | 110-17947 DSB<br>107-17448 XSB<br>107-17449 XSB<br>107-17450 XSD<br>110-17948 LOC | 06 00 20 05 | LMP | LET ME RAKE THIS TIME AND THEN I'LL GET ON WITH THE PENETROMETER, OKAY? |
| | | | | 06 00 20 09 | CDR | OKAY, FINE. |
| | | | | 06 00 20 10 | LMP | THERE'S A PLACE RIGHT UP HERE, JOHN, THAT LOOKS LIKE IT'S A GOOD - - |
| | | | | 06 00 20 16 | CDR | OKAY, LET'S NOT GO TOO FAR. |
| | | | | 06 00 20 18 | LMP | I'M NOT. IT'S PRETTY STEEP. THERE'S A PLACE RIGHT HERE THAT'S GOT A LOT OF GOOD ONES. |
| | | | | 06 00 20 38 | LMP | LET ME GET UP-SUN. AN 11-FOOTER |
| | | | | 06 00 21 00 | LMP | OK, GOT IT. AND LET ME GET A LOCATOR FROM UP HERE, TOO. UNDERNEATH THIS REGOLITH UP HERE, WE'VE STILL GOT THE SAME DEAL. TOP CENTIMETER OR SO IS - - |
| | | | | 06 00 21 24 | CDR | NOW WE RAKE. |
| | | | | 06 00 21 37 | CDR | OK. MOST OF THESE ROCKS WERE WHITE CLASTS. |
| | | | | 06 00 21 43 | LMP | GLASS COATED, TOO - A LITTLE -- |
| | | | | 06 00 21 45 | CDR | GLASS COATED. |
| | | | | 06 00 21 46 | LMP | - - ON SOME OF THEM. |
| | | | | 06 00 21 50 | CDR | THERE'S 12 OR 13 IN THAT FIRST SCOOP, AND THEY'RE MOSTLY WHITE CLAST ROCKS. |

| | | | | | |
|---|---|---|---|---|---|
| | | | 06 00 22 00 | LMP | HERE COMES ONE THAT'S GOT A LOT OF GLASS ON IT. |
| | | | 06 00 22 10 | CC | YOU THINK YOU'RE GETTING BRECCIAS THERE, THEN? |
| | | | 06 00 22 17 | CDR | NO, WE'RE NOT SURE BECAUSE THEY'RE DUST COATED TOO, AND THERE'S GLASS - THERE'S GLASS ON THEM. THEY COULD BE JUST SHOCKED ROCK. |
| | | | 06 00 22 27 | CDR | OK, THAT'S GOING INTO BAG 395. |
| | | | 06 00 22 30 | LMP | I DON'T GET THE IMPRESSION - - |
| | | | 06 00 22 33 | LMP | - - THEY'RE BRECCIAS, MYSELF. |
| | | | 06 00 22 34 | CDR | I DON'T EITHER. BUT IT'S JUST AN IMPRESSION. |
| | | | 06 00 22 48 | LMP | YOU WANT TO GET AN AFTER OF THAT, JOHN? I'LL GET A SHOVELFUL. |
| **BAG 396** | **RAKE SOIL** | SAME AS | 06 00 23 22 | LMP | WANT TO GET THAT KILO. OK. |
| **64500*** | | BAG 395 | 06 00 23 29 | LMP | ... SOME OF THAT WHITE STUFF IN THE BOTTOM. |
| | | | 06 00 23 32 | LMP | THAT'S WHAT I WAS GOING TO SAY. UNDERNEATH THIS TOP GRAY LAYER, IT'S WHITE AGAIN UP HERE, JUST LIKE ON THE CAYLEY. |
| | | | 06 00 23 42 | LMP | THAT'S A KILO, ISN'T IT? |
| | | | 06 00 23 45 | CDR | YEAH. |
| | | | 06 00 23 46 | LMP | YOUR OLD RAKE IS FINISHED. |
| | | | 06 00 23 56 | CDR | AND IT'S IN BAG 396. |
| **BAG 398** | **4 ROCKS** | 107-17453 DSB | 06 00 25 57 | CDR | I'M LOOKING AT A ROCK HERE THAT IS A VERY ANGULAR |
| **64475*** | | 107-17451 XSB | | | ROCK, AND IT HAS WHITE CLASTS WITH A BRECCIA, OR |
| | | 107-17452 XSB | | | IT HAS A BRECCIATED APPEARANCE. I'LL TAKE A |
| | | 107-17457 DSA | | | PICTURE OF IT AND SAMPLE IT FOR YOU. |
| | | 107-17454 LOC | | | - - - |
| | | | 06 00 32 15 | CDR | I'M SAMPLING INDEPENDENTLY, AND I'VE GOT FOUR SAMPLES IN BAG 398. THEY'RE SO DUST COVERED THAT I CAN'T TELL ANYTHING ABOUT THEM - - |
| | | | 06 00 32 25 | CDR | - - BUT I SUSPECT THEY'RE LYING BY THIS BIG ROCK, AND THEY MAY BE THE SAME KIND OF ROCK CHARLIE, I'M GOING TO GET THAT BAG OUT FROM UNDERNEATH YOUR SEAT AND PUT THE SAMPLES IN THERE. |
| **BAG 397** | **GLASS SPATTER** | 107-17455 XSB | 06 00 29 08 | CDR | DON'T STEP RIGHT THERE, CHARLIE. HERE'S A |
| **64455*** | | 107-17456 XSB | | | GLASS SPLATTER. |
| | | | 06 00 29 12 | LMP | OH YEAH. I SEE IT. A WHOLE BIG BUBBLE OF IT, ISN'T IT? |
| | | | 06 00 29 22 | CDR | I'M GOING TO GRAB SAMPLE THIS GLASS SPLATTER BEHIND THE ROVER. |
| | | | 06 00 29 33 | LMP | GOOD. JOHN, IF YOU SEE IT, THERE'S ONE UNDER THAT ROCK. IS THAT THE ONE YOU'RE TALKING ABOUT? |
| | | | 06 00 29 40 | CDR | YEAH. |
| | | | | | - - - |
| | | | 06 00 29 57 | CDR | AND THAT'S GOING INTO BAG 397. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 4** | | | | | | |
| BAG 399 | | TRENCH SOIL | 107-17458 XSA | 06 00 35 31 | CDR | OKAY, HOUSTON. I'M DIGGING AN EXPLORATORY TRENCH |
| 64420* | | | 107-17459 XSA | | | RIGHT HERE TO SEE IF THE MATERIAL IS BLACK. |
| | | | 107-17460 XSA | 06 00 35 43 | CDR | - IT'S SURE NOT. I MEAN THE MATERIAL IS NOT |
| | | | 107-17461 XSA | | | WHITE. IT'S JUST THE SAME AS IT - |
| | | | 107-17462 XSA | | | - - - |
| | | | | 06 00 36 19 | CDR | I'VE GONE DOWN ABOUT - A |
| | | | | 06 00 36 35 | CDR | SHOVEL WIDTH, AND IT'S ALL THE SAME MATERIAL. AND I DON'T SEE ANY LAYERING IN IT OR ANYTHING. |
| | | | | | | - - - |
| | | | | 06 00 37 43 | CDR | I'VE GOT A SAMPLE OUT OF THE DEEPEST PART OF THIS TRENCH THAT I'M DIGGING, AND IT'S GOING INTO BAG - |
| | | | | 06 00 38 00 | CDR | BAG 399. |
| U-43/L38 | | DOUBLE DRIVE TUBE | 110-17949 XSD | 06 00 37 23 | LMP | TONY, DO YOU WANT THIS DOUBLE CORE - IN THE DITCH |
| 64002/ | 584.1/ | | 110-17950 XSD | | | HERE OR DOWNSLOPE WHERE I THINK IS PROBABLY CLOSER |
| 64001* | | | 110-17951 LOC | | | TO DESCARTES? |
| | | | | | | - - - |
| | | | | 06 00 38 16 | CC | CHARLIE. WHY DON'T WE JUST GO AHEAD AND TAKE IT DOWNSLOPE THERE ABOUT YOUR LAST PENETROMETER PLACE. |
| | | | | | | - - - |
| | | | | 06 00 41 05 | LMP | THE OLD DOUBLE CORE IS ASSEMBLED. TONY, IN THE REGOLITH, YOU SEE LITTLE BRIGHT SPECKLES LOOKING AT YOU, AND I THINK IT'S GLASS PARTICLES. JOHN HAS ALREADY SAMPLED - SOME OF THEM. |
| | | | | | | - - - |
| | | | | 06 00 42 49 | LMP | I DON'T WANT TO GET DOWN THERE TOO FAR. THIS THING IS DEEP. I'M TO THE 2:30 POSITION OF THE ROVER, AND I'M GOING TO START WITH THIS DOUBLE CORE - GOT IT ASSEMBLED. OK. I PUSHED IT IN. I GOT IN ALMOST TO THE TOP OF THE FIRST STEM BY PUSHING IT IN. |
| | | | | | | - - - |
| | | | | 06 00 44 00 | LMP | OK, TONY, ABOUT HALFWAY UP THE SECOND ONE - IT'S GETTING A LITTLE HARDER, BUT IT'S GOING ON IN. |
| | | | | 06 00 44 18 | CC | OK. MAYBE WE'RE GETTING DOWN TO DESCARTES THERE. |
| | | | | | | - - - |
| | | | | 06 00 46 01 | LMP | I'M FINISHING UP THE DOUBLE CORE RIGHT NOW. I'VE GOT IT BACK HERE, AND I'M TAKING IT APART. |
| | | | | 06 00 46 11 | LMP | CAPPED, BOTTOM SECTION. |
| | | | | 06 00 46 35 | LMP | THAT'S FULL. BOTTOM SECTION WAS 38. |
| | | | | | | - - - |
| | | | | 06 00 47 31 | LMP | TOP SECTION IS NUMBER 43. |

| | | | | | |
|---|---|---|---|---|---|
| **BAG 400**<br>**64600*** | **SCOOP SOIL** | **107-17463 DSB**<br>**107-17464 DSB**<br>**107-17465 XSB**<br>**107-17466 XSB** | 06 00 45 09 | CDR | I'M STANDING ON THE RIM OF THIS CRATER OVER HERE. THE ONLY ROCK I SEE ON THE SOUTH RIM OF THIS OBVIOUS SECONDARY IS NOT TOO BIG. I CAN GET DOWN INTO THE CRATER AND LOOK DOWN IN IT, AND SEE IF I CAN SCRATCH AWAY TO A BENCH, IF YOU'D LIKE TO DO THAT.<br>- - - |
| | | | 06 00 47 05 | CDR | WHAT I'LL DO, HOUSTON, IS GET A SOIL SAMPLE OFF THIS RIM. THAT'S THE ONLY THING I CAN BE ASSURED OF THAT'S DESCARTES RIGHT AT THIS POINT. |
| | | | 06 00 47 20 | CDR | THAT'S GOING IN BAG 400.<br>- - - |
| | | | 06 00 59 23 | CDR | I THINK THE FACT THAT WE DIDN'T RUN ACROSS ANY WHITE SOIL MAY BE SIGNIFICANT AROUND HERE. |
| **BAG 401**<br>**64610*** | **RAKE FRAGMENTS** | **SAME AS BAG 400**<br>**107-17490 XSA**<br>**107-17491 XSA** | 06 00 51 37 | CDR | LET ME GET THE RAKE SAMPLE, CHARLIE. GET IT. |
| | | | 06 00 51 43 | LMP | OK. THERE'S A LOT OF GOODIES RIGHT THERE ON THE INNER RIM. |
| | | | 06 00 51 48 | CDR | THAT'S WHERE I'LL RAKE - RIGHT THERE.<br>- - - |
| | | | 06 00 52 01 | LMP | YEAH. HERE, LET ME HAVE THE SHOVEL. OK. I GOT IT. |
| | | | 06 00 52 13 | LMP | THAT'S A CLOD. THAT'S AN INDURATED CLOD. HERE'S SOME ROCKS. GOOD DEAL, BOY THAT'S GREAT. HEY, LET'S FILL THIS ONE UP, AND THEN - |
| | | | 06 00 52 41 | LMP | REAL DUST-COVERED, MOSTLY CENTIMETER SIZE, TONY - ABOUT 15 FRAGS - SOME SMALLER THAN THAT. |
| | | | 06 00 52 52 | CDR | I'VE ALREADY GOT MY SHOVEL FULL HERE, CHARLIE. |
| | | | 06 00 52 58 | LMP | OK. OF THE DIRT? |
| | | | 06 00 53 03 | LMP | I HATE TO TELL YOU THIS, BUT I THINK IT S INDURATED REGOLITH. |
| | | | 06 00 53 07 | LMP | BECAUSE I'M JUST BREAKING IT UP. |
| | | | 06 00 53 10 | CDR | VERY FRIABLE. LIKE DUST - DIRT CLODS. |
| | | | 06 00 53 14 | LMP | WHICH IS PROBABLY WHAT IT IS. |
| | | | 06 00 53 17 | CDR | WANT TO GET ANOTHER ONE? |
| | | | 06 00 53 19 | LMP | YEAH. CAN YOU TRY ANOTHER ONE? |
| | | | 06 00 53 28 | LMP | I DON'T THINK THESE ARE ROCKS. IF THEY ARE, THEY ARE VERY FRIABLE. I THINK IT'S JUST INDURATED REGOLITH. |
| | | | 06 00 53 40 | CDR | WELL, THERE MAY BE A ROCK OR TWO IN THERE. |
| | | | 06 00 53 55 | CDR | MAYBE SOME OF THEM ARE ROCKS. THAT WAS THREE SCOOPS, AND WE'RE NOT DOCUMENTING THIS TO THE BEST OF OUR ABILITY, BECAUSE I THINK WE'RE STANDING TOO CLOSE TO THE RIM HERE TO -<br>- - - |
| | | | 06 00 54 19 | CDR | THE LOCATOR SHOT WILL BE IN THE PAN, AND I'M GOING TO SHOOT THIS - THIS IS AN UP-SUN, AFTER, OF THE RAKE SAMPLE, STEREO. |
| | | | 06 00 54 31 | LMP | THAT WAS IN BAG 401. |

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| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 5** | | | | | | |
| **BAG 332** | | **RAKE FRAGMENTS** | 110-18019 DSB | 06 01 09 41 | LMP | IT MIGHT BE A PRIMARY IMPACT, BUT I THINK |
| **65510** | **588.5** | **UNSORTED** | 107-17492 XSB | | | THOSE BLOCKS - THE ROCKS THERE ARE FROM SOUTH |
| | | | 107-17493 XSB | | | RAY. I THINK WE OUGHT TO GET A RAKE SAMPLE |
| | | | 107-17494 XSA | | | HERE. |
| | | | 107-17495 XSA | 06 01 09 50 | CC | HOW BIG IS THAT CRATER? |
| | | | 110-18020 LOC | 06 01 09 55 | LMP | ABOUT 15 METERS ACROSS. |
| | | | | 06 01 10 05 | CDR | WE'RE PARKED RIGHT ON THE RIM OF IT. |
| | | | | | | - - - |
| | | | | 06 01 14 12 | CDR | ROGER. WELL, I'LL TELL YOU WHAT. IF WE DO A RAKE SAMPLE IN THE WALL, WOULD PROBABLY BE OUR BEST BET. |
| | | | | 06 01 14 20 | LMP | THAT'S WHAT I WOULD LIKE TO DO. |
| | | | | | | - - - |
| | | | | 06 01 16 13 | CDR | LET ME GET THE RAKE SAMPLE HERE. |
| | | | | | | - - - |
| | | | | 06 01 16 21 | LMP | OKAY, GO AHEAD, PICK A PLACE. I'LL GET THE GNOMON. YOU GOING TO GET IT? OKAY. |
| | | | | | | - - - |
| | | | | 06 01 17 02 | CDR | HERE'S ABOUT A FOOT AND A HALF ACROSS SECONDARY - LOOKS LIKE A PRIMARY THAT CUT INTO THE RIM - THE UPPER RIM OF THIS 10 - OR 20-METER - YEAH, THIS 20-METER SECONDARY. HOW ABOUT SAMPLING OUT OF THE WALL OF THAT ONE? |
| | | | | | | - - - |
| | | | | 06 01 17 43 | CC | OKAY, DOES IT LOOK LIKE IT KNOCKED OUT ANY ROCKS? |
| | | | | 06 01 17 50 | CDR | YEAH. I DON'T THINK THE ROCKS THAT ARE THERE WERE THERE BECAUSE OF - |
| | | | | 06 01 17 55 | LMP | YEAH, IT DOES, JOHN. THERE'S SOME ROCKS RIGHT IN THAT CORNER THERE, RIGHT BY YOUR FOOTPRINT. |
| | | | | 06 01 18 03 | LMP | SEE THAT ONE RIGHT THERE - BY THE RAKE? |
| | | | | 06 01 18 05 | LMP | AND HERE'S ONE RIGHT IN THE VERY BOTTOM. WHY DON'T YOU GET THAT SCOOP GOING? AND I'LL GO OVER HERE AND GET A LOCATOR. |
| | | | | | | - - - |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 06 01 18 55 | LMP | NOW, THAT'S A GOOD BAGFULL. |
| | | | | 06 01 18 57 | LMP | ONE SCOOP. |
| | | | | 06 01 19 00 | CDR | WANT ME TO DO IT AGAIN? |
| | | | | 06 01 19 02 | LMP | WELL, WE GOT A BAGFUL. |
| | | | | 06 01 19 03 | CDR | NOTICE THE COLOR OF THE MATERIAL, CHARLIE. IN THE BOTTOM OF IT - IT'S WHITE. WE GET A KILO OF SOIL. |
| | | | | 06 01 19 11 | LMP | THAT'S WHAT THIS IS. THIS ISN'T ROCKS. |
| | | | | 06 01 19 14 | CDR | FRIABLE SOIL? |
| | | | | 06 01 19 15 | LMP | YEAH. |
| | | | | 06 01 19 16 | CDR | THAT COULD BE DESCARTES, CHARLIE. |
| | | | | 06 01 19 19 | LMP | THAT RAKE SOIL - SAMPLE WAS IN 332, AND I JUST, PINCHED ONE OF THE ROCKS, AND IT BROKE. |
| | | | | 06 01 19 34 | LMP | IT'S PROBABLY GOING TO BE A BAGFUL OF SOIL WHEN WE GET IT BACK. |
| | | | | 06 01 19 38 | CC | WELL, THAT MAY STILL BE DESCARTES. |
| | | | | 06 01 19 44 | CDR | IT MAY BE. |
| | | | | 06 01 19 46 | LMP | I THINK IT IS. |
| **BAG 333** | | **RAKE SOIL** | **SAME AS** | 06 01 20 08 | LMP | WANT ANOTHER ONE? |
| **65500** | **619.4** | **UNSORTED** | **BAG 332** | 06 01 20 10 | CDR | YEAH. LIGHTER ALBEDO MUCH LIGHTER ALBEDO. AND IF I HAD MY DRUTHERS, IT'S SOMEWHERE BETWEEN THE GRAY AND THE WHITE OUT ON THE PLAINS. |
| | | | | 06 01 20 24 | LMP | THAT'S GOOD, JOHN. IT'S ABOUT A KILO. |
| | | | | 06 01 20 25 | CDR | IT'S SOMEWHERE BETWEEN THE GRAY OF THE SURFACE AND THE WHITE MATERIAL THAT WE PICKED UP OUT ON THE PLAINS. AND WE GOT A BAGFUL OF MOST OF THAT FROM SCOOPING UNDERNEATH THE ROCK SAMPLES. |
| **BAG 334** | | **RAKE FRAGMENTS** | **107-17496 XSB** | 06 01 22 27 | CDR | NOW, THE ONLY ROCKS WE SEE ARE REALLY ANGULAR, |
| **65610*** | | | **107-17497 XSB** | | | AND THEY'RE ON THIS RIM. AND I GUESS THE |
| | | | **110-18021 XSD** | | | PROBLEM IS - IT WAS A CRATERING EVENT WAS |
| | | | **110-18022 XSD** | | | PROBABLY SO LONG AGO. THERE'S JUST NOT EVEN A |
| | | | **107-17498 XSA** | | | HINT OF ANY LEDGES OR BEDROCK IN THIS RASCAL. |
| | | | **107-17499 XSA** | 06 01 22 56 | LMP | JOHN, WHY DON'T YOU TAKE THE RAKE RIGHT HERE IN FRONT OF THE GNOMON - I'VE ALREADY DOCUMENTED THAT AREA - AND SEE WHAT YOU GET? |
| | | | | 06 01 23 04 | CDR | TAKE THE RAKE WHAT, CHARLIE? |
| | | | | 06 01 23 06 | LMP | AND JUST RIGHT HERE IN FRONT THE GNOMON AND SEE WHAT YOU GET. ONE SCOOP AND - IT MIGHT BE - - - - |

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| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 5** | | | | | | |
| | | | | 06 01 23 27 | CDR | I DON'T THINK YOU'RE GONNA GET ANYTHING BUT SOIL! |
| | | | | 06 01 23 31 | LMP | I DON'T EITHER. THERE'S SOME ROCKS, 2. |
| | | | | 06 01 24 12 | LMP | THERE WE GOT A FEW OF THOSE. |
| | | | | 06 01 24 17 | CC | OKAY. DO THOSE LOOK LIKE CLODS TOO? |
| | | | | 06 01 24 23 | LMP | NO, THEY DON'T. THERE'S AT LEAST ONE OF THEM THAT'S GLASS COATED. |
| | | | | 06 01 24 34 | CDR | HEY, THERE'S SOME. |
| | | | | 06 01 24 36 | LMP | THESE ARE WHITISH TYPE ROCKS, VERY SMALL, THEY MAY HAVE COME FROM SOUTH RAY. |
| | | | | 06 01 24 49 | LMP | HOW ABOUT ONE MORE SCOOP JOHN? |
| | | | | 06 01 25 10 | CDR | HEY, LOOK AT THAT. |
| | | | | 06 01 25 14 | LMP | AND ALL OF THOSE ARE ROUNDED. |
| | | | | 06 01 25 14 | CDR | AS CHARLIE POINTED OUT, THE DIFFERENT CHARACTERISTICS OF THESE ROCKS THAT WE'RE JUST CUTTING RIGHT NOW, AND MAYBE THAT'S THE KEY, IS THAT THEY'RE MORE ROUNDED THAN THE SOUTH RAY CRATER ROCKS ARE. |
| | | | | 06 01 25 31 | CDR | THERE ARE A FEW ANGULAR IN THERE, BUT THESE ARE MOSTLY ROUNDED; AND I SEE SOME LITTLE BLACK GLASS ON ONE, BUT THEY'RE MOSTLY ROUNDED, WHITISH ROCKS COVERED WITH DUST, OF COURSE. |
| | | | | 06 01 25 42 | LMP | THESE ARE A COUPLE OF GOOD ONES. |
| | | | | 06 01 25 49 | LMP | BAG 334. |
| **BAG 402** | | **SOIL** | SAME AS BAG 334 | 06 01 26 35 | LMP | OKAY. LET ME GET SOME SOIL HERE. |
| **65600*** | | | | 06 01 26 51 | CDR | WAIT A MINUTE, CHARLIE. |
| | | | | 06 01 26 53 | LMP | YOU REALLY FEEL LIKE YOU'RE ON THE VERGE OF INSTABILITY, DON'T YOU? |
| | | | | 06 01 26 59 | CDR | YEAH. |
| | | | | 06 01 27 04 | CDR | I'VE GOT THE GLOVES SO DIRTY. OKAY. THAT'S GOING INTO BAG 402. |

| | | | | | |
|---|---|---|---|---|---|
| BAG 403<br>65075* | ROCK | 107-17500 XSB | 06 01 29 05 | LMP | GET IT - GET THAT - THAT RIGHT THERE. |
| | | 107-17501 XSB | 06 01 29 07 | CDR | I AM. I'M TRYING TO GET UPSLOPE ON IT. |
| | | 107-17502 XSB | 06 01 29 10 | LMP | HERE LET ME - I CAN GET IT. |
| | | | 06 01 29 28 | LMP | OKAY. I GOT IT. |
| | | | 06 01 29 32 | CC | THE WHITE ROCK THAT YOU PICKED UP AND THE ONES YOU JUST HAVE HERE, CAN YOU SEE ANY CRYSTALS IN IT? |
| | | | 06 01 29 40 | LMP | YES, SIR. I SURE CA[illegible]T'S BLUISH CRYSTAL, A COUPLE OF MILLIMETL[illegible]IZE. |
| | | | 06 01 29 49 | CDR | BLUISH? |
| | | | 06 01 29 51 | LMP | WELL, THAT'S WHAT IT LOOKED - GRAYISH MAYBE - AND ONE CORNER OF IT'S GOT A GLASS RIND ON IT ABOUT A HALF A CENTIMETER THICK. |
| | | | 06 01 20 08 | LMP | IT DOESN'T LOOK LIKE A BRECCIA, TONY. IT LOOKS LIKE A CRYSTALLINE ROCK. |
| | | | 06 01 30 13 | CDR | YEAH, IT'S GOT A LOT OF - IT'S FINE GRAINED - IT SEEMS TO BE A FINE-GRAINED CRYSTALLINE ROCK ANYWAY, THE PART THAT WE CAN SEE. THE PARTICLES IN IT ARE MILLIMETER SIZE, THOUGH. I SEE SOME MILLIMETER-SIZE SPARKLIES FLASHING AT ME. THAT'S GOING IN BAG 403. |
| BAG 404<br>65035* | ROCK, GLASSY COATING | 110-18023 XSB | 06 01 30 34 | LMP | HEY, JOHN, I'M HAVING ABOUT STRIKE OUT ON THIS |
| | | 110-18024 XSB | | | RAKE HERE. I CAN'T - GET A COUPLE OF LITTLE ONES |
| | | 107-17503 XSD | | | EACH TIME, BUT - - |
| | | 107-17504 XSA | 06 01 30 47 | LMP | WANT TO MOVE ON AROUND THERE ABOUT 10 FEET OR SO? |
| | | THRU | 06 01 30 50 | CDR | OKAY. |
| | | 107-17507 XSA | 06 01 30 51 | LMP | PICK A SPOT. I'LL FOLLOW IN YOUR TRACKS. YOU'RE |
| | | 110-18025 XSA | | | SLIDING DOWNHILL ABOUT 2 INCHES EVERY TIME YOU - |
| | | 110-18026 XSA | | | I CAN'T GET GOING , HERE. LOOK AT THAT GLASS COVERED ONE RIGHT THERE. |
| | | | 06 01 31 12 | CDR | LET'S GET IT, CHARLIE. |
| | | | | | - - - |
| | | | 06 01 31 34 | LMP | GONNA BE JUST ONE ROCK AND ONE BAG HERE. |
| | | | 06 01 31 52 | LMP | HEY, TONY. WE JUST PICKED YOU UP A GLASS RIND ROCK - AT LEAST A QUARTER OF IT'S GOT GLASS ON IT, AND IT'S SO DUST COVERED THAT IT - - |
| | | | 06 01 32 09 | CDR | - - DEFIES DESCRIPTION. |
| | | | 06 01 32 12 | CDR | 404 IS THE BAG NUMBER - - |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| EVA 2 - STATION: 5 | | | | | | |
| BAG 405 | | RAKE FRAGMENTS | SAME AS | 06 01 32 33 | LMP | OKAY. LET ME RAKE UP HERE. |
| 65310* | | PLUS LARGER | BAG 404 | | | HERE'S SOME - THESE ARE EITHER CLODS OR - - |
| | | ROUNDED ROCK | 107-17504 XSB | 06 01 32 56 | LMP | THAT WAS A WHITISH ROCK. THAT ONE PROBABLY |
| | | | 107-17505 XSA | | | CAME FROM SOUTH RAY. WAIT A MINUTE. HERE'S |
| | | | 107-17506 XSA | | | SOME GOOD ONES - DUSTY ONES. |
| | | | 107-17507 XSA | 06 01 33 26 | CDR | MOST OF THOSE ARE EITHER LITTLE ROCKS -- |
| | | | 110-18026 XSA | 06 01 33 33 | CDR | THERE'S A ROUND ONE, CHARLIE. |
| | | | | 06 01 33 34 | LMP | HEY, THERE'S A GREAT ONE, JOHN. THERE'S A GOOD ROCK RIGHT THERE. |
| | | | | 06 01 33 37 | CDR | I DON'T THINK THIS IS GOING TO BE A SIMPLE PROBLEM, EVEN AFTER YOU - - |
| | | | | 06 01 33 48 | CDR | - - GET THE ROCKS BACK BECAUSE THEY'RE SO DARK - SO DARN - DARK - IT'S 405. |
| | | | | 06 01 33 54 | CDR | GO IN BAG 405. THAT'S A BIG ROUND ROCK THAT'S DUST COVERED. I SEE WHITE STREAKS THROUGH IT, AND I CAN'T TELL FROM THE CLASTS SHOWING THROUGH THAT I CAN SEE WHETHER IT - I DON'T KNOW WHETHER I CAN SEE ANY GLASS ON IT OR NOT. BUT IT'S A FRIABLE WHITE ROCK, AND IT'S ROUNDED. |
| | | | | 06 01 34 17 | CDR | GOING INTO BAG 405 WITH CHARLIE'S RAKE SAMPLE. |
| BAG 335 | | RAKE SOIL, DEEP | 107-17508 XSA | 06 01 34 29 | CC | WE'D LIKE YOU TO FIND THE STEEPEST SLOPE THAT YOU |
| 65710* | | | 107-17509 XSA | | | CAN WORK ON THERE, AND DIG AS DEEP AS YOU CAN WITH THAT RAKE. |
| | | | | 06 01 34 38 | CDR | LET ME DO THAT, CHARLIE. |
| | | | | 06 01 34 40 | LMP | WE'RE ON IT RIGHT NOW, BABE. I'LL TELL YOU. |
| | | | | 06 01 34 42 | CC | OK, CAN YOU DIG INTO THE FACE OF THE SLOPE A BIT? |
| | | | | 06 01 34 45 | CDR | LET ME DIG. CHARLIE, LET ME DO THAT. |
| | | | | 06 01 34 49 | LMP | OK. I'LL SWAP WITH YOU. |
| | | | | 06 01 34 53 | CDR | HOLD THE GNOMON. - - - |
| | | | | 06 01 35 15 | CDR | STEEPEST IS CLOSEST TO THE RIM. |
| | | | | 06 01 35 18 | LMP | THAT'S RIGHT. RIGHT UP THERE. - - - |
| | | | | 06 01 35 53 | LMP | OK, TONY. WE'VE GONE VERTICALLY INTO THE WALL, ABOUT A FOOT, AND IT ALL LOOKS THE SAME. OCCASIONALLY, YOU SEE A WHITE SPLOTCH. - - - |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 06 01 36 33 | CDR | WHOOP. ONE THING ABOUT BEING ON A 20-DECREE SLOPE. YOU CAN GET DOWN ON YOUR KNEES. |
| | | | 06 01 37 17 | LMP | LOOKS LIKE JUST INDURATED REGOLITH, DOESN'T IT. |
| | | | 06 01 37 21 | LMP | DON'T SEE ANY ROCKS. HERE LET ME DO THIS. |
| | | | 06 01 37 35 | CDR | THERE'S ONE. |
| | | | 06 01 37 36 | LMP | YEAH. |
| | | | 06 01 37 42 | CDR | THERE'S SOME. |
| | | | 06 01 37 50 | LMP | YEAH, THEY'RE ROCKS ALL RIGHT. GOING IN BAG 335, THREE LITTIE ONES, TONY. |
| | | | 06 01 37 56 | LMP | NO, THEY AREN'T; THEY'RE CLODS. |
| | | | 06 01 38 05 | LMP | BUT, ANYWAY, 335. |
| | | | | | - - - |
| | | | 06 01 38 16 | CC | WELL, YOU THINK THE ROCK CONCENTRATION NEAR THE SURFACE IS A LAG SURFACE, THEN? |
| | | | 06 01 38 27 | LMP | APPARENTLY SO BECAUSE IN THIS WALL HERE, WE'RE NOT GETTINC A THING. |
| | | | 06 01 38 37 | LMP | AND THERE'S LESS SOIL HERE - I MEAN LESS ROCKS HERE THAN ON THE OTHER SIDE OF THE CRATER. |
| **BAG 406** | **SOIL AND ROCK** | 107-17508 XSA | 06 01 39 04 | LMP | NOW THERE IS A PURE - THERE ARE TWO ROCKS, RIGHT THERE. |
| **65700*** | | 107-17509 XSA | | | |
| | | | 06 01 39 08 | CDR | HEY, CHARLIE, I GOT TO PUT THIS ONE IN YOUR BAG BEFORE I CAN GET IT. |
| | | | 06 01 39 32 | LMP | GET YOU A SOIL - THEY WANT A SOIL BAG FULL. HATE TO WASTE A BAG ON THAT ONE, BUT - - |
| | | | 06 01 39 39 | CDR | LET'S PUT THE SOIL IN THERE WITH THE ... |
| | | | 06 01 39 42 | CDR | BAG 406 WILL HAVE ONE ROCK IN IT AND A SOIL SAMPLE FROM THIS LOW AREA. |
| | | | 06 01 39 55 | LMP | LET'S FILL UP THE BAG. |
| | | | 06 01 39 59 | LMP | AND, TONY, A LOT OF THIS SOIL IS COMING OUT FROM ABOUT 6 INCHES DOWN - - |
| **BAG 336** | **ROUNDED, DUSTY** | 110-18027 XSB | 06 01 44 35 | LMP | OK, TONY. 1'M SAMPLINC RIGHT IN FRONT OF THE ROVER. - ABOUT 10 FEET. I GOT A FIST-SIZE ROCK OUT HERE. |
| **65095*** | **ROCK** | 110-18028 XSB | | | |
| | | | 06 01 44 48 | LMP | IT'S CAPTURED IN THE OLD TONGS. |
| | | | 06 01 45 42 | LMP | THAT ROCK'S GOING IN 336. IT'S A ROUNDED ROCK AND IT'S DUSTY, AND ALL I CAN SEE IS SOME STREAKS ON IT, WHITE STREAKS. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 5** | | | | | | |
| FSR-5<br>65015* | | ROCK, CRYSTALLINE | NO PHOTOGRAPHS | 06 01 47 08 | CDR | HEY, CHARLIE, WHERE I TRIPPED OVER HERE IS A LOT OF WHITE ROCK. |
| | | | | 06 01 47 21 | LMP | I GOT SOME OVER HERE, TOO. BOY, I'M GOING TO GRAB THAT ONE. THAT'S A FRESH, SHARP, WHITE ROCK THAT I HAVE NEVER SEEN THE LIKE OF. VERY ANGULAR. |
| | | | | 06 01 47 51 | CDR | LOOK AT THIS ROCK. THAT HAS GOT TO BE PLAG. |
| | | | | 06 01 48 04 | LMP | WHEREABOUTS DID YOU FIND IT, JOHN? |
| | | | | 06 01 48 05 | CDR | RIGHT DOWN THERE IN THAT HOLE - - |
| | | | | 06 01 48 08 | CDR | - - WITH ALL THAT WHITE ROCK. |
| | | | | 06 01 48 10 | CDR | LOOK AT THESE LITTLE CRYSTALS IN IT. NO, THAT COULDN'T BE. A BIG, WHITE, ANGULAR ROCK, BUT ALL THE CRYSTALS IN IT ARE VERY SMALL. THAT IS A CRYSTAL ROCK. WE'RE GONNA GET THAT ONE. THAT'S THE FIRST ONE I'VE SEEN HERE THAT I REALLY BELIEVE IS A CRYSTAL ROCK. |
| | | | | 06 01 48 54 | CDR | IT'S ABOUT 6 CENTIMETERS - 12 CENTIMETERS LONG, AND IT'S GOT A HEAD ON IT LIKE - IT LOOKS LIKE THE HEAD OF A - MAYBE A VIPER OR DIAMONDBACK, IF YOU LAY IT DOWN FLAT. YOU WON'T HAVE ANY TROUBLE RECOGNIZING IT. AND IT'S WHITE, AND WHEN I HOLD IT UP TO THE SUN, IT HAS A GREENISH CAST TO IT. A GREENISH-BLUISH CAST. |
| | | | | 06 01 49 26 | CDR | I SEE SOME STRIATIONS IN IT, TOO. THEY MAY BE MY IMAGINATION. |
| | | | | | | - - - |
| | | | | 06 01 49 47 | CDR | OK, I'M PUTTING THIS ROCK UNDER YOUR SEAT. |
| | | | | 06 01 50 46 | CC | AND, JOHN, DO YOU HAVE A BAG NUMBER FOR YOUR WHITE ROCK, OR HAVE YOU COLLECTED IT YET? |
| | | | | 06 01 50 52 | CDR | I MADE A GRAB SAMPLE OUT OF IT, HOUSTON. |
| | | | | 06 01 50 58 | LMP | TOO BIG FOR A BAG, WASN'T IT, JOHN? |
| | | | | 06 01 51 00 | CDR | YEAH, IT WAS TOO BIG FOR A BAG. |
| | | | | | | - - - |
| | | | | 06 01 53 10 | LMP | THAT IS A CRYSTALLINE ROCK IF I'VE EVER SEEN A CRYSTALLINE ROCK. |
| | | | | 06 01 53 16 | CDR | FIRST ONE TODAY. |
| | | | | | | - - - |
| | | | | 06 01 53 40 | LMP | IT'S NOT VERY BIG, BUT IT'S JUST A NICE ROCK. |
| | | | | 06 01 53 46 | LMP | YEAH, IT WAS MADE ABOUT - IT LOOKS LIKE IT'S ABOUT 3 DAYS OLD. NO, IT MUST BE ON THE ORDER OF 4 BILLION. |
| BAG 337<br>65055* | | 2 ROCKS | 110-18029 XSB<br>110-18030 XSB | 06 01 49 32 | LMP | TONY, I'VE GOT TWO MORE ROCKS DOCUMENTED IN 337. |

**EVA 2 - STATION: 6**

| | | | | | |
|---|---|---|---|---|---|
| **BAG 407** | **ROUNDED ROCK** | **108-17627 DSB** | 06 02 05 06 | LMP | HERE'S A CRATER, JOHN, THAT'S ABOUT 10 METERS, |
| **66030*** | **AND SOIL** | **107-17512 XSB** | | | - FAIRLY BLOCKY RIM, ANGULAR. WANT TO STOP |
| | | **107-17513 XSB** | | | HERE? IT'S A SECONDARY ON THIS SIDE. |
| | | | | | - - - |
| | | **107-17514 XSA** | 06 02 08 16 | CDR | NOW THIS IS HARDER ... |
| | | **107-17515 XSA** | 06 02 08 18 | LMP | IT IS. |
| | | **107-17516 XSA** | 06 02 08 22 | LMP | IT'S A LOT HARDER. |
| | | **107-17517 XSA** | 06 02 08 23 | CDR | YEAH, WE DIDN'T SINK NEAR - OF COURSE, WE'RE NOT STANDING ON THE RIM OF A CRATER. BUT THIS IS HARDER, BECAUSE WE JUST SORT OF BOUNCE HERE. |
| | | | 06 02 08 31 | LMP | YEAH, IT'S A LOT MORE - THE REGOLITH CHARACTER - AS JOHN SAID, IT'S REALLY CHANGED. |
| | | | 06 02 08 44 | LMP | WHEN WE WALK, WE DON'T BOUNCE AS MUCH - I MEAN, WE DON'T SINK IN AS MUCH. |
| | | | | | - - - |
| | | | 06 02 10 01 | CDR | MAN, THAT IS SOME ROCK. |
| | | | 06 02 10 05 | LMP | THAT MATRIX THERE'S PURE WHITE WITH BLACK PHENOCRYST IN IT. IT MIGHT BE CLAST. IT MIGHT BE A BRECCIA. AND IT'S GOT SOME LATHLIKE CRYSTALS IN IT. |
| | | | 06 02 10 31 | LMP | THAT'S THE ONE I'M TALKING ABOUT. SEE, I JUST BROKE THAT OPEN. |
| | | | 06 02 10 34 | CDR | YEAH, THAT'S A TWC-ROCK BRECCIA. LET ME GET A BIGGER PIECE OF IT, CHARLIE. |
| | | | 06 02 10 37 | LMP | YOU CAN'T WHACK IT OFF. |
| | | | 06 02 10 40 | CDR | TOO HARD TO WHACK? |
| | | | 06 02 10 41 | LMP | YEAH, I'VE WHACKED ABOUT FIVE TIMES, AS HARD AS I COULD. |
| | | | 06 02 10 44 | CDR | IT HAS A WHITE MATRIX WITH A SQUARE CLAST AND ELONGATE CLASTS IN IT. |
| | | | 06 02 10 51 | CDR | AND IT'S ROUNDED, TOO. |
| | | | 06 02 10 59 | LMP | LOOKS LIKE SOME MORE OF THEM RIGHT DOWN HERE, JOHN, THAT ARE - THAT ARE SAMPLE - - |
| | | | 06 02 11 05 | LMP | - - THAT ARE SAMPLE SIZE. |
| | | | 06 02 11 08 | CDR | OKAY, LET'S GET SOME OF THOSE. |
| | | | | | - - - |
| | | | 06 02 13 10 | CDR | WHERE DO YOU WANT TO GO? |
| | | | 06 02 13 15 | LMP | I DON'T CARE. ANYWHERE IS FINE. HERE'S A NICE LITTLE CRACKED ONE RIGHT THERE. |
| | | | 06 02 13 21 | LMP | THESE ARE ANGULAR - THERE'S SOME ANGULAR AND ROUNDED ROCKS RIGHT THERE. YOU CAN STICK THE TONGS IN THERE, JOHN. |
| | | | | | - - - |
| | | | 06 02 14 37 | CDR | THAT'S GOING IN BAG 407. IT WAS SOME SOIL AND SOME DIRT, A ROUNDED ROCK. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 6** | | | | | | |
| BAG 408 | | | SAME AS | 06 02 14 53 | CDR | LET'S GRAB THIS ANGULAR ONE NEXT. |
| 66055* | | | BAG 407 | 06 02 15 03 | CDR | LET ME GET IT WITH THE TONGS. |
| | | | 107-17514 XSB | 06 02 15 16 | LMP | MIGHT BE THE SAME KIND, JOHN, THAT YOU PICKED UP UP THE WAY THERE. |
| | | | | 06 02 15 30 | LMP | THAT IS - PARTIALLY SACKED. THERE WE GO. YOU GOT IT. |
| | | | | 06 02 15 33 | CDR | GET THE AFTER. GOT IT. 408 IS THE BAG NUMBER. |
| BAG 338 | | SOIL | SAME AS | 06 02 15 55 | CDR | WHY DON'T YOU GET A SOIL SAMPLE? |
| 66040 | 166.5 | RESERVE FINES | BAGS 407, 408 | 06 02 15 57 | LMP | OK; THAT'S A GOOD IDEA. |
| 66041 | 357.4 | < 1 MM | 108-17627 DSB | 06 02 16 07 | LMP | MAYBE WE COULD GO TO ONE MORE AREA. AND SO |
| 66042 | 19.5 | 1-2 MM | 107-17512 XSB | | | WE WON'T SALT IT WITH IT, THIS IS JUST ONE BROKEN-UP BLOCK HERE. |
| 66043 | 15.5 | 2-4 MM | 107-17513 XSB | | | |
| 66044 | 11.3 | 4-10 MM | 107-17514 XSB | 06 02 16 28 | LMP | 338 IS THE SOIL SAMPLE. |
| | | | 107-17515 XSB | 06 02 16 36 | LMP | SEE ANYTHING DOWN UNDER THERE, JOHN? |
| | | | 107-17516 XSB | 06 02 16 45 | CDR | NO. THIS IS THE SECOND - THIS IS RIM OF IT. |
| | | | 107-17517 XSA | | | IT'S VERY SOFT. I DIDN'T HAVE ANY TROUBLE DIGGING DOWN WITH THE SHOVEL. |
| | | | | 06 02 16 56 | LMP | SOLID GRAY ALL THE WAY - - |
| | | | | 06 02 16 57 | CDR | SOLID GRAY ALL THE WAY DOWN. I SEE NO LAYERING. |
| | | | | 06 02 17 01 | LMP | LET ME PUT THIS IN YOUR BAG. |
| BAG 339 | | SOIL, INDURATED, WHITE | 108-17628 DSB | 06 02 17 15 | LMP | THIS MIGHT HAVE BEEN A SECONDARY. |
| | | | 107-17518 XSB | 06 02 17 17 | CDR | LOOK AT THAT RIGHT OVER THERE, CHARLIE. |
| | | | 107-17519 XSB | 06 02 17 18 | LMP | IT'S A REALLY UNIQUE WHITE-LOOKING SOMETHING-OR-OTHER. |
| | | | 107-17520 XSA | | | |
| | | | 108-17629 LOC | 06 02 17 32 | LMP | I THINK IT'S SOIL. |
| 66080 | 106.1 | RESERVE FINES | | 06 02 17 40 | CDR | WELL, YOU WANT TO GET SOME OF IT? IT'S UNUSUAL SOIL, IF IT IS. |
| 66081 | 177.3 | < 1 MM | | | | |
| 66082 | 9.85 | 1-2 MM | | 06 02 17 45 | LMP | IT LOOKS LIKE A LITTLE TEENY IMPACT, DOESN'T IT? |
| 66083 | 4.53 | 2-4 MM | | 06 02 17 56 | LMP | HEY, LET'S GET A QUICK ONE AND THEN GO ON UP HERE AND GET SOME OF THESE BLOCKS ON THE UPPER RIM. |
| 66084 | 3.13 | 4-10 MM | | | | |
| 66085 | 3.66 | FRAGMENT | | | | - - - |
| 66086 | 2.03 | FRAGMENT | | 06 02 18 28 | LMP | GOT YOU A BAG COMING, JOHN. HEY, TONY, WHAT WE'RE PICKING UP IS A WHITE - IT LOOKS LIKE A LITTLE PATCH OF INDURATED REGOLITH, AND IT'S WHITISH IN COLOR. |
| | | | | 06 02 18 51 | LMP | LET'S GET A LITTLE BIT MORE OF THE WHITE, JOHN. THAT GOT MOST OF IT; IT WAS JUST ON THE END OF THE SCOOP. |
| | | | | 06 02 19 24 | LMP | THAT'S GOT IT. I'LL GET YOUR AFTER. |
| | | | | 06 02 19 27 | CDR | I'LL GET IT, CHARLIE. |
| | | | | 06 02 19 28 | LMP | OKAY, THAT'S IN BAG - THAT SOIL SAMPLE IN 339. |

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|---|---|---|---|---|---|---|---|
| **BAG 409** | | **WHITE, SUBROUNDED** | 108-17630 DSB | 06 | 02 20 02 | CDR | I BEEN HANKERING FOR A PIECE OFF THAT ROCK. |
| **66075** | **347.1** | **ROCK** | 107-17521 XSB | 06 | 02 20 05 | LMP | HERE'S AN OLDROUNDED ONE RIGHT HERE, JOHN. WITH |
| | | | 107-17522 XSB | | | | THE WHITE SPOTS - IN IT. HERE'S A REAL ANGULAR ONE |
| | | | 108-17631 LOC | | | | RIGHT OVER HERE. |
| | | | | 06 | 02 20 20 | CDR | LET'S GET THIS ROUNDED ONE, CHARLIE - -- |
| | | | | 06 | 02 20 24 | LMP | OKAY, I AGREE. DOWN-SUN, HERE. |
| | | | | 06 | 02 20 38 | LMP | GOT IT. |
| | | | | 06 | 02 20 39 | CDR | WAIT A MINUTE. GET A LOCATOR |
| | | | | 06 | 02 21 12 | CDR | IN BAG 409, HOUSTON. AND IT'S SO DUST-COVERED THAT |
| | | | | | | | I'M UNABLE TO DESCRIBE IT, ALTHOUGH IT'S A WHITE |
| | | | | | | | SUBROUNDED ROCK. AND I CAN'T DISTINGUISH ANY |
| | | | | | | | CRYSTALLINE STRUCTURE IN IT. IT'S GOING IN BAG 409. |
| | | | | 06 | 02 21 34 | CDR | CHARLIE, PUT THAT ONE IN MINE. YOURS IS FULL. |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **BAG 410** | | **ROCK** | 107-17523 XSD | 06 | 02 21 56 | LMP | BRING ME THE SCOOP A MINUTE. LET ME WHACK THIS |
| **66095*** | | | 107-17524 XSD | | | | THING RIGHT HERE. IT'S SO GOOD THAT I CAN'T PASS |
| | | | 107-17525 USD | | | | IT UP. ALL RIGHT, THERE'S A GOOD PLACE TO WHACK. |
| | | | 108-17632 XSD | 06 | 02 22 15 | CDR | OH, THAT'S HARD - YOU GOT IT! |
| | | | 108-17633 XSD | 06 | 02 22 18 | CDR | DEMOLISHED IT. |
| | | | 107-17526 LOC | 06 | 02 22 19 | LMP | THAT'S A GREAT ROCK! LOOK AT THAT! I'M SORRY |
| | | | | | | | WE DIDN'T GET IT DOCUMENTED BEFORE, BUT THAT IS |
| | | | | | | | A GOOD SAMPLE. I THINK IT'S A CRYSTAL ROCK. |
| | | | | 06 | 02 22 32 | CC | OK, LET'S GO AHEAD AND DOCUMENT IT NOW - - |
| | | | | 06 | 02 22 34 | CC | - - SO WE GET THE LOCATION OF THE ONE THAT'S STILL |
| | | | | | | | IN PLACE. IT DIDN'T LOOK LIKE IT MOVED. |
| | | | | 06 | 02 22 40 | CDR | NO, HE DIDN'T MOVE ANYTHING THERE. I'M GONNA DO AN |
| | | | | | | | UP-SUN ON THIS DOCUMENTATION. |
| | | | | 06 | 02 22 44 | LMP | OK, I'LL GET A CROSS-SUN HERE. IT'S A GRAYISH |
| | | | | | | | BLUISH - ROCK, TONY, IN THE MATRIX WITH SOME WHITE |
| | | | | | | | CLAST IN IT. |
| | | | | 06 | 02 23 06 | LMP | LET ME GET IT WITH THIS - IT ISN'T ANY TROUBLE, |
| | | | | | | | JOHN. |
| | | | | 06 | 02 23 22 | LMP | THE MATRIX IS SO FINE-GRAINED, I CAN'T TELL, BUT |
| | | | | | | | IT'S DEFINITELY GOT A BLUE CAST TO IT AND THERE |
| | | | | | | | ARE INCLUSIONS OF A WHITISH - IT LOOKED LIKE PLAG |
| | | | | | | | TO ME. |
| | | | | 06 | 02 23 45 | CDR | AND THEN, NEEDLE-LIKE BLACK CRYSTALS IN IT, TOO! |
| | | | | 06 | 02 23 49 | CDR | I SEE ONE IN THERE THAT'S A MILLIMETER WIDE BY 3 |
| | | | | | | | MILLIMETERS LONG, AND SOME OTHER NEEDLE-LIKE |
| | | | | | | | CRYSTALS IN IT. |
| | | | | 06 | 02 23 58 | LMP | HERE'S ANOTHER PIECE - CAME OFF THE SAME ROCK. |
| | | | | 06 | 02 24 02 | CDR | IT HAS THIS WHITE CLAST IN IT. IT'S GOT TO BE |
| | | | | | | | A BRECCIA, CHARLIE. |
| | | | | 06 | 02 24 07 | LMP | THINK SO? |
| | | | | 06 | 02 24 09 | LMP | THEY DON'T REALLY LOOK LIKE -- |
| | | | | 06 | 02 24 13 | CDR | THAT'S GOING IN BAG 410. |
| | | | | | | | - - - |
| | | | | 06 | 02 29 36 | LMP | LOOK AT THAT BLUE ROCK - THAT WE JUST WHACKED ON! |

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CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - TRAVERSE, STATION 6 - 8** | | | | | | |
| | | | | 06 02 33 37 | LMP | THIS IS REALLY A RAY. COMING OUT OVER THE RIDGE - YOU CAN DISTINCTLY SEE THE RAYS FROM SOUTH RAY - THE WHITER ALBEDO AND THE CONTACT BETWEEN THE WHITE RAY AND THE CAYLEY HERE. QUITE APPARENT. |
| | | | | | | - - - |
| | | | | 06 02 34 42 | CDR | THAT'S THE FIRST ROCK I'VE SEEN WITH VESICLES |
| | | | | | | - - - |
| | | | | 06 02 38 10 | LMP | HOW ABOUT STOPPING UP THERE IN THE MIDDLE OF ALL OF THOSE BIG BOULDERS, JOHN? |
| | | | | 06 02 38 25 | CDR | CALL THAT STATION 8? |
| | | | | 06 02 38 16 | LMP | CALL THAT STATION 8. THAT'S GONNA BE ABOUT IT. |
| | | | | 06 02 38 50 | LMP | THERE'S ONE THAT'S OVERTURNABLE, I'LL BET YOU. RIGHT THERE. LOOK AT THAT ELONGATE ONE. |
| | | | | 06 02 39 12 | LMP | OK, TONY, WE'RE AT 010 AND 3.0, AND WE'VE GOT ABOUT THREE OR FOUR - 2- OR 3-METER-SIZE BLOCKS, ONE BLACK AND SOME WHITE ONES. |
| | | | | | | - - - |
| | | | | 06 02 43 23 | LMP | AND THE REGOLITH HERE, IS FIRMER THAN UP ON - STONE. WE'RE IN A BLOCKY FIELD HERE. PREDOMINANT SIZE IS 10 TO 15 CENTIMETERS, BUT THE BIGGEST ONE IS A COUPLE OF METERS. AND YOU'LL SEE THAT 12 O'CLOCK FROM THE ROCK. |
| | | | | 06 02 43 51 | LMP | IT HAS A [illegible]H CAST TO IT - BLACK MAYBE. OK, YOU ALREADY SAMPLED IT, HUH? AND BEYOND THAT, THERE'S A WHITE ONE. IT LOOKS LIKE THAT BIG ONE THAT JOHN SAMPLED. THINK WE OUGHT TO GET ONE OF THOSE. OK; PAN'S COMPLETE. DOUBLE CORE HERE IS THE FIRST THING. AND I'LL SAMPLE - I THINK WE'RE IN THE RAY, SO I'LL JUST SAMPLE - RIGHT OUT - DO IT RIGHT OVER HERE. |
| | | | | | | - - - |
| | | | | 06 02 47 47 | CC | HOW NEAR ARE YOU TO THE EDGE OF THIS RAY? |
| | | | | 06 02 47 56 | LMP | GOES IN BOTH DIRECTIONS AS FAR AS WE CAN SEE. |
| | | | | 06 02 48 01 | LMP | THE WHOLE AREA IS JUST COVERED WITH THESE ROCKS. |
| | | | | 06 02 48 21 | CC | I GUESS WE'RE JUST LOOKING FOR A VARIETY THEN IN THE BOULDER PROTOCOL. |
| | | | | 06 02 48 28 | LMP | OK, WE CAN GIVE YOU THAT, I'LL TELL YOU. THERE'S TWO BIG BOULDERS AT 12 O'CLOCK THAT ARE GOING TO BE A GREAT SAMPLING. ONE OF THEM IS A ROUNDED AND - BUT THE BIGGEST - AND THE OTHER ONE IS A WHITE - AND IT'S BLACK. THE OTHER IS WHITE AND IT'S VERY SHARP, VERY ANGULAR. |

**EVA 2 - STATION: 8**

| | | | | | | |
|---|---|---|---|---|---|---|
| **U29/L36** | **DOUBLE DRIVE TUBE** | 08-17682 XSB | 06 02 48 58 | LMP | OK, I PUSHED THE DOUBLE CORE IN ABOUT HALFWAY UP |
| **68002/ 583.5/** | | 108-17683 XSB | | | THE FIRST. |
| **68001*** | | | | | - - - |
| | | | 06 02 49 58 | CDR | WHAT'S THE MATTER, CHARLIE? |
| | | | 06 02 50 01 | LMP | NOT GOING IN TOO WELL. |
| | | | 06 02 50 05 | CDR | PRETTY HARD AROUND HERE. |
| | | | | | - - - |
| | | | 06 02 50 55 | LMP | AND THE HAMMER. I DON'T THINK THE DOUBLE CORE IS GOING TO GO IN. DO YOU WANT ME PULL IT OUT AND SHAKE IT OUT AND TRY ANOTHER PLACE? I THINK I HIT A ROCK -- |
| | | | 06 02 51 06 | CC | OK, YEAH, WE'D SURE LIKE YOU TO DO THAT. |
| | | | 06 02 51 08 | LMP | THAT ONE JUST STOPPED ALL AT ONCE, SO I THINK I DID HIT A ROCK. |
| | | | | | - - - |
| | | 108-17684 XSD | 06 02 54 46 | LMP | BOY, IT IS HARD UNDER HERE, TONY. |
| | | 108-17685 XSD | 06 02 54 49 | CC | RIGHT, IT SURE LOOKS IT, BUT I CAN SEE YOU'RE |
| | | 108-17686 XSD | | | GETTING IT DOWN. |
| | | 107-17529 LOC | 06 02 54 50 | LMP | ...IT'S IN. |
| | | | 06 02 54 58 | LMP | IT'S A LITTLE OFF VERTICAL, BUT YOU'RE JUST GOING TO HAVE TO TAKE IT. |
| | | | 06 02 55 03 | LMP | THAT WAS A HARD ONE. WHEW! |
| | | | 06 02 55 23 | LMP | I CAN'T BELIEVE IT. IT COMES OUT SO EASY. |
| | | | | | - - - |
| | | | 06 02 58 25 | LMP | THE BOTTOM CORE WAS 36 AND THE TOP PART IS 29. |

| | | | | | |
|---|---|---|---|---|---|
| **BAG 411** | **RAKE FRAGMENTS** | 107-17530 DSB | 06 02 47 05 | CDR | OK, WELL I CAN GET A RAKE SOIL HERE WHILE YOU'RE |
| **68510*** | | 107-17527 XSB | | | DOING THAT (DOUBLE CORE). |
| | | 107-17528 XSB | | | - - - |
| | | 107-17531 DSA | 06 02 47 24 | CDR | RAKE SOIL AWAY FROM THE BOULDERS. |
| | | 107-17529 LOC | | | - - - |
| | | | 06 02 52 05 | CDR | OUT OF FIVE SCOOPS, I'VE GOT ABOUT 10 ROCK FRAGS, ONE OF WHICH HAS SOME INTERESTING BLACK GLASS ALONG THE SIDES OF IT, THE OTHER OF WHICH IS COVERED WITH BLACK GLASS - BUT IN THE MOST THERE'S NOT MUCH OF THAT MATERIAL AROUND HERE. THAT'S GOING INTO BAG 411. |
| | | | 06 02 52 39 | CDR | WHERE YOU'RE AWAY FROM BOULDERS THERE'S HARDLY ANY-THING BUT SOIL - VERY FEW ROCKS, IN OTHER WORDS. |

| | | | | | |
|---|---|---|---|---|---|
| **BAG 412** | **RAKE SOIL** | 107-17527 XSB | 06 02 53 50 | LMP | HEY, THERE ARE LITTLE GLASS BEADS ALL OVER THE |
| **68500*** | | 107-17528 XSB | | | PLACE HERE, JOHN. |
| | | 107-17533 XSA | 06 02 53 53 | CDR | AND PLACES WHERE LITTLE WHITE ROCKS SEEM |
| | | 107-17530 DSB | | | TO HAVE HIT, TOO. I'LL GET A SOIL SAMPLE HERE. |
| | | 107-17531 DSA | | | - - - |
| | | 107-17529 LOC | 06 02 55 41 | CDR | OK, THE SOIL SAMPLE HERE IS GOING IN BAG 412. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LM SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 8** | | | | | | |
| BAG 413 | | BLACK GLASS | 107-17532 XSB | 06 02 56 13 | CDR | I DON'T KNOW WHAT THIS IS STARING HERE AT ME |
| 68035* | | | 107-17533 XSB | | | HERE, BUT I'M GOING TO PICK IT UP. |
| | | | 107-17534 XSB | 06 02 56 24 | CDR | IT'S A GLASS, BUT IN THIS SUNLIGHT, IT'S |
| | | | 107-17535 XSB | | | REFLECTING RED, GREEN LIKE A RAINBOW. |
| | | | 107-17536 LOC | 06 02 56 46 | LMP | FOUND THE FIRST PRISM ON THE MOON, JOHN. |
| | | | 107-17537 LOC | 06 02 58 01 | CDR | I DON'T KNOW IF THAT THING WILL LAST OR NOT. NO, I GUESS IT WAS JUST BLACK GLASS BUT IT WAS THE WAY THE SUN WAS REFLECTING OFF OF IT. ISN'T THAT TOO BAD? ANYWAY, THAT'S A SAMPLE - AND IT'S GOING IN BAG 413. |
| | | | | | | - - - |
| | | | | 06 03 03 02 | LMP | THERE'S A LOT OF GLASS AROUND HERE. |
| BAG 340 | | | 107-17541 XSB | 06 03 08 01 | LMP | THIS IS REALLY SOME ROCK. IT'S A TWO-ROCK BRECCIA, |
| 68115 | 1190.0 | ROCK, BRECCIA | 107-17542 XSB | | | WITH THE MATRIX BEING BLUE TO ME, IN THIS LIGHT |
| | | | 107-17543 XSB | | | ANYWAY, AND THE WHITE CLASTS ARE FRAGMENTS OF |
| | | | 107-17544 XSB | | | CRYSTALLINE ROCKS - THAT APPEAR TO BE FAIRLY COARSE- |
| | | | 107-17545 XSB | | | GRAINED - TAKE THAT BACK - LET'S SAY, FINE-GRAINED - |
| | | | 107-17546 XSB | 06 03 08 42 | CDR | THAT'S THE ONE YOU WANT TO TURN OVER, CHARLIE. |
| | | | 107-17547 XSA | 06 03 08 45 | LMP | THIS THING! GOSH! I CAN'T EVEN BUDGE IT. |
| | | | | 06 03 08 48 | CDR | IT'S A BIGGIE. |
| | | | | | | - - - |
| | | | | 06 03 10 11 | LMP | YEAH, I GOT THE HAMMER, AND I'M BRINGING THE TONGS AND THE SCOOP FOR A LITTLE FILLET SAMPLE AROUND IT. |
| | | | | 06 03 10 23 | LMP | WE MIGHT THINK OF A PADDED BAG SAMPLE HERE. THIS BIG ONE'S A BRECCIA, BUT THE OTHER ONE LOOKS LIKE A CRYSTALLINE ROCK. |
| | | | | 06 03 10 54 | CC | OK, WHY DON'T YOU TRY TO CHIP OUT SOME OF THOSE CLASTS THERE, AND WE WON'T WORRY ABOUT OVER-TURNING THIS ONE, BUT MAYBE YOU CAN GET A FILLET HERE. IF YOU HAVEN'T MESSED UP THE FILLET BY GETTING IN THERE TOO CLOSE. |
| | | | | 06 03 11 30 | LMP | OK. JOHN, LETS FIND A GOOD PLACE TO WHACK. |
| | | | | | | - - - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | 06 03 13 35 | LMP | WE GOT TO FIND A PLACE TO CL.. THAT. |
| | | | | 06 03 13 44 | CDR | HERE'S A PLACE THAT'S HANGING OUT, CHARLIE. |
| | | | | | | - - - |
| | | | | 06 03 14 06 | LMP | OK. THAT LOOKS GREAT. GOT TO HIT IT, IT LOOKS LIKE. |
| | | | | 06 03 14 13 | CDR | YEAH, BUT IT'S RIGHT AT A FRACTURE, SO IT'LL COME OFF IN GOOD SHAPE. |
| | | | | 06 03 14 20 | LMP | MAN, THE WHOLE ROCK'S COMING APART. SUPER JOB, JOHN. |
| | | | | 06 03 14 30 | CDR | IT WAS ONE OF THOSE FRACTURES THAT'S ALL INCLUDED WITH GLASS. |
| | | | | 06 03 14 39 | CDR | SEE THOSE GLASS FRACTURES THAT - - |
| | | | | | | - - - |
| | | | | 06 03 14 47 | LMP | YEAH - IS GOING IN 340. |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **BAG 374** | | **FILLET SOIL** | 107-17541 XSB | 06 03 10 11 | LMP | YEAH, I GOT THE HAMMER, AND I'M BRINGING THE TONGS AND THE SCOOP FOR A LITTLE FILLET SAMPLE AROUND IT. |
| | | | 107-17542 XSB | | | |
| 68120 | 88.7 | RESERVE FINES | 107-17543 XSB | | | |
| 68121 | 141.9 | < 1 MM | 107-17544 XSA | | | - - - |
| 68122 | 10.92 | 1-2 MM | 107-17545 XSA | 06 03 11 33 | CDR | LET'S GET THE FILLET FIRST, THOUGH - |
| 68123 | 7.36 | 2-4 MM | 107-17546 XSA | 06 03 11 41 | CDR | ACTUALLY, I DON'T SEE ANY FILLET, PER SE. I THINK IT JUST HIT AND MADE A - STICK IT IN THE DIRT. ***END IT UP IN THE DIRT, CHARLIE. *** TELL WHICH WAY IS UP. HOW ABOUT RIGHT THERE? |
| 68124 | 8.65 | 4-10 MM | 107-17547 XSA | | | |
| | | | | 06 03 12 13 | CDR | *** CROSS-SUN STEREO, WHERE ARE YOU GONNA***... |
| | | | | 06 03 12 17 | LMP | OK, JUST TAKE A PICTURE OF IT AND I'LL HOLD THE SCOOP END. |
| | | | | 06 03 12 21 | CDR | ***STANDING IN THE SHADOW, CHARLIE. GET THE AFTER, CHARLIE. |
| | | | | 06 03 12 27 | LMP | HUH? |
| | | | | 06 03 12 29 | CDR | GET IT IN THE AFTER. |
| | | | | 06 03 12 45 | CDR | OK, HERE WE GO. MAN, YOU CAN'T SEE ANYTHING WITH ***DOWN IN THE SHADOW LIKE THAT. THERE WE GO. HEY, JOHN, HERE'S A LITTLE PIECE JUST SITTING UP HERE ON TOP OF THE ROCK. |
| | | | | 06 03 13 26 | CDR | THAT SAMPLE'S IN BAG 374. |

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|---|---|---|---|---|---|---|---|
| **BAGS 341, 342** | | **ROCK CHIPS FROM CRYSTALLINE BOULDER** | 108-17697 DSB | 06 03 15 57 | LMP | LOOK AT THAT BEAUTY, JOHN! THAT IS A CRYSTALLINE ROCK, NO BRECCIA. |
| | | | 107-17548 XSB | | | |
| | | | 107-17549 XSB | 06 03 16 03 | CDR | A NO-BRECCIA, CRYSTALLINE ROCK, HUH? |
| 68415,1 | 202.5 | | 107-17550 XSA | 06 03 16 07 | LMP | AND IT IS WHITISH TO GRAY, WITH A LOT OF ZAP PITS IN IT. |
| 68415,2 | 168.6 | | 108-17698 XSA | | | |
| 68416 | 178.4 | | | 06 03 16 14 | CDR | THOSE ARE ZAP PITS, AREN'T THEY? |
| | | | | 06 04 16 24 | LMP | YEAH. IN FACT, THE WHOLE AREA - THERE'S A LOT OF THIS ROCK HERE, SCATTERED ALL OVER - SCATTERED AROUND. |
| | | | | | | - - - |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| EVA 2 - STATION: 8 | | | | | | |
| | | | | 06 03 16 55 | CDR | WHERE DO YOU WANT A SAMPLE FROM? |
| | | | | 06 03 16 57 | LMP | SEE THAT SHARP CORNER? RIGHT UP AT THE TOP THERE? |
| | | | | 06 03 17 00 | CDR | OFF THE TOP? |
| | | | | 06 03 17 02 | LMP | YEAH. |
| | | | | 06 03 17 06 | CDR | OK. ***THINK I CAN GET THAT. IT'S FRACTURED RIGHT THERE. |
| | | | | 06 03 17 27 | CDR | WELL, IF THAT AIN'T PURE PLAG, I NEVER SEEN IT. |
| | | | | 06 03 17 31 | LMP | DON,T IT LOOK LIKE PURE PLAG TO YOU? |
| | | | | 06 03 17 32 | CDR | I DON'T KNOW WHAT IT IS, THOUGH. |
| | | | | 06 03 17 35 | LMP | IT'S PURE FELDSPAR, LOOKS LIKE - - |
| | | | | 06 03 17 38 | CDR | PURE FELDSPAR. DON'T IT LOOK LIKE IT'S BEEN - IT'S SO SANDY LOOKING, IT COULD HAVE BEEN REWORKED OR SOMETHING. |
| | | | | 06 03 17 48 | LMP | MAYBE PARTIALLY SHOCKED. |
| | | | | 06 03 17 49 | CDR | SHOCKED, YEAH. |
| | | | | 06 03 17 51 | LMP | BUT IT'S PURE PLAG - IT'S PLAG, TONY. |
| | | | | 06 03 17 56 | LMP | AND IT'S IN 341. WHACK OFF - ANOTHER PIECE RIGHT HERE, JOHN. |
| | | | | 06 03 18 03 | LMP | THIS ROCK IS PRETTY PREDOMINANT. |
| | | | | 06 03 18 08 | CDR | NO, IT ISN'T FRIABLE; IT JUST FRACTURED. |
| | | | | 06 03 18 12 | CDR | WHERE DO YOU WANT TO HIT IT OFF, CHARLIE? |
| | | | | 06 03 18 14 | LMP | RIGHT AT THAT SHARP - RIGHT THERE; YEAH. SEE HOW THAT COMES OFF. PRETTY FRIABLE ISN'T IT? |
| | | | | 06 03 18 22 | CDR | YEAH. BET IT'S SHOCKED. |
| | | | | 06 03 18 25 | LMP | YEAH. |
| | | | | 06 03 18 32 | CDR | PUT THAT IN THE SAME BAG? |
| | | | | 06 03 18 33 | LMP | YEAH, LET'S PUT THEM ALL - AND THERE'S ANOTHER PIECE DOWN THERE. - - - |
| | | | | 06 03 18 43 | CDR | OKAY, THE FIRST TWO PIECES - THE FIRST PIECE WAS OFF THE TOP OF THE ROCK, THE SECOND PIECE IS UNDER THE SHADOW OF THE SHOVEL, AND THEY'RE BOTH GOING IN BAG NUMBER WHATEVER CHARLIE SAYS. |
| | | | | 06 03 18 56 | LMP | 341. |
| | | | | 06 03 18 58 | LMP | WE'RE GONNA HAVE ANOTHER PIECE THAT CAME OUT OF THE SAME - THE SECOND WHACK. |
| | | | | 06 03 19 08 | LMP | JOHN, LET'S PUT THIS OTHER PIECE IN ANOTHER BAG, BECAUSE THIS ONE HAS GOT NO DUST IN IT AT ALL. - - - |
| | | | | 06 03 19 43 | LMP | THE OTHER PIECE OF THAT ROCK'S GOING IN 342. I SEE AT LEAST 10 OTHER ROCKS AROUND HERE THAT HAVE THAT SAME APPEARANCE, SO IT'S NOT A COMPLETELY ANOMALOUS ROCK. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BAG 375 | | FILLET SOIL | 108-17699 XSB | 06 03 21 30 | CC | I'M NOT SO SURE WE GOT A GOOD FILLET ON THIS LAST |
| | | | 108-17700 XSB | | | ONE, SO WE MIGHT BE WILLING TO SAMPLE ANOTHER. |
| 68820* | | | 108-17701 XSA | | | - - - |
| | | | | 06 03 22 18 | LMP | OKAY, THEN WE'LL SEE IF WE CAN MOVE IT. I DON'T THINK, WE CAN. IT'S GOT A PRETTY BIG BASE TO IT. OKAY, 7 FOOT AT F/8. I GOT IT. HEY, I - GOT A GOOD FILLET AROUND IT. |
| | | | | 06 03 22 43 | CDR | IT DOES. |
| | | | | 06 03 22 45 | LMP | IT DOESN'T HAVE ANY DUST ON THE TOP OF IT. I THOUGHT WE COULD GET THE FILLET SAMPLE HERE, BUT IT DOESN'T HAVE ANY DUST ON THE TOP. |
| | | | | 06 03 22 58 | CC | WE DON'T NEED DUST FROM THE TOP. IF THIS IS A BETTER FILLET THAN THE OTHER, YOU MIGHT TAKE A SOIL SAMPLE THERE, AND THEN A REFERENCE SOIL AWAY, AND THEN A CHIP OFF THE ROCK, AND WE'LL HAVE A GOOD FILLET SAMPLE. |
| | | | | 06 03 23 09 | LMP | OKAY, THIS IS A BETTER - THIS IS A BETTER FILLET THAN THE OTHER ONE. |
| | | | | 06 03 23 13 | CDR | OKAY, BUT I THOUGHT YOU DIDN'T WANT BRECCIA. |
| | | | | 06 03 23 21 | LMP | JUST CRYSTALLINE OR TOUGH BRECCIA FOR FILLET SAMPLE. |
| | | | | 06 03 23 25 | CDR | I DON'T KNOW WHETHER IT'S TOUGH OR NOT. YOU MEAN HARD. |
| | | | | 06 03 23 32 | LMP | YEAH, HARD ... LET'S TRY IT, JOHN, OKAY? |
| | | | | 06 03 23 36 | LMP | WE'LL FILL THAT SQUARE. OKAY, FILLET COMING IN FROM THIS SIDE. THERE'S A GOOD ONE RIGHT OVER HERE. ALREADY GOT THE CROSS-SUN. |
| | | | | 06 03 23 57 | CDR | MY PERSONAL GUESS IS THAT THE FILLET DIDN'T COME OFF THAT ROCK. |
| | | | | 06 03 24 01 | LMP | MINE, TOO; 375. |
| | | | | | | - - - |
| | | | | 06 03 24 37 | LMP | I GOT A FOOTPRINT IN, BUT THE SCOOP WILL BE RIGHT WEST OF WHERE THE FILLET WAS TAKEN. |

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| | | | | | | |
|---|---|---|---|---|---|---|
| FSR-6 | | ROCK | 108-17699 XSB | 06 03 24 35 | CDR | OKAY, LET'S GET THE CHIP. |
| 68815 | 1791.0 | CHIP FROM BRECCIA | 108-17700 XSB | | | - - - |
| | | BOULDER | 108-17701 XSB | 06 03 25 05 | LMP | THAT'S A HARD BRECCIA, AIN'T IT? |
| | | | | 06 03 25 06 | CDR | A HARD, HARD ROCK. |
| | | | | 06 03 25 10 | LMP | HIT IT RIGHT HERE ON THIS CORNER RIGHT HERE IN THE - YOUR SHADOW NOW. DOWN A LITTLE BIT. THERE YOU GO. |
| | | | | | | - - - |
| | | | | 06 03 27 05 | LMP | I DON'T THINK THEY'LL EVER RECOGNIZE IT AGAIN. |
| | | | | 06 03 27 07 | CDR | OH, YEAH; THROW IT IN MY BAG. |
| | | | | 06 03 27 11 | LMP | LET'S - OKAY. OKAY, TONY, THAT FILLET - THAT CHIP OFF THAT BLOCK - - |
| | | | | 06 03 27 22 | CDR | OKAY, AND IT OPENED UP A CLEAR FILLET, AND THERE'S A LOT OF - THIS IS A VESICULAR TYPE OF BRECCIA ... |

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| | | | | | | |
|---|---|---|---|---|---|---|
| BAG 343 | | ROCK CHIP | SAME AS | 06 03 27 36 | LMP | ANOTHER PIECE THAT FELL OFF HERE. |
| 68815,2 | 34.49 | FROM BRECCIA | FSR-6 | 06 03 27 39 | LMP | WELL, I WAS GONNA PUT IT IN A SACK SO THEY'LL MAKE SURE - ALL THAT HAMMERING, I DON'T WANT THEM TO LOSE IT. YEAH. |
| | | BOULDER | | | | |
| | | | | 06 03 27 50 | CDR | HEY, LET'S PUSH IT OVER. |
| | | | | 06 03 27 52 | LMP | DON'T THINK WE CAN. OKAY, THAT CAME OFF THE ROCK RIGHT THERE. OKAY, TONY, A LOOSE PIECE OFF THE SIDE OF THE ROCK IS GOING IN BAG 343. |
| | | | | 06 03 28 15 | CDR | ***TO PUSH THAT ROCK. |

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| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 8** | | | | | | |
| BAG 344 | | SOIL | 108-17702 DS | 06 03 29 3[illegible] | LMP | WE GOT TO GO OFF 5 METERS AND GET A |
| 68840* | | | 107-17555 XSB | | | REFERENCE SOIL. |
| | | | 107-17556 XSB | | | |
| | | | 107-17557 XSA | 06 03 30 04 | CDR | I THINK THE REFERENCE SOIL IS BACK THERE AT THE |
| | | | 108-17702 LOC | | | SOIL SAMPLE. |
| | | | | 06 03 30 08 | LMP | OKAY, HERE'S 5 - HERE'S A PRETTY PRISTINE AREA RIGHT OVER HERE, JOHN, WE HAVEN'T BEEN WALKING - WE CAN JUST GO OVER HERE AND GET IT. TAKE THE SHOVEL DOWN THERE AND I'LL - IS THAT 5 METERS. |
| | | | | 06 03 30 24 | CDR | YEAH, THAT'S ABOUT 5 METERS. FIFTEEN FEET, BABY. |
| | | | | | | - - - |
| | | | | 06 03 31 10 | LMP | YEAH, UH-HUH. OKAY, TONY; IS ONE SCOOPFUL ENOUGH? |
| | | | | 06 03 31 18 | CC | ROGER. ONE SCOOPFUL. |
| | | | | 06 03 31 32 | LMP | GOT A LITTLE GLASS BEAD IN IT, JOHN. |
| | | | | 06 03 31 36 | LMP | THAT'S GOOD. WENT RIGHT IN. OKAY, THAT ONE SHOVELFUL, IS IN 344. |
| | | | | 06 03 31 56 | LMP | PUT IT IN MY BAG, JOHN. YOURS IS FULL. |
| **EVA 2 - STATION: 9** | | | | | | |
| SURFACE | | SPECIAL | 108-17740 DS | 06 03 56 45 | LMP | OKAY, PAN IS COMPLETE. OKAY, WE NEED THE SURFACE |
| SAMPLES | | SURFACE | 107-17558 XSA | | | SAMPLERS. AND THAT STARTS WITH THE BETA AND THEN |
| | | SAMPLES | 107-17559 XSA | | | THE VELVET AND THEN A SKIM AND A SCOOP. |
| 69003* | | | 107-17560 LOC | 06 03 57 04 | CDR | HEY, WE SNIPPED THAT ROCK OVER THERE, THE ONE |
| 69004* | | | 108-17741 LOC | | | I'M GONNA SNEAK UP ON, CHARLIE. |
| | | | | | | - - - |
| | | | | 06 03 59 03 | LMP | IF YOU'LL PAN LEFT, WE'LL SHOW YOU THE ROCK WE'RE GOING TO SNEAK UP ON. |
| | | | | | | - - - |
| | | | | 06 03 59 26 | CDR | IT'S BETWEEN US AND THE LM. IT'S BETWEEN THE LM AND US. |
| | | | | 06 03 59 30 | LMP | THEY DON'T WANT YOU TO OPEN THIS THING UNTIL YOU GET RIGHT UP NEXT TO THE ROCK. |
| | | | | 06 03 59 40 | LMP | I'M GOING TO GET THE OTHER ONE. |
| | | | | 06 04 01 51 | CC | OKAY. DID THAT DISTURB THE [illegible]RFACE ON THE OTHER SIDE THERE? |
| | | | | 06 04 02 06 | CDR | ... NO, WE DIDN'T DISTURB IT AT ALL. |
| | | | | | | - - - |
| | | | | 06 04 03 03 | LMP | BEAUTIFUL. YOU PICKED SOME UP ON THAT ONE. ONLY ON ONE CORNER. HE GOT SOME ON ONE CORNER, HOUSTON. |
| | | | | 06 04 03 19 | LMP | I'D SAY [illegible]BOUT 20 PERCENT OF IT IS COVERED. |

| | | | | | | |
|---|---|---|---|---|---|---|
| **BAG 376** | **SPECIAL** | 108-17740 DS | 06 04 06 05 | LMP | WE GOT TO GET A SKIM. |
| **69920*** | **SURFACE** | 107-17558 XSB | 06 04 06 17 | CDR | CAN WE SKIM WHERE THE PRISTINE SAMPLE WAS? |
| | **SAMPLES** | 107-17559 XSB | 06 04 06 19 | CC | WE'D LIKE TO SKIM NEXT TO IT. |
| | **SKIM SOIL** | 107-17561 XSD | 06 04 06 20 | LMP | NO, THEY WANT IT RIGHT BESIDE IT, RIGHT THERE ... |
| | | 107-17562 XSD | 06 04 06 23 | CDR | YOU CAN'T SEE ANY OF THAT STUFF. |
| | | 107-17563 XSD | 06 04 06 24 | LMP | YEAH, I CAN SEE. OK, HERE WE GO. GET ME A BAG READY. |
| **BAG 377** | **REFERENCE SOIL** | 107-17560 LOC | | | |
| **69940*** | | 108-17741 LOC | 06 04 06 48 | LMP | TONY, I PROBABLY GOT 5 MILLIMETERS ON THAT SKIM. |
| | | | 06 04 06 59 | CDR | WHAT SETTING SHOULD I OPEN THIS UP TO SHOW YOU THESE PRINTS WE GOT IN THE VACUUM HERE? I MEAN IN THE SHADOW? |
| | | | 06 04 07 23 | CDR | THAT'S GOING INTO BAG 376? |
| | | | | | - - - |
| | | | 06 04 07 52 | CDR | OK. I'LL GET YOU A LITTLE FLIGHT LINE OF THAT. CHARLIE'S SCOOP IS BEING TAKEN RIGHT UNDER THE- |
| | | | 06 04 08 10 | LMP | YOU GOT IT. |
| | | | 06 04 08 28 | LMP | OK, THERE YOU GO. THAT'S GOING IN BAG 377. |

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|---|---|---|---|---|---|---|
| **CSVC-34** | | **SINGLE DRIVE TUBE** | 108-17742 XSD | 06 04 08 33 | CC | WE'D LIKE TO GET THAT CSVC. |
| **69001** | **558.3** | | 108-17743 XSD | | | - - - |
| | | **(IN CORE SAMPLE VACUUM CONTAINER)** | | 06 04 10 56 | LMP | MAY I BORROW YOUR HAMMER, JOHN? THIS CORE, I THINK MIGHT BE ABLE TO PUSH IT IN, BUT - |
| | | | | 06 04 11 07 | LMP | OK, WE'LL JUST DO IT RIGHT HERE. TONY, I'M 15 METERS OUT TO THE LEFT OF THE - - |
| | | | | 06 04 11 18 | CC | ROGER. WE'RE WATCHING YOU, CHARLIE. |
| | | | | 06 04 11 31 | LMP | OK, THERE WE GO. PUSHED IT IN HALFWAY, TONY. |
| | | | | 06 04 11 36 | CC | OK. AND REMEMBER NOT TO HAMMER THIS ONE ALL THE WAY IN. |
| | | | | | | - - - |
| | | | | 06 04 12 16 | LMP | OK, TONY, THAT'S ABOUT 7 CENTIMETERS OUT. |
| | | | | 06 04 12 19 | CC | LOOKS GOOD TO US. |
| | | | | 06 04 12 25 | LMP | FEELS GOOD TO ME, TOO, TO GET THAT OVER. |
| | | | | | | - - - |
| | | | | 06 04 14 18 | LMP | HEY, JOHN, LET ME CAP THIS LITTLE BEAUTY HERE BEFORE WE LOSE IT - BEFORE I FORGET ABOUT IT. |
| | | | | | | - - - |
| | | | | 06 04 20 43 | LMP | THE PLUNGER WENT RIGHT DOWN. IT'S ABOUT 4 CENTIMETERS FROM THE TOP. |
| | | | | 06 04 21 06 | CC | AND BEFORE YOU STICK IT IN THERE, COULD WE HAVE THE CORE TUBE NUMBER? |
| | | | | 06 04 21 12 | LMP | THIRTY-FOUR. |
| | | | | 06 04 22 54 | CC | ALL RIGHT CHARLIE, THAT CSVC GOES IN THE SRC. |

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|---|---|---|---|---|---|
| **BAG 378** | **CHIP FROM TOP OF** | 107-17558 XSB | 06 04 11 46 | CDR | THE TOP OF THAT ROCK IS A HARD BRECCIA, AND |
| **69935*** | **BRECCIA BOULDER** | 107-17559 XSB | | | I'M JUST GOING TO THROW IT UNDER YOUR SEAT, |
| | | 107-17572 XSA | | | CHARLIE. |
| | | 107-17560 LOC | 06 04 11 58 | LMP | IS IT IN A BAG? |
| | | 107-17561 XSB | 06 04 11 59 | CC | DID YOU HAVE A BAG NUMBER? |
| | | 107-17562 XSB | 06 04 12 03 | CDR | 373. (378) |
| | | 107-17563 XSB | | | - - - |
| | | | 06 04 12 30 | CDR | YEAH, THAT'S GOT IT ALL - ON THREE SIDES. |
| | | | 06 04 12 58 | CDR | HERE'S THE PICTURE TO SHOW WHERE THE TOP ROCK CAME OUT. CHARLIE, I GOT IT! |

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CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 2 - STATION: 9** | | | | | | |
| **BAG 379** | | **SOIL BENEATH** | 107-17575 DSB | 06 04 13 14 | LMP | HE DID IT, HOUSTON! HE DID IT. |
| **69960*** | | **BOULDER** | 107-17576 DSB | 06 04 13 23 | CC | SO YOU CAN NOT ONLY SNEAK UP ON THEM, YOU CAN FLIP THEM OVER, HUH? |
| | | | 107-17573 XSB | | | |
| | | | 107-17574 XSB | 06 04 13 31 | CDR | YEAH. THAT'S A BIGGIE. MAN, IT LOOKS LIKE IT'S BEEN SITTING THERE FOR QUITE A WHILE. LOOK AT THAT SOIL UNDERNEATH. |
| | | | 107-17577 XSA | | | |
| | | | 107-17578 XSA | | | |
| | | | 107-17579 XSA | 06 04 13 43 | CDR | BEFORE I STOMP ALL OVER IT, CHARLIE, SNEAK OVER HERE AND LET'S GET SOME OF THIS SOIL. |
| | | | 107-17580 XSA | | | - - - |
| | | | | 06 04 14 44 | CDR | HEY, WHY DON'T YOU JUST SORT OF SNEAK UP SO YOU DON'T SPRINKLE ANY DIRT DOWN IN THE BOTTOM OF THIS PLACE WHERE WE TURNED IT OVER. |
| | | | | 06 04 14 50 | LMP | YEAH, OK. |
| | | | | 06 04 14 52 | LMP | LOOK AT THAT SOIL! IT'S ALL CAKED LOOKING, ISN'T IT |
| | | | | 06 04 14 54 | CDR | YEAH, IT IS. |
| | | | | 06 04 15 01 | LMP | OK. LET ME GET THE SOIL BEFORE YOU START WHACKING. OK? |
| | | | | 06 04 15 04 | CDR | YEAH. |
| | | | | | | - - - |
| | | | | 06 04 15 32 | LMP | AND IT LOOKS JUST LIKE AN ALKALI FLAT IN THE CAKE THAT'S UNDER IT, TONY. AND THAT'S RIGHT FROM THE DEEPEST PART. THAT SAMPLE IS RIGHT IN THE MIDDLE, WHICH HAPPENS TO BE THE DEEPEST PENETRATION THAT BOULDER MADE. |
| | | | | 06 04 16 02 | LMP | THERE'S A SACKFUL. 379. |
| **BAG 380** | | **CHIP FROM BOTTOM** | 107-17575 DSB | 06 04 16 29 | LMP | WHERE ARE YOU GOING TO WHACK IT,JOHN? |
| **69955*** | | **OF BOULDER** | 107-17576 DSB | | | - - - |
| | | | 107-17573 XSB | 06 04 16 37 | LMP | OK. REAL FRIABLE, ISN'T IT? |
| | | | 107-17574 XSB | | | - - - |
| | | | 107-17577 XSB | 06 04 16 50 | LMP | AHA! LOOK AT THAT PIECE HERE, LET ME GET IT, JOHN. BACK UP. I'LL GO GET IT. THERE IT IS RIGHT THERE. |
| | | | 107-17578 XSB | | | |
| | | | 107-17579 XSA | | | |
| | | | 107-17580 XSA | 06 04 17 10 | CDR | CAN'T YOU JUST PICK IT UP WITH YOUR SHOVEL? |
| | | | | 06 04 17 12 | LMP | I DON'T WANT TO GET IT TOO DIRTY. |
| | | | | 06 04 17 21 | LMP | OK, WE GOT YOU ABOUT A 4-CENTIMETER CHIP. |
| | | | | 06 04 17 38 | LMP | AND THAT'S NOT GLASS, JOHN. THOSE ARE CRYSTALS. THOSE ARE BIG CRYSTALS. AT LEAST 5 MILLIMETERS, WITH A BLUISH CAST TO THEM. |
| | | | | 06 04 17 59 | CDR | THAT'S GOING IN BAG 380, HOUSTON. |
| | | | | 06 04 18 07 | CDR | IT LOOKS TO ME LIKE IT'S A SHOCKED ROCK WITH A LOT OF - AND THIS IS A GUESS - A LOT OF BLACK GLASS IN THE FRACTURE PATTERNS. |

**EVA 2 - STATION: 10**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| U45/L54 | | DOUBLE DRIVE TUBE | 115-18555 XSB | 06 04 59 44 | CDR | DOUBLE CORE. OK, CAN BE ANYWHERE OUT IN FRONT OF THE ROVER. |
| 60010/ | 635.3/ | | 115-18556 XSB | | | |
| 60009 | 759.8 | | 115-18557 XSD | 06 05 00 29 | CDR | WANT ME TO HELP YOU WITH THE PENETROMETER? |
| | | | 115-18558 XSD | 06 05 00 32 | LMP | WELL, I'VE GOT THE DOUBLE CORE RIGHT NOW. |
| | | | | 06 05 00 46 | LMP | I BET YOU I DON'T GET THIS IN HERE, BUT I'LL TRY IT. |
| | | | | 06 05 00 49 | CDR | I THINK YOU WILL. |
| | | | | 06 05 00 55 | LMP | I DON'T KNOW. OK, THAT'S PUSHED IN. |
| | | | | 06 05 00 59 | CDR | LET ME DO THAT, AND YOU DO THE PENETROMETER BECAUSE I KNOW HOW TO DO THAT ONE. |
| | | | | 06 05 01 02 | LMP | OK. THAT'S A GOOD SWAP. |
| | | | | | | - - - |
| | | | | 06 05 02 49 | LMP | OK. IT GETS HARD DOWN THERE, DOESN'T IT, JOHN? |
| | | | | 06 05 02 54 | CDR | YEAH, I DON'T THINK IT'S GOING TO GO. HOW MANY HITS DO YOU WANT ME TO GIVE IT, HOUSTON, BEFORE I QUIT? |
| | | | | 06 05 03 15 | LMP | NOW, YOU'RE GETTING IT A LITTLE BIT, JOHN. IT'S GOING IN, JOHN, ABOUT A QUARTER INCH A STROKE. |
| | | | | 06 05 04 32 | LMP | IT'S IN. JOHN, IT'S IN. THAT'S FAR - |
| | | | | 06 05 04 36 | CDR | HOW FAR DO YOU WANT TO DRIVE IT, CHARLIE? |
| | | | | 06 05 04 38 | LMP | THAT'S FAR ENOUGH. |
| | | | | | | - - - |
| | | | | 06 05 04 42 | CDR | GEE, IT CAME RIGHT BACK OUT, TOO. |
| | | | | | | - - - |
| | | | | 06 05 10 11 | CDR | OK, THE UPPER ONE WAS 45, THE BOTTOM ONE WAS (5)4. |

| | | | | | | |
|---|---|---|---|---|---|---|
| BAG 381 | | ANGULAR ROCK | 114-18445 XSB | 06 05 11 36 | CC | HEY, JOHN. WHILE YOU'RE SAMPLING - - |
| | | | 114-18446 XSB | 06 05 11 38 | CC | - - THERE, YOU MIGHT LOOK AROUND AND SEE IF YOU |
| 60115* | | | 114-18447 XSA | | | SEE ANY OF THAT VESICULAR BASALT. |
| | | | 114-18448 LOC | 06 05 11 46 | CDR | THAT'S WHAT I'M A LOOKING FOR. |
| | | | | | | - - - |
| | | | | 06 05 16 04 | CDR | BUT, CHARLIE. I JUST DON'T SEE ANY VESICULAR BASALT. |
| | | | | | | - - - |
| | | | | 06 05 18 46 | CDR | OK, HOUSTON. I COLLECTED ONE SAMPLE, WHICH WAS A SHARP ANGULAR. |
| | | | | | | - - - |
| | | | | 06 05 19 18 | CDR | THAT SAMPLE IS GOING IN BAG SAMPLE 381 |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| EVA 3 - STATION: 11 | | | | | | |
| | | | | 06 22 42 28 | LMP | WE'RE DEFINITELY ON THE EJECTA BLANKET HERE. AND, OH, WITHIN 100 METERS OR SO I THINK IS THE RIM. (OF NORTH RAY CRATER) |
| | | | | 06 22 42 44 | LMP | THE ROCKS ARE JUST WHITE, CRYSTALLINE WHITE LOOKING. |
| | | | | | | - - - |
| | | | | 06 22 43 10 | LMP | GO ON OUT TO THE RIM. OK THAT'S A BRECCIA. |
| | | | | 06 22 43 20 | CDR | THAT WHITE ONE IS A BRECCIA. THERE'S THE RIM. |
| | | | | | | - - - |
| | | | | 06 22 43 33 | LMP | I CAN'T BELIEVE THE SIZE OF THAT BIG BLACK ROCK OVER HERE. AND I DON'T THINK THAT'S A BRECCIA JOHN. BUT ALTHOUGH IT MIGHT BE I SEE SOME LARGE WHITE CLASTS. |
| | | | | | | - - - |
| | | | | 06 22 49 34 | CDR | THE UNFORTUNATE THING ABOUT IT, HOUSTON, IS THAT RASCALLY RIM - - IT GOES DOWN - - IT SLOPES IN TO IT ABOUT 10 OR 15 DEGREES, WHICH IS THE KIND OF SLOPE I'M STANDING ON RIGHT NOW AND THEN ALL OF A SUDDEN IN ORDER TO SEE THE BOTTOM, I'VE GOT TO WALK ANOTHER 100 YARDS DOWN A 25 TO 30 DEGREES SLOPE AND I DON'T THINK I'D BETTER. MAYBE WE CAN DRIVE AROUND TO THE OTHER SIDE AND SEE DOWN INTO IT. |
| | | | | | | - - - |
| | | | | 06 22 50 37 | CDR | THE BOULDER LAYERS ARE HORIZONTALLY ORIENTED AND OF COURSE, THEY ARE ALL COVERED WITH TALUS. OVER ON THE NORTH WALL IN PARTICULAR, ABOUT ONE-THIRD OF THE WAY FROM THE TOP, IS A LINE OF BOULDERS WHICH YOU'D PROBABLY OUGHT TO BE ABLE TO SEE ON THE TV, BUT THEY'RE ALL ORIENTED RIGHT IN THAT LINE WHICH WOULD LEAN WITH THE THINKING THERE IS BEDDING THERE. DON'T YOU SEE THAT LINE RIGHT OVER THERE, CHARLIE? |
| | | | | | | - - - |
| | | | | 06 22 51 30 | CDR | IN THIS LIGHT THEY APPEAR TO BE DARK BOULDERS. |
| | | | | 06 22 51 36 | CC | THE WHITE ROCKS YOU SEE THERE. DO THEY LOOK LIKE THE CONE CRATER TYPE WHITE ROCKS? |
| | | | | 06 22 51 48 | LMP | NO, NOT TO ME. |
| | | | | 06 22 51 55 | CDR | BETTER LET ME GET A PIECE OF ONE, CHARLIE. THIS IS DEFINITELY A BRECCIA RIGHT HERE, A BIG FOOT AND A HALF BRECCIA. IT'S A WHITE MATRIX WITH DARK CLASTS AND IT LOOKS TO BE A THREE-ROCK BRECCIA; SOME OF THE DARK CLASTS HAVE EVEN DARKER CLASTS THAN THOSE. |
| | | | | | | - - - |
| | | | | 06 23 02 02 | LMP | RIGHT UNDER THE UPPER DULL GRAY SOIL THERE'S A LAYER OF WHITISH MATERIAL, MUCH LIKE IT WAS AT SOUTH RAY. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **BAG 382** | | **ROCK, BRECCIA** | NO PHOTOGRAPHY | 06 22 52 30 | CDR | OK, HOUSTON, I JUST PICKED UP A GRAB SAMPLE OF BRECCIA. IT'S VERY FRIABLE. IT LOOKS SHOCKED. IT HAS BLACK GLASS IN IT - - GLASS A COUPLE OF MILLIMETERS ACROSS, AND IT'S SO WORN DOWN THAT YOU KNOW WHAT IT REALLY LOOKS LIKE? IT LOOKS LIKE A - - IF I CAN USE THE ANALOGY. I'M NOT SURE WHAT THE HECK IT IS. IT LOOKS LIKE A TUFF - - - I'M JUST LOOKS LIKE A ROCK. - - THE CLASTS ARE STICKING OUT OF IT. |
| **67035** | **245.2** | **ROCK** | | | | |
| **67031** | **52.73** | **FINES** | | | | |
| **67032** | **13.3** | **FRAGMENT** | | | | |
| **67033** | **14.88** | **FRAGMENT** | | | | |
| **67034** | **14.55** | **FRAGMENT** | | | | |
| | | | | | | - - - |
| | | | | 06 22 53 41 | CC | AND JOHN, IN YOUR MINERAL DESCRIPTION, COULD YOU SEE - - CRYSTAL SHAPE TO IT? |
| | | | | 06 22 53 44 | CDR | COULD I SEE A CRYSTAL SHAPE? NOW THE CLASTS IN THERE ARE VERY ANGULAR. MAYBE THAT'S A ZAP CRATER - - THE WHITE MATRIX DOESN'T HAVE ANY CRYSTALLINE STRUCTURE THAT I CAN RECOGNIZE. |
| | | | | | | - - - |
| | | | | 06 22 56 10 | CC | JOHN DID YOU GET BAG NUMBER ON THAT? |
| | | | | | | - - - |
| | | | | 06 22 56 16 | CDR | YEAH. EXCUSE ME 373 I THINK. (382) |
| | | | | 06 22 56 21 | CDR | IT'S IN THE BOTTOM OF SCB 7. ANYWAY I CAN IDENTIFY THAT ROCK FOR YOU. |
| **BAG 383** | | **ROCK** | 116-18615 DSB | 06 23 02 56 | CDR | OK, HOUSTON I'M GOING TO PICK UP A SAMPLE WHICH I THINK IS THE TYPE ROCK, BUT IT IS SORT OF DUST COVERED. |
| **67055** | **221.4** | **ROCK** | 116-18616 XSB | | | |
| **67050** | **17.66** | **RESIDUE** | 116-18617 XSB | | | |
| | | | 116-18618 XSA | | | - - - |
| | | | | 06 23 03 33 | CDR | NO, I WAS WRONG, IT WAS A VERY FRIABLE, MUST BE SHOCKED WHITE ROCK WITH A LOT OF BLACK CLASTS - LOOKS LIKE ABOUT 50 PERCENT OF THE ROCK IS BLACK CLASTS(?), WHICH WAS A LOT MORE THAN THE LAST ROCK I PICKED UP AND IT SURE IS FRIABLE. YOU KNOW WHAT I MEAN, IT'LL TAKE A HECK OF A BEATING AND THAT'S GOING INTO BAG NUMBER 383. |
| **FSR 7** | | | | 06 23 07 54 | LMP | LOOK AT THIS ROCK RIGHT HERE, JOHN. PURE WHITE. |
| **67015** | **1194.4** | **ROCK** | 116-18619 DSB | 06 23 08 00 | LMP | YEAH, IT'S REALLY SHOCKED WHATEVER IT IS. IT LOOKS LIKE CHALK, TONY, IT'S SO SHOCKED. IT'S ABOUT PEBBLE SIZE AND IT'S BROKEN OPEN, LET'S MAKE IT 5 CENTIMETERS LONG, BROKEN OPEN. LET ME GET THIS ONE DOCUMENTED. OK, THE POLARIZING FILTERS COMING OFF, I HOPE. |
| | | | 116-18620 DSB | | | |
| | | | 116-18621 XSB | | | |
| | | | 116-18622 XSB | | | |
| | | | 116-18623 XSA | | | |
| | | | | 06 23 09 11 | CDR | THE BLACK CLASTS IN THIS ROCK ARE REALLY, REALLY BLACK MATERIAL. IT'S EITHER A VERY FINE GRAINED BLACK BRECCIA; I'LL TELL YOU WHAT IT LOOKS LIKE, IT LOOKS LIKE THAT BLACK BRECCIA, FINE GRAINED LINED(?) THAT HAD THAT WHITE CLASTS IN IT ON APOLLO 15. ALTHOUGH HERE, THE MATRIX IS WHITE AND THE CLASTS ARE BLACK. |
| | | | | 06 23 9 54 | CC | HOW LARGE ARE THE CLASTS? |
| | | | | 06 23 09 57 | CC | IS THIS BLACK BRECCIA FROTHY TOO? |
| | | | | 06 23 10 03 | CDR | 3 CENTIMETERS. NO, IT'S NOT FROTHY AT ALL. IT'S DENSE. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| EVA 3 - STATION: 11 | | | | | | |
| | | | | 06 23 10 10 | CDR | IT COULD BE A VERY DENSE BASALT-LIKE ROCK. IT LOOKS LIKE IT HAS THE 90 DEGREE CLEVAGE AND I'M HARD PUT TO TELL THAT. THAT'S JUST THE WAY IT BREAKS. BUT IT'S SURE SHOCKED. IT'S TOO BIG TO GO IN THE BAG BUT I'M GOING TO PUT IT IN THERE ANYWAY. |
| | | | | 06 23 10 36 | CDR | AT LEAST IT HAS A SHOCKED APPEARANCE. |
| BAG 385 | | | | 06 23 11 20 | CDR | OK, HERE'S A SMALL SECONDARY UP HERE ON TOP OF THE RIM. IT'S ABOUT A METER ACROSS, ABOUT A METER DEEP |
| 67095 | 339.8 | ROCK | 116-18624 DSB<br>116-18625 DSB<br>116-18626 XSB<br>116-18627 XSB<br>116-18628 XSA | | | AND IT HAS EITHER VERY ANGULAR BLACK CLASTS OR PART OF THIS BLACK ROCK IN TOTAL, AND THEY MUST BE 4 OR 5 CENTIMETERS ACROSS IN THERE AND I'LL GET ONE OR TWO OF THOSE BABIES. |
| | | | | | | - - - |
| | | | | 06 23 14 15 | CDR | THE OUTER SURFACE OF THAT ROCK IS DUST COVERED IT APPEARS TO BE A REALLY BLACK GLASS. IT'S GOING INTO 385. |
| | | | | | | - - - |
| | | | | 06 23 15 03 | CDR | WHAT REALLY ATTRACTS ME TO THIS ROCK, EVEN THOUGH IT'S DUST COVERED, HOUSTON, IS THE FACT THAT IT HAS RIGHT ANGLES TO IT. IT DID, BEFORE I PICKED IT UP. |
| BAG 384 | | | 106-17318 XSB | 06 23 12 02 | LMP | HEY, JOHN. CAN I GET A BAG FROM YOU. |
| 67075 | 219.2 | WHITE BRECCIA | 106-17319 XSB | 06 23 12 19 | LMP | I PICKED UP THAT WHITE - |
| | | | | | | - - - |
| | | | | 06 23 12 26 | LMP | THANK YOU. THAT WHITE SHOCKED ROCK. IT'S BROKE IN TWO THERE'S TWO PIECES OF IT. PARTIALLY DOCUMENTED, A BEFORE ANYWAY, AND 384. |
| BAG 386 | | | SAME AS BAG 385 | 06 23 15 44 | CDR | YEAH, THIS NEXT ONE THAT'S GOING IN, IS SO DUST COVERED AFTER I PICKED IT UP AND DROPPED IT INTO |
| 67115 | 240.0 | ROCK, BRECCIA | 116-18624 DSB<br>116-18625 DSB<br>116-18626 XSB<br>116-18627 XSB<br>116-18628 XSA | | | THE DIRT, I CAN'T DESCRIBE IT TO YOU. OTHER THAN TO SAY IT'S DUST COVERED. IT'S GOING INTO BAG 386. |
| BAG 415 | | GLASS COATED | 106-17320 XSB | 06 23 18 23 | LMP | OKAY - HERE'S AN OLD GLASSY ROCK, TONY, THAT'S |
| 67435* | 353.5 | ROCK | 106-17321 XSB | | | GLASS COATED. ANYWAY, IT WENT INTO 415. |
| | | | 106-17322 XSA | 06 23 18 45 | LMP | AND IT WAS HACKLY LOOKING ON THE SURFACE - THAT'S WHY I STOPPED TO GET IT. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BAG 416<br>67455* | 942.2 | ROCK, FRIABLE<br>BRECCIA | 106-17331 XSB<br>106-17332 XSB | 06 23 16 31 | LMP | I WAS JUST GOING UP HERE A LITTLE BIT, JOHN, AND DO SOME OF THE FLIGHT LINE STEREO OF THIS 3 METER BLOCK UP HERE.<br>- - - | |
| | | | | 06 23 19 26 | LMP | I'M GOING TO GIVE YOU A LITTLE STEREO ON THIS BOULDER<br>- - - | |
| | | | | 06 23 21 12 | LMP | THERE'S ONE OF THESE WHITE ROCKS UP HERE, JOHN, THAT'S GOT A FRACTURE ON IT. | |
| | | | | 06 23 21 19 | CDR | GOT A HAMMER? | |
| | | | | 06 23 21 20 | LMP | YEAH, I GOT THE HAMMER. IT'S JUST LOOSE, THE STUFF IS LYING UP THERE ON THE TOP.<br>- - - | |
| | | | | 06 23 21 57 | CC | CHARLIE, IF POSSIBLE, WE'D LIKE SOME SAMPLES ON THAT STUFF ON TOP OF THE BOULDER.<br>- - | |
| | | | | 06 23 24 58 | CDR | DID YOU GET THE BOULDER OFF THE TOP? | |
| | | | | 06 23 25 01 | LMP | YES, I DID. I GOT THAT SAMPLE. | |
| | | | | 06 23 25 09 | CDR | IT'S A MULTI-ROCK BRECCIA. | |
| | | | | | LMP | THE MATRIX IS THE WHITE - - WITH THE BLACK BEING THE CLASTS. | |
| | | | | 06 23 25 15 | CDR | YEAH, I SEE AT LEAST 2 DIFFERENT COLORS OF LIGHT-DARK CLASTS. THEY MUST BE AT LEAST A 3 ROCKER. | |
| BAG 417<br>67460* | | FILLET SOIL | 116-18632 LSA<br>116-18633 DSA<br>106-17333 XSB<br>106-17334 XSB<br>106-17335 XSA<br>106-17336 LOC | 06 23 20 35 | CC | CHARLIE, WHILE YOU'RE UP AT THAT BOULDER, IF YOU CAN GET SOME OF THAT FILLET AS WELL AS THE BOULDER?<br>- - - | |
| | | | | 06 23 21 30 | LMP | HEY, TONY, WE'LL FILLET SAMPLE FOR YOU UP HERE.<br>- - - | |
| | | | | 06 23 23 37 | LMP | JOHN. COULD WE GET A FILLET UP THERE WHERE THAT GNOMON IS?<br>I'LL GET THE CROSS-SUN. | |
| | | | | 06 23 24 19 | LMP | THAT FILLET IS 417. | |
| | | | | 06 23 24 40 | CDR | OK, I'LL GET THE DOWN-SUN HERE. | |
| | | | | 06 23 24 45 | LMP | THERE'S AN AFTER AND I'LL TRY TO GET A LOCATOR FROM UP HERE. | |
| BAG 418<br>67475* | 175.1 | BLACK CLAST<br>CHIPPED FROM<br>BRECCIA BOULDER | 106-17337 XSA | 06 23 26 00 | LMP | HEY, JOHN, I'M CHIPPING OUT THIS LITTLE TINY, THIS BIG BLACK CLAST HERE. IT'S COMING RIGHT OUT. I DON'T THINK WE GOT ANY OF IT IN THAT SAMPLE THAT I GOT. AND THIS THING IS SO FRIABLE. HEY, I GOT IT. | |
| | | | | 06 23 26 35 | LMP | THIS BLACK CLAST I CHIPPED OUT IS AN APHANITIC MATRIX, IT LOOKS LIKE A TYPICAL BASALT TO ME. I GOT A PICTURE OF IT AFTER I CHIPPED IT OUT. I DIDN'T THINK I WAS GOING TO BE ABLE TO, BUT IT CAME OUT, GET A 5 FOOTER. IT'S GOING IN 418. | |
| | | | | 06 23 27 15 | LMP | I HAVEN'T SEEN A ROCK LIKE THAT BEFORE IN THE APOLLO SAMPLES. | |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 3 - STATION: 11** | | | | | | |
| BAG 387<br>67415* | | WHITE ROCK | 116-18636 DSB<br>116-18634 XSB<br>116-18635 XSB | 06 23 27 38 | CDR | I HAVE A ROCK HERE THAT IS A FINE WHITE CRYSTALLINE ROCK. IT'S PRETTY WELL DUST COVERED, BUT I DON'T SEE ANY CLASTS IN IT. |
| | | | | 06 23 27 57 | CDR | OF COURSE IT COULD BE JUST A HUNK OF MATRIX THAT GOT BUSTED LOOSE. BUT AS FINE AS THESE CLASTS ARE IN IT, -- THAT'S GOING INTO BAG 387 AS FINE AS THESE ROCKS ARE, I DON'T SEE HOW YOU CAN MISS ONE. |
| BAG 419<br>67480* | | SOIL | | 06 23 28 48 | CDR | LET'S GET A SOIL SAMPLE RIGHT HERE. |
| | | | | 06 23 28 51 | LMP | OK. |
| | | | | | | - - - |
| | | | | 06 23 29 24 | LMP | THE REGOLITH HERE, TONY UP ON THIS CRATER RIM IS REALLY SOFT. WE'RE SINKING IN ON THE SLOPES ABOUT 6 INCHES OR SO. |
| | | | | 06 23 29 46 | LMP | THE SOIL SAMPLE HERE IS 419. |
| BAG 420<br>67510* | 468.4 | RAKE FRAGMENTS | 116-18637 XSB<br>116-18638 XSB<br>116-18639 XSB<br>116-18640 XSA | 06 23 30 07 | LMP | LET'S GET IN A CLEAR SPOT, JOHN, TO RAKE. OK? THEN WE CAN DO IT DOWN THERE TOO. |
| | | | | 06 23 30 11 | LMP | IT LOOKS ALMOST FRUITLESS UP HERE. |
| | | | | | LMP | OH NO, THERE'S SOME ROCK. |
| | | | | 06 23 30 18 | CDR | LOT OF ROCKS THERE, CHARLIE, ONE RAKE SAMPLE. |
| | | | | 06 23 30 21 | LMP | ONE RAKE SAMPLE RIGHT OUT HERE, TONY. |
| | | | | | | - - - |
| | | | | 06 23 30 29 | LMP | IT'S GOING IN 420. |
| | | | | | | - - - |
| | | | | 06 23 30 39 | LMP | OH, HE'S GOT SOME NICE ONES THERE. |
| | | | | | | - - - |
| | | | | 06 23 30 51 | LMP | THEY'RE SO DUST COVERED I CAN'T REALLY SEE WHAT THEY ARE. |

| | | | | | | |
|---|---|---|---|---|---|---|
| BAG 421<br>67610* | RAKE FRAGMENTS | 106-17338 DSB<br>116-18641 XSB<br>116-18642 XSB<br>116-18643 XSA | 06 23 31 35 | LMP | WHY DON'T WE GO DOWN HALF WAY, JOHN, AND DO ANOTHER RAKE SAMPLE AND THEN GO DOWN TO THE BIG BLACK ROCK. |
| | | | 06 23 31 43 | CDR | ALRIGHT. |
| | | | 06 23 31 46 | LMP | THAT'LL BE ABOUT 150 METERS RADIAL - NOT RADIAL, BUT CONCENTRIC SAMPLING. |
| | | | | | - - - |
| | | | 06 23 33 35 | CDR | COME RIGHT DOWN THIS WAY. |
| | | | 06 23 33 40 | LMP | OK, JOHN'S GETTING ABOUT 2 RAKES, HE'S DOING 2 RAKES AND HE'S GOT ABOUT 15 PEBBLES. |
| | | | 06 23 33 52 | CDR | THERE'S NOT ANY THERE. |
| | | | 06 23 33 54 | LMP | THAT'S A PRETTY GOOD FULL SAMPLE. THERE YOU GO, LOOK AT THAT. THAT'S A BAG FULL NOW. THE THIRD ONE WAS REALLY FRUITFUL. |
| | | | 06 23 34 09 | CDR | OK, TURN IT. THERE YOU GO. I COULD SEE VESICLES IN ONE OF THEM. |
| | | | 06 23 34 17 | LMP | YES, I COULD TOO. THAT'S IN 421. |
| BAG 422<br>67600* | RAKE SOIL | SAME AS BAG 421 | 06 23 34 41 | LMP | GIVE THEM A SOIL. |
| | | | 06 23 35 09 | LMP | 422 FOR THE SOIL SAMPLE. |
| | | | 06 23 35 13 | LMP | THAT'S ENOUGH, JOHN. THAT'S A HUNDRED GRAMS. |
| BAG 423<br>67710* 694.1 | RAKE FRAGMENTS<br>UNSORTED | 106-17339 DSB<br>116-18644 XSB<br>116-18645 XSB<br>116-18646 XSA<br>106-17340 LOC | 06 23 35 46 | CDR | OK, CHARLIE, LET'S GO BACK TO THE ROVER. PUT YOUR BAG ON THERE AND HEAD OUT FOR THE BIG ROCK, BECAUSE YOU GOT A BAG ON YOUR BACK, AND WE'LL USE IT. |
| | | | | | - - - |
| | | | 06 23 36 53 | LMP | WE'LL STOP ABOUT HALF WAY DOWN HERE AND DO ANOTHER RAKE, HOW'S THAT? |
| | | | 06 23 36 57 | CDR | GOOD IDEA, CHARLIE. |
| | | | | | - - - |
| | | | 06 23 38 22 | LMP | HE'S GETTING A COUPLE OF WHITISH FRAGS AND THEN DUST-COVERED GRAY-LOOKING FRAGS. I THINK YOU GOT A BAG FULL THERE, JOHN. |
| | | | 06 23 38 34 | CDR | YEP, THREE SCOOPS AND A BAG FULL. IT'S ALL SALTED WITH THAT ONE WHITE ROCK HERE. |
| | | | 06 23 38 53 | LMP | THAT'S IN 423. |
| | | | 06 23 38 59 | CDR | HANG ONTO THIS. THAT'S GOING IN CHARLIE'S SCB. |
| | | | 06 23 39 09 | LMP | GET AN AFTER OF THAT, JOHN, I'LL GET THE SOIL SAMPLE. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 3 - STATION: 11** | | | | | | |
| BAG 388 | | RAKE SOIL | SAME AS | 06 23 39 09 | LMP | GET AN AFTER OF THAT, JOHN, I'LL GET THE SOIL SAMPLE. |
| 67700 | 142.6 | RESERVE FINES | BAG 423 | | | |
| 67701 | 235.0 | < 1 MM | 116-18646 XSB | 06 23 39 14 | CDR | THERE'S THE AFTER. |
| 67702 | 21.69 | 1-2 MM | | 06 23 39 15 | LMP | IT'S HARD UNDER THERE, YOU KNOW IT. |
| 67703 | 13.71 | 2-4 MM | | 06 23 39 22 | CDR | YES, THAT'S WHY THE RAKE WOULDN'T GO DOWN. |
| 67704 | 7.47 | 4-10 MM | | 06 23 39 27 | CDR | I'M NOT GOING ANYWHERE. HIT IT AGAIN. |
| 67705 | 6.57 | CLOD | | 06 23 39 32 | LMP | TONY, THERE MUST BE A BIG ROCK RIGHT UNDER HERE. |
| 67706 | 2.08 | CLOD | | 06 23 39 37 | LMP | I CAN'T GET THE RAKE IN. |
| 67707 | 1.84 | CLOD | | 06 23 39 40 | CDR | LOOK AT THAT, CHARLIE. |
| 67708 | 1.43 | CLOD | | 06 23 39 41 | LMP | I KNOW, IT'S ALL WHITE UNDER HERE. |
| | | | | 06 23 39 47 | LMP | DOWN ABOUT A CENTIMETER OR LESS, IT'S ALL WHITE. |
| | | | | 06 23 39 59 | LMP | I THINK IT MIGHT BE A ROCK SURFACE, AND ITS, ONE OF THOSE FRIABLE ONES, THE FRACTURED ONES, AND WE'RE JUST CHIPPING OFF -- HERE, JOHN, I CAN GET A SOIL SAMPLE FROM WHERE YOU KICKED IT UP WITH YOUR FOOT. |
| | | | | 06 23 40 23 | LMP | OKAY, YOU WANT ANOTHER ONE? |
| | | | | 06 23 40 34 | LMP | THAT SOIL SAMPLE IS GOING IN BAG 388 |
| | | | | 06 23 41 21 | CDR | IN THE SUNLIGHT, HOUSTON, THIS WHITE ROCK HAS SORT OF A GREENISH HUE TO IT, THIS ROCK BRECCIA. WHICH IS WHAT ALL THIS IS WE'RE WALKING ON RIGHT NOW IS THIS WHITE ROCK BRECCIA THAT CHARLIE CHIPPED OUT OF AND I GUESS THAT IS PROBABLY THE SECOND LAYER UP. I WOULD RECKON -- IF WE COULD SEE TO THE BOTTOM, WE COULD SAY FOR SURE IF THIS BIG BLACK ROCK IS RIGHT OUT OF THE BOTTOM. BUT MY GUESS FROM THE OLD PHOTOGRAPH IT PROBABLY IS. |
| BAG 389 | | ROCK CHIPS FROM | 116-18653 DSA | 06 23 42 03 | LMP | LOOK AT THE SIZE OF THAT ROCK. |
| 67935 | 108.9 | HOUSE ROCK | 106-17345 XSB | | | - - - |
| 67936 | 61.82 | BOULDER | 106-17346 XSB | 06 23 42 43 | CDR | AND LOOK AT THOSE -- LOOK AT THE SHAPE OF THAT RASCAL. |
| 67937 | 59.67 | | 116-18647 XSD | | | |
| | | | 116-18648 XSD | 06 23 42 50 | LMP | YES. WE DON'T SEE ANY GLASS, THOUGH, PARTICULARLY. |
| | | | 116-18649 XSD | 06 23 42 57 | CDR | NO, I GUESS I'D HAVE TO CALL THIS A BLACK MATRIX -- LOOKS LIKE THE MATRIX HAS REVERSED ITSELF NOW, IT'S ALL BLACK MATRIX. |
| | | | | 06 23 43 11 | LMP | WELL, TONY, THAT'S YOUR HOUSE ROCK RIGHT THERE. - - - |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 06 23 43 52 | LMP | LOOK AT THAT. SEE IT'S GLASS COATED AND THIS IS JUST FRACTURED OFF. WE COULD PULL THAT OFF. BIG CHUNKS OF THAT WILL COME RIGHT OFF. |
| | | | | 06 23 44 15 | LMP | IT'S GOT A BLUISH TINT TO IT, DOESN'T IT? |
| | | | | 06 23 44 19 | CDR | IT DOES. |
| | | | | 06 23 44 20 | LMP | IT DOESN'T LOOK LIKE REAL BASALT. |
| | | | | 06 23 44 24 | CDR | LOOK AT THAT SHATTER CONE RIGHT THERE, CHARLIE. I'LL BE DARNED. |
| | | | | 06 23 44 29 | CDR | IT IS. I'M SURE. |
| | | | | 06 23 44 33 | LMP | PUT YOUR TONGS UP THERE AND I'LL GET A CLOSEUP. |
| | | | | | | - - - |
| | | | | 06 23 44 45 | LMP | OK, HERE'S THE CHUNK OF IT. THE BLACK ROCK LOOKS - - SOME OF IT'S GLASS-COATED, TONY, AND MAN, THAT IS A SHATTER CONE. |
| | | | | 06 23 45 00 | CDR | CHARLIE, LET'S GET A PIECE OF IT. |
| | | | | 06 23 45 01 | LMP | OK, HERE YOU GO. I GOT A PIECE. GIVE ME A BAG. ON THE NEXT ONE HOW ABOUT STEPPING BACK AND AS I POINT TO IT, I'LL PULL OFF ANOTHER PIECE AND WE'LL PUT A COUPLE OF PIECES IN HERE. |
| | | | | 06 23 45 18 | CDR | OK. |
| | | | | 06 23 45 20 | LMP | THAT'S GOING IN BAG 389. |
| | | | | 06 23 45 27 | LMP | OK, LET'S JUST TAKE A PICTURE OF THAT. SO YOU'LL KNOW WHERE IT CAME FROM. |
| | | | | 06 23 45 31 | LMP | IT'S BADLY SHATTERED, TONY, SO I DON'T KNOW WHETHER IT'S GOING TO STAY TOGETHER OR NOT. |
| | | | | 06 23 45 38 | CDR | GET IT, CHARLIE, I'LL GET THE PICTURE. THAT'S RIGHT NEAR THE SHATTER CONE. |
| | | | | | | - - - |
| | | | | 06 23 46 11 | LMP | OK 5 SAMPLES IN 389 TONY. |



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|---|---|---|---|---|---|---|
| **FSR 8** | | **ROCK CHIPS FROM** | **116-18653 DSA** | 06 23 46 15 | LMP | THAT'S BLACK. THERE'S FAINT - - LOOK AT THAT VEINLET RUNNING THROUGH - - |
| **67915** | **2559.0** | **BOULDER** | **116-18652 XSA** | | | |
| | | **HOUSE ROCK** | | 06 23 46 22 | LMP | RIGHT THERE, JOHN. - - A BRECCIA. MAN, IT'S A BIG ROCK. HERE'S THIS WHITE STUFF, HERE'S A ROCK JOHN, THAT IS NOT A BRECCIA. A CLAST IN A BLACK ROCK. |
| | | | | | | - - - |
| | | | | 06 23 46 48 | CDR | PUT IT BACK WHERE YOU GOT IT FOR A SECOND AND LET ME GET A PICTURE OF IT. NOW, LET'S FIT IT IN. NO, JUST MOVE AWAY. THEY CAN FIT IT IN. OK, THAT'S HOW IT WAS MORE OR LESS? |
| | | | | 06 23 47 02 | LMP | YEAH, MORE OR LESS. |
| | | | | 06 23 47 03 | CDR | OK, NOW GET IT. |
| | | | | 06 23 47 06 | LMP | LET'S GET AN AFTER. |
| | | | | 06 23 47 10 | CDR | YEAH, THAT HAS A CLAST OF THAT ROCK IN IN IT TOO. |
| | | | | | | - - - |
| | | | | 06 23 47 24 | LMP | THAT'S UNBAGGED, AND IT'S GRAPEFRUIT SIZE, AND IT WAS A WHITE MATRIX. IT'S NOT AS NEARLY SHOCKED, AND IT'S A LARGE CLAST ABOUT A 3 METER CLAST OUT OF THIS BIG BLACK ROCK. PART OF IT. |

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CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 3 - STATION: 11** | | | | | | |
| BAG 425 | | ROCK CHIPS FROM | 116-18653 DSA | 06 23 47 58 | LMP | OK, JOHN, I'M GOING TO WHACK OFF ANOTHER - COULD YOU GET A PICTURE OF THIS, WITH THE HAMMER IN. LET ME GET SOME OF THE UNSHOCKED WHITE STUFF. |
| 67955 | 162.6 | BOULDER | | | | - - - |
| 67956 | 3.7 | HOUSE ROCK | | 06 23 48 27 | CDR | HARD ISN'T IT. |
| 67957 | 1.73 | | | 06 23 48 28 | LMP | YEAH, IT'S HARD, BUT I'M GOING TO GET A PIECE. |
| | | | | 06 23 48 33 | CDR | I GOT IT, CHARLIE. |
| | | | | 06 23 48 34 | LMP | OK, HERE'S A GOOD PIECE RIGHT UP HERE. |
| | | | | | | - - - |
| | | | | 06 23 48 46 | LMP | OK, I'VE GOT IT. OF THE WHITE CLAST WITH · IT'S NOT NEARLY AS SHOCKED, IS GOING IN 425. |
| BAG 390 | | SOIL, E-W SPLIT | 116-18653 DSB | 06 23 49 07 | CC | DID YOU ALL SEE A PERMANENTLY SHADOWED SAMPLE AROUND THERE? |
| 67940 | 26.8 | RESERVE FINES | | 06 23 49 13 | CDR | NO, WE DON'T. |
| 67941 | 105.9 | < 1 MM | | | | - - - |
| 67942 | 12.23 | 1-2 MM | | 06-23-49-29 | CDR | THE HOLE UNFORTUNATELY IS A SORT OF AN...EAST-WEST SPLIT THERE, CHARLIE. |
| 67943 | 9.36 | 2-4 MM | | 06 23 49 36 | LMP | I KNOW, IT IS AN EAST-WEST SPLIT. TONY, WE GOT AN EAST-WEST SPLIT HERE, A' WE CAN GET THE RAKE IN. |
| 67944 | 8.59 | 4-10 MM | | 06 23 49 46 | CC | WHY DON'T YOU GO AHEAD AN. KE A SOIL OUT OF THAT. |
| 67945 | 4.37 | FRAGMENT | | | | - - - |
| 67946 | 3.2 | FRAGMENT | | 06 23 50 11 | LMP | YEAH, I CAN GET IN HERE. RIGHT UP NEXT TO THIS ROCK RIGHT HERE WOULD BE A GOOD POINT. I GOT IT. |
| 67947 | 2.43 | FRAGMENT | | 06 23 50 46 | CDR | IN THE BAG, - - OK. WAIT A MINUTE, I'LL GIVE YOU A LITTLE BIT MORE. IT'S NOT A CLASSIC EAST-WEST SPLIT HOUSTON, BUT IT'S ONE. |
| 67948 | 1.59 | FRAGMENT | | 06 23 50 51 | CDR | BAG 390. |
| | | | | 06 23 50 52 | CC | OK, BAG 390. AND WE'LL NEED A REFERENCE SOIL. |
| BAG 391 | | REFERENCE SOIL | 106-17347 XSB | 06 23 51 34 | CDR | WE'RE GOING TO DO A REFERENCE SAMPLE. LET'S GET THAT HUGH MASS RIGHT THERE. |
| 67960 | 12.11 | | 106-17348 XSB | 06 23 51 36 | LMP | OK. |
| | | | | 06 23 51 39 | CDR | THE TONGS ARE NOT GOING TO GO IN THIS GROUND, CHARLIE. |
| | | | | 06 23 51 41 | LMP | I KNOW IT. IT'S A BIG ROCK DOWN THERE. WHY DON'T YOU JUST HOLD IT THERE, AND I'LL TAKE THE PICTURE. |
| | | | | | | - - - |
| | | | | 06 23 52 00 | CDR | GOT IT, YOU GOT IT. |
| | | | | 06 23 52 10 | LMP | OK, TONY, THIS SOIL HERE IS VERY HARD, AND THE RAKE REALLY WON'T GO INTO IT. IT'S BENDING TINES LIKE WE USE TO IN TRAINING. |
| | | | | | | - - - |
| | | | | 06 23 52 34 | CDR | THERE'S NOTHING LOOSE. |
| | | | | 06 23 52 35 | LMP | OK, THERE'S ABOUT 25 GRAMS. |

| | | | | | | |
|---|---|---|---|---|---|---|
| **BAG 392**<br>**67975** **446.6** **"FROTHY" ROCK** | | | 06 23 53 07 | LMP | THERE'S A REAL FROTHY ROCK RIGHT THERE, JOHN. WANT TO THROW THAT IN?<br>- - -<br>GOT A GRAB SAMPLE GOING IN 393 (392), WHITE MATRIX WITH GLASS ON IT. |
| **PADDED BAG NO. 2**<br>**67235*** | **ROCK** | 116-18656 DSB<br>116-18654 XSB<br>116-18655 XSB | 06 23 57 11 | CC | IF YOU SEE A FIST SIZE IGNEOUS ROCK NEAR THE ROVER WE'LL USE THE PADDED BAGS HERE, IF NOT WE'LL JUST FORGET THEM, |
| | | 116-18657 LOC | 06 23 57 16 | LMP | OKAY. |
| | | | 06 23 57 26 | LMP | I BET YOU ALL OF THIS STUFF UP HERE IS REALLY SHOCKED. DOES THAT MAKE ANY DIFFERENCE TO YOU? AND THEREFORE IT'S NOT GOING TO BE TOO HARD. |
| | | | 06 23 57 44 | CC | ALL RIGHT, IF YOU FIND A GOOD DENSE ONE THAT YOU THINK HAS A GOOD HARD SURFACE ON IT WE'LL GO AHEAD AND TAKE IT.<br>- - - |
| | | | 06 23 58 09 | CDR | I'M GOING TO GET ONE RIGHT HERE. |
| | | | 06 23 59 30 | CDR | IT'D BE TOO BIG FOR A PADDED BAG. |
| | | | 06 23 59 31 | LMP | NO, IT'LL GO IN. |
| | | | 06 23 59 39 | LMP | WELL, LET'S GIVE IT A GO. |
| | | | 07 00 00 26 | LMP | WHY DON'T YOU PUT IT IN NUMBER 6 THERE JOHN. NOW, LET'S SEE IF I CAN FIND ANOTHER ONE HERE. |
| | | | 07 00 00 51 | CDR | OKAY, BUT GET A SMALLER ONE CHARLIE. |
| **PADDED BAG NO. 1**<br>**67215*** | **ROCK** | 106-17355 XSB<br>106-17356 XSB | 07 00 01 31 | LMP | I'LL TELL YOU THIS REGOLITH IS ABOUT AN INCH DEEP HERE IN MOST PLACES. THERE'S JUST LOTS OF ROCKS UNDER THIS STUFF. |
| | | | 07 00 01 50 | LMP | YOU CAN BARELY GET THE SHOVEL IN ANYWHERE. OKAY WE GOT TWO ROCKS FOR YOUR PADDED BAGS BUT I'M NOT SURE THEY ARE GOING TO DO YOU ANY GOOD THEY ARE SO DUST COVERED. |
| | | | 07 00 02 09 | LMP | I HIT ONE WITH THE SHOVEL HERE THAT I'VE GOT IN MY HAND THAT YOU JUST SAW ME PICK UP AND IT DIDN'T BREAK ANYWAY SO AT LEAST IT'S THAT HARD.<br>- - - |
| | | | 07 00 02 58 | CDR | THAT'S A BETTER SIZED ONE.<br>- - - |
| | | | 07 00 04 31 | CDR | OKAY, CHARLIE, HERE'S BAG 6. BOTH PADDED BAGS ARE IN THERE. |
| | | | 07 00 04 35 | LMP | OKAY, JOHN. |
| | | | 07 00 04 39 | CDR | THE VELCRO CAME OFF BOTH THOSE BAGS AND WE WEREN'T ABLE TO PUT EM TIGHT LIKE THEY'RE SUPPOSED TO BE.<br>- - - |
| | | | 07 00 05 33 | LMP | OKAY. THEY'RE RIGHT ON THE TOP IN NUMBER 6 AND THERE'S NO ROCKS ON TOP OF THEM. |
| **PSR 8B** | **ROCK** | 116-18658 USB<br>116-18659 USB<br>116-18660 LOC | 07 00 07 53 | LMP | GOOD GRAB SAMPLE. |
| | | | 07 00 07 55 | CDR | I THOUGHT YOU'D LIKE THAT ONE. |

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|---|---|---|---|---|---|---|
| **TRAVERSE - STATION 11 - 13** | | | | | | |
| | | | | 07 00 10 22 | CDR | OKAY, STATION 13, RIGHT DOWN THE SAME WAY WE CAME. |
| | | | | 07 00 10 30 | LMP | WE CAN'T SEE OLD ORION FROM HERE.<br>THIS IS GOING TO BE SOMETHING GOING DOWN THIS HILL.<br>- - - |
| | | | | 07 00 10 53 | LMP | LOOK AT THAT SLOPE.<br>THIS IS AT LEAST 15 DEGREES SLOPE WE'RE GOING DOWN AND THAT ROVER CAME RIGHT UP IT AND YOU NEVER EVEN KNEW IT.<br>- - - |
| | | | | 07 00 12 17 | LMP | GOING BACK ACROSS SUN THE TRACKS, WE JUST BARELY PENETRATED THE REGOLITH MAYBE 1/8 OF AN INCH OR SO. WHATEVER IT IS, IT'S GOING TO BE REAL FIRM HERE.<br>- - - |
| | | | | 07 00 15 53 | CDR | SEE THAT BIG ROCK OVER THERE? MAYBE THAT'S A PERMANENTLY SHADOWED ONE. TRY IT?<br>- - - |
| | | | | 07 00 16 23 | LMP | ON DOWN THIS RIDGE, WE'RE GOING DOWN ABOUT - AT AT LEAST A 5 DEGREE SLOPE. WE HAVE ONE REAL FILLETED ROCK THAT WE'RE JUST PASSING NOW AT 3.8 AT 183 AND THEN WE HAVE ANOTHER ROCK DOWN HERE THAT 'S THE SAME SIZE THAT'S ABOUT 3 METERS ACROSS THAT HAS HARDLY ANY FILLET. AND THAT'S THE ONE WE'RE GOING TO STOP BY. |
| | | | | 07 00 16 49 | LMP | IS THAT WHAT YOU MEANT JOHN FOR PERMANENTLY SHADOWED? |
| | | | | 07 00 16 51 | CDR | YEAH.<br>- - - |
| | | | | 07 00 17 23 | LMP | OKAY, BE ABLE TO SEE THAT BIGGY.<br>THAT ROCK LOOKS LIKE THAT GREAT BIG ONE WE SAMPLED UP ON THE RIM, JOHN. |
| | | | | 07 00 17 31 | CDR | SURE DOES.<br>- - - |
| | | | | 07 00 19 07 | CC | OKAY, THE PLAN HERE IS A RAKE SOIL FIRST TOGETHER AND AFTER YOU'VE DONE THAT WE'D LIKE JOHN TO TAKE AN LMP AND CHARLIE YOU CAN GO SAMPLE. |

**EVA 3 - STATION: 13**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **BAG 345** | | **RAKE FRAGMENTS** | 106-17408 DSB | 07 00 23 58 | LMP | HEY, JOHN. SEE THOSE 4 OR 5 LITTLE ROCKS RIGHT |
| **63510*** | **389.4** | **UNSORTED** | 106-17409 XSB | | | THERE? |
| | | | 116-18661 XSB | 07 00 24 00 | CDR | YES. |
| | | | 116-18662 XSB | 07 00 24 01 | LMP | STICK HER DOWN RIGHT THERE AND LET ME. |
| | | | 116-18663 XSD | | | - - - |
| | | | 116-18664 XSD | 07 00 25 00 | CDR | GET A BAG FOR ME. CHARLIE. |
| | | | 116-18665 XSD | | | - - - |
| | | | 116-18666 XSD | 07 00 25 12 | LMP | OKAY, THERE'S SOME GLASS IN THERE, A BLACK CHIP. |
| | | | 116-18667 XSA | | | IN ONE RAKE WE GOT ABOUT 10 LITTLE, AND THE REGOLITH HERE SEEMS TO BE A LITTLE BIT MORE LOOSELY COMPACTED THEN UP ON THE TOP. |
| | | | | 07 00 25 35 | CDR | I CAN'T GET MY GNOMON IN. |
| | | | | 07 00 25 45 | LMP | NOT VERY PRODUCTIVE THOUGH, ON THE SMALL CHIPS. |
| | | | | 07 00 26 30 | CDR | OKAY, THERE'S ABOUT 20 SMALL ROCKS GOING INTO TO BAG 343. (345) |
| | | | | 07 00 26 34 | LMP | THAT'S THREE SCOOP FULLS TONY. |

| | | | | | | |
|---|---|---|---|---|---|---|
| **BAG 346** | | **RAKE SOIL** | **SAME AS** | 07 00 26 46 | LMP | OKAY AND THE SOIL. |
| **63500** | **201.7** | **RESERVE FINES** | **BAG 345** | 07 00 26 51 | CDR | LET ME GET ANOTHER BAG FROM YOU CHARLIE. |
| **63501** | **342.5** | **< 1 MM FINES** | | 07 00 27 18 | CDR | OK, THAT LOOKS LIKE 2 SCOOPFULS GOING INTO BAG 346. |
| **63502** | **25.29** | **1-2 MM** | | 07 00 27 26 | LMP | SACK IT. |
| **63503** | **14.53** | **2-4 MM** | | | | |
| **63504** | **17.34** | **4-10 MM** | | | | |
| **63505** | **5.41** | **FRAGMENT** | | | | |
| **63506** | **4.9** | **FRAGMENT** | | | | |
| **63507** | **2.78** | **FRAGMENT** | | | | |
| **63508** | **2.61** | **FRAGMENT** | | | | |
| **63509** | **2.05** | **FRAGMENT** | | | | |
| **63515** | **1.32** | **FRAGMENT** | | | | |

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|---|---|---|---|---|---|---|
| EVA 3 - STATION: 13 | | | | | | |
| BAG 426 | | SHADOWED SOIL | 106-17413 XS | 07 00 27 49 | CC | WHILE JOHN'S DOING THE LPM WE'D LIKE YOU TO HAMMER ON THAT ROCK A BIT. |
| 63320* | 351.0 | UNSORTED | 106-17414 XS | | | - - - |
| | | | 106-17415 XS | | | |
| | | | AS A PAN OF BOULDER | 07 00 28 00 | CC | AND IF YOU GET A CHANCE AND IT LOOKS LIKE SOME SOIL RIGHT ON THE SOUTH SIDE, KIND OF UNDERNEATH - MIGHT BE PERMANENTLY SHADOWED YOU MIGHT TAKE SOME OF THOSE AND JUST PUT IT IN THE BAG. |
| | | | | 07 00 28 11 | LMP | ALL RIGHTY. |
| | | | | | | - - - |
| | | | | 07 00 30 12 | LMP | OKAY, I'M GOING TO GET ON THE SUNLIT SIDE SO I'LL KNOW WHAT I'M WHACKING ON HERE. THAT MIGHT BE A PERMANENTLY SHADOWED SOIL RIGHT IN THERE. I THINK IT IS, AS A MATTER OF FACT. IT'LL PASS. |
| | | | | | | - - - |
| | | | | 07 00 30 53 | LMP | YES SIR, BABY, THAT IS A PERFECT SHADOWED SOIL SAMPLE. |
| | | | | 07 00 31 08 | LMP | IT IS REALLY PERFECT! JOHN, YOU COULDN'T HAVE PICKED A BETTER ROCK! |
| | | | | 07 00 31 52 | LMP | I DON'T KNOW HOW LONG THAT ROCK'S BEEN THERE, BUT THAT DIRT HAS BEEN SHADOWED EVER SINCE IT'S BEEN HERE. |
| | | | | 07 00 32 01 | LMP | I GOT IT FROM ABOUT A METER UP UNDER THERE, TONY. |
| | | | | 07 00 32 13 | LMP | AND I'M SORRY, BUT IT'S GOING TO HAVE TO GO IN A LITTLE OL' PLASTIC BAG HERE. |
| | | | | 07 00 32 20 | LMP | AND IT'S NUMBER 426 |
| BAG 427 | | SOIL (CONTROL) | SAME AS BAG 426 | 07 00 32 21 | CC | ANY CHANCE GETTING SOIL UNDERNEATH THAT NOW FOR THE CONTROL? |
| 63340* | 180.0 | UNSORTED | | 07 00 32 30 | LMP | UNDERNEATH THE SHADOWED, YOU MEAN? |
| | | | | 07 00 32 33 | CC | UNDERNEATH WHERE YOU JUST TOUCHED, JUST DIG DEEPER. |
| | | | | 07 00 32 40 | LMP | YEAH, LET ME TIP MY VISOR DOWN. THAT THING IS BRIGHT! GET OUT OF THE SUN. YEAH, I CAN GET THAT FOR YOU. THAT'S ABOUT 100 GRAMS, TONY, MAYBE 200. |
| | | | | 07 00 33 46 | CDR | GET A PICTURE OF IT. |
| | | | | 07 00 34 21 | CDR | CAN I HELP YOU CHARLIE? LET ME PUT THAT IN THE BAG. |
| | | | | | | - - - |
| | | | | 07 00 34 46 | LMP | OKAY, THERE'S ABOUT 50 GRAMS IN THE CONTROL. |
| | | | | 07 00 35 50 | CDR | IT'S GOING INTO THE BAG 427. |
| | | | | 07 00 35 00 | CDR | BOY, IT JUST MIGHT BE PERMANENTLY SHADOWED HOUSTON, BECAUSE IT'S DOWNSLOPE. |
| | | | | 07 00 35 07 | LMP | I REACHED BACK IN THERE ABOUT 2 TO 3 FEET IT LOOKED LIKE TO ME. |
| | | | | 07 00 35 20 | CDR | THAT THERE IS ONE OF THOSE GOPHER HOLES. |

| | | | | | | |
|---|---|---|---|---|---|---|
| BAG 428<br>63335* | 65.4 | ROCK CHIPS FROM SHADOW ROCK | SHADOW ROCK IS SHOWN IN<br>106-17413 XS<br>106-17414 XS<br>106-17415 XS | 07 00 35 37 | CDR | ONE THING ABOUT THIS ROCK --THIS IS THE ONE THAT I NOTICED WHEN WE WERE COMING UP THE WAY THAT HAD SOME OF THESE HOLES IN IT -- LOOKED LIKE VESICLES.<br>- - - |
| | | | | 07 00 35 50 | CDR | COULDN'T BE ZAP HOLES.<br>- - - |
| | | | | 07 00 36 09 | LMP | LOOK AT THIS. TONY, THIS IS IS A BLACK MATRIX WITH SOME EXCELLENT CRYSTALS IN IT AND ALSO THAT ARE MILKY IN COLOR. DON'T SEE ANY CLEAVAGE THOUGH OR STRIATIONS-ABOUT A CENTIMETER ACROSS, AND IT HAS A MATRIX OF THAT WHITE ROCK LIKE UP ON THE RIM -- NOT A MATRIX BUT SOME CLASTS OF THAT.<br>- - - |
| | | | | 07 00 38 16 | LMP | OK, I GOT A HANDFUL OF CHIPS THERE. |
| | | | | 07 00 38 33 | CDR | SEE HERE -- CHARLIE, WHEN YOU GET UNDER THE DIRT, IT'S ALL WHITE. |
| | | | | 07 00 38 38 | LMP | I KNOW, HEY, 428, TONY.<br>- - - |
| BAG 429<br>63355* | 68.24 | | | 07 00 40 23 | LMP | OK, TONY, I GOT THREE CHIPS OFF OF THE ROCK SCATTERED OVER ABOUT A 2 METER AREA. ONE OF THEM IS TOO BIG TO GO IN THE BAG BUT THE OTHER -- THE ONE IS RIGHT NOW GOING IN 429. |
| FSR 9<br>60017 | 2102.0 | | | 07 00 40 45 | LMP | GET THIS OTHER ROCK. |
| | | | | 07 00 41 17 | LMP | AND, TONY, THIS ROCK HERE LOOKS LIKE THE SAME -- IT'S THE SAME CHARACTER AS THE ONE ON THE RIM. |
| | | | | 07 00 41 38 | LMP | THAT GREAT, HUGE BLACK ONE THAT WE SAMPLED EXCEPT THAT WE DON'T -- THAT ONE UP THERE DIDN'T HAVE ANY OF THESE HOLES IN IT. I CAN'T REALLY SAY WHAT THESE HOLES ARE HERE. THEY JUST LOOK -- THEY'RE VUGS -- LET'S JUST CALL THEM VUGS. WHAT CUASED THEM I DON'T KNOW. |
| | | | | 07 00 42 00 | CDR | YEAH, THEY LOOK MORE VUGGY TO ME ALTHOUGH THEY'RE ROUND. |
| | | | | 07 00 42 03 | LMP | THEY LOOK LIKE DRILL HOLES IS WHAT THEY LOOK LIKE.<br>- - - |
| | | | | 07 00 42 19 | CDR | OK, THEY LOOK LIKE THE HOLES THAT YOU GET IN ROCKS WHERE YOU HAVE A VENTING OF GAS THAT COMES UP THROUGH THERE LIKE ALONG - |
| | | | | 07 00 42 31 | LMP | VESICLE PIPE. |
| | | | | 07 00 42 33 | CDR | YEAH, VESICLE PIPE THAT'S IT.<br>- - - |
| | | | | 07 00 46 11 | LMP | HOPE WE PICKED UP THE RIGHT ROCKS. I THINK THERE ARE TWO PREDOMINANT TYPE ROCKS HERE, THE APHANITIC BLACK LOOKING ONES THAT REALLY APPEAR TO BE CRYSTALLINE TO ME, AND NOT NECESSARILY LAVA LIKE. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 3 - STATION: 10' (PRIME)** | | | | | | |
| | | | | 07 00 46 41 | CC | STATION 10 MAKES A TRIANGLE WITH ALSEP AND THE OLD STATION 10. WE'LL CALL IT STATION 10 PRIME, AND IT'S ABOUT 50 METERS TO THE NORTHWEST OF THE OLD 10. |
| | | | | | | - - - |
| | | | | 07 01 12 15 | CC | OKAY. IF YOU CAN RECOGNIZE AN EDGE OF THE RAY, IN THE NEIGHBORHOOD OF 50 METERS, NORTH OF THE ALSEP AREA, THAT WOULD BE A GOOD PLACE TO FIX STATION 10 PRIME. OUR PHOTO SHOWS THE EDGE OF THE RAY IN THERE. |
| | | | | | | - - - |
| | | | | 07 01 12 36 | CDR | PICK THE EDGE OF A RAY, 50 METERS OR SO NORTH OF AN ALSEP SITE- OF THE ALSEP. YOU CAN'T HARDLY TELL WHERE ONE - THEY'RE NOT DISTINCT - THE GRADATIONAL PATTERN IS JUST TOO GRADUAL. |
| | | | | 07 01 12 57 | CC | JUST PICK A PLACE 50 METERS, NORTH AND WE'LL CALL THAT 10 PRIME. |
| | | | | | | - - - |
| | | | | 07 01 14 50 | CC | OKAY, WE'RE LOOKING FOR IN THE SAMPLING HERE THOSE VESICULAR BASALTS THAT YOU BOTH DESCRIBED IN THE AREA. |
| | | | | 07 01 15 04 | LMP | THAT MIGHT BE ONE OVER THERE, JOHN, IT'S THE BLUISH--- |
| | | | | 07 01 15 17 | CC | AND TO MAKE A TRIANGLE WITH THE OTHER DOUBLE CORE AND THE DEEP CORE. |
| | | | | 07 01 15 38 | LMP | WE'RE STOPPED AND WE'RE JUST ABOUT DIRECTLY NORTH OF THE ALSEP. |
| | | | | | | - - - |
| BAG 347 | | RAKE FRAGMENTS | 117-18824 DSB | 07 01 20 44 | CC | YES, WE WOULD LIKE A DOUBLE CORE. THE RAKE SOIL |
| 60610* | 750.9 | UNSORTED | 116-18681 XSB | | | IS FIRST PRIORITY AND THEN THE DOUBLE CORE. |
| | | | 116-18682 XSB | | | - - - |
| | | | | 07 01 22 24 | CDR | THAT'S A GOOD PLACE, CHARLIE. |
| | | | 116-18683 XSA | | | - - - |
| | | | 116-18684 XSA | 07 01 22 43 | LMP | LOOK AT THAT REGOLITH. WE'VE GOT SOME GLASS COATED FRAGS HERE, TONY. |
| | | | 117-18825 LOC | 07 01 23 14 | LMP | THE RAKE.. I DON'T SEE ANYTHING THAT LOOKS - |
| | | | | 07 01 23 19 | CDR | GET ANOTHER. |
| | | | | 07 01 23 20 | LMP | OK, THAT WAS ABOUT HALF A BAG FULL. ONE SCOOP. |
| | | | | 07 01 23 30 | CDR | BAG FULL. |
| | | | | 07 01 23 33 | LMP | OK, TONY, OUT OF THAT SCOOP WE LOST THE TWO BIGGEST ROCKS. I POURED TOO FAST. |
| | | | | 07 01 24 10 | CDR | OK, THAT'S IN BAG NUMBER 347. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BAG 348 | | RAKE SOIL | SAME AS | 07 01 24 51 | CDR | LET'S GET THE SOIL, CHARLIE. |
| 60600 | 182.6 | RESERVE FINES | BAG 347 | | | - - - |
| 60601 | 330.2 | < 1 MM | 116-18683 XSB | 07 01 25 14 | LMP | YEP. OK, THERE'S A SCOOP. |
| 60602 | 14.93 | 1-2 MM | | 07 01 25 21 | CDR | OK, AND THAT'S GOING INTO BAG 348. |
| 60603 | 8.57 | 2-4 MM | | | | |
| 60604 | 3.94 | 4-10 MM | | | | |
| | | | | 07 01 24 25 | CC | RIGHT, WE'RE GOING TO WANT A RAKE SOIL, OVER IN THE AREA OF THE OLD STATION 10, ALSO. SO IT'S UP TO YOU WHETHER IT'S EASIEST TO GO GET IT NOW OR TO GET THE DOUBLE CORE NOW. AFTER, YOUR THROUGH WITH THIS ONE. |
| | | | | | | - - - |
| | | | | 07 01 25 43 | LMP | AT OLD STATION 10. |

EVA 3 - STATION: 10

| | | | | | | |
|---|---|---|---|---|---|---|
| BAG 349 | | RAKE FRAGMENTS | 117-18826 DSB | 07 01 26 29 | CDR | LOOK AT THESE NEAT LITTLE CRATERS, YOU JUST RUN |
| 60510* | 76.1 | UNSORTED | 116-18685 XSB | | | RIGHT THROUGH THEM. |
| | | | 116-18686 XSB | | | THERE'S A LOT OF TRACKS AROUND THERE, CHARLIE. |
| | | | 116-18687 XSA | | | THAT MUST BE THE OLD STATION 10 RIGHT THERE. |
| | | | 116-18688 XSA | 07 01 26 47 | LMP | IT'S RIGHT OVER HERE, IT IS, YEAH. |
| | | | 117-18827 XSD | | | - - - |
| | | | | 07 01 27 05 | LMP | THIS IS THE OLD DOUBLE CORE SITE, WE'LL RAKE HERE. |
| | | | | 07 01 27 13 | CC | THAT'S EXACTLY WHAT WE WANT. |
| | | | | 07 01 27 17 | LMP | OK, WE'RE WITHIN THREE METERS OF IT. |
| | | | | | | - - - |
| | | | | 07 01 27 44 | CDR | OK, YOU LOCATING IT, CHARLIE? |
| | | | | 07 01 27 53 | LMP | YEAH. OK, WE'RE SACKING IT 349. |
| | | | | 07 01 28 20 | LMP | JOHN'S GOT 2 SCOOPS--2 RAKES FULL. NOT NEARLY AS PRODUCTIVE OVER HERE. |
| | | | | 07 01 28 29 | CC | OK, YOU'RE PROBABLY ON A DIFFERENT PART OF THE RAY THAT'S GOOD. |
| | | | | 07 01 28 39 | LMP | 2 SCOOPS AND WE GOT 3 LITTLE FRAGS. 1 OF THEM JUST DROPPED OUT. |
| | | | | 07 01 28 44 | CDR | 3 IS ALL WE GOT? |
| | | | | 07 01 28 46 | LMP | 2, 1 OF THEM DROPPED OUT. |
| | | | | 07 01 28 53 | CDR | HERE'S A COUPLE MORE. |
| | | | | 07 01 29 16 | CDR | OK, LET ME GET 1 MORE, CHARLIE. |
| | | | | 07 01 29 36 | LMP | HE HAD ABOUT 20 POUNDS OF SOIL, TONY, AND HE CAME UP WITH 1 LITTLE FRAG. AND WE JUST DROPPED IT. |
| | | | | 07 01 29 45 | LMP | THAT'S ENOUGH. |
| | | | | 07 01 29 47 | CC | YEAH, LETS JUST CALL THAT OUR RAKE SAMPLE. |
| | | | | 07 01 29 48 | LMP | OK, WE GOT ABOUT 4 FRAGS IN 349. |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 3 - STATION:** | | **10** | | | | |
| BAG 350 | | RAKE SOIL | SAME AS | 07 01 29 57 | LMP | OKAY, WE NEED A SOIL SAMPLE, JOHN. |
| 60500 | 233.7 | RESERVE FINES | BAG 349 | 07 01 30 26 | CDR | OK, LET ME GET 1 MORE SCOOP FULL. |
| 60501 | 306.7 | < 1 MM | 116-18687 XSB | 07 01 30 42 | CDR | GET A LITTLE AFTER HERE. |
| 60502 | 17.69 | 1-2 MM | | | | - - - |
| 60503 | 9.94 | 2-4 MM | | 07 01 31 13 | CC | OK, WAS THAT BAG 350, WE DIDN'T GET A NUMBER. |
| 60504 | 6.63 | 4-10 MM | | 07 01 31 22 | LMP | YEAH, 350, TONY. IT WAS. |
| FSR 10 | | ROCK CHIP BROKEN | 116-18689 XSB | 07 01 31 30 | CDR | WHAT ARE YOU SUPPOSED TO BE DOING WHILE I DO THE DOUBLE CORE? |
| 60018 | 1501.0 | FROM BOULDER | 116-18690 XSB | | | |
| | | | 116-18691 XSA | 07 01 31 32 | LMP | I'M SUPPOSED TO BE SAMPLING. |
| | | | 116-18692 XSA | 07 01 31 34 | CC | RIGHT. BE LOOKING AROUND FOR EXOTIC - - |
| | | | 116-18693 LOC | 07 01 31 39 | CC | - - ESPECIALLY THINGS LIKE THAT VESICULAR BASALT YOU DESCRIBED. |
| | | | | 07 01 31 45 | LMP | THAT'S WHY I'M WHACKING ON THIS ONE. |
| | | | | 07 01 31 50 | LMP | THAT IS A HARD ROCK, RIGHT THERE, JOHN. |
| | | | | 07 01 32 13 | LMP | I GOT IT WITH THE RAKE. WHY DON'T YOU TAKE THAT AND PUT IT IN MY SACK AND I'LL GO OVER AND GET THE DOUBLE CORE? |
| | | | | 07 01 32 23 | CDR | CARRY THIS ONE OVER THERE AND THROW IT IN THE BIG BAG. |
| | | | | 07 01 32 26 | LMP | OK, I'LL DO IT. OK, TONY, I JUST WHACKED OFF ONE THAT - I THOUGHT WAS BASALTIC LOOKING BUT IT TURNS OUT IT'S GLASSY WITH THE WHITE MATRIX IN IT. |
| BAG 430 | | GLASS BALL | 116-18694 XSB | 07 01 33 15 | LMP | HEY, -- HERE'S ANOTHER ONE OF THOSE GLASS BALLS. |
| 60135* | 137.7 | | 116-18695 XSB | | | |
| | | | 116-18696 LOC | 07 01 33 22 | CDR | YEAH, THAT'S A BIG ONE. |
| | | | | 07 01 34 46 | CDR | THAT SON OF A GUN, MUST BE SOLID. |
| | | | | 07 01 34 51 | CDR | HOUSTON, THIS GLASS BALL THAT'VE GOT DOESN'T HAVE ANY GIVE TO IT. |
| | | | | 07 01 35 02 | CDR | GOING INTO BAG 380. (430) |
| | | | | | | - - - |
| | | | | 07 01 35 14 | CDR | IMPACT? WELL IT'S SMOOTH ON ONE SIDE AND HAS IMPACT PITS ON THE OTHER. |
| FSR 10 | | | | 07 01 36 25 | CDR | OK, HERE'S THE HAMMER. OK, I'M TAKING THESE 2 BIG ROCKS AND PUT THEM IN THE BIG ROCK BAG, CHARLIE. |
| FSR 9? | | | | 07 01 36 29 | LMP | OK, MULEY'S GOT TO GO IN THERE TOO. |

**EVA 3 - STATION: 10' (PRIME)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| U27/L32 | | DOUBLE DRIVE TUBE | 116-18698 DS | 07 01 35 10 | LMP | OK, DOUBLE CORE'S ASSEMBLED. |
| 60014/ | 570.3 | | 116-18699 DS | | | - - - |
| 60013 | 757.3 | | 116-18700 DS | 07 01 36 46 | LMP | HEY, TONY, I PUSHED IT ALL IN ON ALMOST THREE-QUARTERS OF THE WAY ON THE BOTTOM CORE. |
| | | | 118-18697 LOC | 07 01 37 02 | LMP | JOHN, COULD YOU - - |
| | | | | 07 01 37 05 | LMP | - - TAKE A PICTURE OF THAT FOR ME? I DON'T HAVE MY CAMERA. |
| | | | | | | - - - |
| | | | | 07 01 39 10 | LMP | HEY, TONY, AT THIS BOTTOM OF THIS CORE IT LOOKS WHITISH, AND IT'S PRETTY COARSE GRAIN - - NOT REAL FINE. IT'S SORT OF LIKE A CRUMBLY SHOCKED ROCK. |
| | | | | | | - - - |
| | | | | 07 01 40 53 | LMP | OK, THE BOTTOM WAS 32, TONY. TOP IS 27. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FSR 11 | | ROCK | 116-18701 XSB | 07 01 37 13 | CC | AND JOHN, WHILE YOU'RE LOOKING AROUND THERE, OUR NUMBER ONE PRIORITY IS A VESICULAR BASALT. |
| 60019 | 1887.0 | | 116-18702 XSB | | | - - - |
| | | | 116-18703 USB | | | |
| | | | 116-18704 XSA | 07 01 39 48 | CDR | I'M LOOKING, BUT I'M NOT SEEING ANY BASALT. |
| | | | | 07 01 39 52 | CC | OK, AFTER YOU GET THIS CORE PACKED UP, WHY DON'T YOU DRIVE ON BACK TO THE LM TO THE NORMAL CLOSEOUT POSITION, AND WE'LL LET YOU SAMPLE AROUND THERE -- SEE IF YOU CAN FIND ONE AROUND THERE. YOU DESCRIBED SOMETHING IN A CRATER BEHIND THE LM. |
| | | | | | | - - - |
| | | | | 07 01 42 20 | CDR | I JUST PICKED UP ANOTHER BRECCIA, BUT IT WAS INTERESTING BECAUSE IT HAD SOME VERY DARK CLASTS IN IT, AND IT WAS PRIMARILY A WHITE MATRIX. |
| | | | | 07 01 42 38 | CDR | THE CLASTS WERE VERY DARK. |
| | | | | 07 01 42 47 | CDR | YOU WANT THIS TO GO IN YOUR BAG, CHARLIE? |
| | | | | 07 01 42 49 | LMP | YEAH, WHY DON'T YOU - - |
| | | | | 07 01 42 51 | LMP | STICK IT IN MINE - - I THINK WE HAVE PLENTY OF ROOM IN MINE. |

| | | | | | | |
|---|---|---|---|---|---|---|
| BAG 13 | | ROCK | 116-18705 XSB | 07 01 45 49 | CDR | I JUST GOT A SPECTACULAR WHITE ROCK. BUT IT'S KINDA DUST COATED, IT'S SO FINE GRAINED THAT I CAN'T SEE ANY CRYSTALLINE STRUCTURE ASSOCIATED WITH IT. IT'S SORTA COVERED WITH ZAP, YOU CAN SEE PLENTY OF ZAP PITS. THAT'S GOING IN BAG 13. |
| 60215* | 385.8 | | 116-18706 XSB | | | |
| | | | 116-18707 XSB | | | |

CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

| SAMPLE NUMBER | WEIGHT (G) | SAMPLE TYPE | LUNAR-SURFACE PHOTOGRAPHS | AET | | CREW COMMENTS |
|---|---|---|---|---|---|---|
| **EVA 3 - STATION: LM** | | | | | | |
| BAG 15<br>60235* | | ROCK | 117-18828 XSB<br>117-18829 XSB | 07 01 47 29 | LMP | HEY, TONY, I JUST PICKED UP ONE THAT IS IN BAG 15 THAT HAS A BLACK MATRIX. BLUISH BLACK MATRIX WITH LATH-LIKE EITHER CLASTS OR PHENOCRYST IN IT. AND IT'S RIGHT BEHIND THE LM HERE. I DON'T KNOW IF THAT'S WHAT WE'RE LOOKING FOR OR NOT. |
| | | | | 07 01 47 51 | LMP | THERE ARE A LOT OF THE ROCKS THAT I CALL VESICULAR BASALTS AROUND HERE, BUT I DON'T KNOW WHETHER WHAT I REALLY CALLED WAS CORRECT OR NOT. THAT MIGHT HAVE LEAD YOU ALL ASTRAY. |
| | | | | 07 01 48 09 | LMP | THAT MIGHT HAVE BEEN JUST THE GLASS COATING ON THE ROCK. |
| BAG 17<br>60255* | | ROCK | 117-18830 XSB<br>117-18831 XSB<br>117-18832 XSB | 07 01 49 28 | LMP | OKAY, TONY, I'VE PICKED UP A ROCK HERE THAT HAS AN APHANITIC MATRIX WITH PERHAPS 30 PERCENT OF IT -- WHITISH MILLIMETER SIZE CLAST OR PHENOCRYST AND IT DOESN'T LOOK GLASSY TO ME. |
| | | | | 07 01 49 49 | LMP | IT'S GOOD HALF OF A GRAPEFRUIT SIZE. |
| | | | | 07 01 50 57 | LMP | OKAY, AND IT'S GOING IN BAG 17. |
| BAG 18<br>60275 | 255.2 | ROCK | 117-18833 XSB<br>117-18834 XSB<br>117-18835 XSA | 07 01 55 23 | CC | AND CHARLIE, YOU CAN CONTINUE SAMPLING FOR ABOUT 5 MORE MINUTES AND THEN WE'LL HAVE TO LOAD UP. |
| | | | | 07 01 55 31 | LMP | OKAY. THAT'S ABOUT 3 SAMPLES. I'LL BE OUT OF BAGS THEN ANYWAY. |
| | | | | 07 01 56 01 | LMP | TONY, I'LL SAY ONE THING THAT THE CHARACTER OF THE REGOLITH HAS REALLY CHANGED BETWEEN HERE AND STONE MOUNTAIN AND - |
| | | | | 07 01 56 25 | LMP | THERE'S A GRAB SAMPLE IN 18. |
| | | | | 07 01 56 33 | LMP | WELL, IT'S PARTIALLY DOCUMENTED I SHOULD SAY, NOT A GRAB SAMPLE. |

| | | | | | | |
|---|---|---|---|---|---|---|
| **BAG 20** | | **CRYSTALLINE ROCK** | **117-18836 XSB** | **07 01 56 44** | **LMP** | THERE'S A NEAT ROCK. |
| **60315** | **787.7** | | **117-18837 XSB** | | | RIGHT THERE. DOESN'T LOOK LIKE A BRECCIA. |
| | | | **117-18838 XSB** | | | - - - |
| | | | | **07 01 57 31** | **LMP** | AND, TONY THE LAST ONE I PICK UP IS AN IGNEOUS ROCK, NO BRECCIA. |
| | | | | **07 01 57 38** | **LMP** | AND IT'S GOT LATH CRYSTALS IN IT AND A BLACK MATRIX BUT IT IS NOT BASALTIC. |
| | | | | **07 01 58 01** | **LMP** | WELL, IT WAS GOING IN BAG 19, IT'S NOT ANYMORE. |
| | | | | **07 01 58 05** | **LMP** | IN BAG NUMBER 20, TONY. |

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| | | | | | | |
|---|---|---|---|---|---|---|
| **FSR 12?** | | **ROCK** | | **07 02 16 50** | **CDR** | I GOT ONE MORE ROCK HERE THAT I WAS LOOKING AT OUT OF THE WINDOW OF THE LM, I GOT PLENTY OF PICTURES OF IT FOR YOU. |
| **(FSR 4?)** | | | **110-17866 XSB** | | | |
| **60016** | **4307.0** | | **110-17867 XSB** | | | |
| | | | **110-17868 DSA** | **07 02 16 58** | **LMP** | PUT IT IN THE BIG ROCK BAG -- IT'LL GO IN THAT ETB - |
| | | | | **07 02 17 04** | **CDR** | IT'S NOT ALL THAT BIG. |

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| | | | | | | |
|---|---|---|---|---|---|---|
| **BAG 331** | | **ROCK FOR LPM** | **116-18712 XSB** | **07 02 32 05** | **CC** | OKAY, CHARLIE, WHY DON'T YOU GO ON OUT WHERE JOHN IS AND SEE IF YOU CAN FIND AN IGNEOUS OR A HARD BRECCIA TO PUT ON TOP OF THAT LPM. USE HIS CAMERA TO DOCUMENT IT. |
| **60335*** | | | **116-18713 XSB** | | | |
| | | | **116-18720 LPM** | | | |
| | | | **116-18721 LPM** | | | |
| | | | | | | - - - |
| | | | | **07 02 34 16** | **LMP** | OKAY, HARD BRECCIA OR IGNEOUS ROCK. |
| | | | | **07 02 35 20** | **LMP** | DO YOU WANT THIS ROCK BROUGHT BACK, TONY - THAT IS THAT I'M GOING TO --- FOR THE LPM. |
| | | | | **07 02 35 25** | **CC** | ROG. WE'D LIKE YOU TO DOCUMENT IT BEFORE YOU TOUCH IT AND WHEN YOU GET THE LPM FIRST MEASUREMENT, WE'LL PUT IT ON THE LPM, TAKE A PICTURE OF IT ON THE LPM, AND THEN WE'LL GET AN LPM MEASUREMENT OF IT, AND THEN PACK IT AND BRING IT BACK. |

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TABLE 9. - - SAMPLE INDEX BY CONTAINER

| CONTAINER | LRL NO. | PAGE |
|---|---|---|
| DEEP CORE | 60001-60007 (BIT) (TOP) | 19-20,192 |
| D.T. U43/L38 | 64002/64001* | 88-89,208 |
| D.T. U29/L36 | 68002/68001* | 125-126,221 |
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| 18 | 60275 | 49,248 |
| 20 | 60315 | 50-52,249 |
| 331 | 60335* | 53-54,249 |
| 332 | 65510 | 109-111,210 |
| 333 | 65500 | 109,111,211 |
| 334 | 65610* | 112-113,211 |
| 335 | 65710* | 114-115,214 |
| 336 | 65095* | 107-108,215 |
| 337 | 65055* | 103-104,216 |
| 338 | 66040 | 116-118,218 |
| 339 | 66080-86 | 121-122,218 |
| 340 | 68115 | 129-130,222 |
| 341 | 68415,1; 68416 | 131-132,223 |
| 342 | 68415,2 | 131-132,223 |
| 343 | 68815,2 | 133-134,225 |
| 344 | 68840* | 133,135,226 |
| 345 | 63510* | 182-183,241 |
| 346 | 63500-09 | 182-183,241 |
| | 63515 | |
| 347 | 60610* | 57-58,244 |
| 348 | 60600 | 57-58,245 |
| 349 | 60510* | 55-56,245 |
| 350 | 60500 | 55-56,246 |
| 351 | 60035* | 33-34,193 |
| 352 | 61240*-49* | 75-76,198 |
| | 61255* | |
| 353 | 61295* | 77-79,199 |
| 354 | 61120* [2] | 70-71,195 |
| 355 | 60050* | 35-36,194 |
| 356 | 61160* | 72,74,197 |
| 357 | 61220* | 75-76,198 |
| 362 | 61135* | 64-66,197 |
| 363 | 61500* [3] | 67-69,196 |
| 364 | 61175* | 72-74,196-19 |
| 368 | 61280* | 77-79,200 |
| 369 | 61180* | 64-66,198 |
| 371 | 61155*-58* | 67-68,196 |
| 372 | 61510* | 70-71,195 |
| 373 | 60075* | 35-36,194 |
| 374 | 68120 | 129-130,223 |
| 375 | 68820* | 133-134,225 |
| 376 | 69920* | 138-139,227 |
| 377 | 69940* | 138-139,227 |
| 378 | 69935* | 138-139,227 |
| 379 | 69960* | 138,140,228 |
| 380 | 69955* | 138,140,228 |
| 381 | 60115* | 39-40,229 |
| 382 | 67035 | 144-145,231 |
| 383 | 67055 | 146-147,231 |
| 384 | 67075 | 148-149,232 |
| 385 | 67095 | 150-151,232 |
| 386 | 67115 | 150-151,232 |
| 387 | 67415* | 156-158,234 |
| 388 | 67700-08 | 171-172,236 |
| 389 | 67935-37 | 173-175,236-237 |
| 390 | 67940-48 | 174,176-177,238 |
| 391 | 67960 | 174,176-177,238 |
| 392 | 67975 | 174,176,239 |
| 394 | 64435* | 92-93,206 |
| 395 | 64510* | 96-97,206 |
| 396 | 64500* | 96-97,207 |
| 397 | 64455* | 94-95,207 |
| 398 | 64475* | 207 |
| 399 | 64420* | 90-91,208 |
| 400 | 64600* | 98-99,209 |
| 401 | 64610* | 98-99,209 |
| 402 | 65600* | 112-113,212 |
| 403 | 65075* | 105-106,213 |
| 404 | 65035* | 101-102,213 |
| 405 | 65310* | 101-102,214 |
| 406 | 65700* | 114-115,215 |
| 407 | 66030* | 116,118,217 |
| 408 | 66055* | 116-118,218 |
| 409 | 66075 | 119-120,219 |
| 410 | 66095* | 123-124,219 |
| 411 | 68510* | 127-128,221 |
| 412 | 68500* | 127-128,221 |
| 413 | 68035* | 127-128,222 |
| 415 | 67435* | 159-160,232 |
| 416 | 67455* | 157,161-162,233 |
| 417 | 67460* | 157,163-164,233 |
| 418 | 67475* | 157,165-166,233 |
| 419 | 67480* | 157,167-168,234 |
| 420 | 67510* | 157,167-168,234 |
| 421 | 67610* | 169-170,235 |
| 422 | 67600*-05* | 169-170,235 |
| 423 | 67710* | 171-172,235 |
| 425 | 67955-57 | 173-175,238 |
| 426 | 63320* | 180-181,242 |
| 427 | 63340* | 180-181,242 |
| 428 | 63335* | 180-181,243 |
| 429 | 63355*-57* | 180-181,243 |
| 430 | 60135* | 41-42,246 |
| FSR-1 | 61015* | 60-61,200 |
| FSR-2 | 61016* | 62-63,200 |
| FSR-3 | 60015* | 25-26,203-204 |
| FSR-4 | 60016 | 27-28,205 |
| FSR-4A? | | 59,205 |
| FSR-5 | 65015* | 100,216 |
| FSR-6 | 68815 | 133-134,225 |
| FSR-7 | 67015 | 142-143,231 |
| FSR-8 | 67915 | 173-175,237 |
| FSR-8B | | 178-179,239 |
| FSR-9? | 60017 [1] | 180-181,243 |
| FSR-10 | 60018 | 29-30,246 |
| FSR-11 | 60019 | 31-32,247 |
| PADDED BAG 1 | 67215* | 152-153,239 |
| PADDED BAG 2 | 67235* | 154-155,239 |
| SURFACE SAMPLE 1 | 69003* | 138-139,226 |
| SURFACE SAMPLE 2 | 69004* | 138-139,226 |

D.T. INDICATES DRIVE TUBE.
ONE, TWO, AND THREE DIGIT NUMBERS INDICATE DOCUMENTED BAGS.
FSR INDICATES LOOSE (UNBAGGED) SAMPLE.
? INDICATES TENTATIVE IDENTIFICATION.
* INDICATES PROVISIONAL NUMBER UNLISTED IN THE CURATOR'S LUNAR SAMPLE DATA. INVENTORY AS OF MAY 12, 1972.

[1] IN OUR JUDGEMENT, SAMPLE 60017 WAS COLLECTED AT STATION 13. IF CORRECTLY LOCATED, THE SAMPLE MAY BE RENUMBERED.

[2] SINCE PREPARATION OF THESE DATA THE LRL NUMBER OF SAMPLE 61120 HAS BEEN CHANGED TO 61500.

[3] SINCE PREPARATION OF THESE DATA THE LRL NUMBER OF SAMPLE 61500 HAS BEEN CHANGED TO 61140.

TABLE 10 - - SAMPLE INDEX BY LRL NUMBER

| LRL NO. | CONTAINER | PAGE |
|---|---|---|
| 60001-60007 (BIT) (TOP) | DEEP CORE | 19-20,192 |
| 60010/60009 | D.T. U45/L54 | 21-22,229 |
| 60014/60013 | D.T. U27/L32 | 23-24,247 |
| 60015* | FSR-3 | 25-26,203-204 |
| 60016 | FSR-4 | 27-28,205 |
| 60017 [1] | FSR-9? | 180-181,243 |
| 60018 | FSR-10 | 29-30,246 |
| 60019 | FSR-11 | 31-32,247 |
| | FSR-4A? | 59,205 |
| 60035* | 351 | 33-34,193 |
| 60050* | 355 | 35-36,194 |
| 60075* | 373 | 35-36,194 |
| 60095* | 4 | 37-38,193 |
| 60115* | 381 | 39-40,229 |
| 60135* | 430 | 41-42,246 |
| 60215* | 13 | 43-44,247 |
| 60235* | 15 | 45-46,248 |
| 60255* | 17 | 47-48,248 |
| 60275 | 18 | 49,248 |
| 60315 | 20 | 50-52,249 |
| 60335* | 331 | 53-54,249 |
| 60500 | 350 | 55-56,246 |
| 60510* | 349 | 55-56,245 |
| 60600 | 348 | 57-58,245 |
| 60610* | 347 | 57-58,244 |
| 61015* | FSR-1 | 60-61,200 |
| 61016* | FSR-2 | 62-63,200 |
| 61120* [2] | 354 | 70-71,195 |
| 61135* | 362 | 64-66,197 |
| 61155* | 371 | 67-68,196 |
| 61156* | 371 | 67-68,196 |
| 61157* | 371 | 67-68,196 |
| 61158* | 371 | 67-68,196 |
| 61160* | 356 | 72,74,197 |
| 61175* | 364 | 72-74,196-197 |
| 61180* | 369 | 64-66,198 |
| 61195* | 2 | 64-66,197 |
| 61220* | 357 | 75-76,198 |
| 61240* | 352 | 75-76,198 |
| 61245* | 352 | 75-76,198 |
| 61246* | 352 | 75-76,198 |
| 61247* | 352 | 75-76,198 |
| 61248* | 352 | 75-76,198 |
| 61249* | 352 | 75-76,198 |
| 61255* | 352 | 75-76,198 |
| 61280* | 368 | 77-79,200 |
| 61295* | 353 | 77-79,199 |
| 61500* [3] | 363 | 67-69,196 |
| 61510* | 372 | 70-71,195 |
| 62235* | 5 | 80-81,202 |
| 62236* | 5 | 80-81,202 |
| 62237* | 5 | 80-81,202 |
| 62240* | 6 | 80-81,202 |
| 62255* | 7 | 82-83,202 |
| 62275* | 9 | 84-85,203 |
| 62280* | 11 | 86-87,203 |
| 62295* | 10 | 86-87,203 |
| 63320* | 426 | 180-181,242 |
| 63335* | 428 | 180-181,243 |
| 63340* | 427 | 180-181,242 |
| 63355* | 429 | 180-181,243 |
| 63356* | 429 | 180-181,243 |
| 63357* | 429 | 180-181,243 |
| 63500 | 346 | 182-183,241 |
| 63505 | 346 | 182-183,241 |
| 63506 | 346 | 182-183,241 |
| 63507 | 346 | 182-183,241 |
| 63508 | 346 | 182-183,241 |
| 63509 | 346 | 182-183,241 |
| 63510* | 345 | 182-183,241 |
| 63515 | 346 | 182-183,241 |
| 64002/64001* | D.T. U43/L38 | 88-89,208 |
| 64420* | 399 | 90-91,208 |
| 64435* | 394 | 92-93,206 |
| 64455* | 397 | 94-95,207 |
| 64475* | 398 | 207 |
| 64500* | 396 | 96-97,207 |
| 64510* | 395 | 96-97,206 |
| 64600* | 400 | 98-99,209 |
| 64610* | 401 | 98-99,209 |
| 65015* | FSR-5 | 100,216 |
| 65035* | 404 | 101-102,213 |
| 65055* | 337 | 103-104,216 |
| 65075* | 403 | 105-106,213 |
| 65095* | 336 | 107-108,215 |
| 65310* | 405 | 101-102,214 |
| 65500 | 333 | 109,111,211 |
| 65510 | 332 | 109-111,210 |
| 65800* | 402 | 112-113,212 |
| 65610* | 334 | 112-113,211 |
| 65700* | 406 | 114-115,215 |
| 65710* | 335 | 114-115,214 |
| 66030* | 407 | 116,118,217 |
| 66040 | 338 | 116-118,218 |
| 66055* | 408 | 116-118,218 |
| 66075 | 409 | 119-120,219 |
| 66080 | 339 | 121-122,218 |
| 66085 | 339 | 121-122,218 |
| 66086 | 339 | 121-122,218 |
| 66095* | 410 | 123-124,219 |
| 67015 | FSR-7 | 142-143,231 |
| | FSR-8B | 178-179,239 |
| 67035 | 382 | 144-145,231 |
| 67055 | 383 | 146-147,231 |
| 67075 | 384 | 148-149,232 |
| 67095 | 385 | 150-151,232 |
| 67115 | 386 | 150-151,232 |
| 67215* | PADDED BAG 1 | 152-153,239 |
| 67235* | PADDED BAG 2 | 154-155,239 |
| 67415* | 387 | 156-158,234 |
| 67435* | 415 | 159-160,232 |
| 67455* | 416 | 157,161-162,233 |
| 67460* | 417 | 157,163-164,233 |
| 67475* | 418 | 157,165-166,233 |
| 67480* | 419 | 157,167-168,234 |
| 67510* | 420 | 157,167-168,234 |
| 67600* | 422 | 169-170,235 |
| 67605* | 422 | 169-170,235 |
| 67610* | 421 | 169-170,235 |

TABLE 10 CONT. - - SAMPLE INDEX BY LRL NUMBER

| LRL NO. | CONTAINER | PAGE |
|---|---|---|
| 67700 | 388 | 171-172,236 |
| 67705 | 388 | 171-172,236 |
| 67706 | 388 | 171-172,236 |
| 67707 | 388 | 171-172,236 |
| 67708 | 388 | 171-172,236 |
| 67710* | 423 | 171-172,235 |
| 67915 | FSR-8 | 173-175,237 |
| 67935 | 389 | 173-175,236-237 |
| 67936 | 389 | 173-175,236-237 |
| 67937 | 389 | 173-175,236-237 |
| 67940 | 390 | 174,176-177,238 |
| 67945 | 390 | 174,176-177,238 |
| 67946 | 390 | 174,176-177,238 |
| 67947 | 390 | 174,176-177,238 |
| 67948 | 390 | 174,176-177,238 |
| 67955 | 425 | 173-175,233 |
| 67956 | 425 | 173-175,238 |
| 67957 | 425 | 173-175,238 |
| 67960 | 391 | 174,176-177,238 |
| 67975 | 392 | 174,176,239 |
| 68002/68001* | D.T. U29/L36 | 125-126,221 |
| 68035* | 413 | 127-128,222 |
| 68115 | 340 | 129-130,222 |
| 68120 | 374 | 129-130,223 |
| 68415,1 | 341 | 131-132,223 |
| 68415,2 | 342 | 131-132,223 |
| 68416 | 341 | 131-132,223 |
| 68500* | 412 | 127-128,221 |
| 68510* | 411 | 127-128,221 |
| 68815 | FSR-6 | 133-134,225 |
| 68815,2 | 343 | 133-134,225 |
| 68820* | 375 | 133-134,225 |
| 68840* | 344 | 133,135,226 |
| 69001 | D.T. L34 CSVC | 136-137,227 |
| 69003* | SURFACE SAMPLE 1 | 138-139,226 |
| 69004* | SURFACE SAMPLE 2 | 138-139,226 |
| 69920* | 376 | 138-139,227 |
| 69935* | 378 | 138-139,227 |
| 69940* | 377 | 138-139,227 |
| 69955* | 380 | 138,140,228 |
| 69960* | 379 | 138,140,228 |

* INDICATES PROVISIONAL LRL NUMBER UNLISTED IN THE CURATOR'S LUNAR SAMPLE DATA INVENTORY AS OF MAY 12, 1972. 12, 1972.

D.T. INDICATES DRIVE TUBE.

ONE, TWO, AND THREE DIGIT NUMBERS INDICATE DOCUMENTED BAGS.

FSR INDICATES LOOSE (UNBAGGED) SAMPLE.

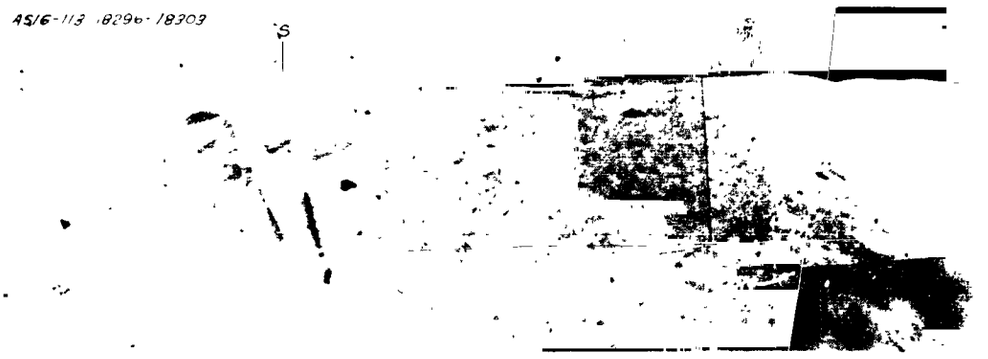
? INDICATES TENTATIVE IDENTIFICATION.

[1] IN OUR JUDGMENT, SAMPLE 60017 WAS COLLECTED AT STATION 13. IF CORRECTLY LOCATED, THE SAMPLE MAY BE RENUMBERED.

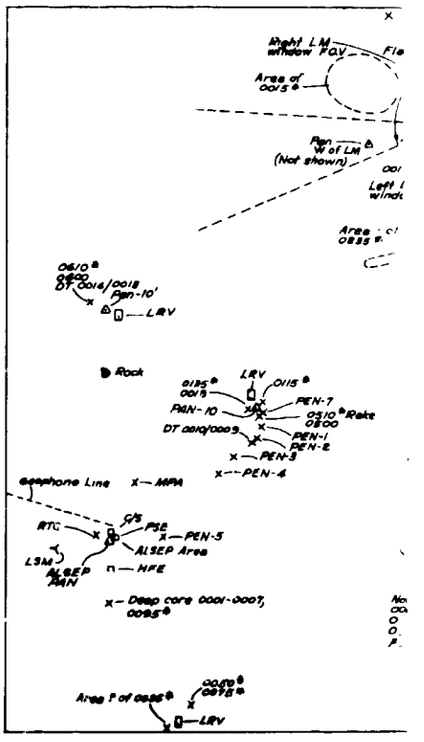
[2] SINCE THE PREPARATION OF THIS REPORT, THE LRL NUMBER OF SAMPLE 61120 HAS BEEN CHANGED TO 61500.

[3] SINCE THE PREPARATION OF THIS REPORT, THE LRL NUMBER OF SAMPLE 61500 HAS BEEN CHANGED TO 61140.

FOLDOUT FRAME 1




*Left LM window pan*

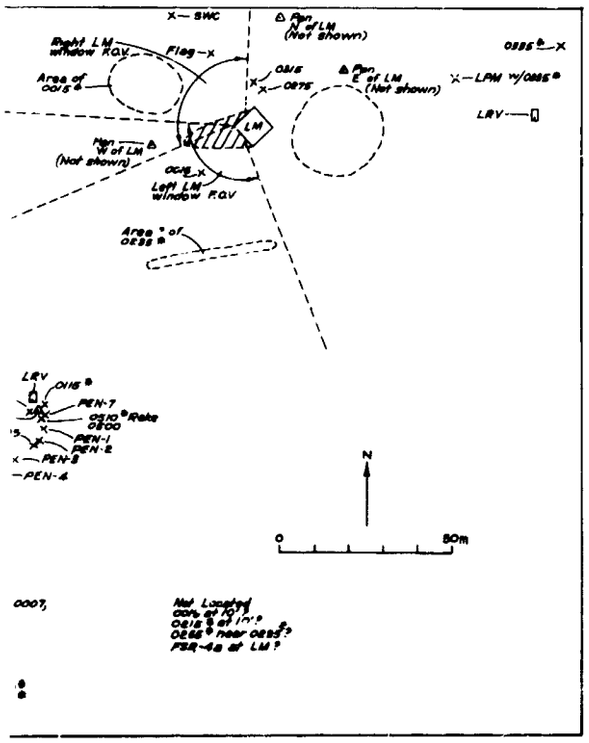



***Planimetric sketch map of LM/ALSEP***

***Station 10' pan***

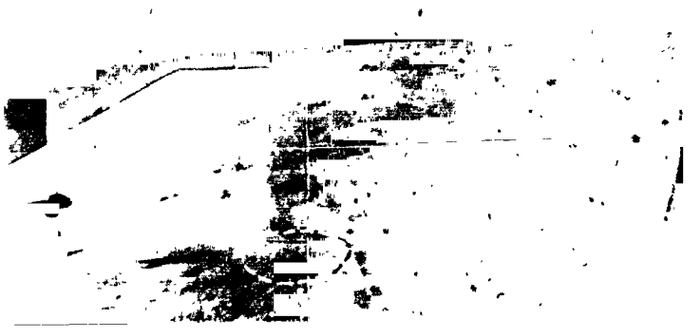
FOLDOUT FRAME 2


Right LM window pan

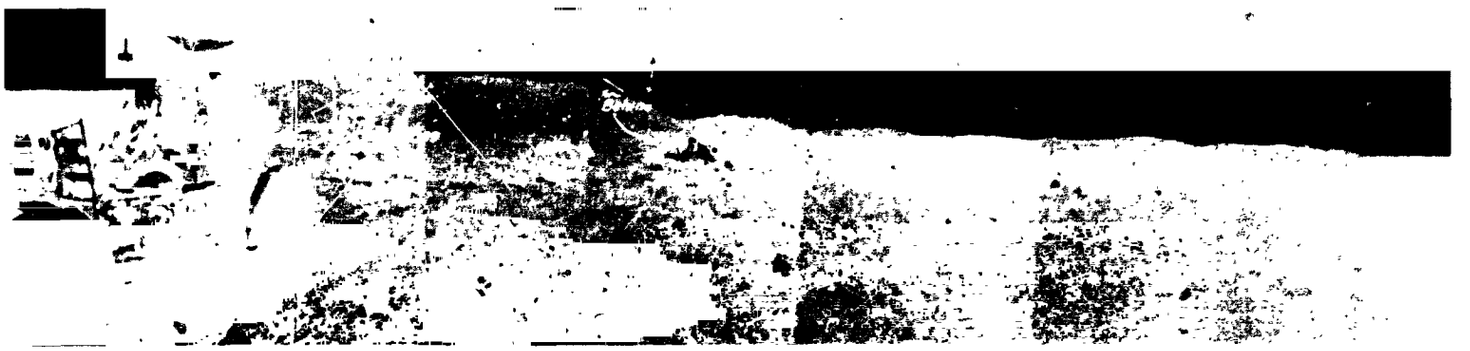



of LM/ALSEP - Station 10 - Station 10' area

FOLDOUT FRAME 3



indow pan

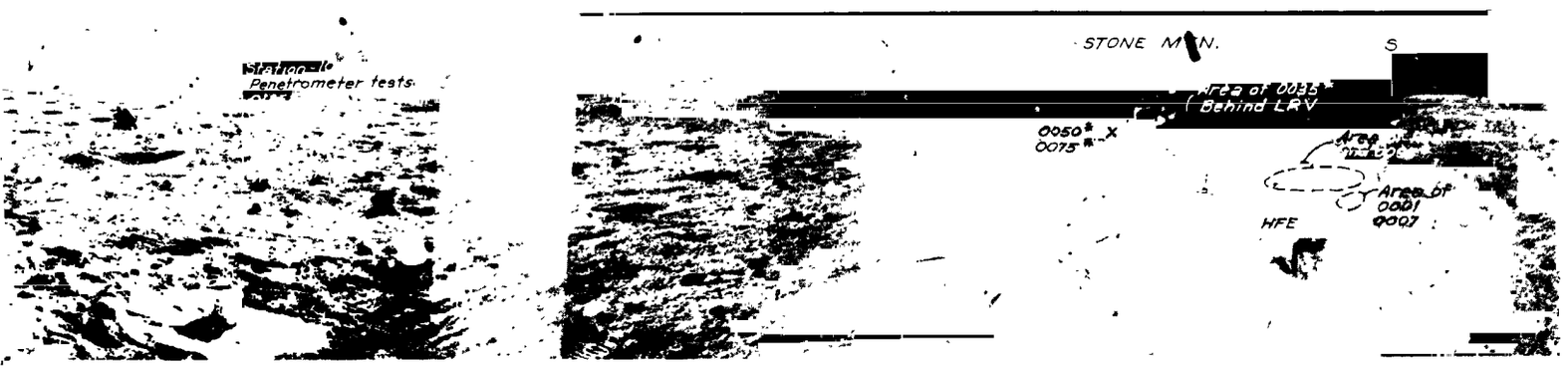


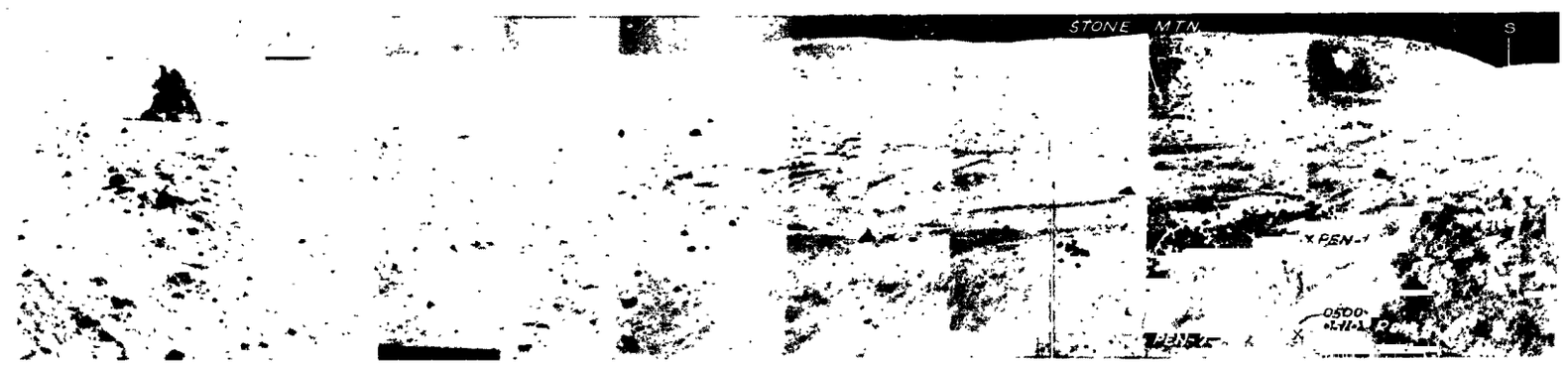
FOLDOUT FRAME 1


*ALSEP pan*

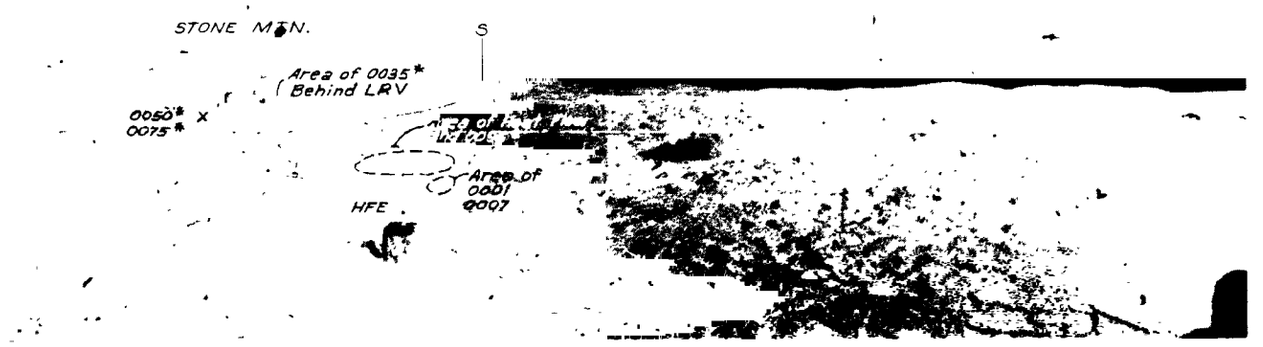
***Station 10 pan***

2

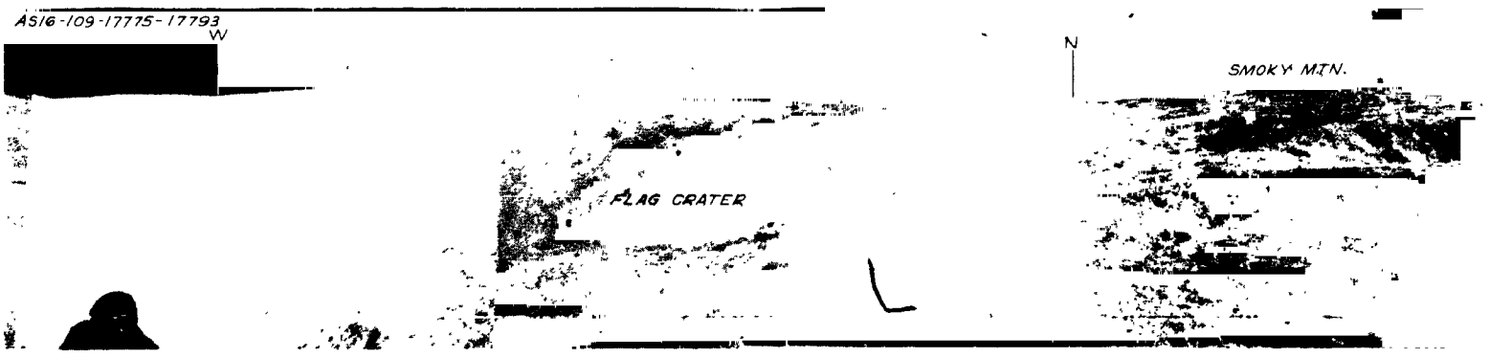

Penetrometer tests
STONE MTN.
S
Area of 0013
Behind LRV
0050
0075
X
Area of
0001
0007
HFE


STONE MTN.
S
X PEN-1
0500
LM-1

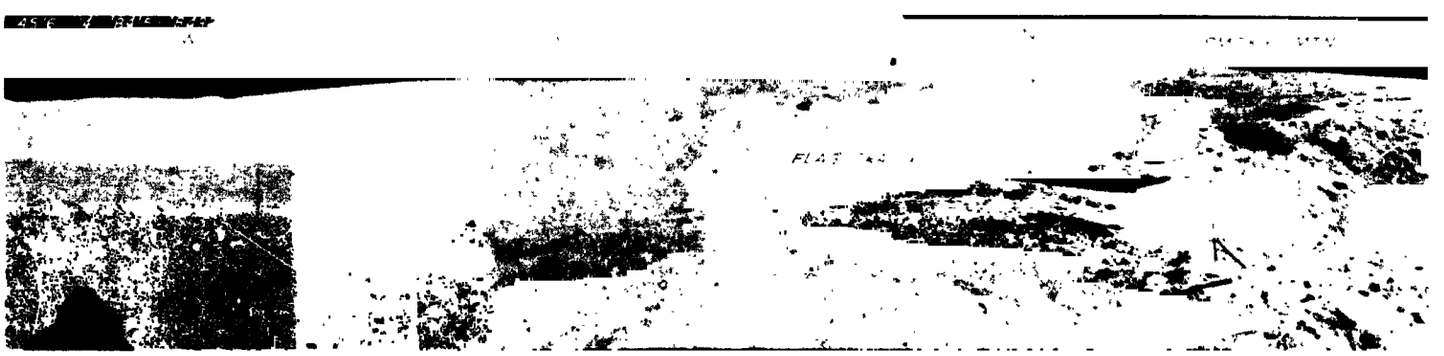
FOLDOUT FRAME 3




FOLDOUT FRAME 1

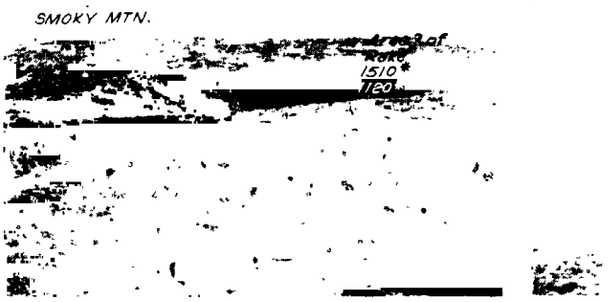


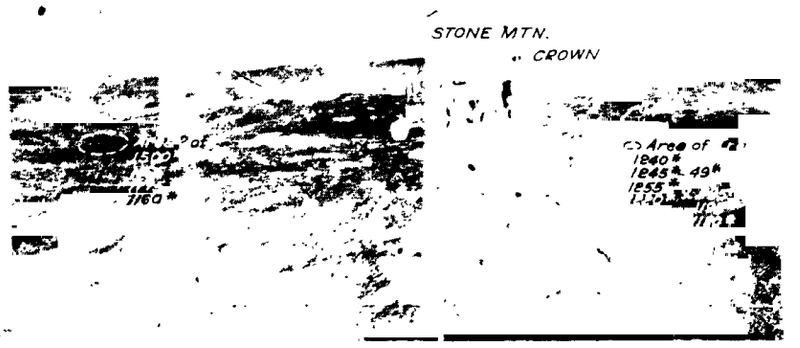

*Station 1 northeast pan*

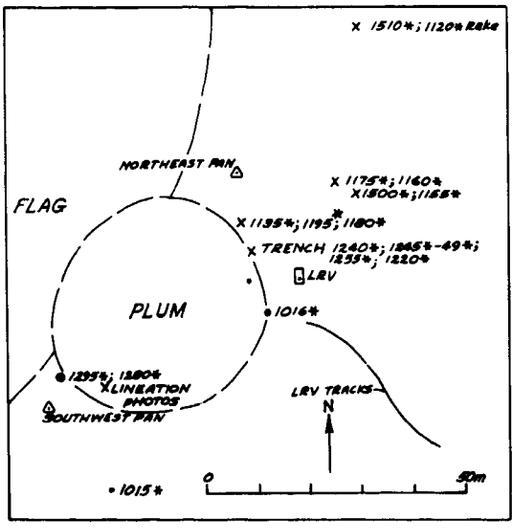



***Station 1 southwest pan***

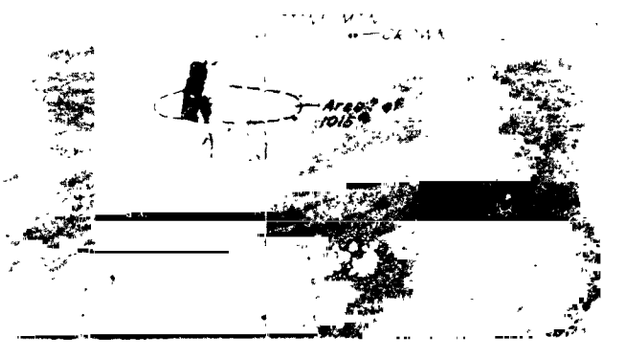
FOLDOUT FRAME 2



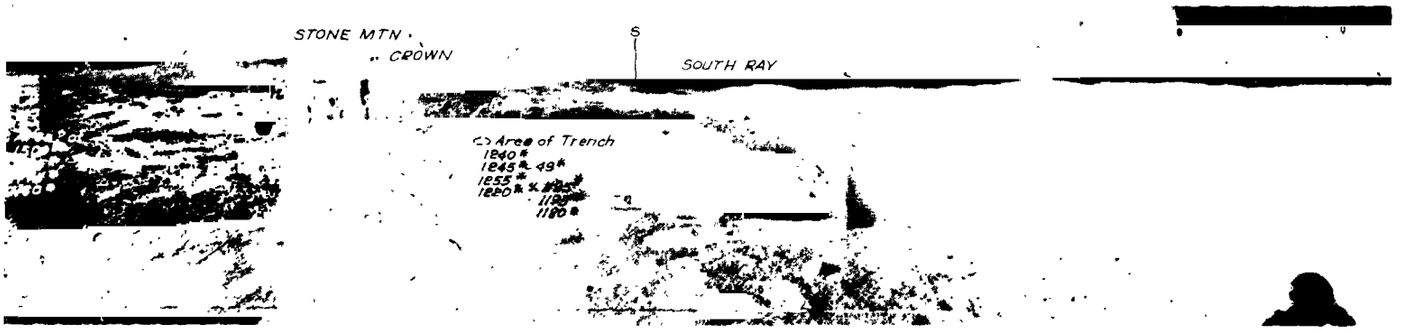



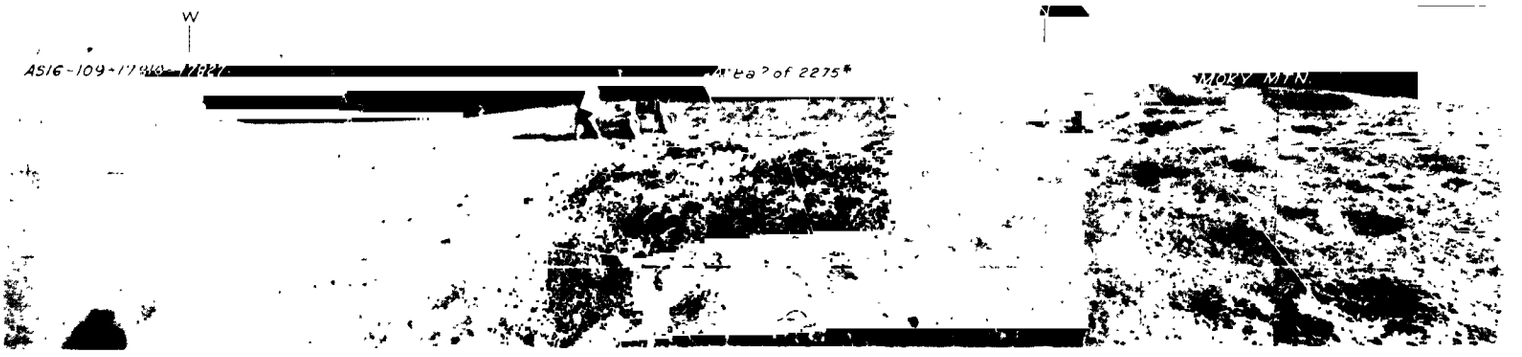

*Plarimetric sketch map of station 1*



FOLDOUT FRAME 3

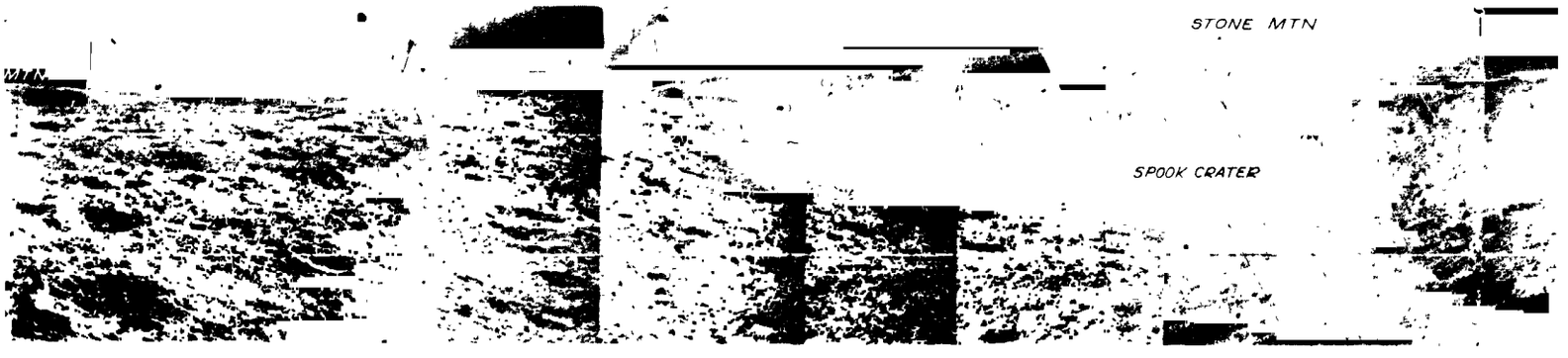


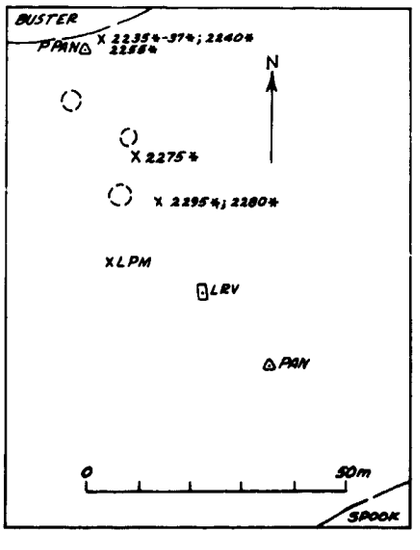

FOLDOUT FRAME




*Station 2 pan*

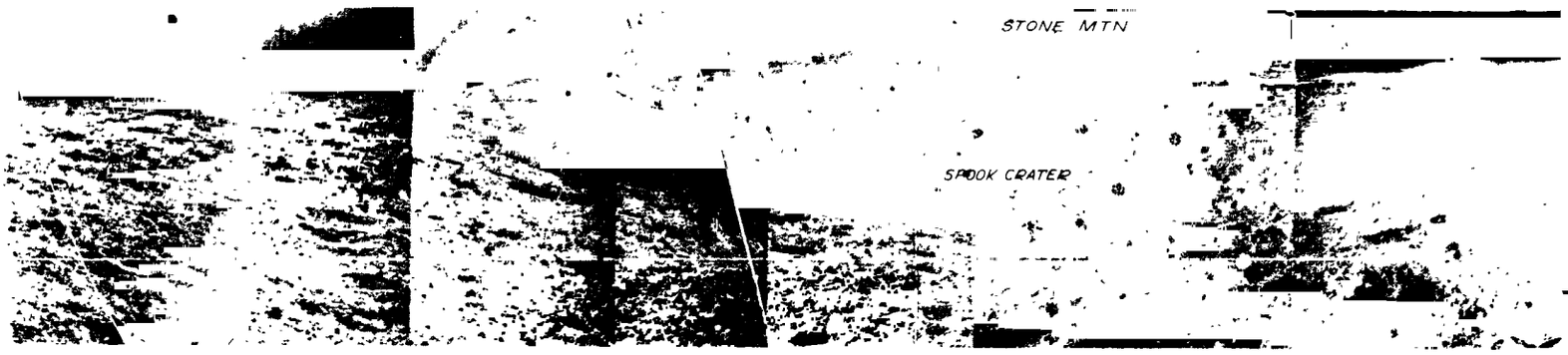
FOLDOUT FRAME 2

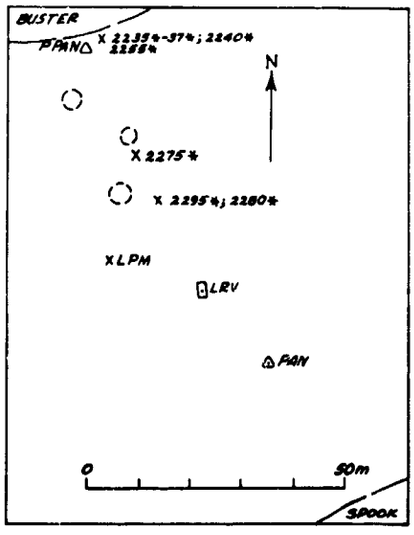



*Planimetric sketch map of station 2*

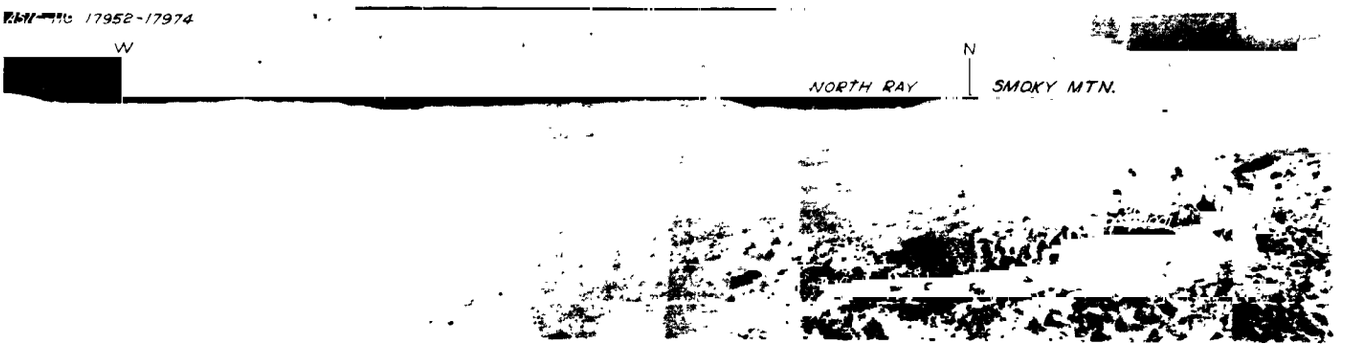
FOLDOUT FRAME 2



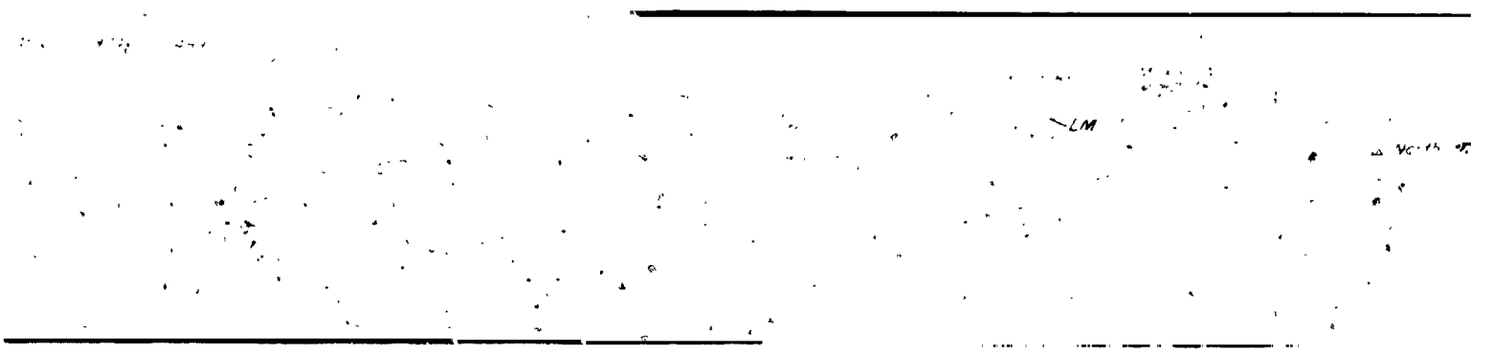




*Panimetric sketch map of station 2*

FOLDOUT FRAME

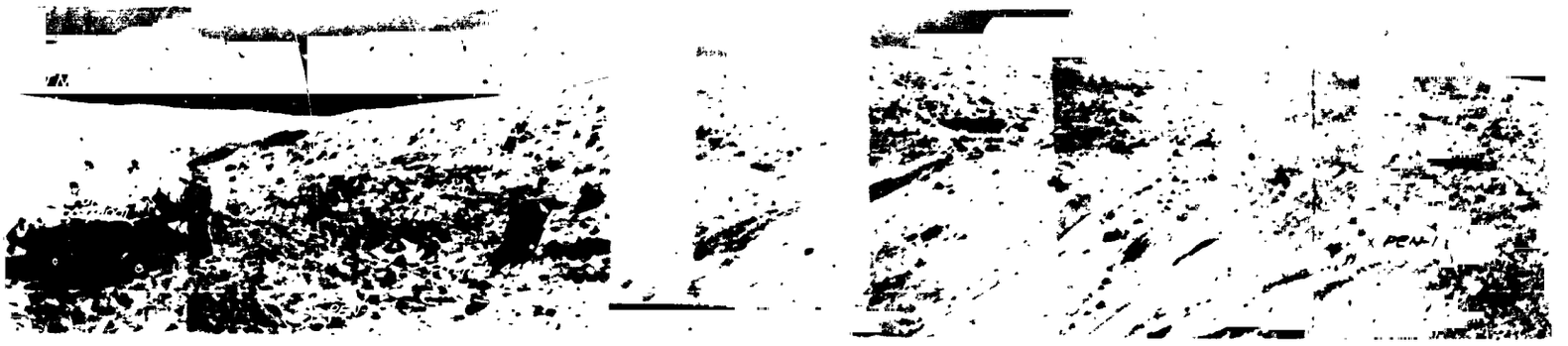


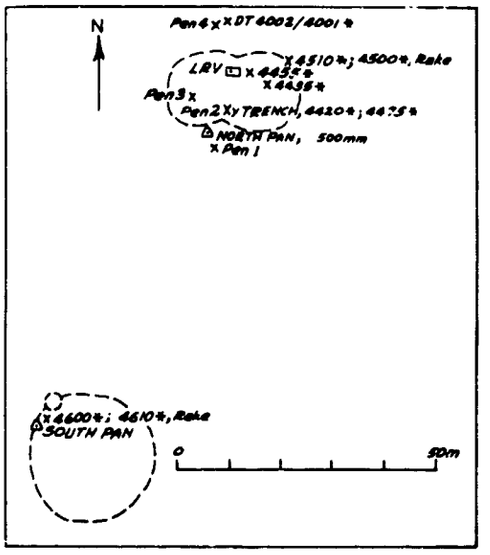

*Station 4 north pan*




***Station 4 south pan***

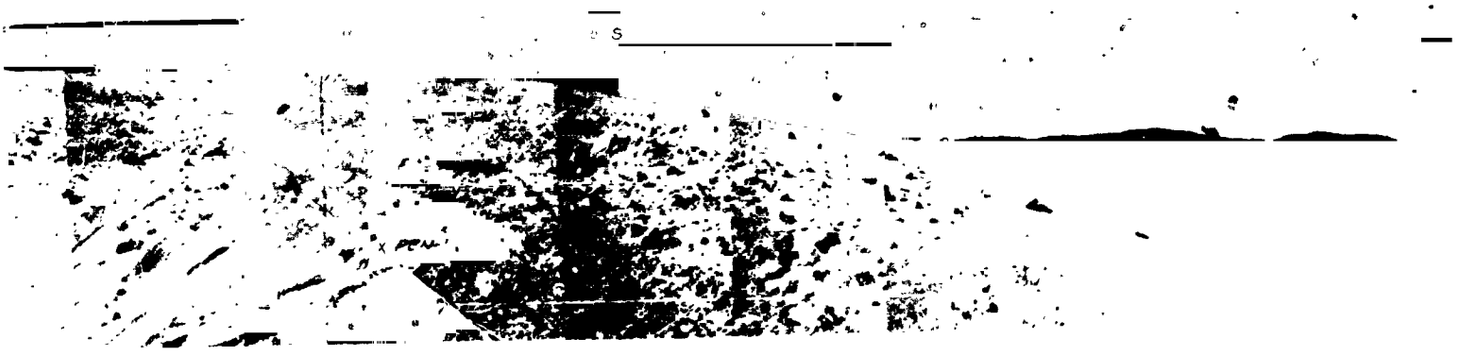
FOLDOUT FRAME 2




*Planimetric sketch map of station 4*

FOLDOUT FRAME 3



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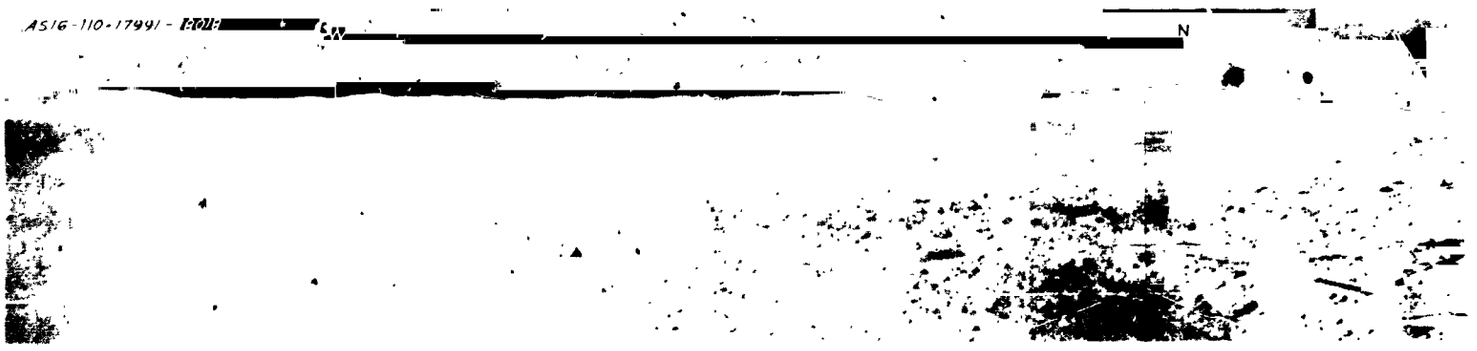
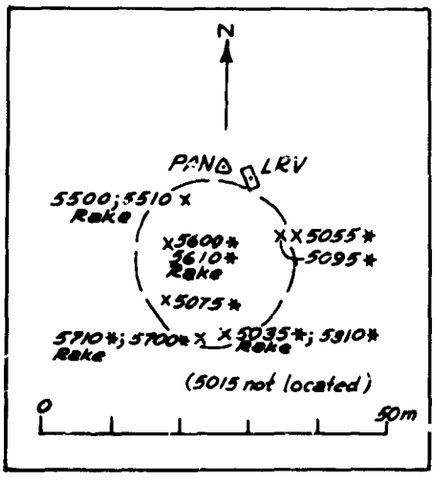
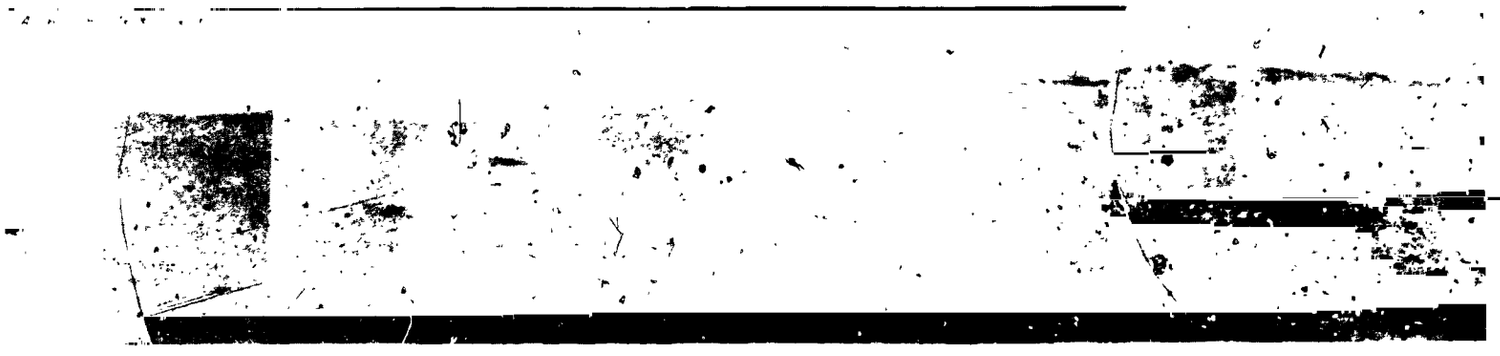



Station 5 pan

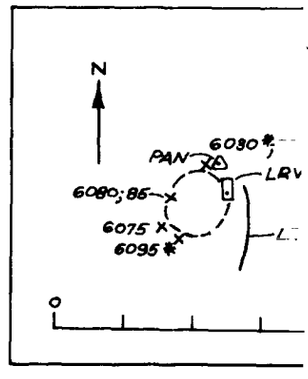



Planimetric sketch map of station 5

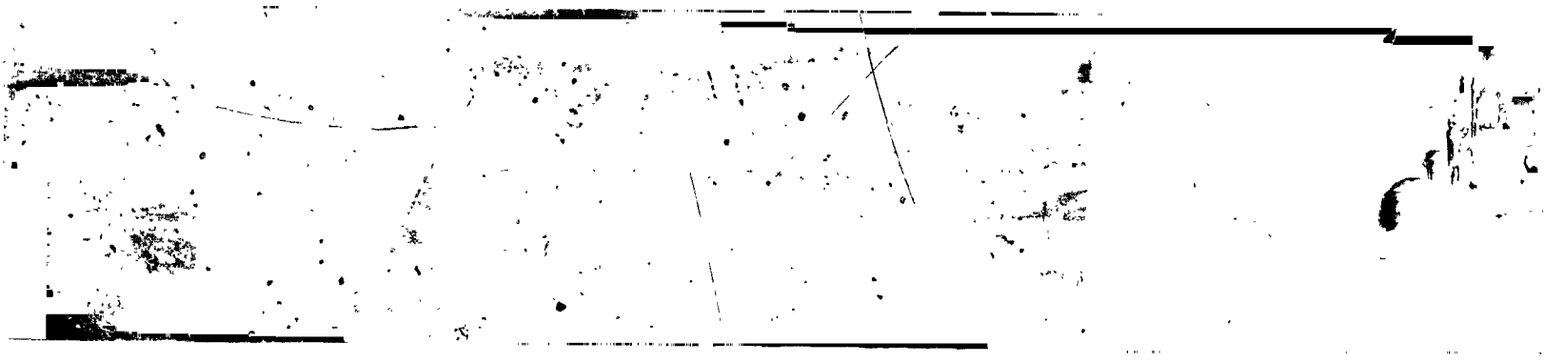


Station 6 pan

FOLDOUT FRAME 2




Planimetric sketch m



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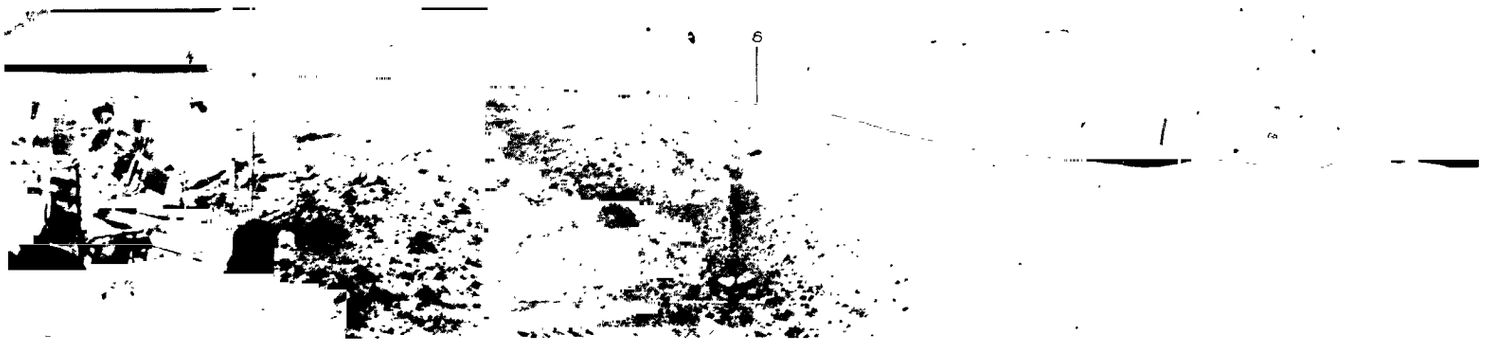
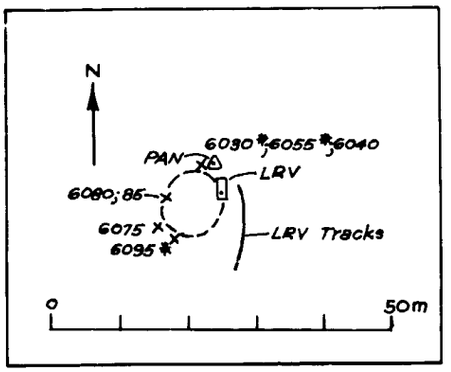
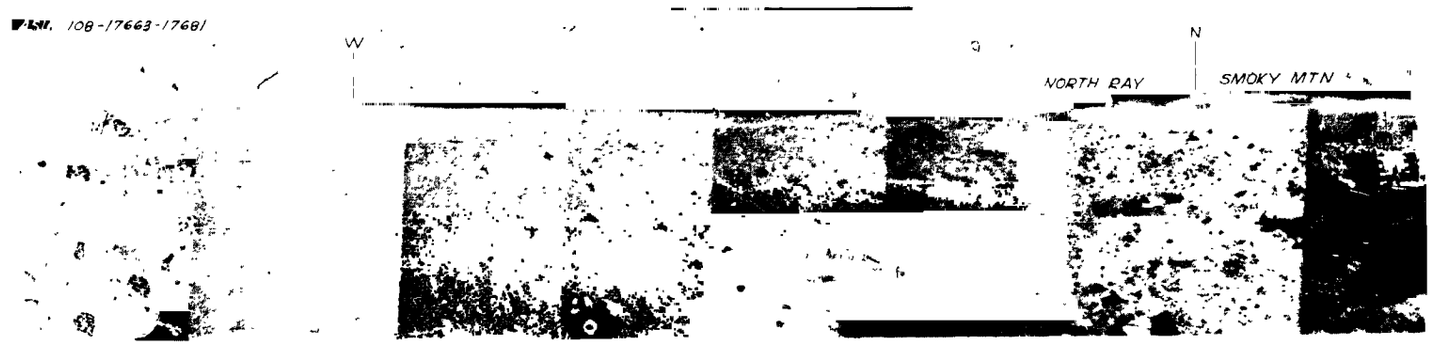


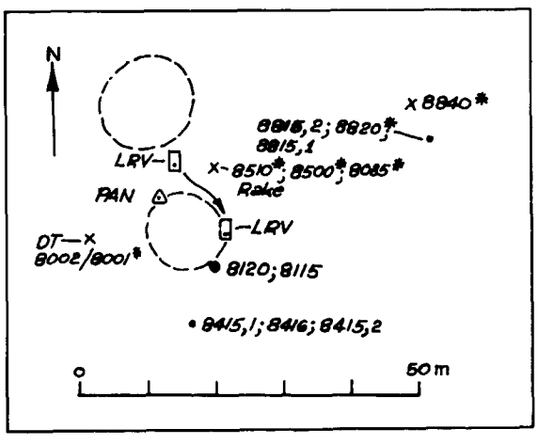



*Planimetric sketch map of station 6*

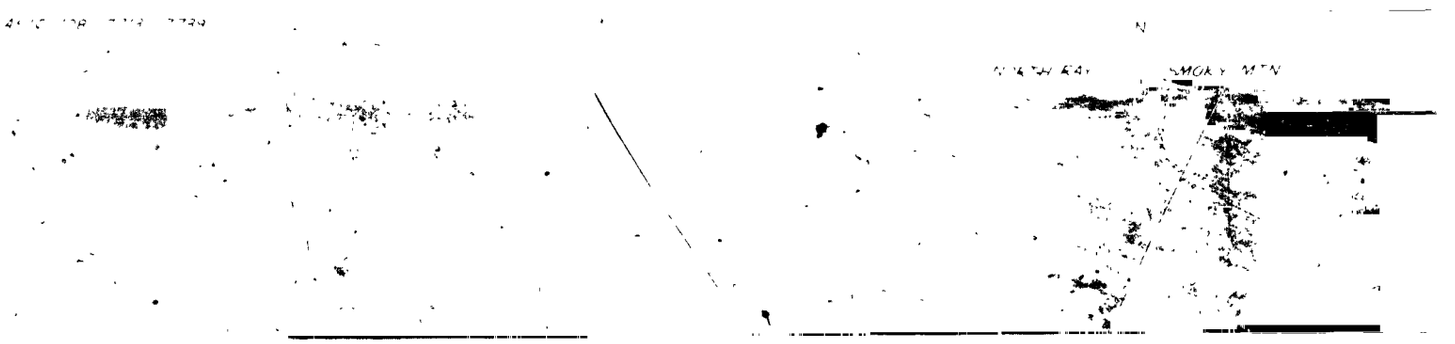
FOLDOUT FRAME




*Station 8 pan*

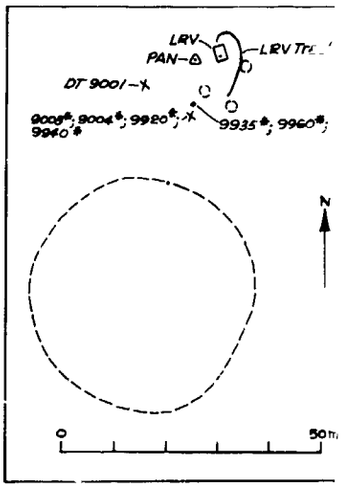



*Planimetric sketch map of station 8*

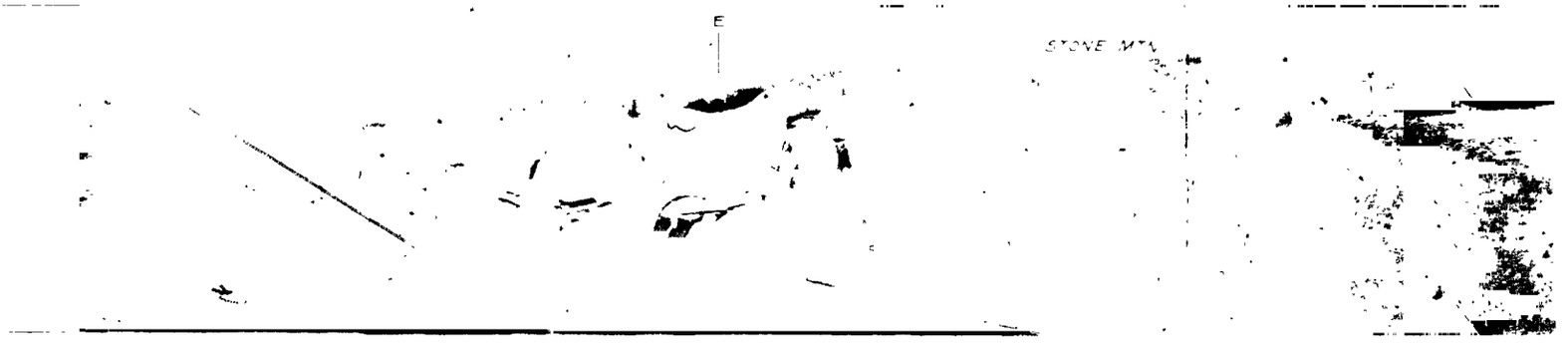



***Station 9 pan***

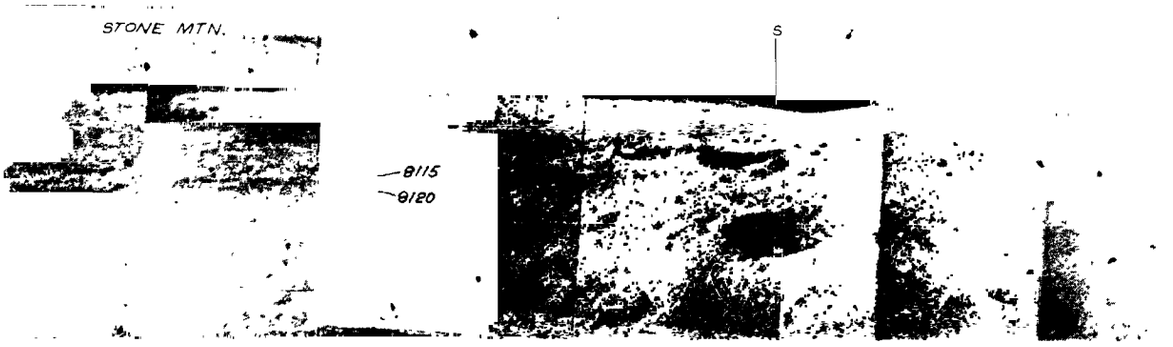
FOLDOUT FRAME 2

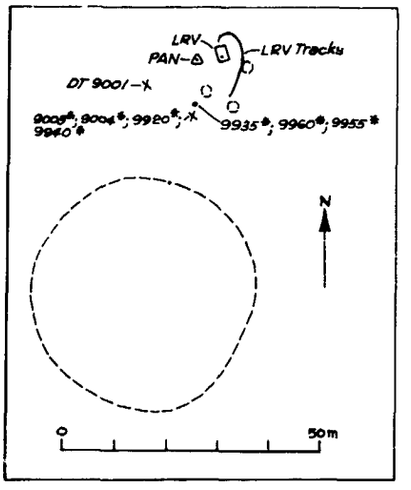




*Planimetric sketch map of s*

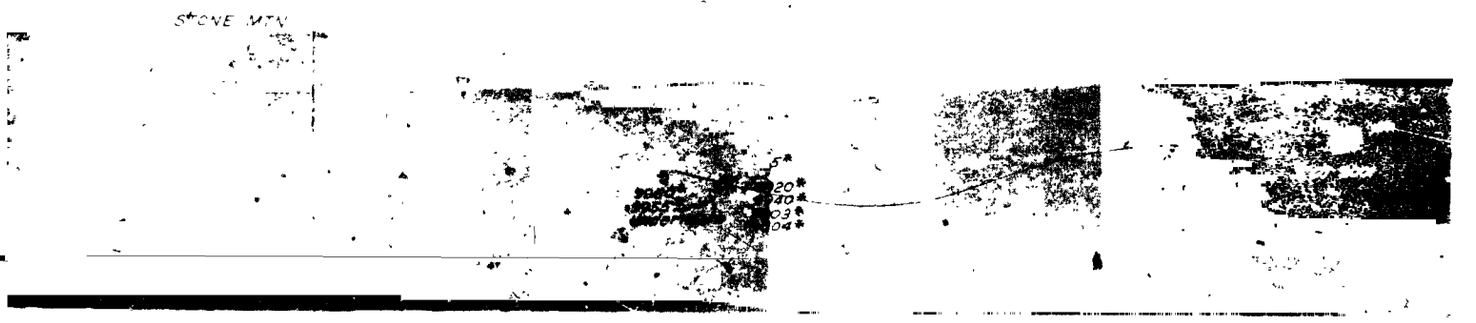


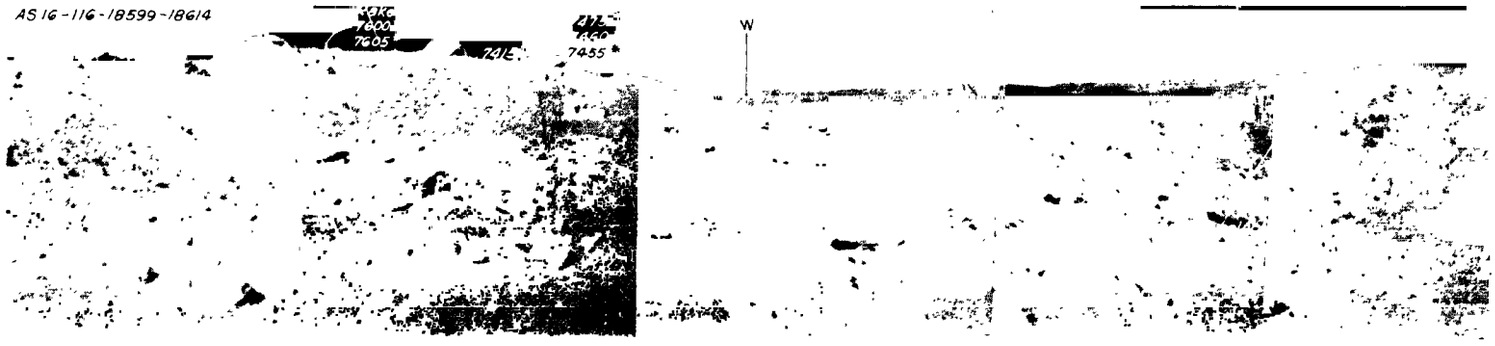
FOLDOUT FRAME 7



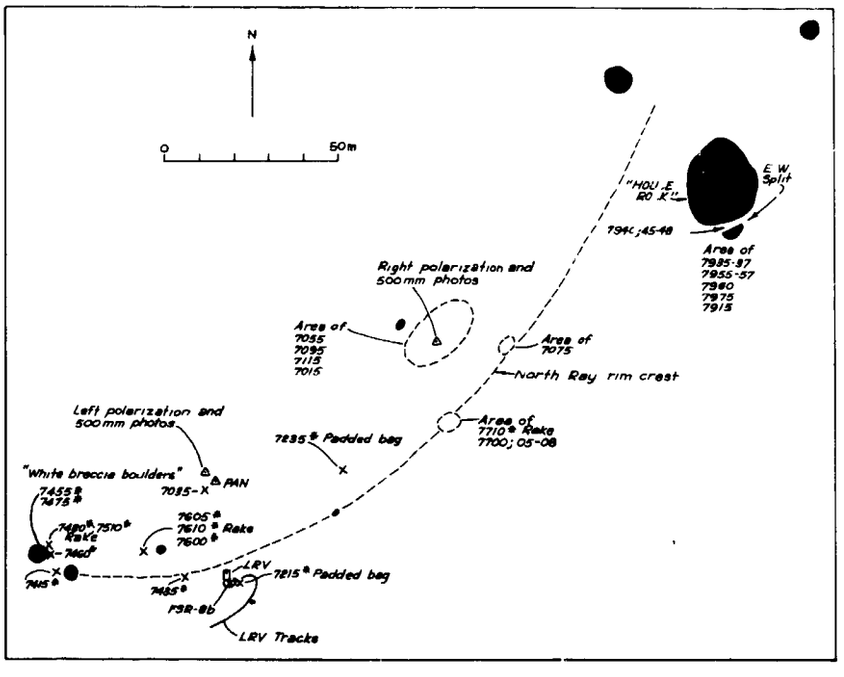

*Planimetric sketch map of station 9*



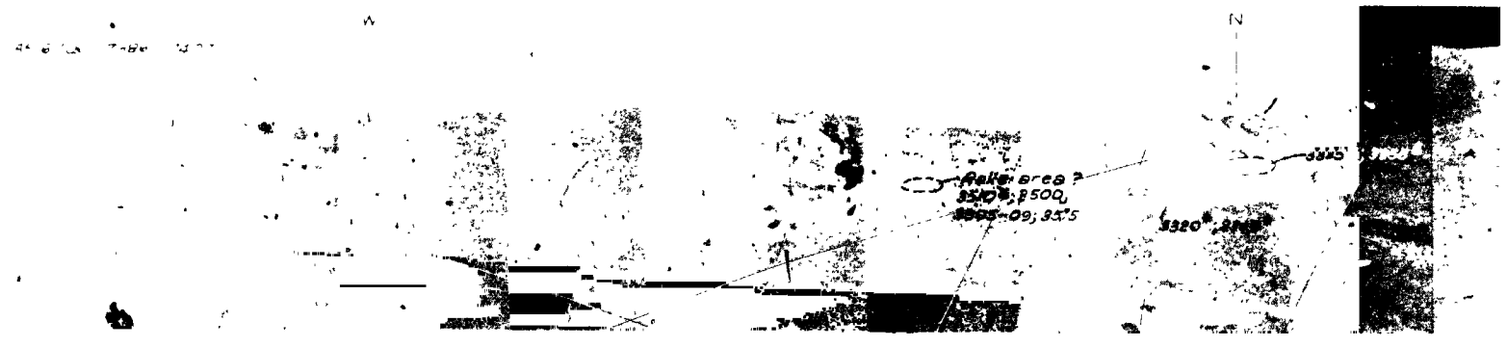



*Station 11 pan*

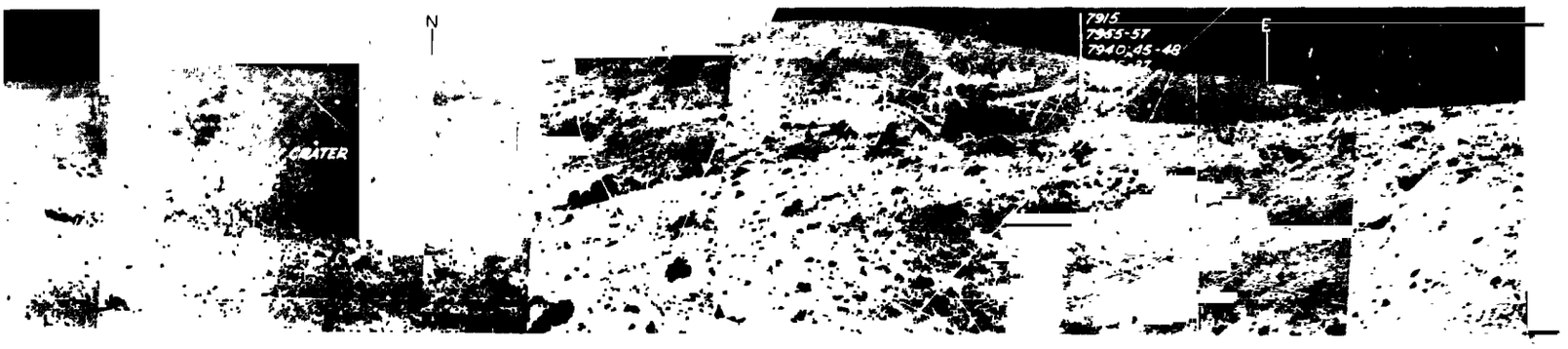
FOLDOUT FRAME 1




*Planimetric sketch map of station 11*




***Station 13 pan***

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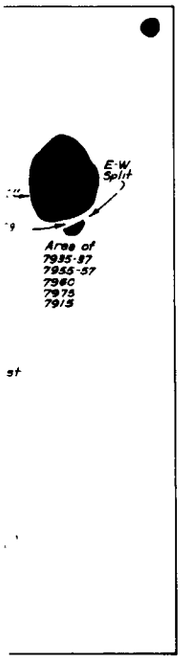
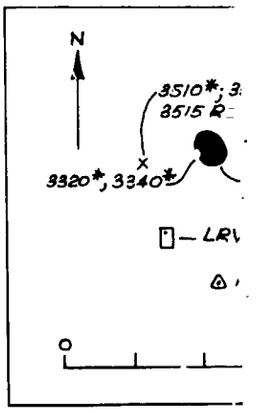
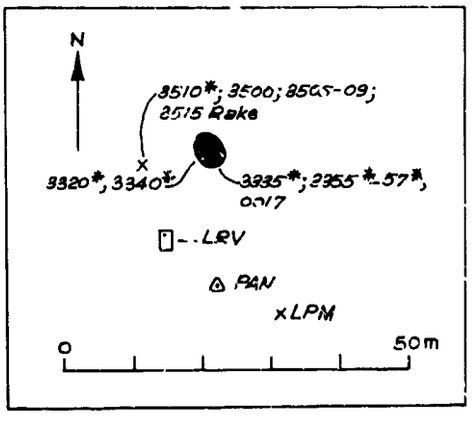



Planimetric sketch

11


FOLDOUT FRAME 3




*Planimetric sketch map of station 13*