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DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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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

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

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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 ($<\sim 5$ 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 m 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.

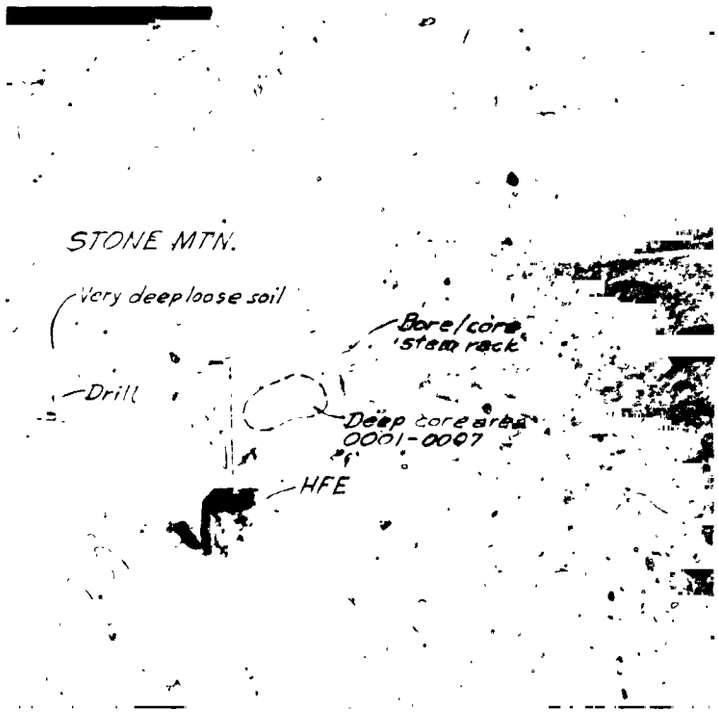
SAMPLE CHARACTERISTICS

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.

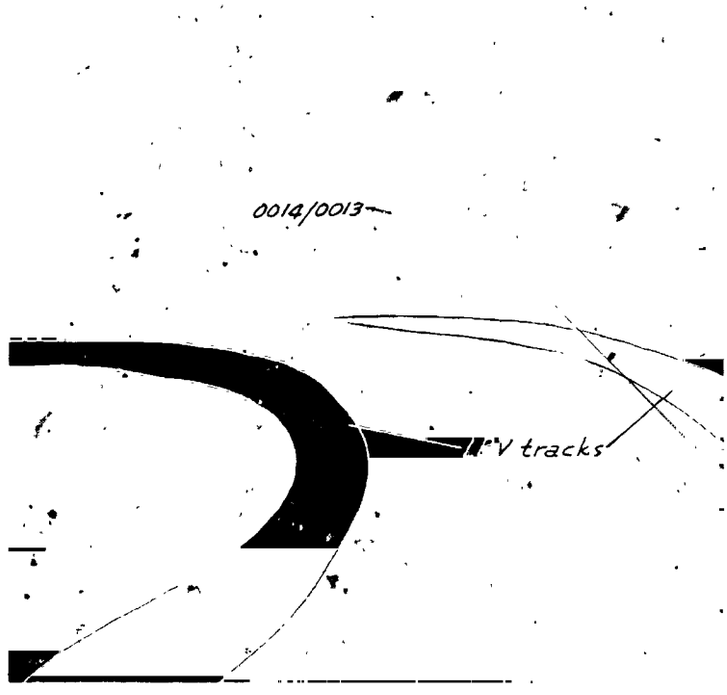
SAMPLE CHARACTERISTICS

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.

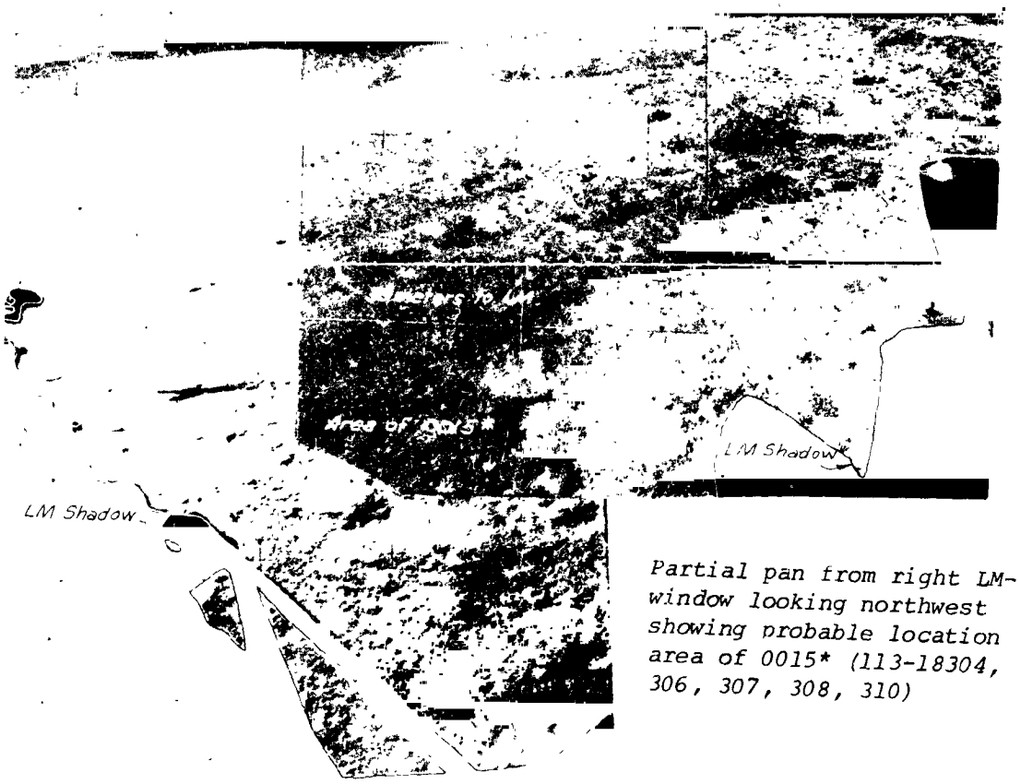
Apparent burial: Not visible.

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.

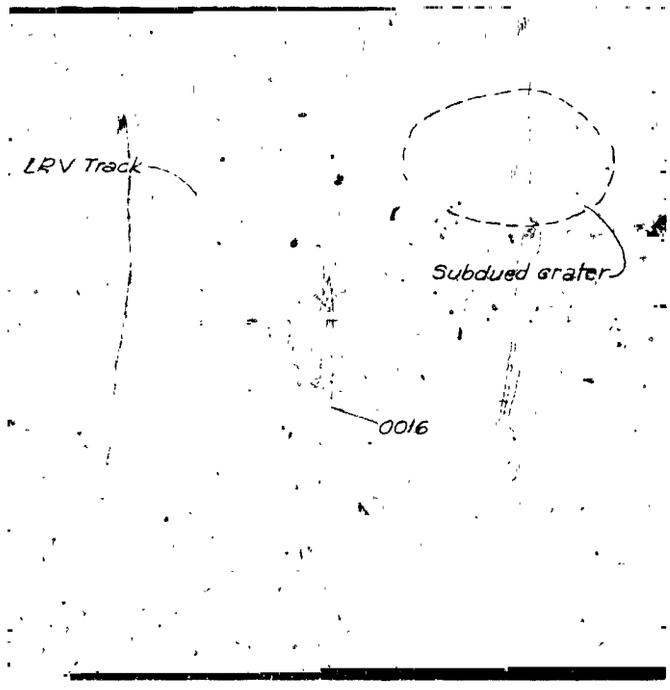
Apparent burial: <1/8 of height.

Dust cover: Moderate to heavy.

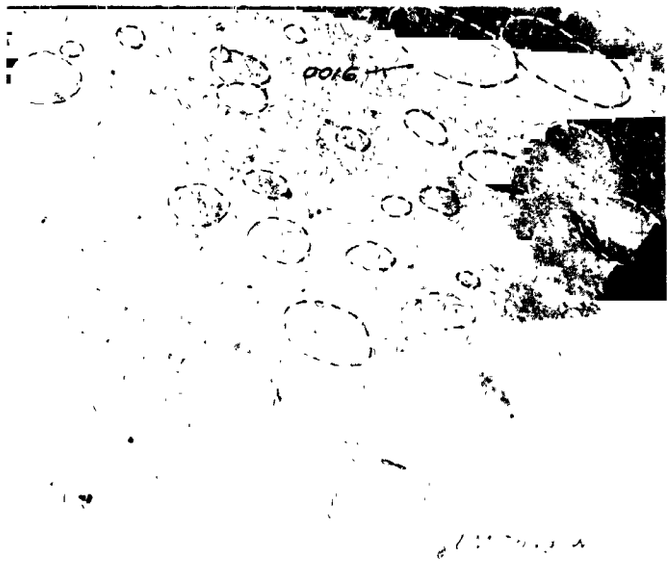
Comparison with other fragments in area: Size of 0016 appears unique for a white rock in the LM-ALSEP area.

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.

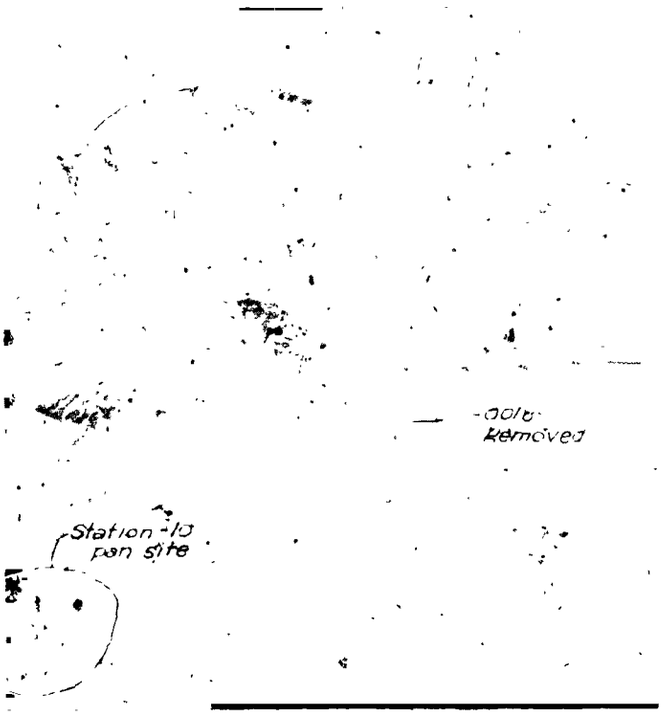
Dust cover: Appears light to moderate.

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 frags 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

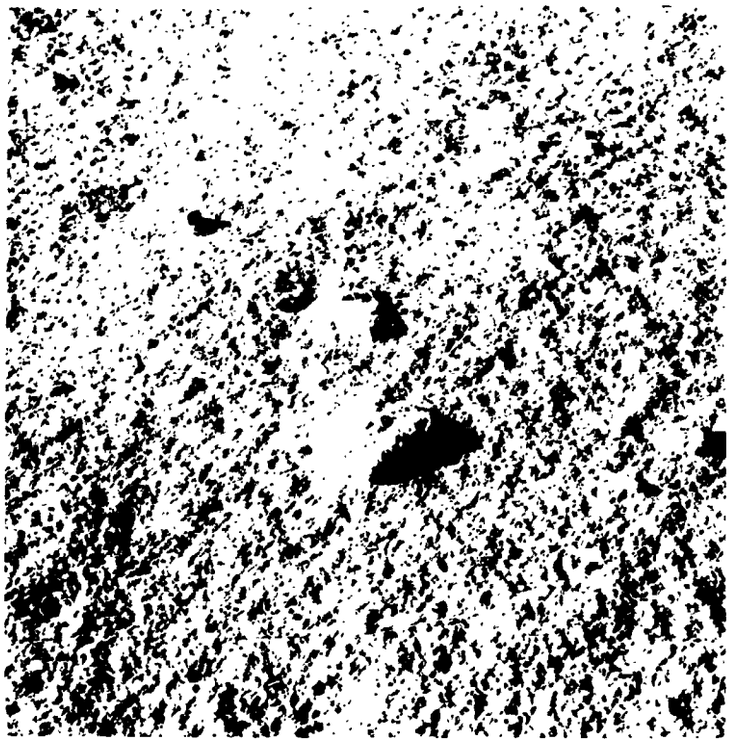
Fillet: Poorly developed

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.

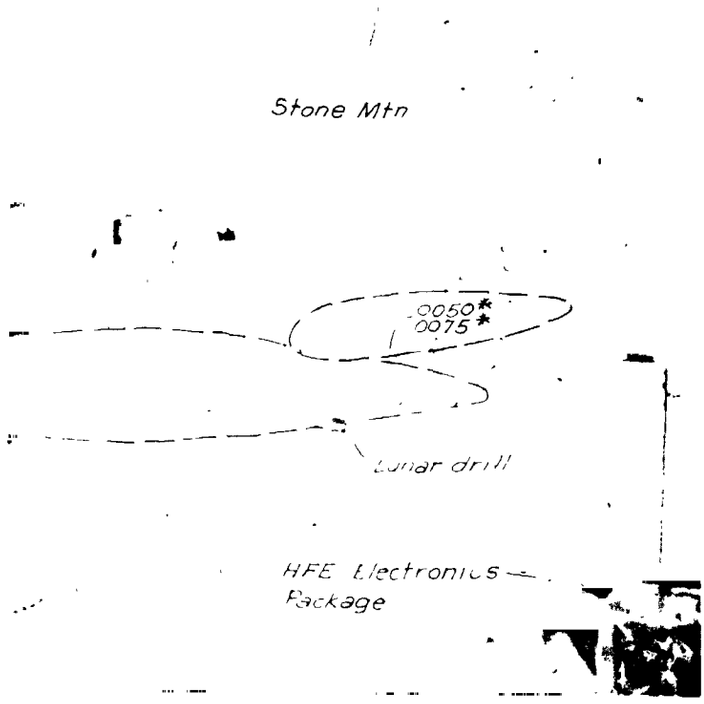
Dust cover: Heavy

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.

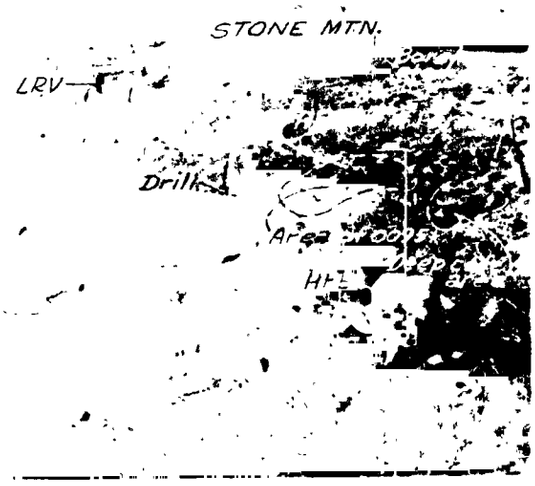
Comparison with other fragments in area: Not common but several sampled in LA area.

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 centimeter-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.

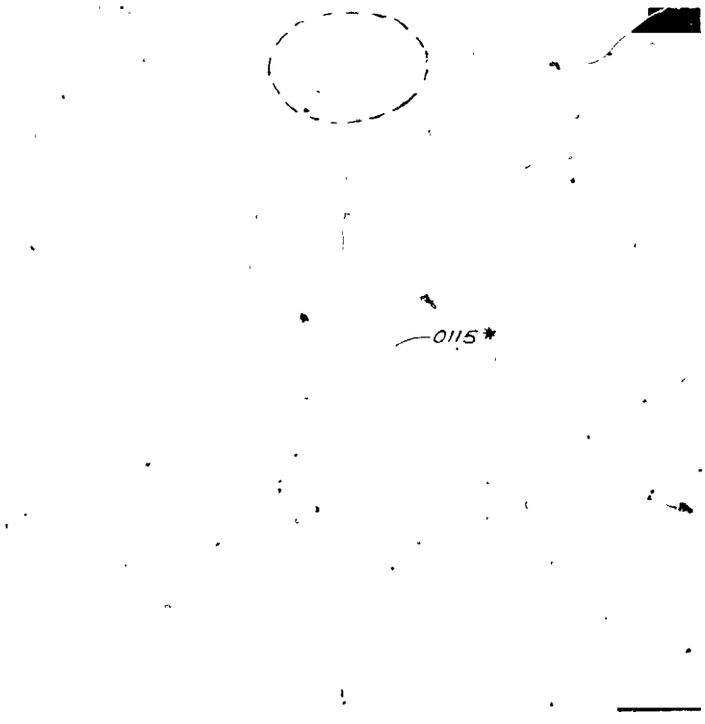
Dust cover: Low to moderate.

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

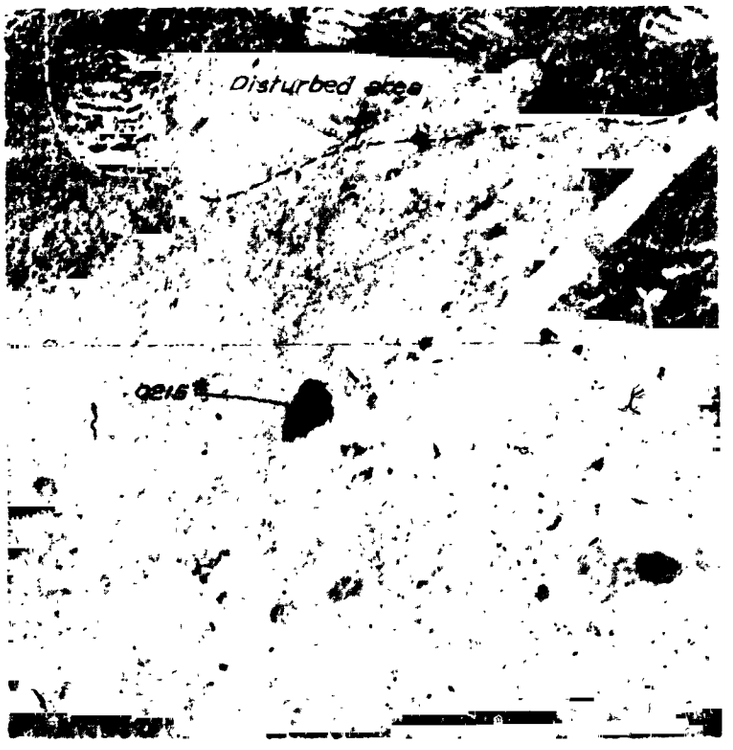
Fillet: None on photographed face

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 20-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 chalky, 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 10-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

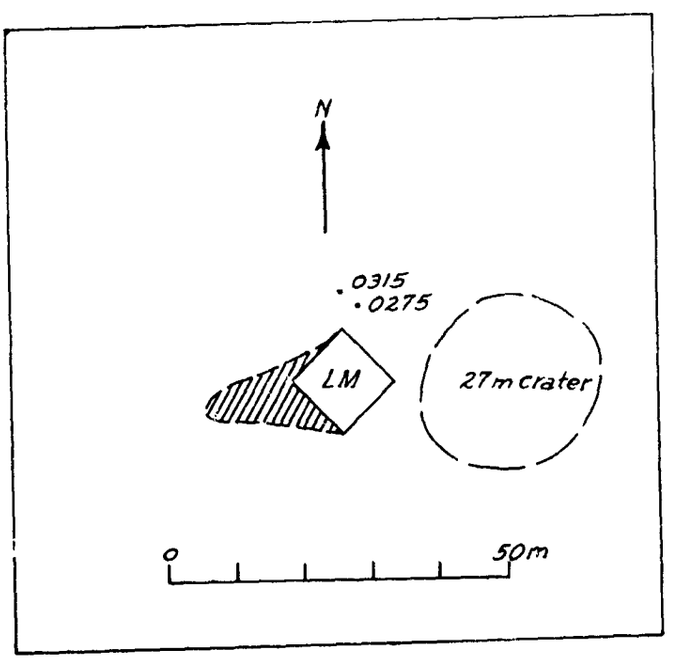
Comparison with other fragments in area: Unique. Tabular, very angular compared to irregular shaped, knobby rocks surrounding it of similar size; 0315 not as buried as majority of larger frags

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)

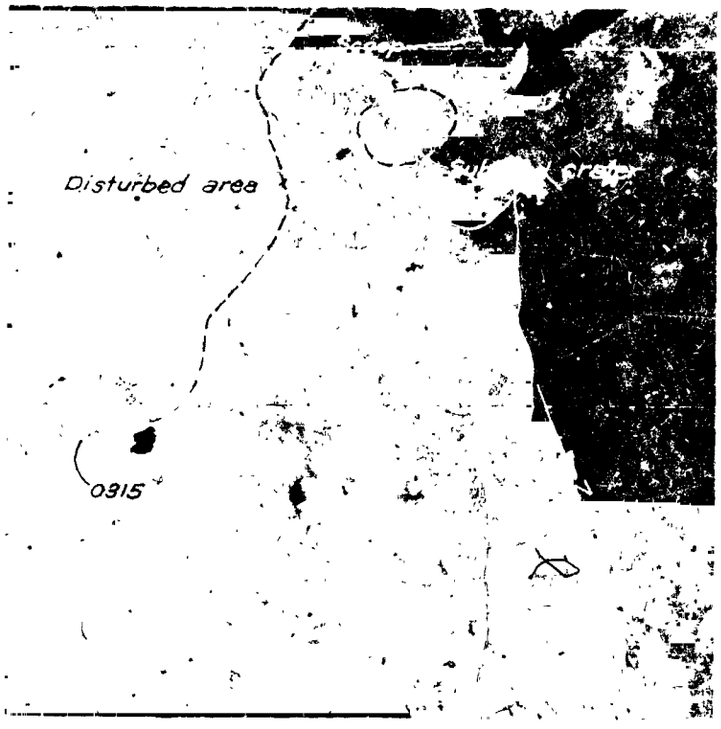
COMMENTS: The crystalline nature of this sample makes it of unusual significance.

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

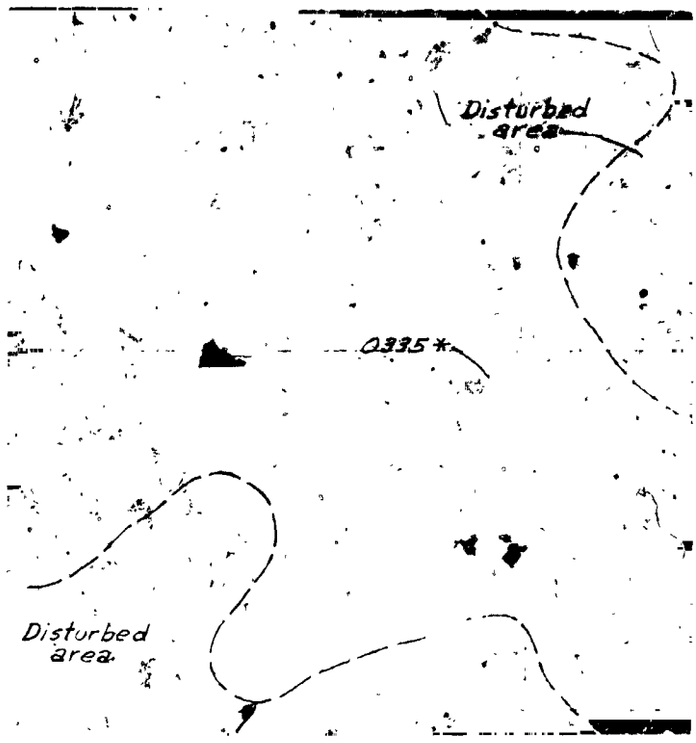
Dust cover: Moderately heavy.

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.

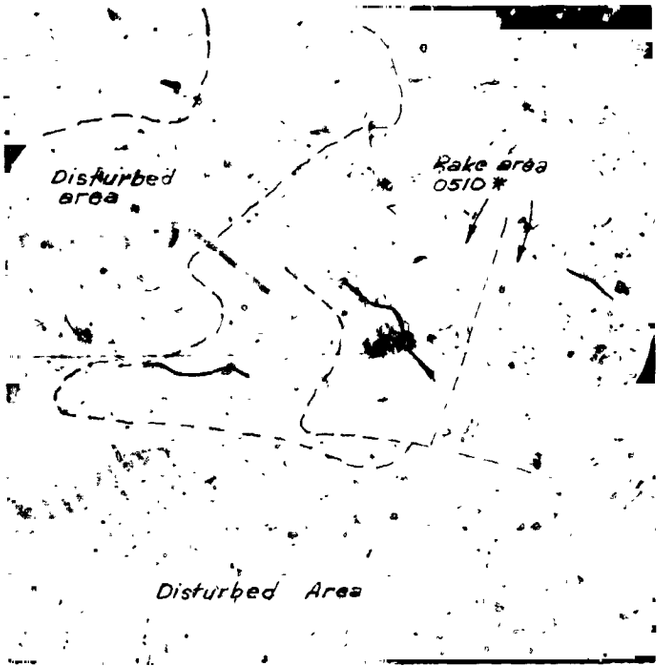
Apparent burial: Perched to slight.

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.

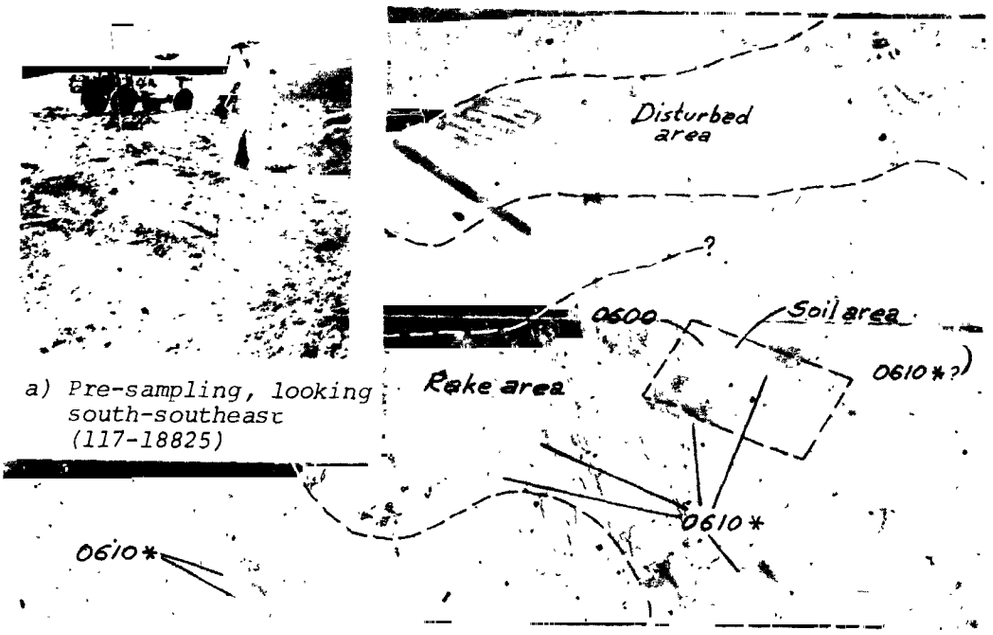
Dust cover: Moderately high.

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.

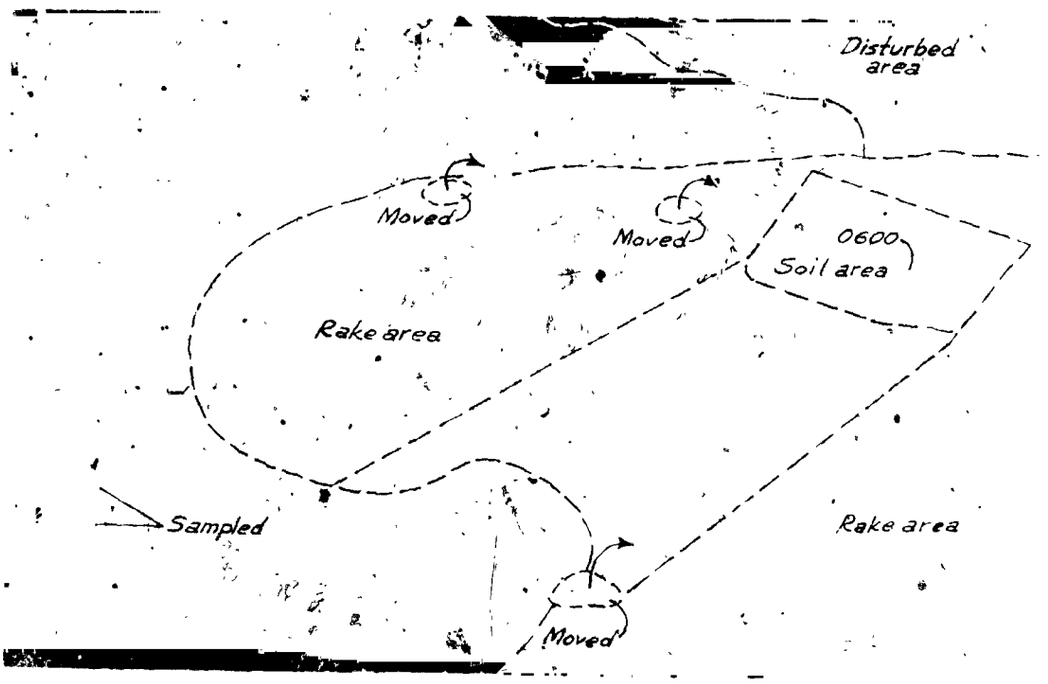
COMMENTS: 15 or more fragments; some glass coated.

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.

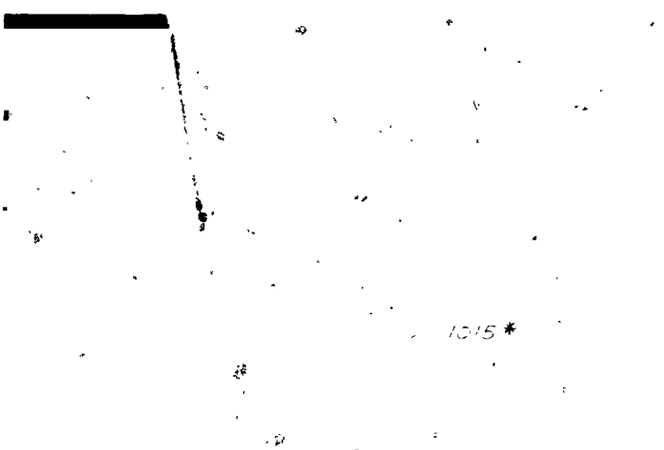
Dust cover: Appears to be somewhat dust covered.

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.

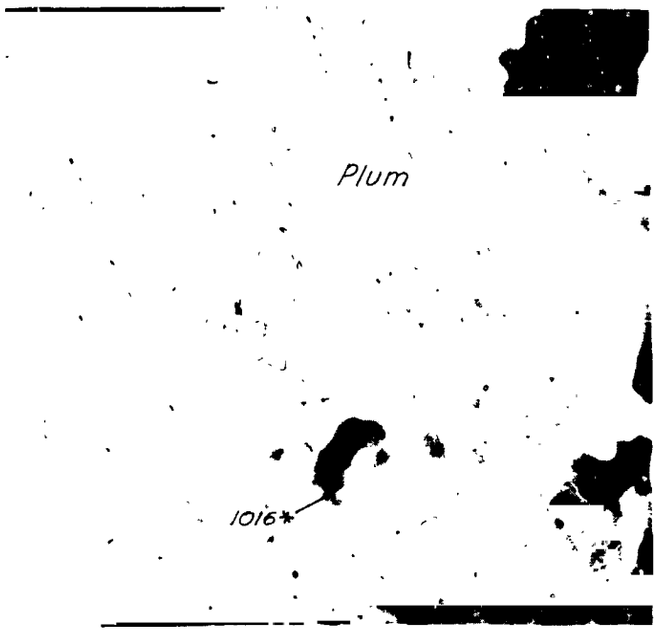
Dust cover: Not visible.

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.

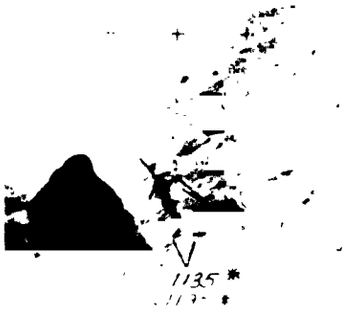
SAMPLE CHARACTERISTICS FOR 1180.*

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.

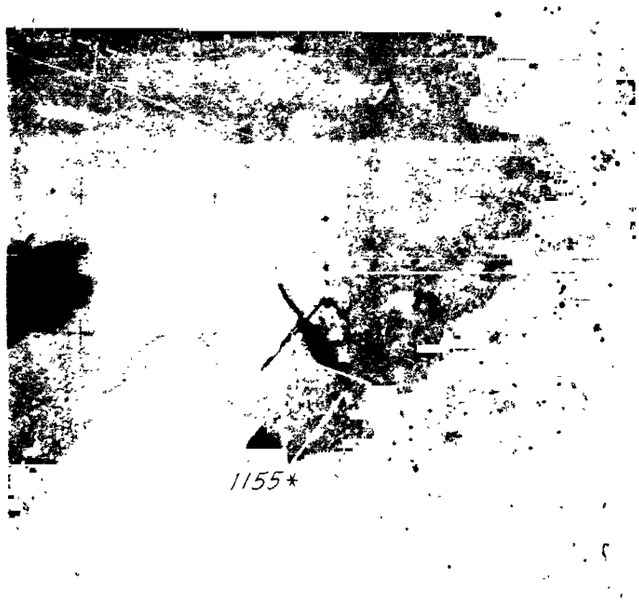
Comparison with other fragments in area: Typical of the more angular fragments in area; one fragment in cluster by gnomon leg is rounded, but was not collected.

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.

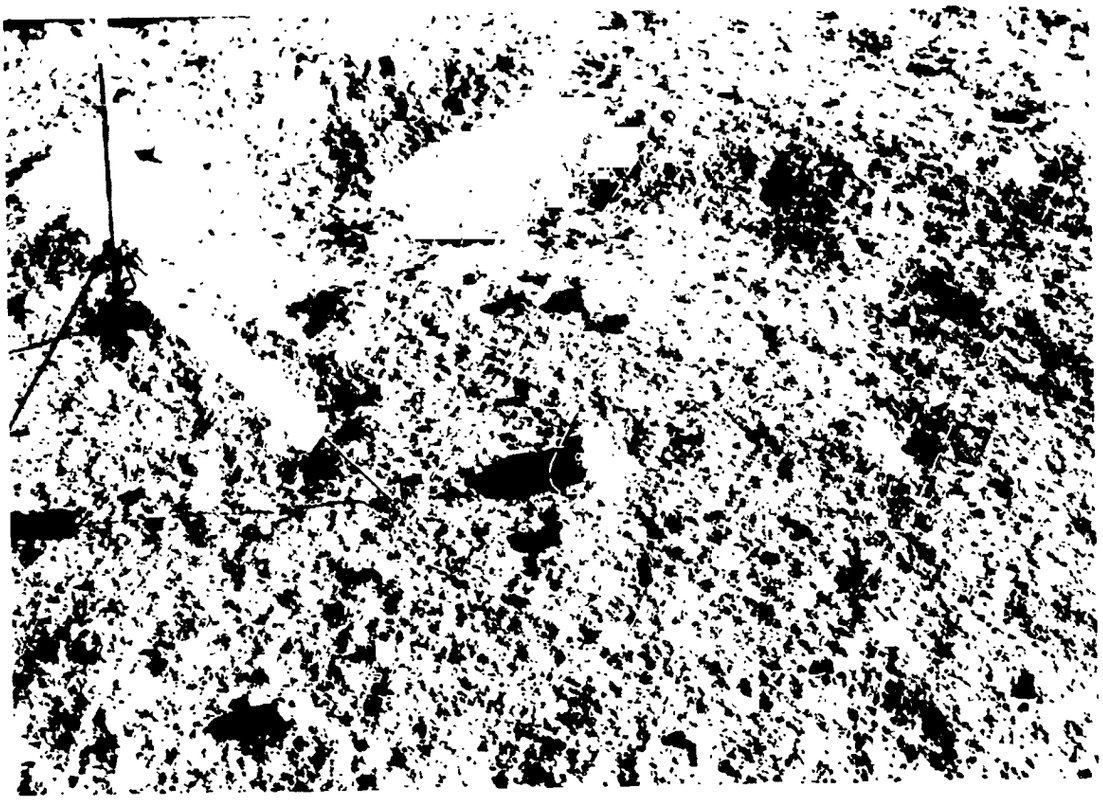
Dust cover: Not visible.

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

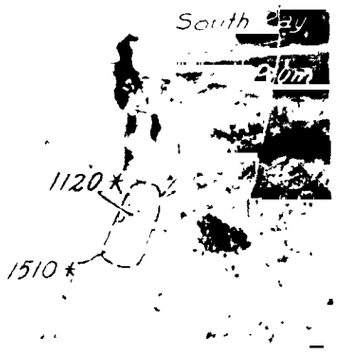
Probable origin: Includes contributions from North Ray, South Ray, Flag, and Plum craters.

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

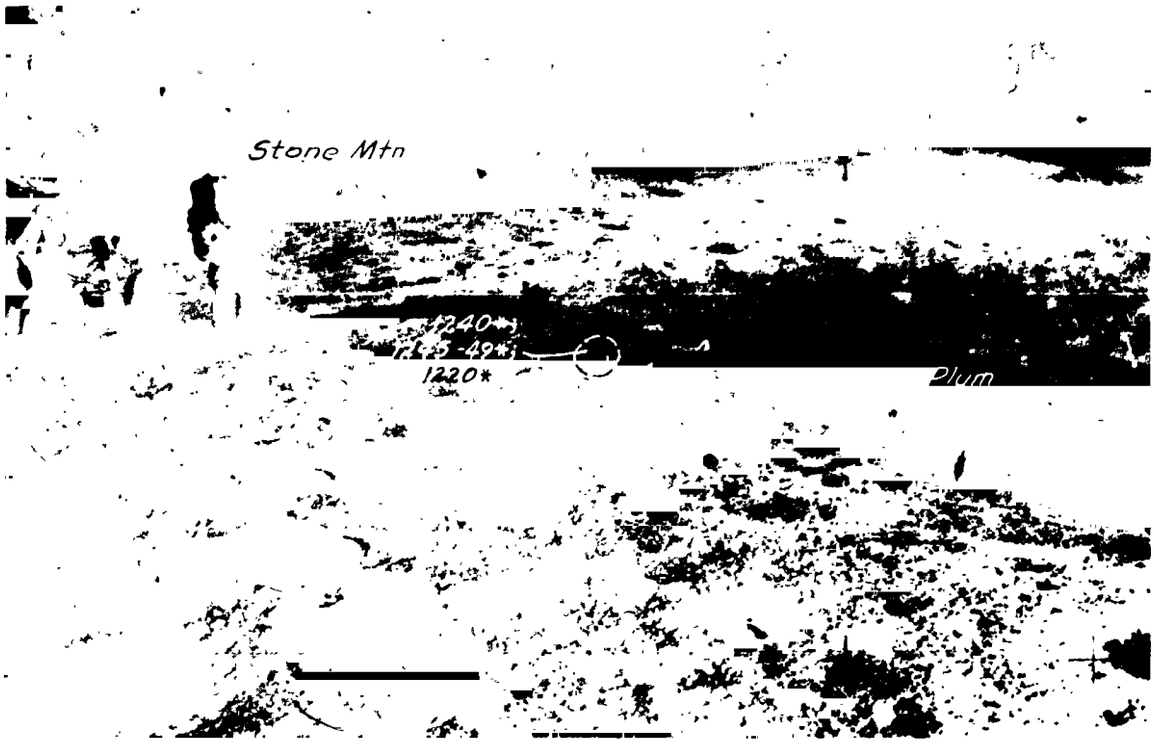
SAMPLE CHARACTERISTICS

Size: Unknown

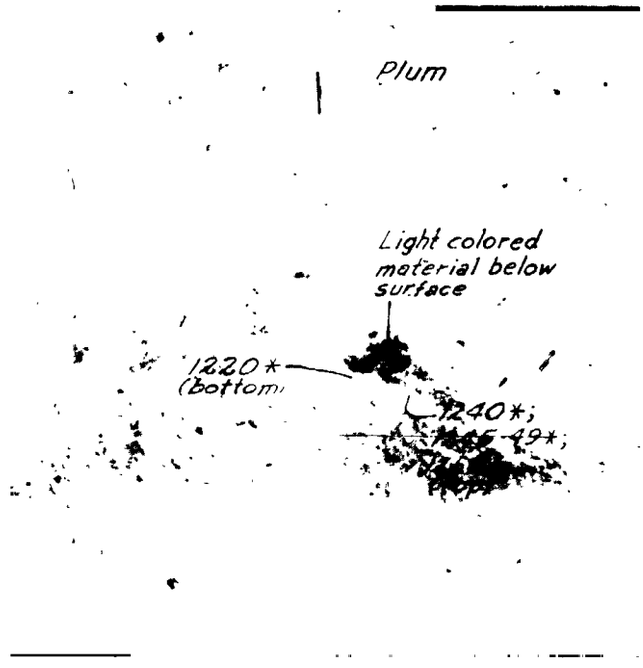
Color: 1240 is medium gray; 1220* is light gray*

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.

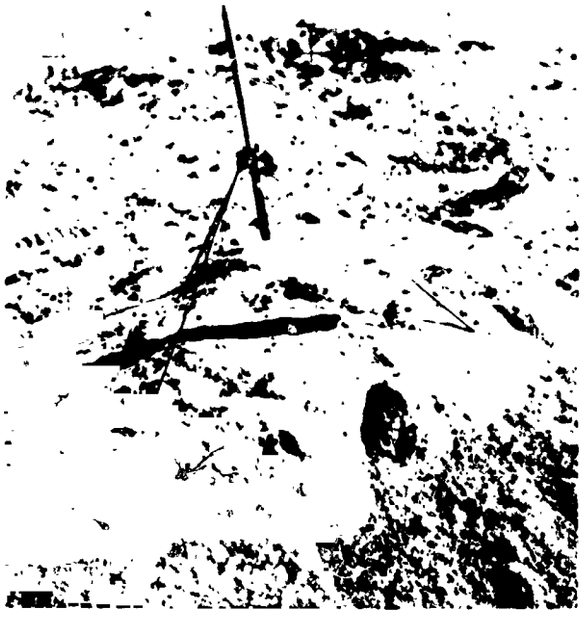
*SAMPLE CHARACTERISTICS FOR 1280**

Size: Unknown

Color: Medium gray

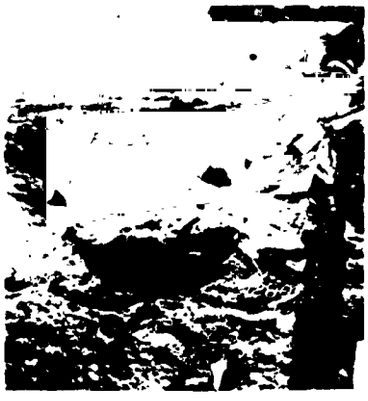
Comparison with other soil in area: From fillet on 2-m boulder; looks similar to other soil in area; cannot tell from photos or transcript if it is lighter in the subsurface at the spot sampled.

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.

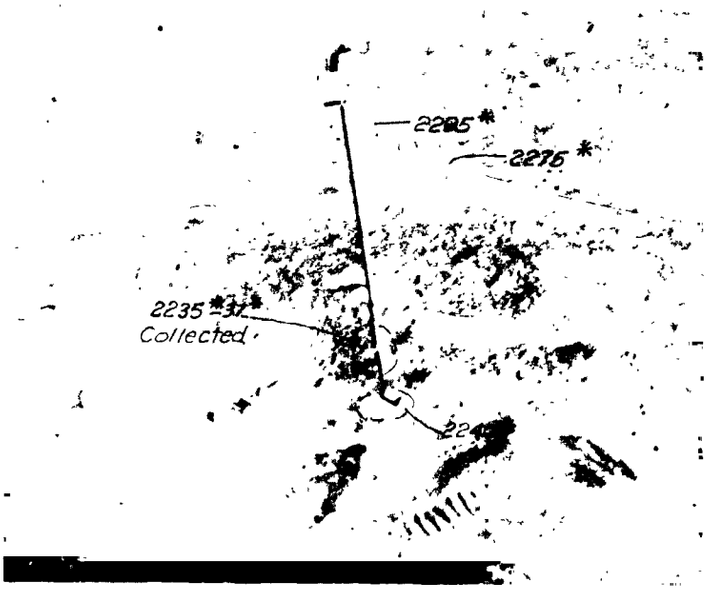
*SAMPLE CHARACTERISTICS FOR 2240**

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.

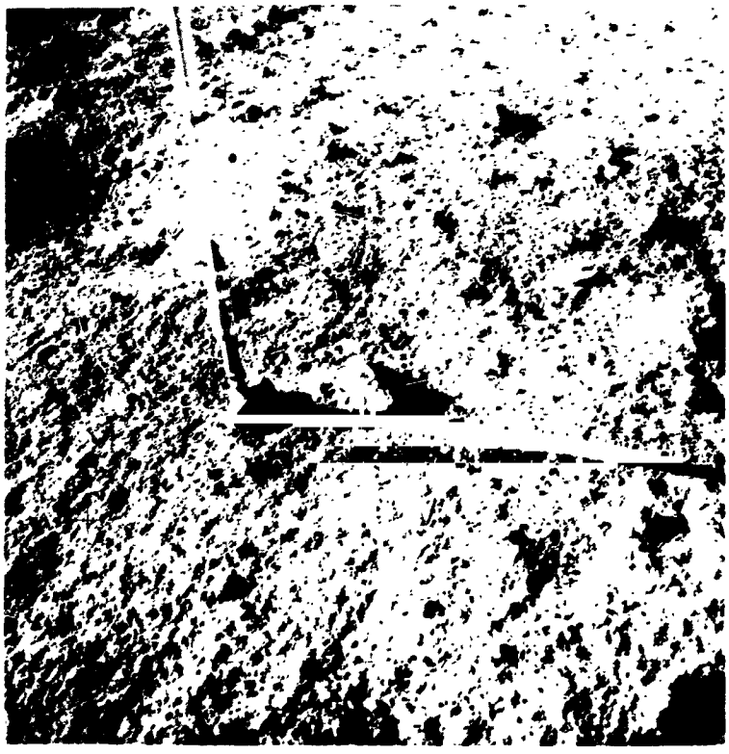
Fillet: None visible.

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**

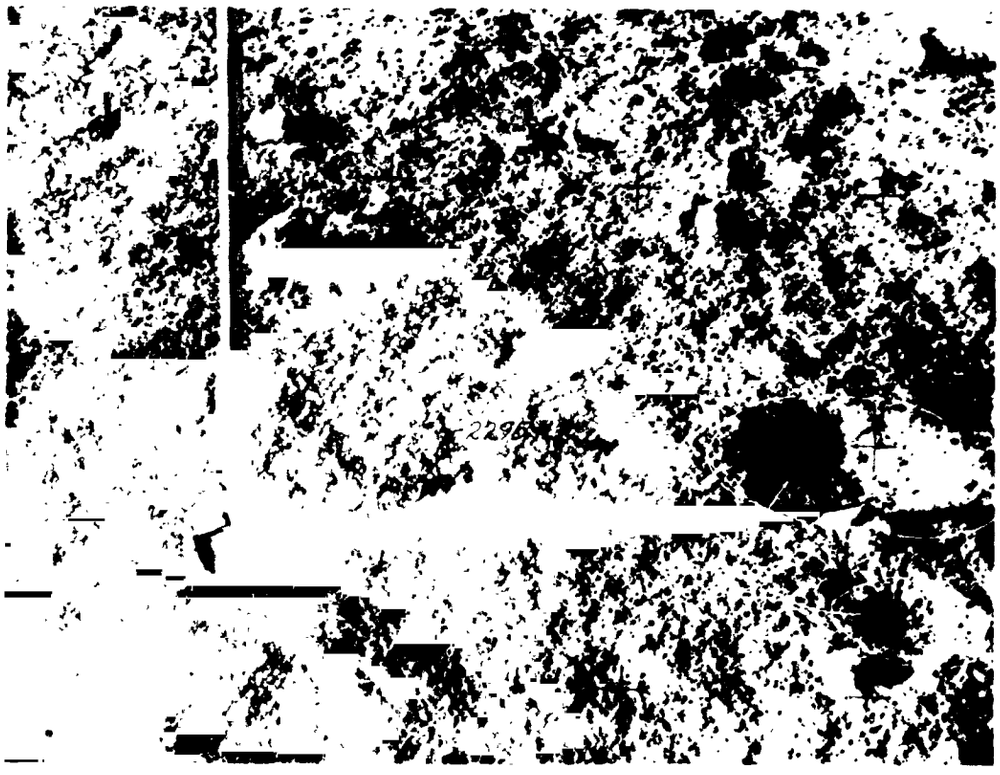
Size: Unknown.

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.

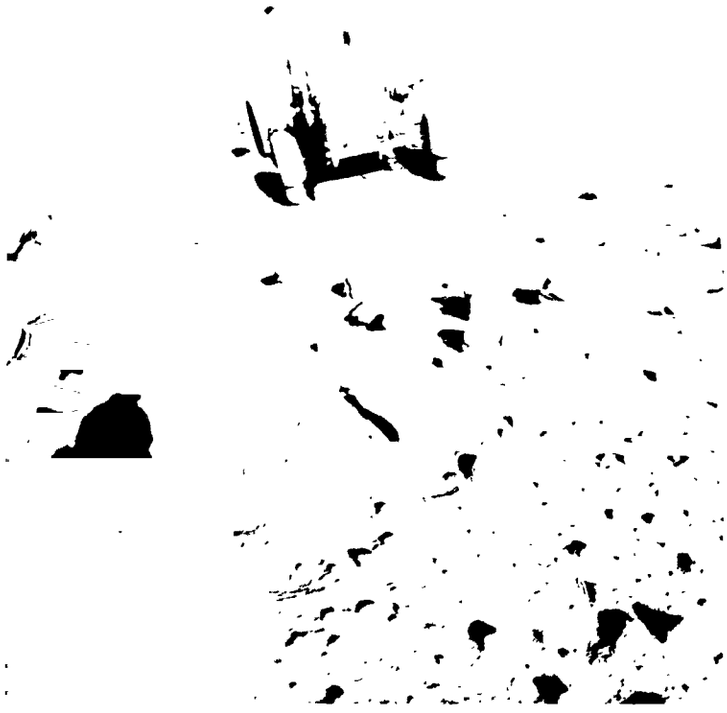
Dust cover: Prevalent.

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

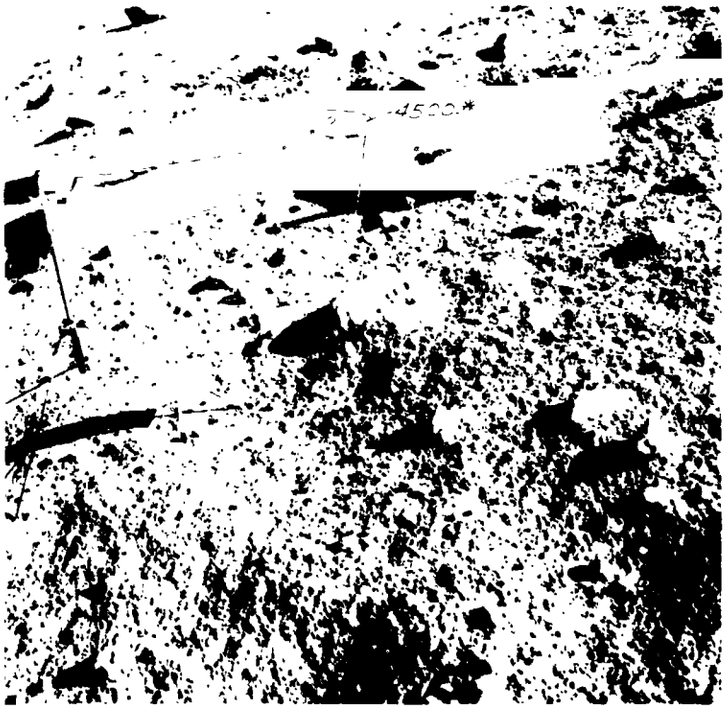
Probable origin: Ejecta from South Ray crater (possibly derived from Cayley Formation).

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.

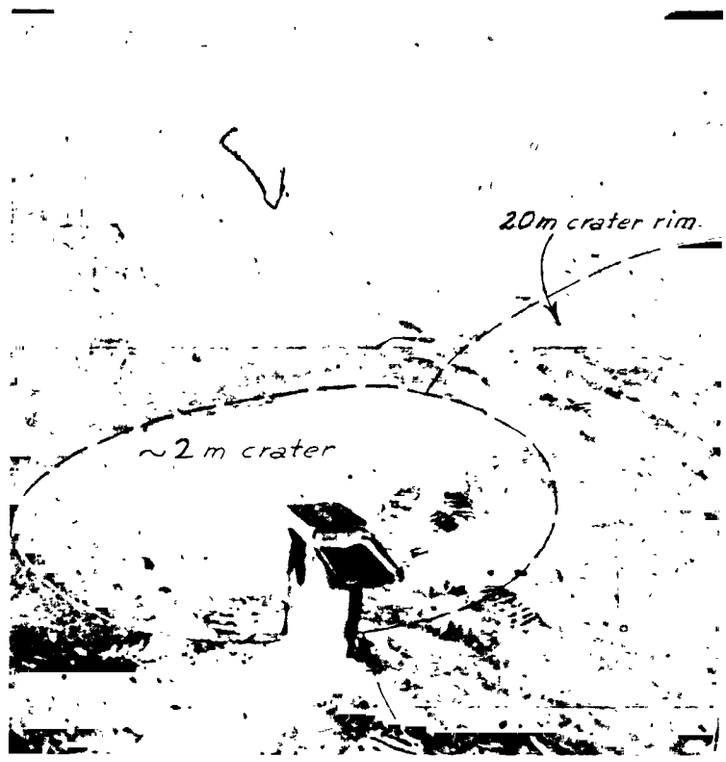
Color: Gray.

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)

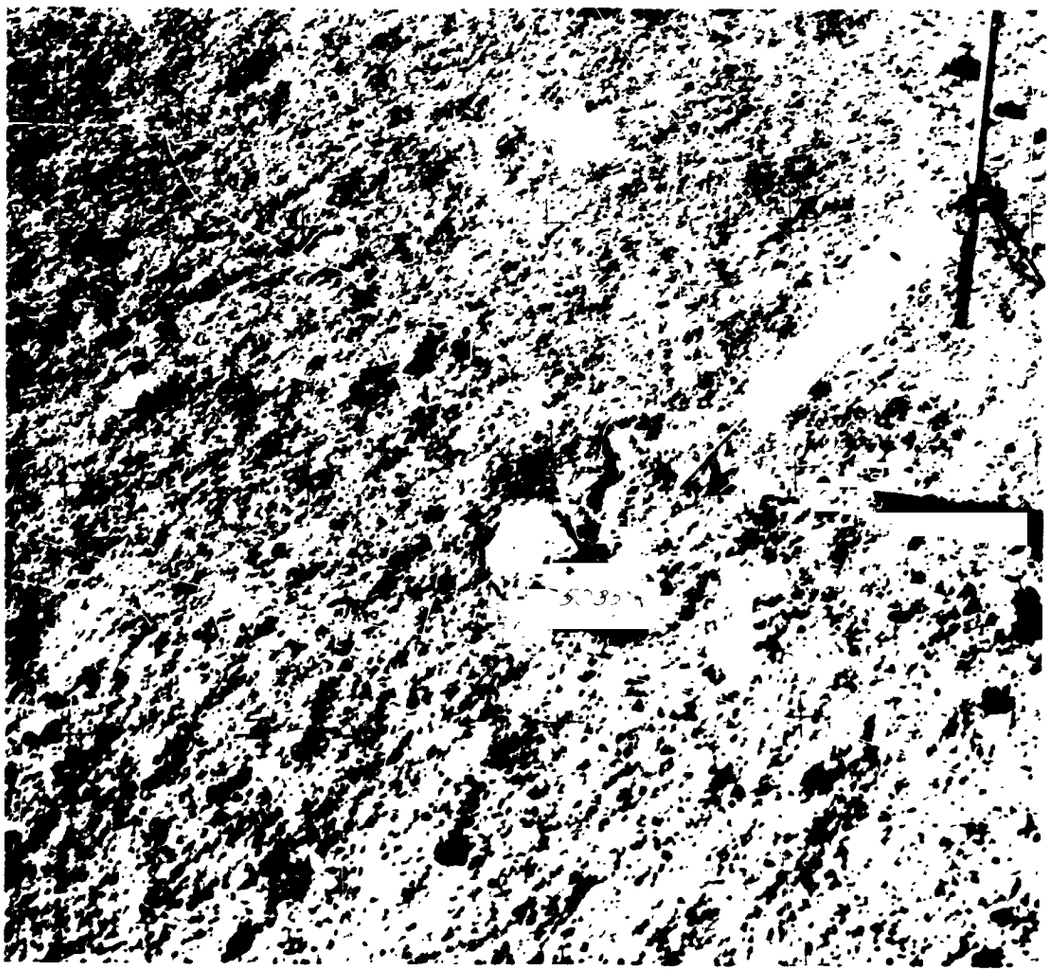
Shape: Most fragments rounded

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: 50:3* (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 subangular; 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.

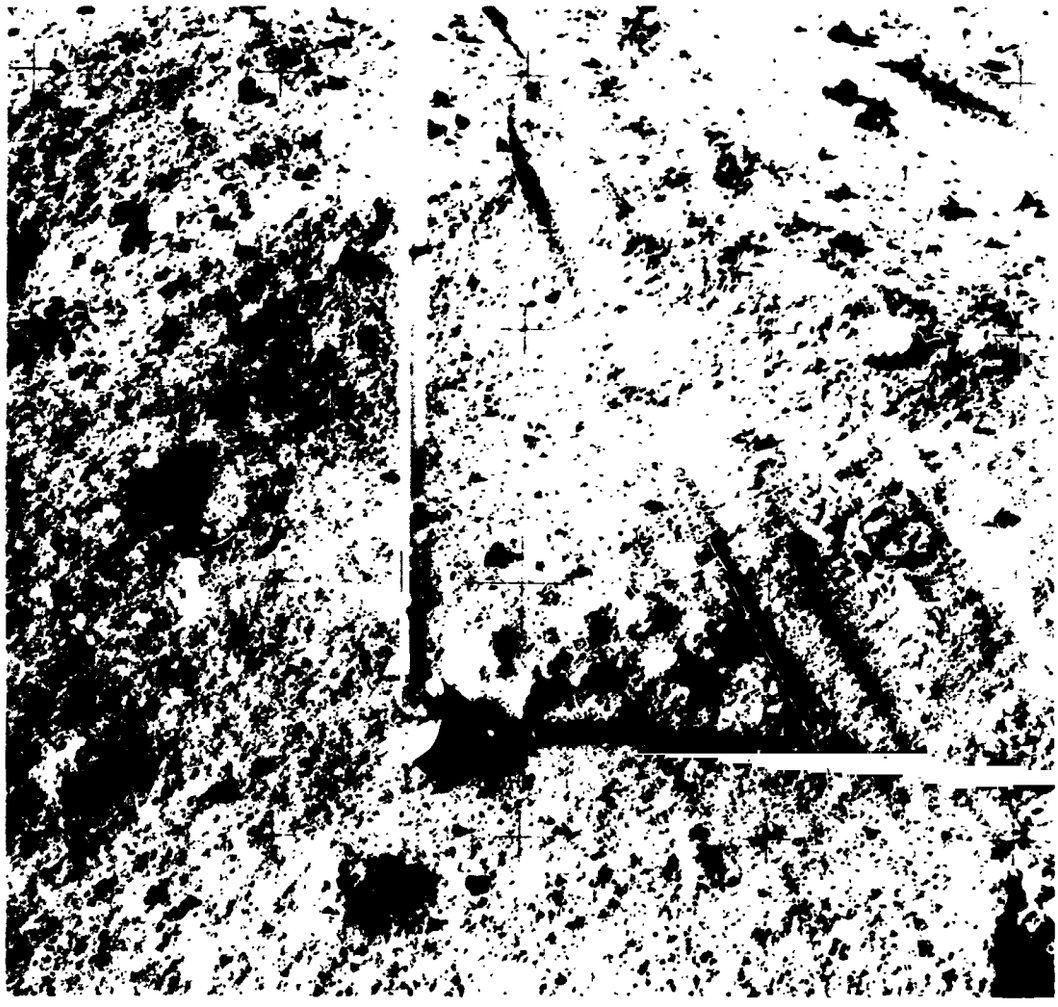
Apparent burial: Larger rock 20% buried; smaller rock slightly buried.

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

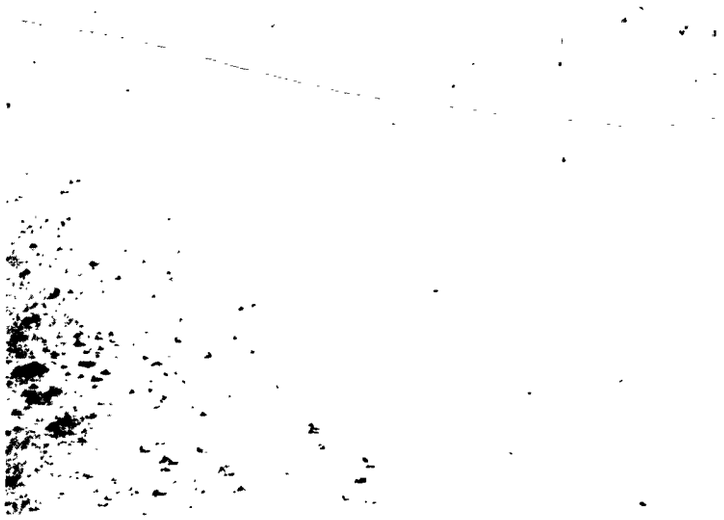
Fillet: Slight

Apparent burial: Probably about half buried

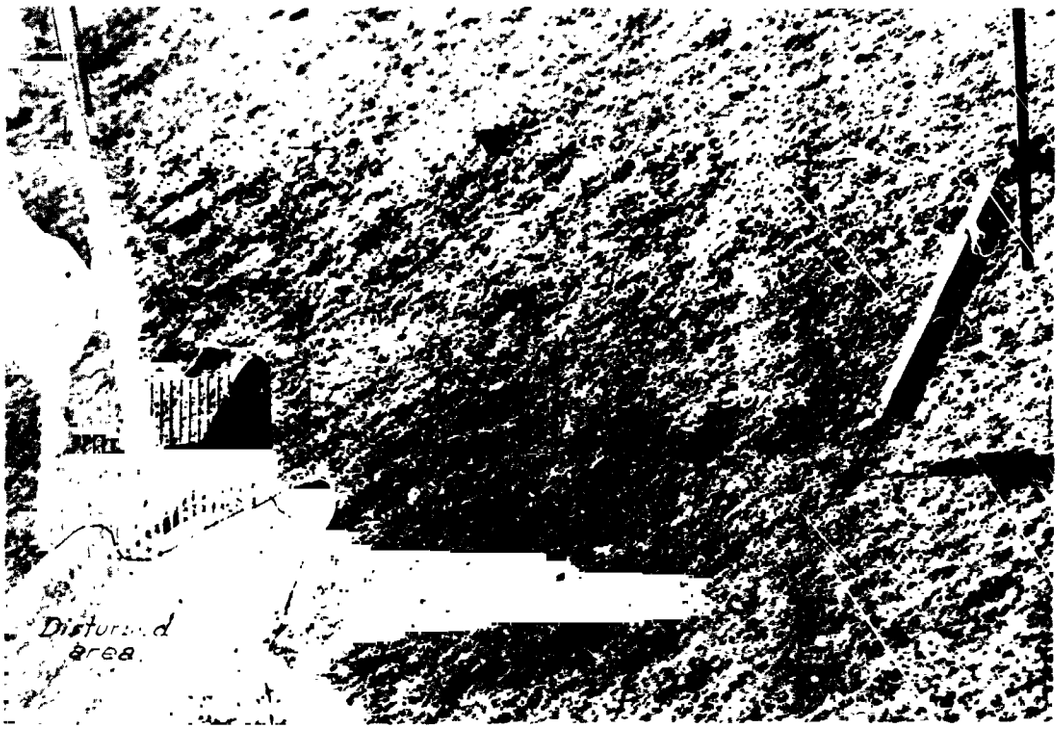
Dust cover: Prevalent

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.

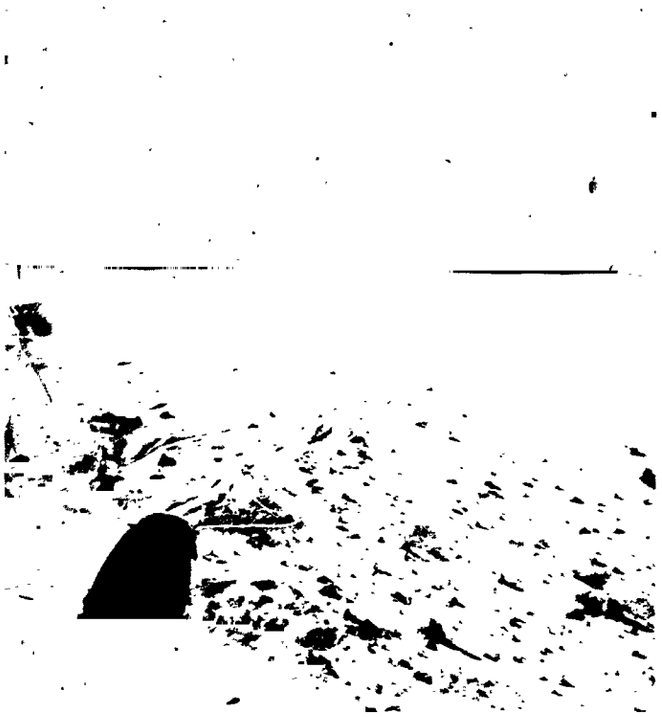
Apparent burial: One-fourth.

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

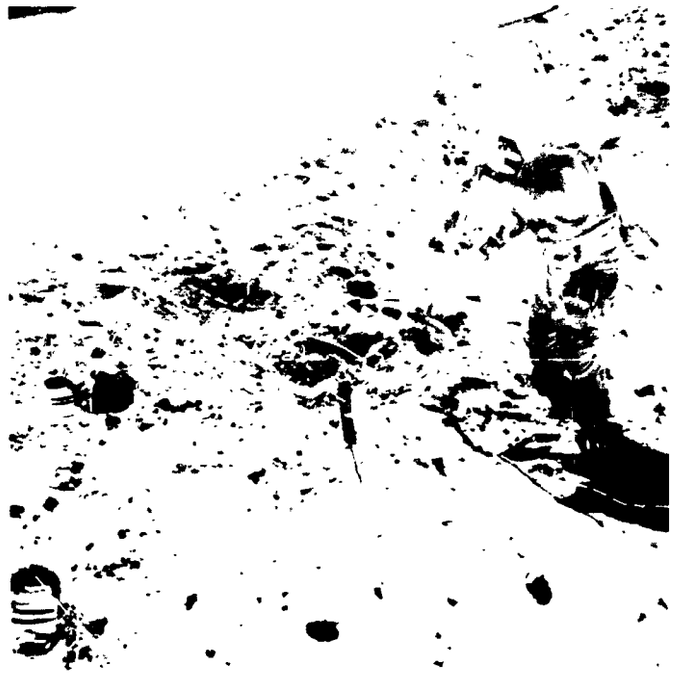
Color: Gray at surface, lighter fragments underneath

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

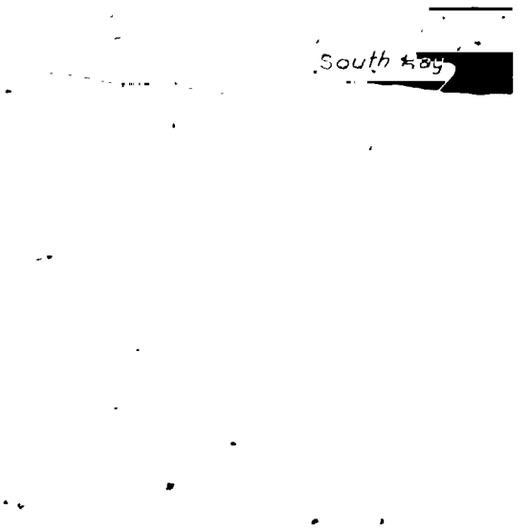
Shape: Mostly rounded, a few angular fragments

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 (2 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.

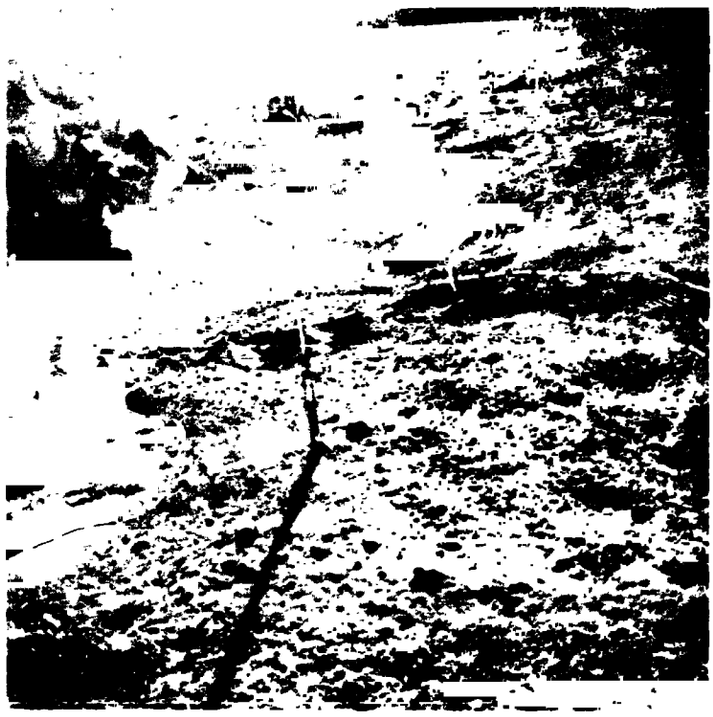
Apparent burial: Slight.

Dust cover: Present.

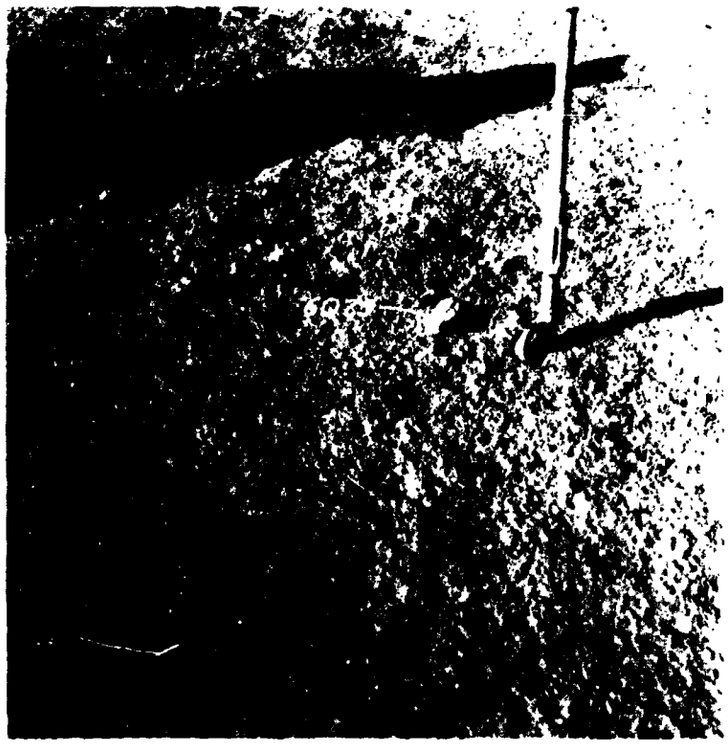
Comparison with other fragments in area: Small clasts visible; probably representative of breccia fragments in local area.

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.

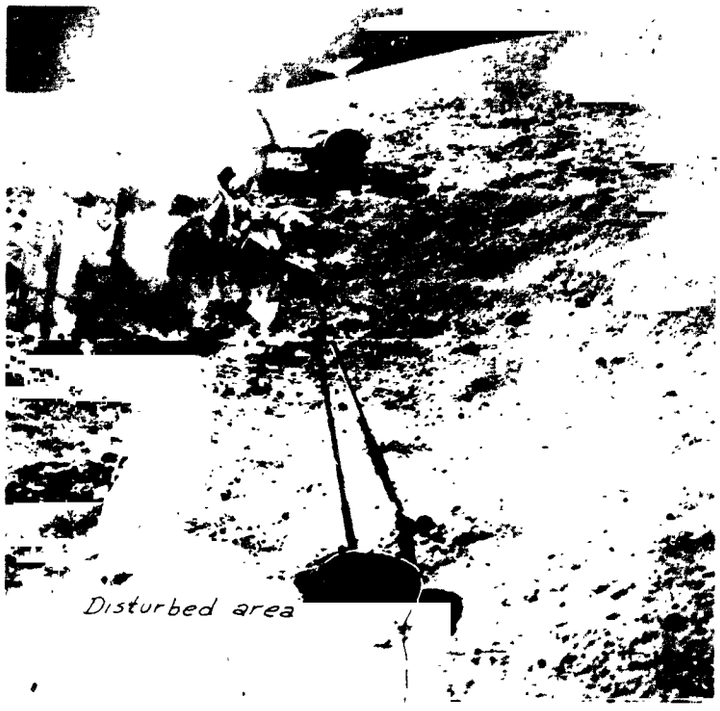
Color: White.

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

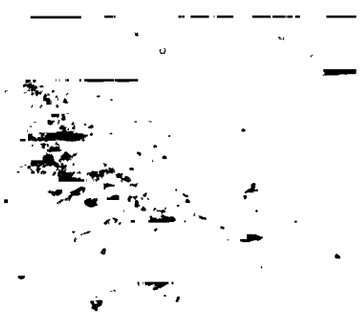
Apparent burial: Probably slight (parent block)

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

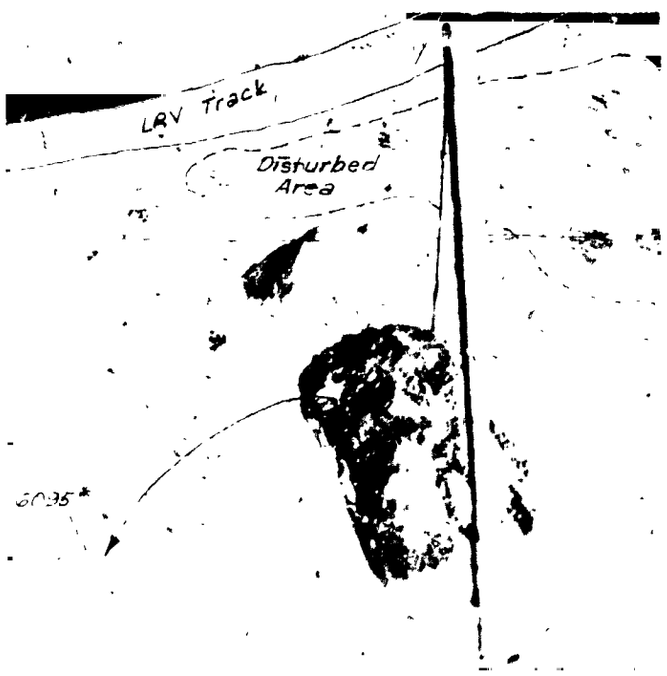
Probable origin: Ejected from South Ray crater, as suggested by angularity, lack of burial, and brecciated appearance

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

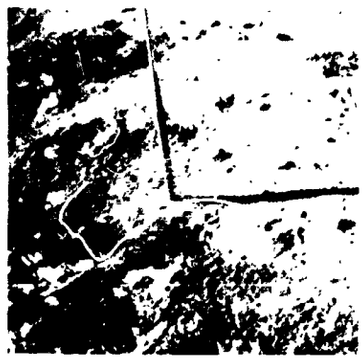
Ejecta: None visible

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*

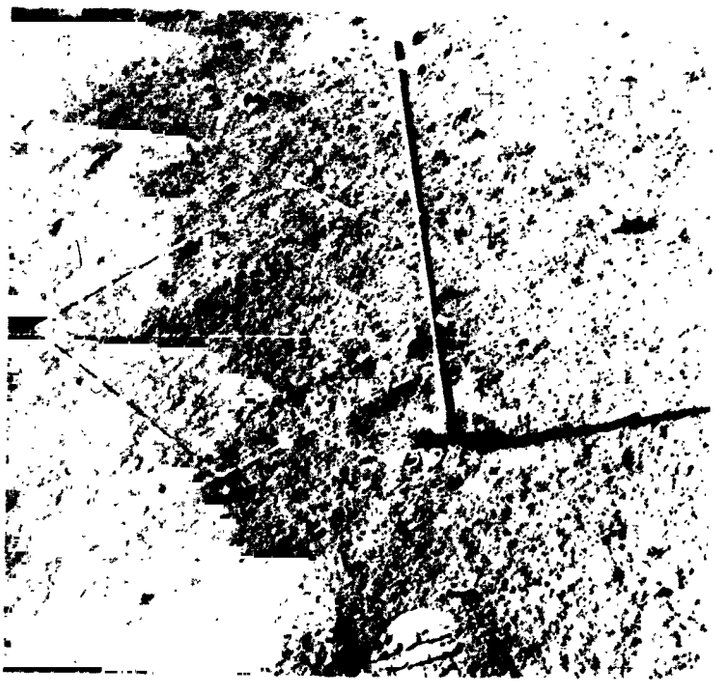
Size: (≈10 fragments), mostly greater than 1 cm; some possibly 3-4 cm.

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.

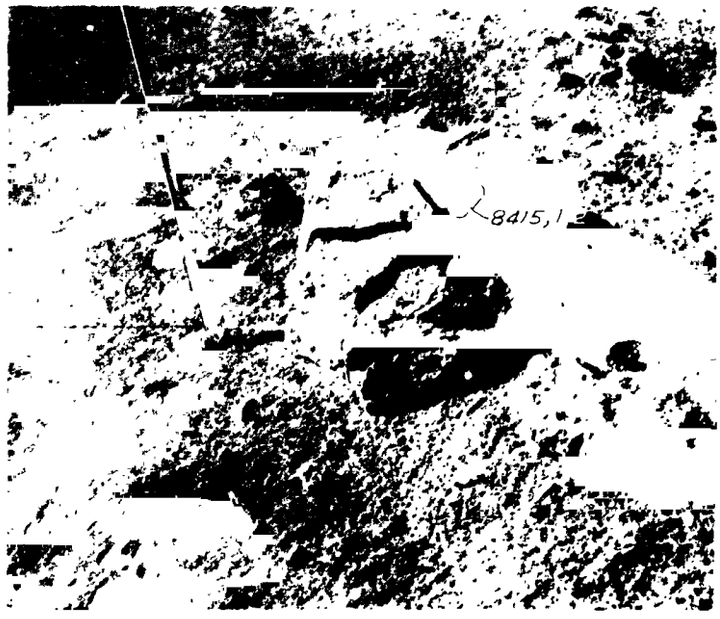
Dust cover: None visible.

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

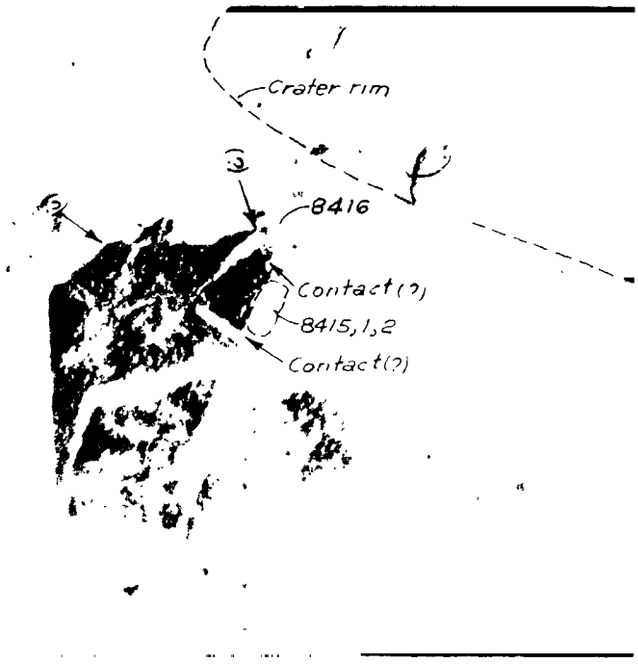
Probable origin: Perched nature and angularity, comparison with other fragments in the area, suggests that the boulder originated from South Ray crater.

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.

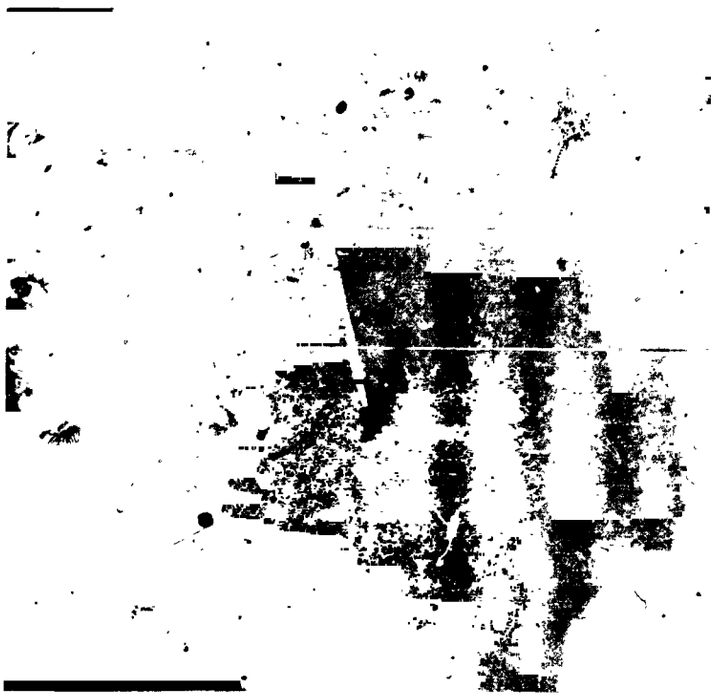
Probable origin: Locale and similarity to soil of nearby areas suggests South Ray crater ejecta.

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

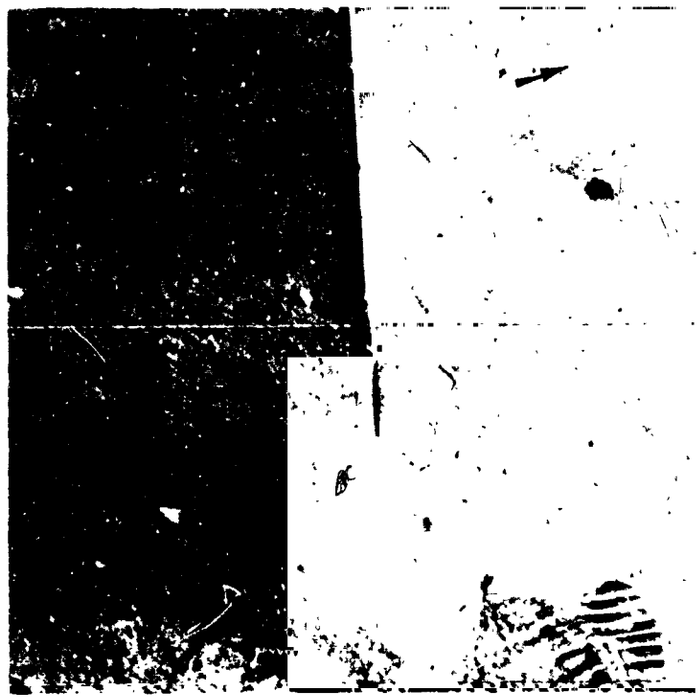
Ejecta: Not visible

SAMPLE CHARACTERISTICS

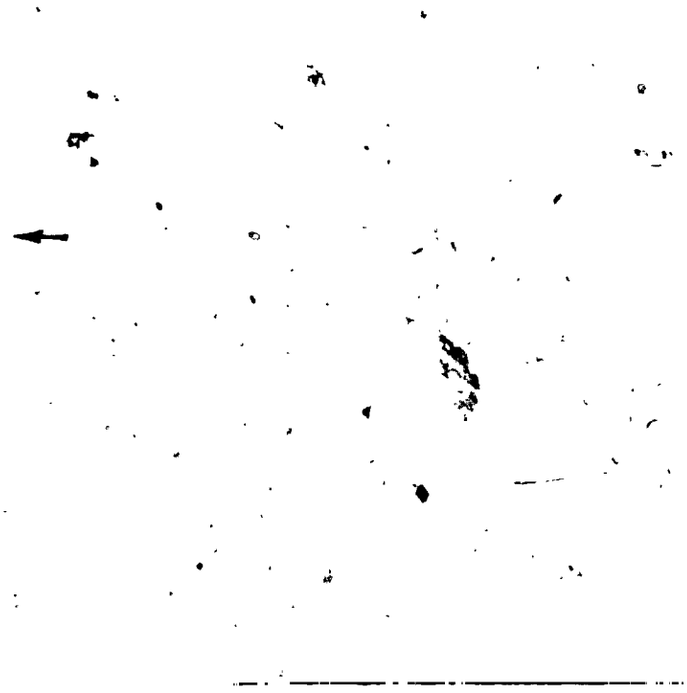
Probable origin: If South Ray ejecta is thin or absent, the drive tube may contain regolith derived from the Cayley Formation

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.

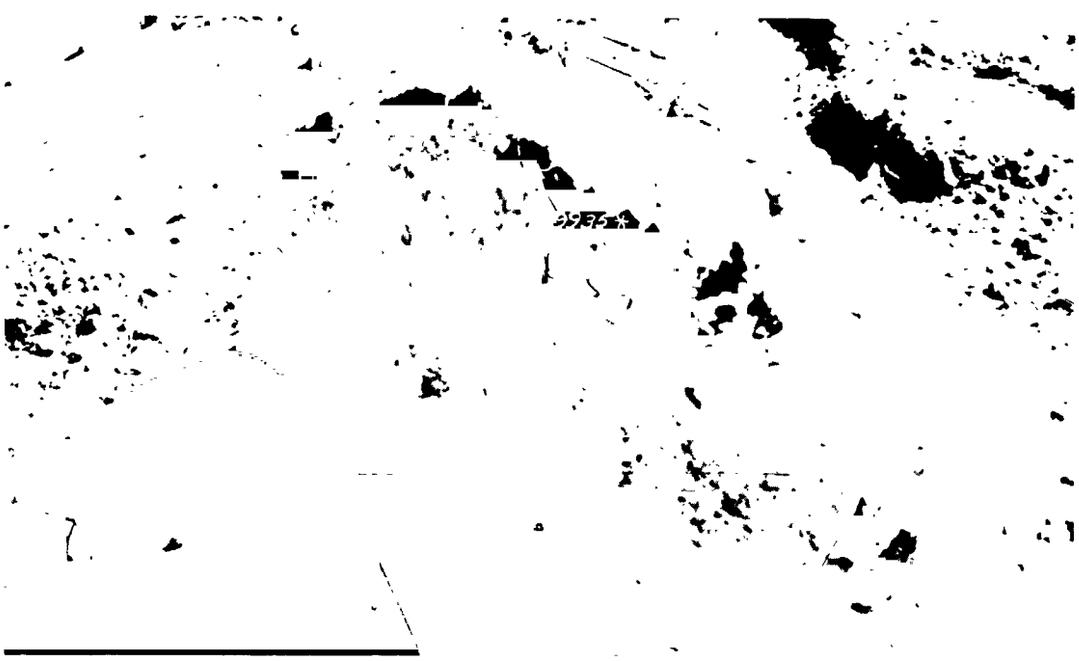
Color: Medium gray.

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**

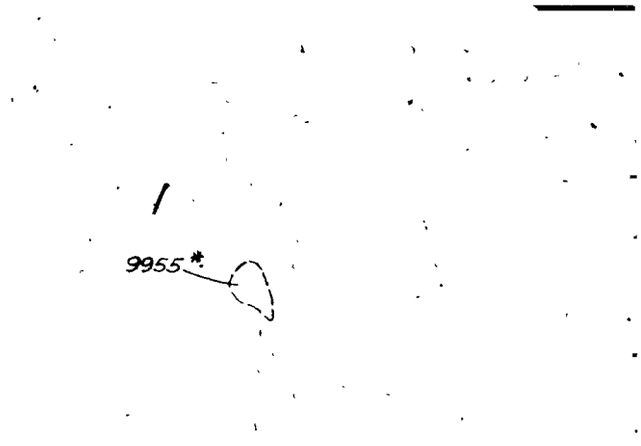
Size: 4-cm.
Color: Medium gray.
Shape: Boulder is generally angular. Bottom of boulder is not appreciably less rounded than the top.
Dust cover: Bottom of boulder appears dust covered.
Comparison with other fragments in area: Angularity, color and perched nature appears similar to most blocks in local 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)



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.

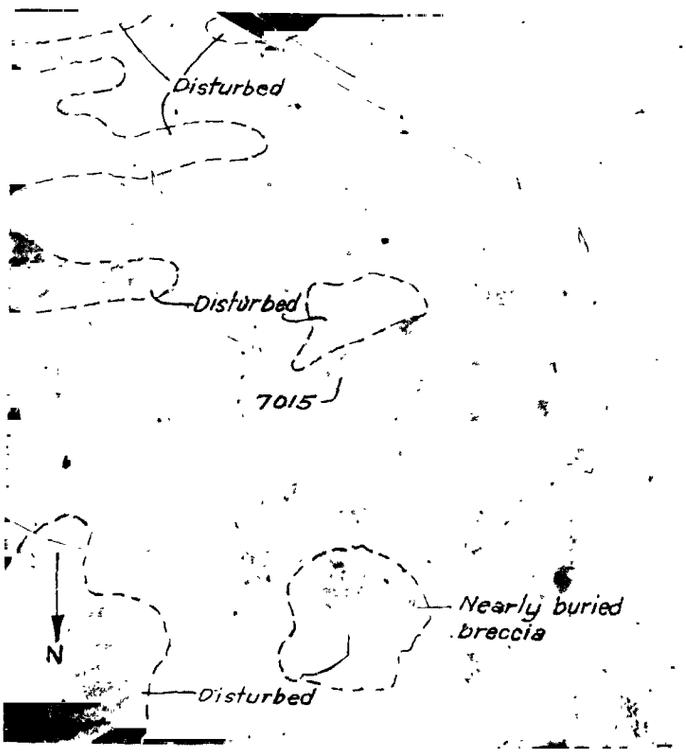
Shape: Subrounded.

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.

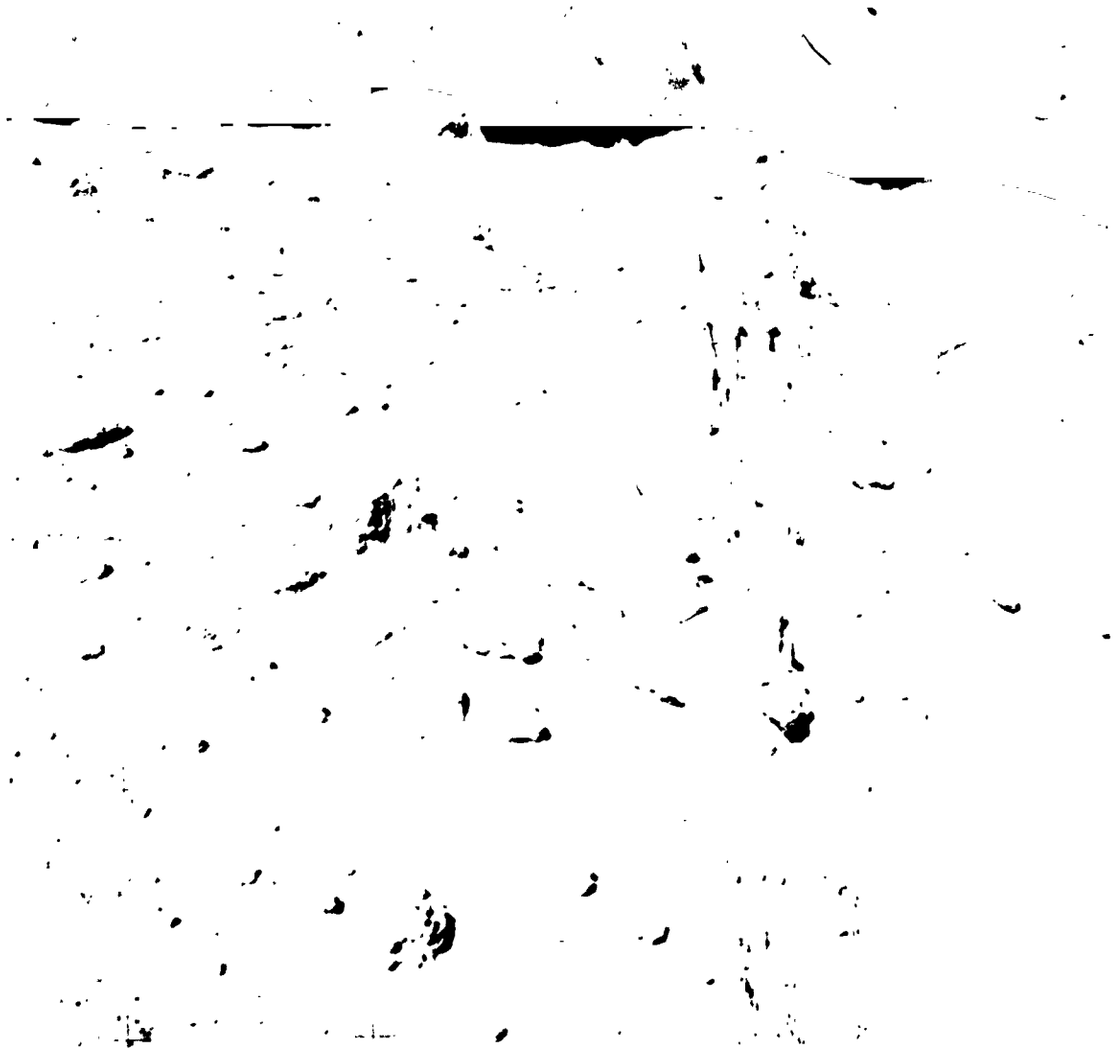
Color: Light gray matrix, with dark and white clasts.

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

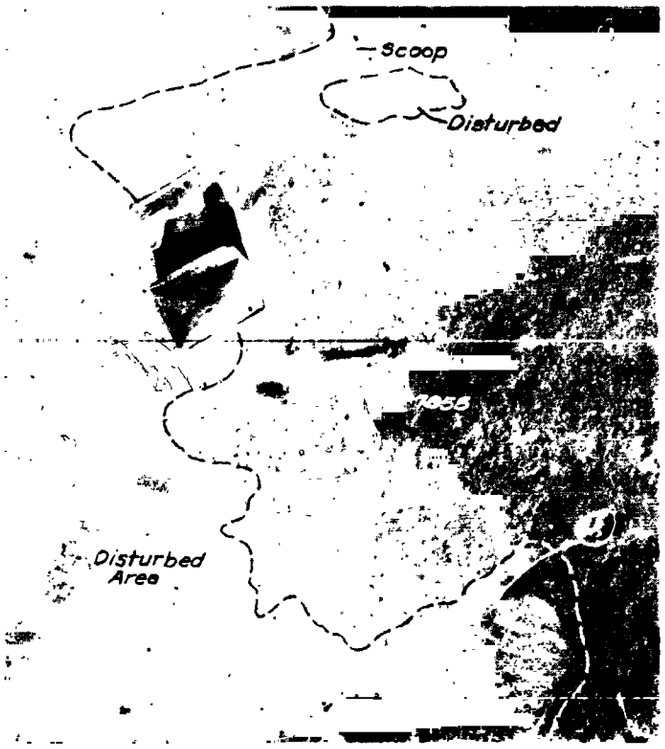
Dust cover: Dust covered

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.

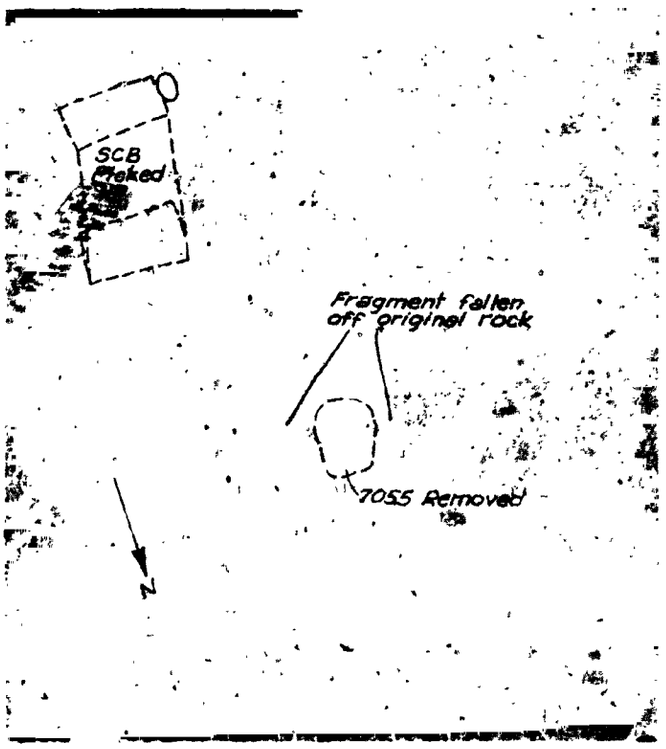
Probable origin: North Ray crater ejecta.

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

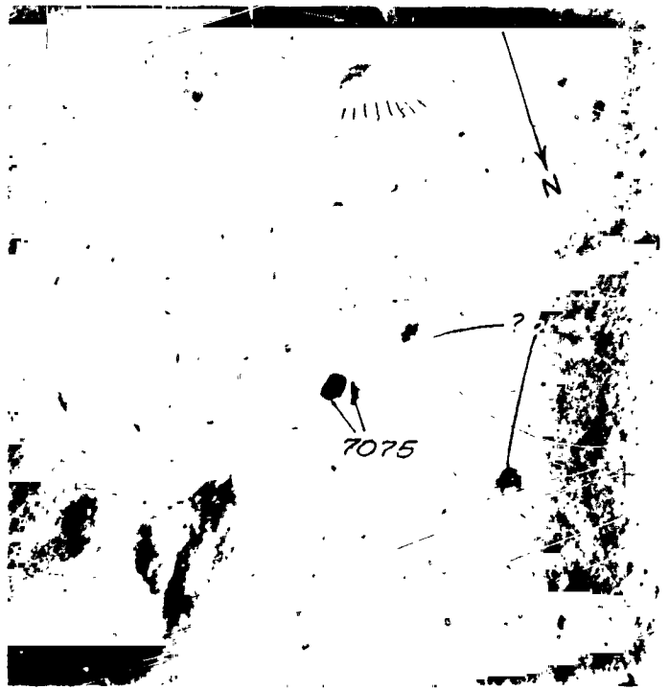
Dust cover: Possibly on smaller fragments to right (north).

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.

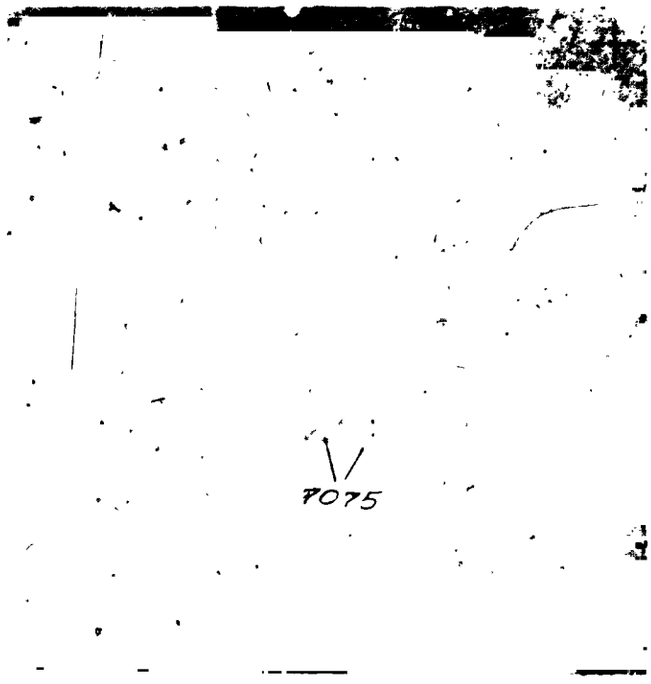
Probable origin: Unique in local area indicates possible exotic origin; although sample may be typical of white rock breccias 150 m to west and therefore is ejecta from North Ray.

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: 11

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.

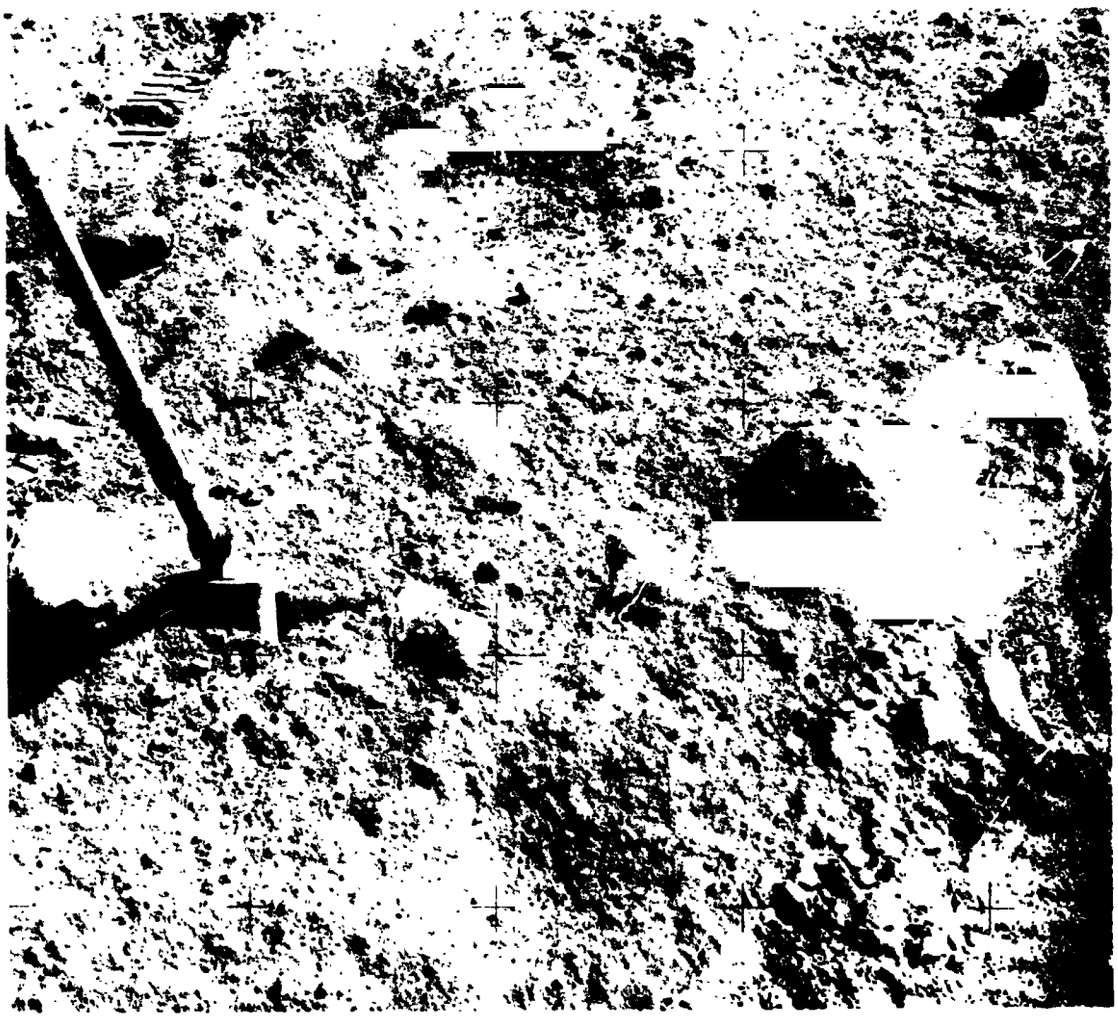
Dust cover: Partly covered, possibly due to movement.

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

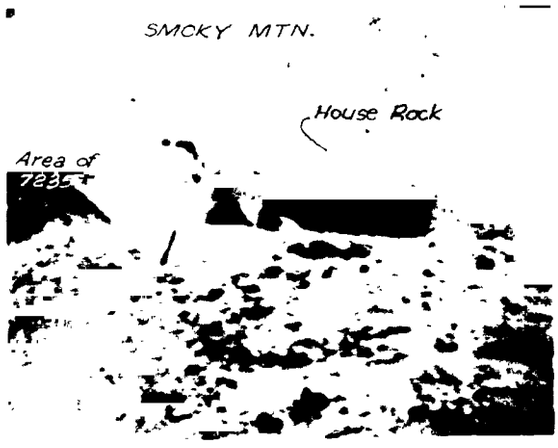
Apparent burial: Perched

Dust cover: Not visible

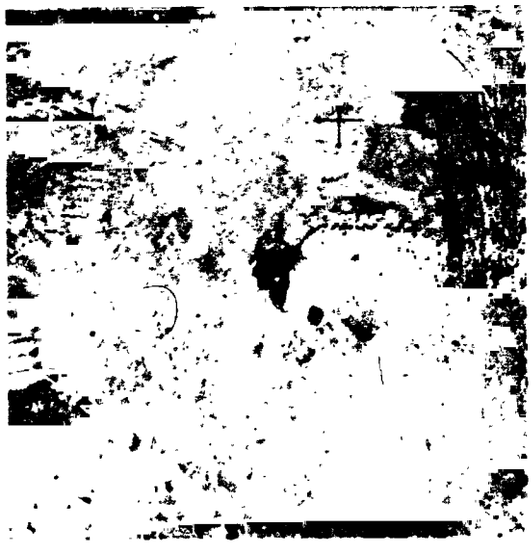
Comparison with other fragments in area: More angular and lighter in color than the majority of larger fragments

Probable origin: North Ray crater ejecta

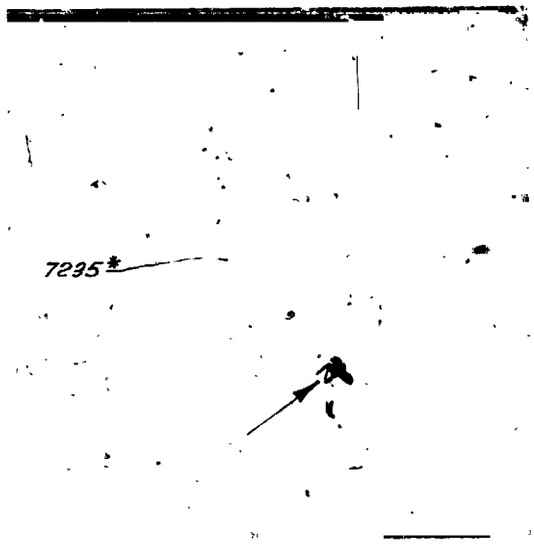
COMMENTS: Surface largely disturbed



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.

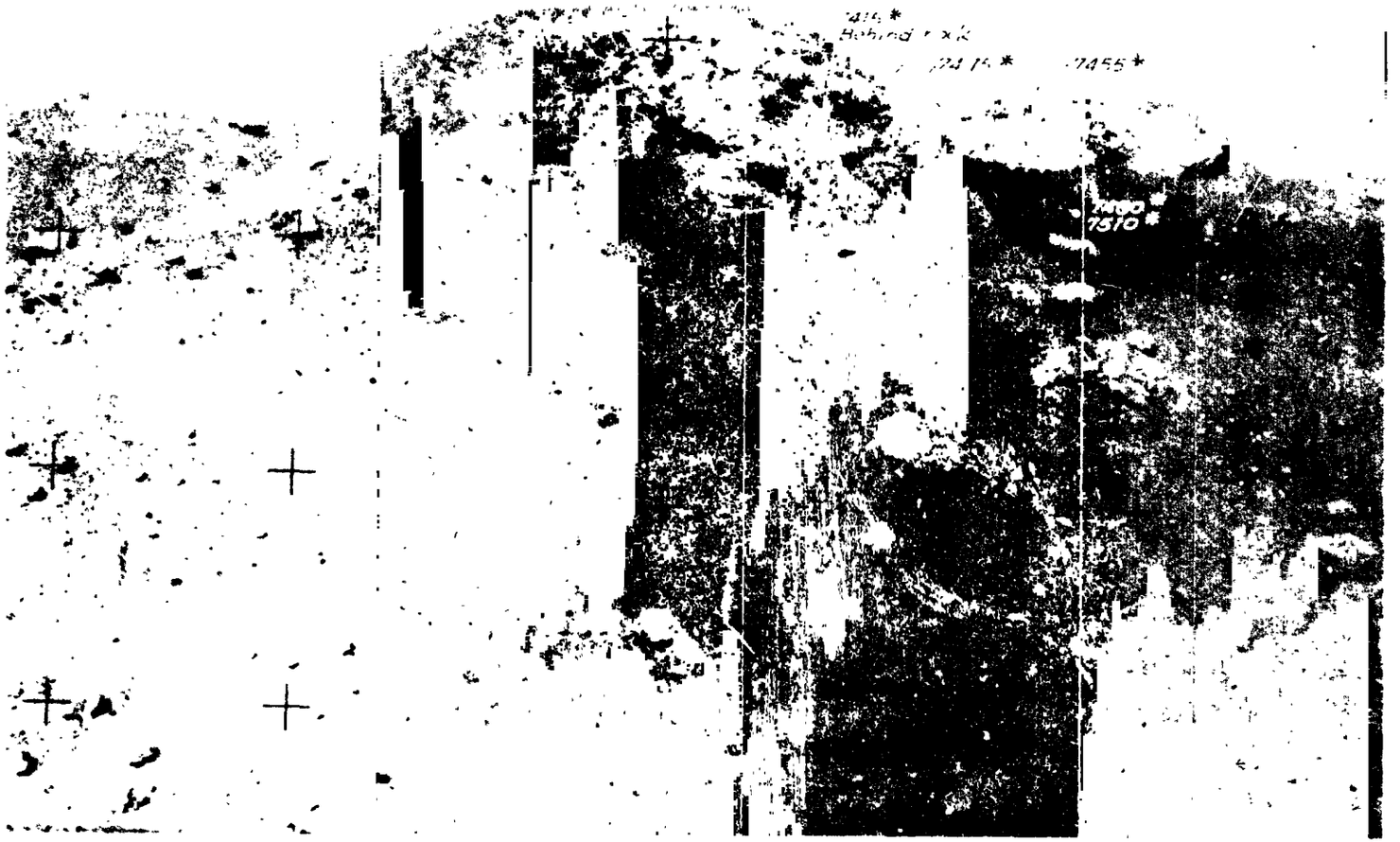
Fillet: None.

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.

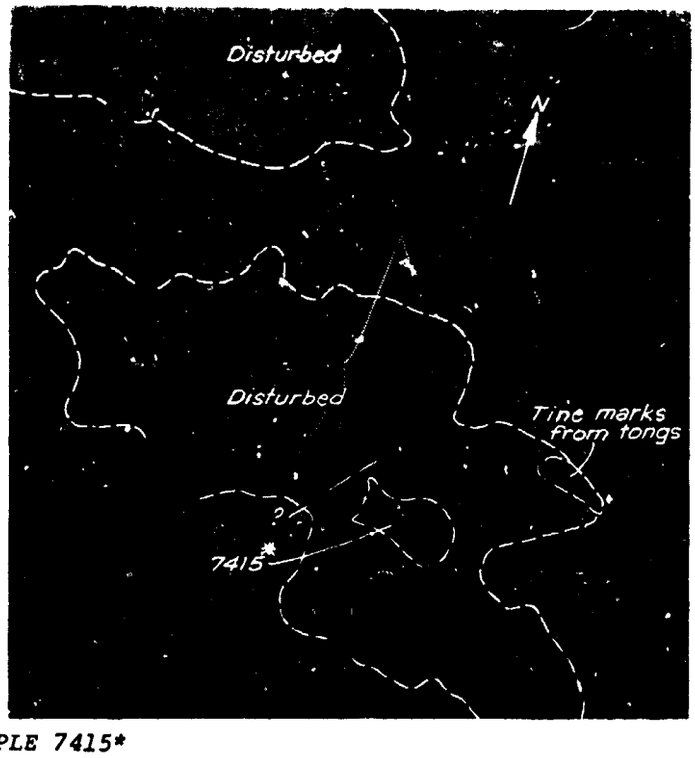


Pre-sampling, looking east (106-17323-24)

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.

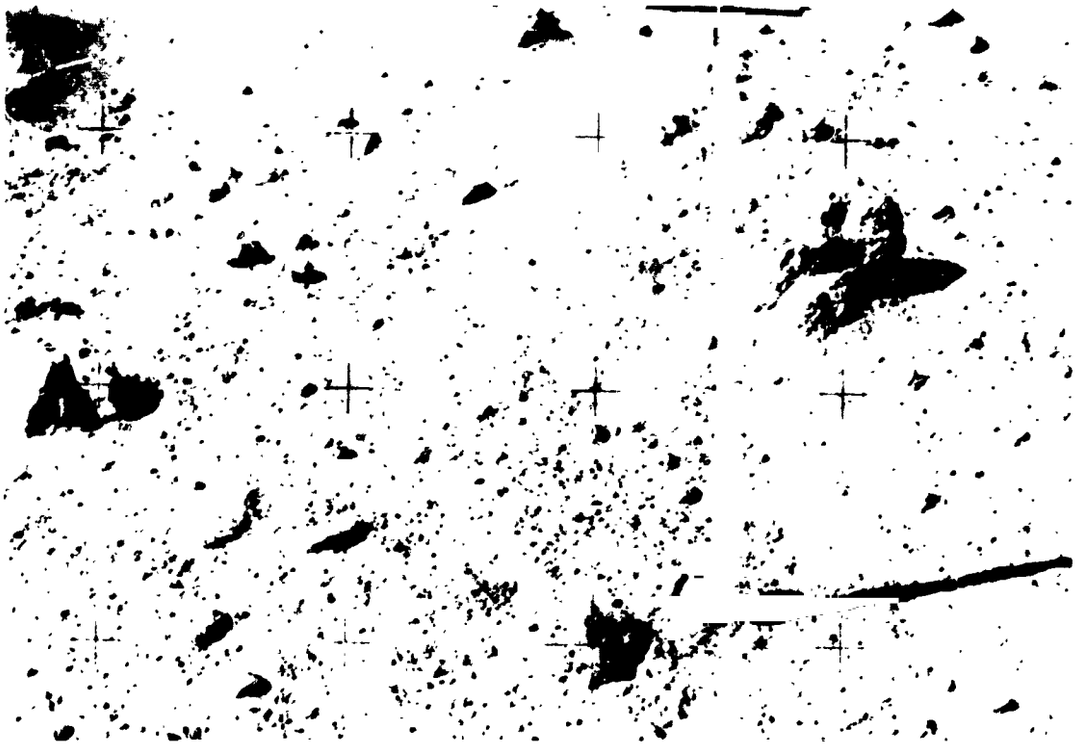
Apparent burial: Perched.

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.

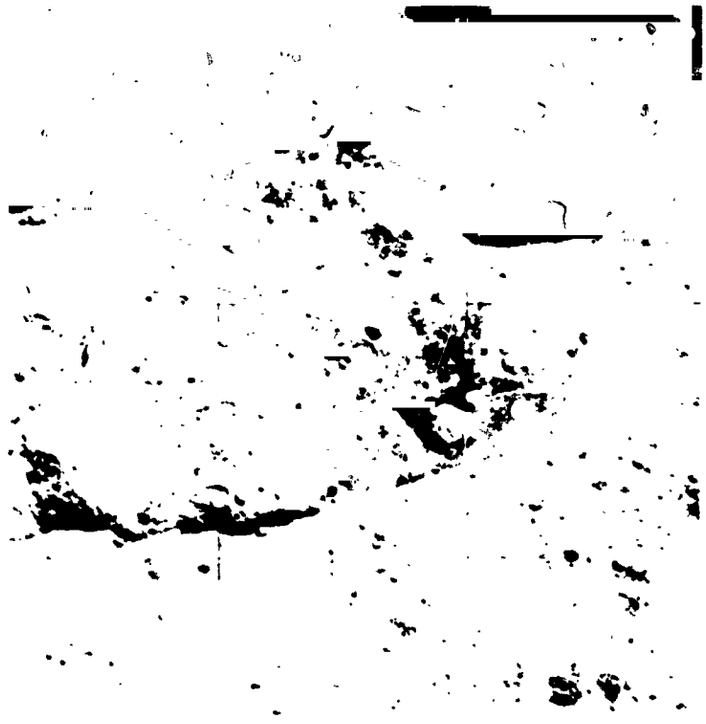
Probable origin: Broken, but nearly in place on larger boulder which is probable ejecta from the deeper levels of North Ray crater.

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.

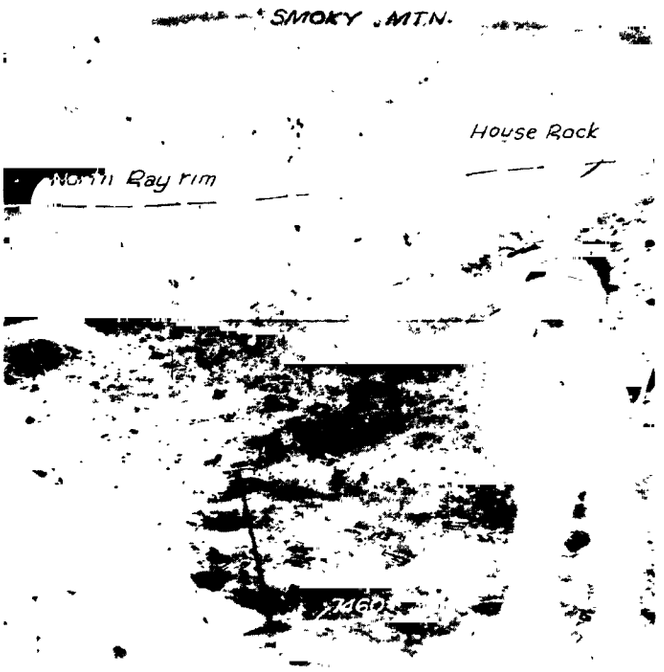
Fillet: Moderately well developed, with steep, sharp contact with base of boulder.

Comparison with other soil in area: Similar in color and texture to adjacent soil.

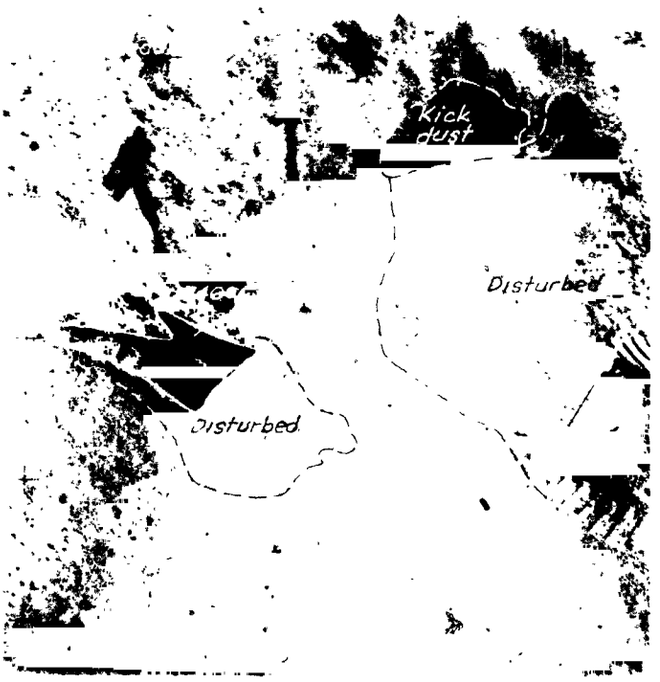
Probable origin: Derived from disintegrating white matrix breccias in this area.

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.

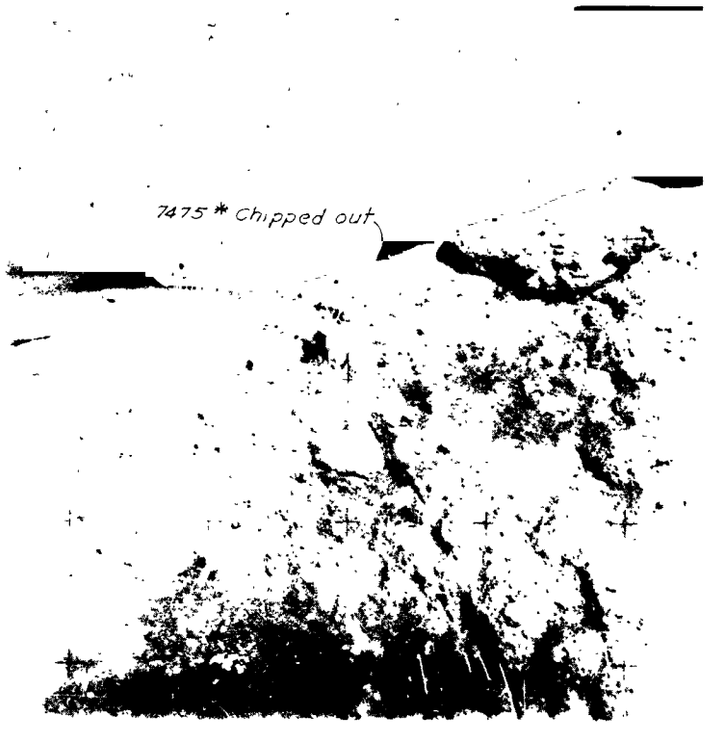
Color: Black.

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.

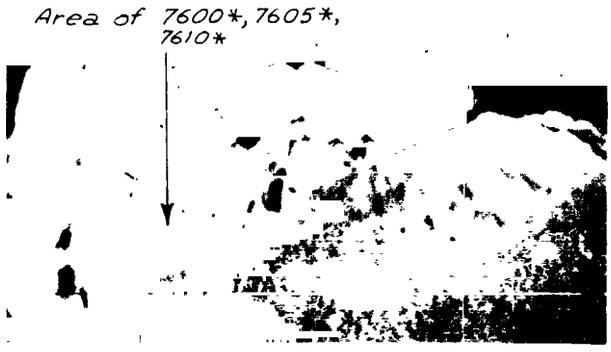
Fillet: Steep fillet on south side of one 5 cm fragment.

Apparent burial: Some partly buried.

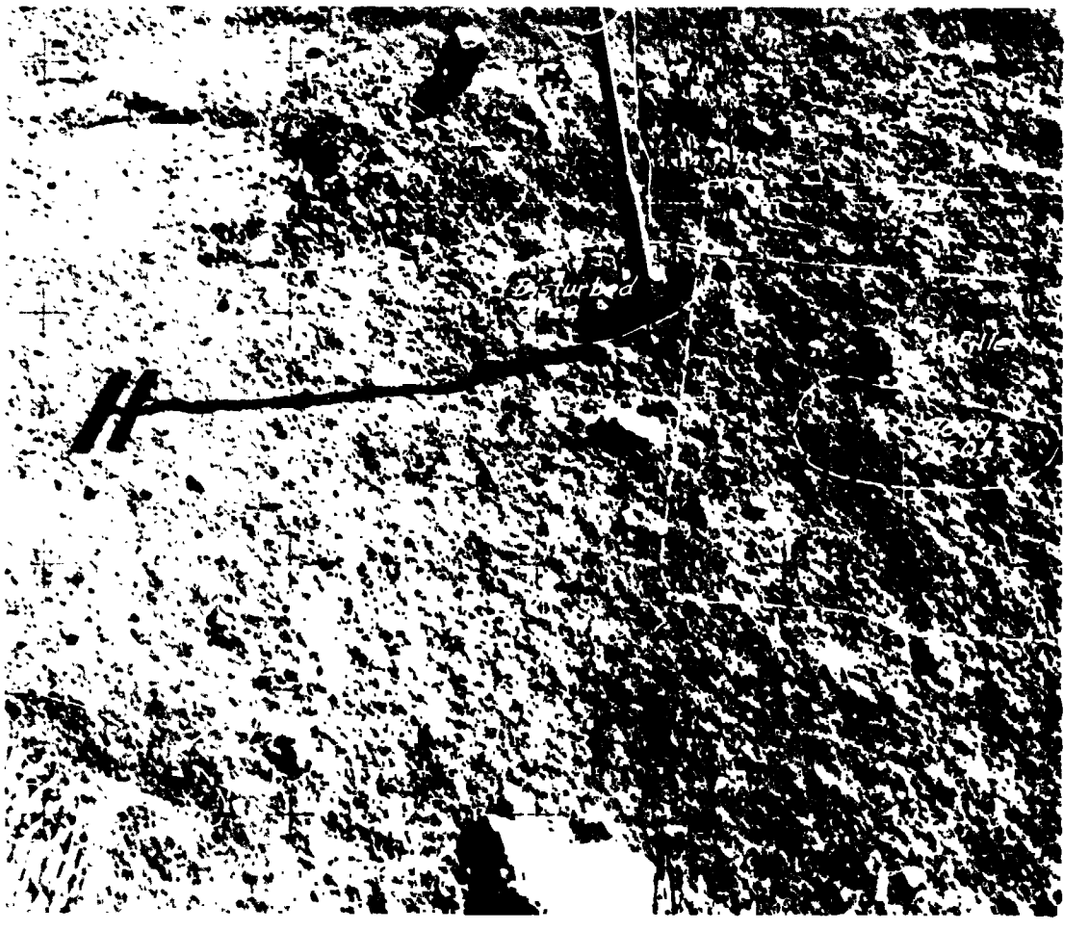
Dust cover: Not visible.

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.

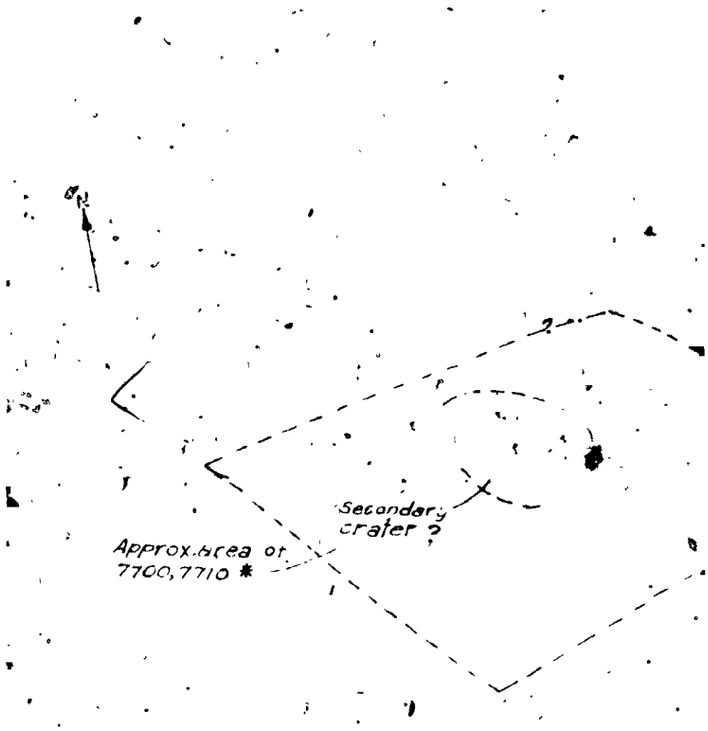
Color: Dusty gray and friable white fragments.

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.

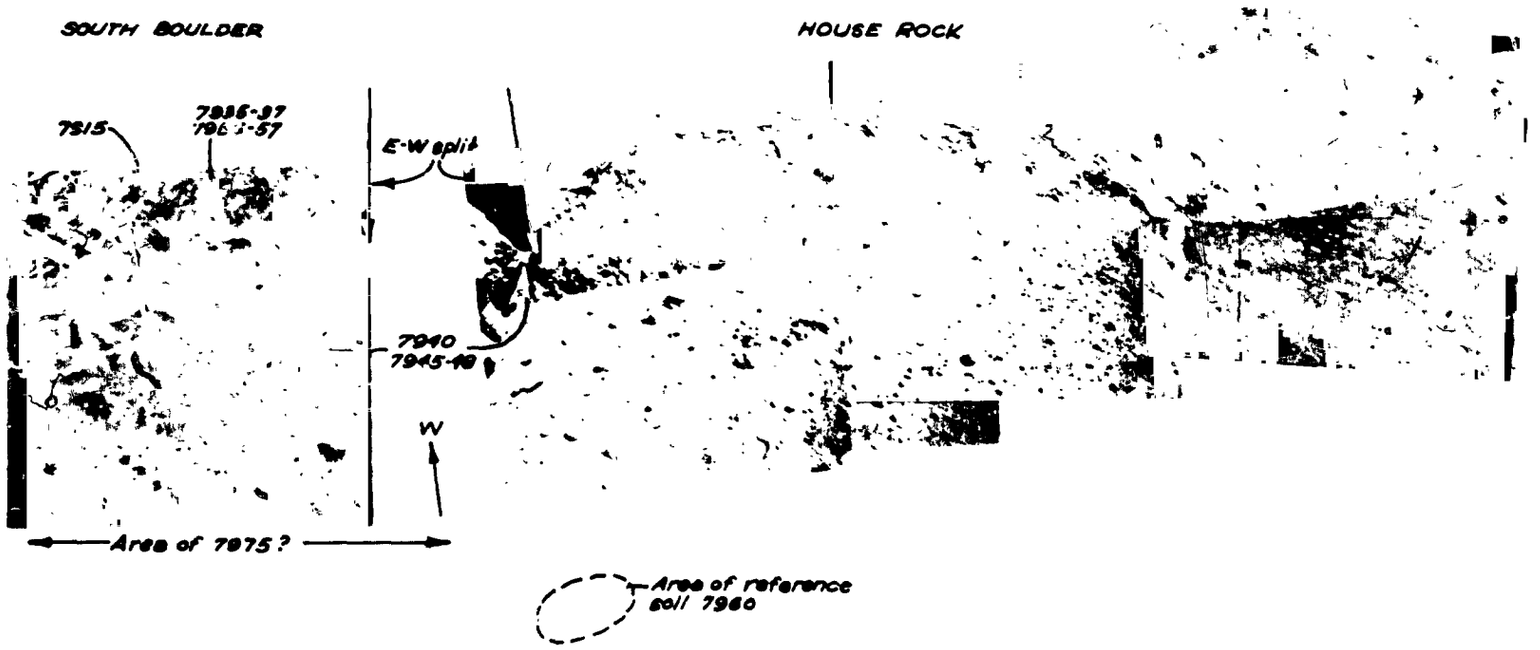
Shape: Angular to rounded.

Dust cover: None

Comparison with other fragments in area: White pieces probably typical of white clasts in south boulder and adjacent House Rock.

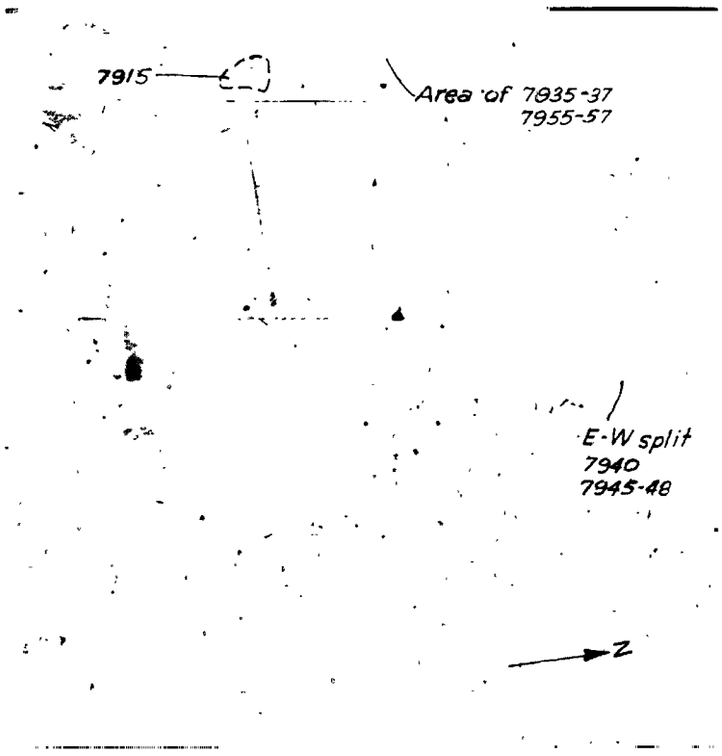
Probable origin: Collected to represent white clasts that were not as shocked as neighboring samples 7915 and 7935-37. 7956 and 7957 are dark matrix breccias similar to 7915.

COMMENTS: Should be similar to clasts in samples 7915 and 7935-37.

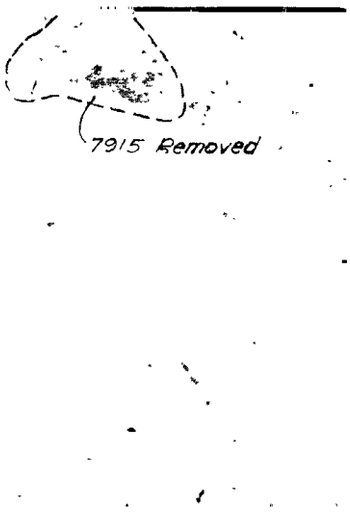


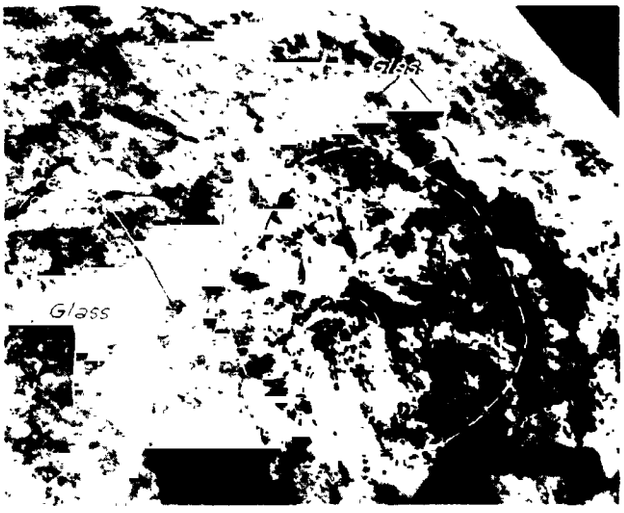
House Rock area showing localities of samples collected and relation to adjacent South Boulder. (116-18653 left; 106-17349 to 17354 right to left)

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.

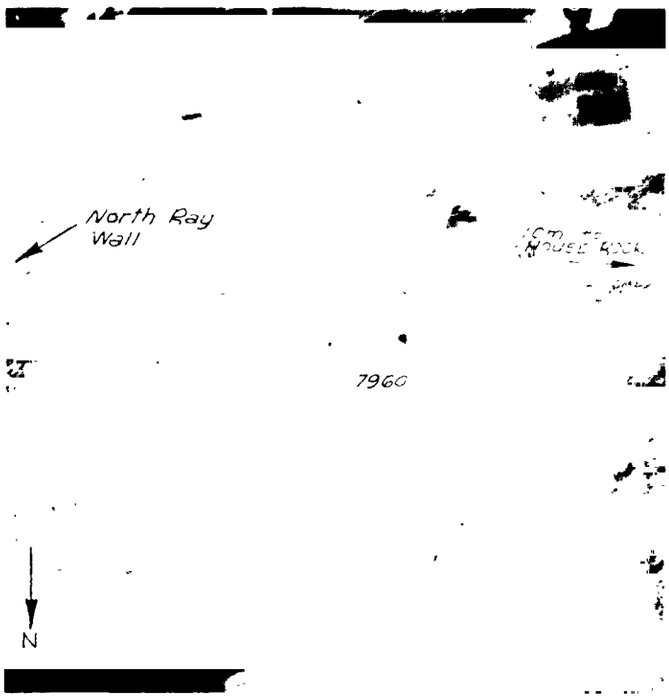
Probable origin: Ejecta from North Ray crater.

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.

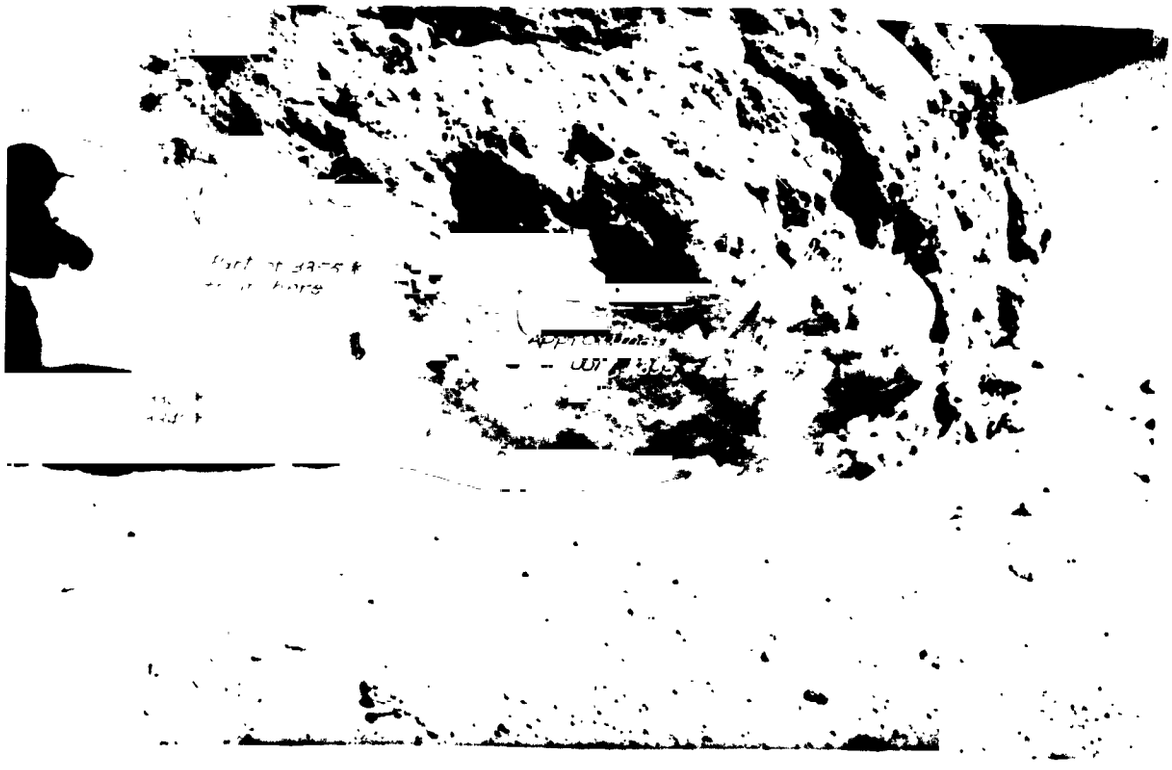
SAMPLE CHARACTERISTICS FOR 3320 AND 3340**

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

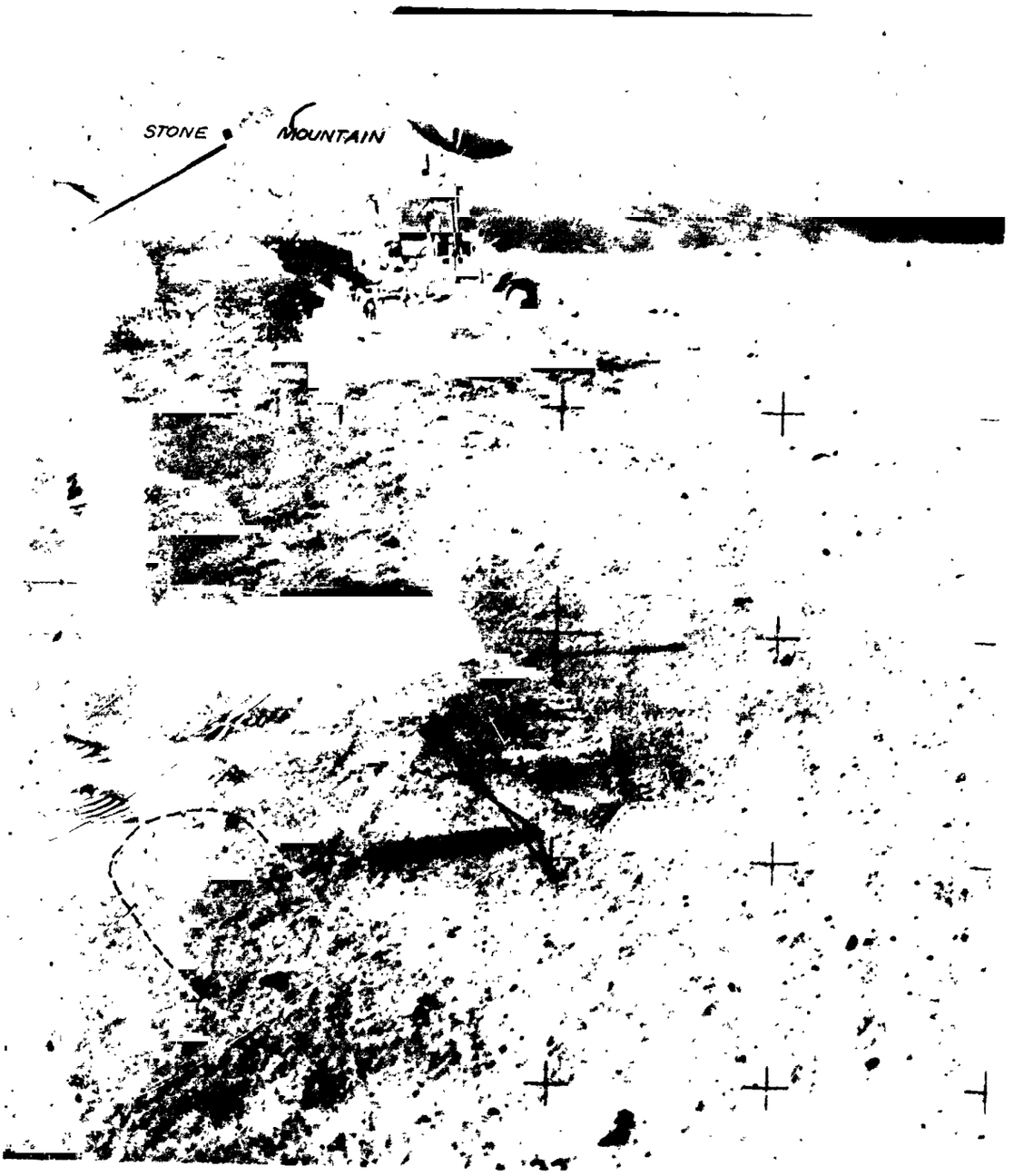
*SAMPLE CHARACTERISTICS FOR 3510**

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 10	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 DOCUMENTATION ONLY	05 01 25 36	LMP	OKAY, STARTING ON THE DEEP DRILL.
				05 01 25 46	LMP	MARK.
60007	105.7	(TOP)		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 BIT OFF THE FIRST STEM. GOT A LITTLE DUSTY IN THERE, BUT I GOT IT CLEANED OUT.
60005	76.1					
60004	202.7					
60003	215.5			05 01 31 56	LMP	THE PROBLEM IS THAT THE BIT WON'T STAY STUCK IN THE GROUND, AND WHEN I TRY TO GET THIS STUFF ON, IT SPINS THE WHOLE DEAL INSTEAD OF THE - -
60002	211.8					
60001	30.1	(BIT)				
		(BOTTOM)				
				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 BETWEEN 3RD AND 4TH SECTIONS FOR RETURN TO EARTH		05 01 33 33	LMP	I'M HOLDING BACK ON IT THIS TIME.
				05 01 34 16	LMP	MARK. OKAY, THE SECOND ONE WENT IN WITH NO PROBLEM, TONY.
						- - -
				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 **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. - - -
			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. - - -
			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 **60035***	**ROCK(S)**	**114-18383 XSB** **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. - - -
			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 60050*		SCOOPED SOIL	114-18385 XSA 114-18386 XSA 114-18387 LOC 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 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
61175*			114-18400 XSB			A GOOD ONE. SEE THAT ONE RIGHT THERE BY THAT
			114-18401 XSB			FOOTPRINT? THAT'S A GOOD SAMPLE SIZE. ABOUT
			114-18402 XSA			5 CENTIMETERS ACROSS?
			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 61160*		SOIL	SAME AS BAG 364	05 03 42 31	CDR	OKAY. LET ME GET THAT SOIL SAMPLE. - - -
			109-17798 DSB 114-18400 XSB	05 03 44 02	LMP	OKAY, COMING UP.
			114-18401 XSB 114-18402 XSA 114-18403 XSA	05 03 44 24	CDR	IT'S GOING IN BAG 356, HOUSTON. SOIL SAMPLE. - - -
BAG 362 61135*	245.1	ROCK WHITE-CLAST BRECCIA	109-17799 DSB 114-18404 XSB 114-18405 XSB	05 03 45 28	CDR	WANT TO GET SOME OF THESE HERE, CHARLIE?
				05 03 45 30	LMP	YEAH, THAT'S GREAT - THAT DEFINITELY IS A BRECCIA RIGHT THERE, JOHN.
			114-18406 XSA 114-18407 XSA 114-18408 XSA	05 03 45 34	CDR	YES, SEE THE CLAST IN IT.
				05 03 45 35	LMP	YES. - - -
			109-17800 TCC	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 61195*	587.9	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. - - -
				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 61295	CHIP FROM BOULDER	109-17802 DSB 109-17803 DSB 114-18412 XSB 114-18413 XSB 114-18414 XSA 109-17805 XSA 109-17804 LOC	05 03 57 29	CDR	LOOK AT THAT, CHARLIE!
			05 03 57 31	LMP	WHAT'S THAT?
			05 03 57 32	CDR	THAT THING HAS - GREENISH-BLACK CLAST IN IT. RIGHT THERE IN THAT BOULDER, THERE?
			05 03 57 40	LMP	LOOKS LIKE IT TO ME, TOO, YEAH. LET'S SEE IF WE CAN GET A PIECE OF THAT. OKAY, TONY, THIS IS A 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 109-17809 XSB 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 BUSTER CRATER**	109-17837 XSB	05 04 32 33	LMP	IF THAT IS A SECONDARY, THAT IS A BIG ROCK THAT HI IN THERE.
62235*			109-17838 XSB			
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 BAG 5	05 04 36 20	LMP	OK, TONY. FROM HERE IS A SOIL SAMPLE GOING INTO BAG 6. THIS IS ON THE RIM OF BUSTER.
62240*			109-17838 XSB			
			109-17842 XSA			
BAG 7		**ROCK, RIM OF BUSTER CRATER**	109-17843 XSB	05 04 37 08	LMP	THAT'S THE ROCK I WANT, BUT IT'S TOO BIG FOR THE BAG. BUT IT MIGHT GO IN THE BAG.
62255*	1192.0		109-17844 XSB			
						- - -
				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 **62275***	**ROCK, 1/4 DIA.** **FROM BUSTER** **CRATER**	109-17845 XSB 109-17846 XSB	05 04 40 44 05 04 40 52	LMP LMP	OK, TONY, THE ROCK I'VE GOT HERE - - - - 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	CDR	THIS IS REALLY SOME ROCK, REALLY SHOCKED.
			05 04 41 50	LMP	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	LMP	IT BROKE IN TWO IN MY HAND.
			05 04 42 22	LMP	OK, AND THAT'S IN BAG NUMBER 9.
BAG 10 **62295***	**ROCK**	109-17847 XSB 109-17848 XSB	05 04 44 07 05 04 44 12	LMP LMP	OKAY, BAG NUMBER 10, IS ANOTHER ONE. IT'S AN ANGULAR ROCK. - - -
			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 **62280***	**SOIL**	**SAME AS** **BAG 10**	05 04 45 18 05 04 45 30	LMP LMP	WE GOT SOIL SAMPLES AND ABOUT - THAT SAMPLE IS GOING INTO BAG 11, TONY. THAT'S A SACKFUL, JOHN. I DON'T SEE THE HIGH ALBEDO STUFF UNDERNEATH.
EVA 1 - STATION:	**LM**				
FSR-3 **60015***	**ROCK** **"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. - - -

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: 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		**ROCK**	**109-17866 XSB**	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.
60016	**4307.0**		**109-17867 XSB**			
			109-17868 DSA			
			113-18303 LOC			
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?

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SAMPLE NUMBER	WEIGHT (G)	SAMPLE TYPE	LUNAR-SURFACE PHOTOGRAPHS	AET		CREW COMMENTS
EVA 2 - STATION: 4						
BAG 394		**ROCK**	107-17443 XSB	06 00 16 05	CDR	MOST OF THESE ROCKS HAVE A WHITISH CAST TO THEM,
64435*			107-17444 XSB			HOUSTON, BUT -
			107-17445 XSB,			- - -
			107-17447 XSA	06 00 17 08	LMP	LOOK UPSLOPE, TONY. OK, LOOK ON UPSLOPE, AND
			107-17446 LOC			YOU SEE ALL THIS ROCK FIELD THAT WE'RE IN HERE.
			107-17445 LOC			- - -
				06 00 17 19	CDR	OK. I WAS JUST GOING TO GET THIS ONE SAMPLE.
						- - -
				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
						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
						COVERED. WELL, NOT MOST OF THEM; IN FACT,
						MOST OF THEM ARE NOT DUST COVERED.
BAG 395		**RAKE FRAGMENTS**	110-17947 DSB	06 00 20 05	LMP	LET ME RAKE THIS TIME AND THEN I'LL GET ON
64510*			107-17448 XSB			WITH THE PENETROMETER, OKAY?
			107-17449 XSB	06 00 20 09	CDR	OKAY, FINE.
			107-17450 XSD	06 00 20 10	LMP	THERE'S A PLACE RIGHT UP HERE, JOHN, THAT LOOKS
			110-17948 LOC			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 64500*	**RAKE SOIL**	SAME AS BAG 395	06 00 23 22	LMP	WANT TO GET THAT KILO. OK.
			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 64475*	**4 ROCKS**	107-17453 DSB 107-17451 XSB 107-17452 XSB 107-17457 DSA 107-17454 LOC	06 00 25 57	CDR	I'M LOOKING AT A ROCK HERE THAT IS A VERY ANGULAR ROCK, AND IT HAS WHITE CLASTS WITH A BRECCIA, OR IT HAS A BRECCIATED APPEARANCE. I'LL TAKE A PICTURE OF IT AND SAMPLE IT FOR YOU. - - -
			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 64455*	**GLASS SPATTER**	107-17455 XSB 107-17456 XSB	06 00 29 08	CDR	DON'T STEP RIGHT THERE, CHARLIE. HERE'S A 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.

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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
68420*			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
68002/	**584.1/**		110-17950 XSD			HERE OR DOWNSLOPE WHERE I THINK IS PROBABLY CLOSER
68001*			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 **64600***	**SCOOP SOIL**	107-17463 DSB 107-17464 DSB 107-17465 XSB 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.
					- - -
			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.
					- - -
			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 **64610***	**RAKE FRAGMENTS**	SAME AS BAG 400 107-17490 XSA 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.
					- - -
			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 54	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 -
					- - -
			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.

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 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 SOMEHWERE 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, AND THEY'RE ON THIS RIM. AND I GUESS THE PROBLEM IS - IT WAS A CRATERING EVENT WAS PROBABLY SO LONG AGO. THERE'S JUST NOT EVEN A HINT OF ANY LEDGES OR BEDROCK IN THIS RASCAL.
65610*			**107-17497 XSB**			
			110-18021 XSD			
			110-18022 XSD			
			107-17498 XSA			
			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 65600*		SOIL	SAME AS BAG 334	06 01 26 35	LMP	OKAY. LET ME GET SOME SOIL HERE.
				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 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 CAN. IT'S BLUISH CRYSTAL, A COUPLE OF MILLIMETER SIZE.
			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 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 - -

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EVA 2 - STATION: 5						
BAG 405 65310*		RAKE FRAGMENTS PLUS LARGER ROUNDED ROCK	SAME AS BAG 404	06 01 32 33	LMP	OKAY. LET ME RAKE UP HERE. HERE'S SOME - THESE ARE EITHER CLODS OR - -
			107-17504 XSB	06 01 32 56	LMP	THAT WAS A WHITISH ROCK. THAT ONE PROBABLY CAME FROM SOUTH RAY. WAIT A MINUTE. HERE'S SOME GOOD ONES - DUSTY ONES.
			107-17505 XSA			
			107-17506 XSA			
			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 65710*		RAKE SOIL, DEEP	107-17508 XSA	06 01 34 29	CC	WE'D LIKE YOU TO FIND THE STEEPEST SLOPE THAT YOU CAN WORK ON THERE, AND DIG AS DEEP AS YOU CAN WITH THAT RAKE.
			107-17509 XSA			
				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-DEGREE 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 LITTLE 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 GETTING 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 **65700***	**SOIL AND ROCK**	**107-17508 XSA** **107-17509 XSA**	06 01 39 04	LMP	NOW THERE IS A PURE - THERE ARE TWO ROCKS, RIGHT THERE.
			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 **65095***	**ROUNDED, DUSTY ROCK**	**110-18027 XSB** **110-18028 XSB**	06 01 44 35	LMP	OK, TONY. I'M SAMPLING RIGHT IN FRONT OF THE ROVER. - ABOUT 10 FEET. I GOT A FIST-SIZE ROCK OUT HERE.
			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.

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SAMPLE NUMBER	WEIGHT (G)	SAMPLE TYPE	LUNAR-SURFACE PHOTOGRAPHS	AET		CREW COMMENTS
EVA 2 - STATION: 5						
FSR-5		**ROCK, CRYSTALLINE**	**NO PHOTOGRAPHS**	06 01 47 08	CDR	HEY, CHARLIE, WHERE I TRIPPED OVER HERE IS A LOT OF WHITE ROCK.
65015*				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 18	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		**2 ROCKS**	**110-18029 XSB**	06 01 49 32	LMP	TONY, I'VE GOT TWO MORE ROCKS DOCUMENTED IN 337.
65055*			**110-18030 XSB**			

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 TWO-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-
66043	15.5	2-4 MM	107-17513 XSB			UP BLOCK HERE.
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-
			107-17520 XSA			OTHER.
			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
66081	177.3	< 1 MM				SOIL, IF IT IS.
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
66084	3.13	4-10 MM				AND GET SOME OF THESE BLOCKS ON THE UPPER RIM.
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.

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.

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!

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 53 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] CAST TO IT - BLACK MAYBE. OK, YOU ALREADY S[illegible]T, 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 68002/ 68001*	583.5/	DOUBLE DRIVE TUBE	08-17682 XSB 108-17683 XSB	06 02 48 58	LMP	OK, I PUSHED THE DOUBLE CORE IN ABOUT HALFWAY UP THE FIRST. - - -
				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 108-17686 XSD	06 02 54 49	CC	RIGHT, IT SURE LOOKS IT, BUT I CAN SEE YOU'RE 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 68510*		RAKE FRAGMENTS	107-17530 DSB 107-17527 XSB 107-17528 XSB	06 02 47 05	CDR	OK, WELL I CAN GET A RAKE SOIL HERE WHILE YOU'RE DOING THAT (DOUBLE CORE). - - -
			107-17531 DSA 107-17529 LOC	06 02 47 24	CDR	RAKE SOIL AWAY FROM THE BOULDERS. - - -
				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 ANYTHING BUT SOIL - VERY FEW ROCKS, IN OTHER WORDS.
BAG 412 68500*		RAKE SOIL	107-17527 XSB 107-17528 XSB	06 02 53 50	LMP	HEY, THERE ARE LITTLE GLASS BEADS ALL OVER THE PLACE HERE, JOHN.
			107-17533 XSA 107-17530 DSB 107-17531 DSA	06 02 53 53	CDR	AND PLACES WHERE LITTLE WHITE ROCKS SEEM TO HAVE HIT, TOO. I'LL GET A SOIL SAMPLE HERE. - - -
			107-17529 LOC	06 02 55 41	CDR	OK, THE SOIL SAMPLE HERE IS GOING IN BAG 412.

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SAMPLE NUMBER	WEIGHT (G)	SAMPLE TYPE	LUNAR 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.
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.
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.
						- - -

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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 WAS 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 108-17700 XSB 108-17701 XSA	06 03 21 30	CC	I'M NOT SO SURE WE GOT A GOOD FILLET ON THIS LAST ONE, SO WE MIGHT BE WILLING TO SAMPLE ANOTHER.
68820*						- - -
				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.
FSR-6		ROCK	108-17699 XSB	06 03 24 35	CDR	OKAY, LET'S GET THE CHIP.
68815	1791.0	CHIP FROM BRECCIA BOULDER	108-17700 XSB 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 ...
BAG 343		ROCK CHIP	SAME AS	06 03 27 36	LMP	ANOTHER PIECE THAT FELL OFF HERE.
68815,2	34.49	FROM BRECCIA BOULDER	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.
				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.

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						
BAG 344		**SOIL**	108-17702 DS	06 03 29 38	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 SURFACE 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 ABOUT 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.

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.

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!

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
			107-17573 XSB			FLIP THEM OVER, HUH?
			107-17574 XSB	06 04 13 31	CDR	YEAH. THAT'S A BIGGIE. MAN, IT LOOKS LIKE IT'S
			107-17577 XSA			BEEN SITTING THERE FOR QUITE A WHILE. LOOK AT
			107-17578 XSA			THAT SOIL UNDERNEATH.
			107-17579 XSA	06 04 13 43	CDR	BEFORE I STOMP ALL OVER IT, CHARLIE, SNEAK OVER
			107-17580 XSA			HERE AND LET'S GET SOME OF THIS SOIL.
						- - -
				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,
			107-17578 XSB			JOHN. BACK UP. I'LL GO GET IT. THERE IT IS
			107-17579 XSA			RIGHT THERE.
			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
60010/	635.3/		115-18556 XSB			OF THE ROVER.
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, [illegible] MIGHT LOOK AROUND AND SEE IF YOU
60115*		114-18447 XSA			SEE ANY OF [illegible] VESICULAR BASALT.
		114-18448 LOC	06 05 11 46	CDR	THAT'S WHAT [illegible] 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

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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 - - - IT 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.

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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 67095	339.8	ROCK	116-18624 DSB 116-18625 DSB 116-18626 XSB 116-18627 XSB 116-18628 XSA	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 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 67075	219.2	WHITE BRECCIA	106-17318 XSB 106-17319 XSB	06 23 12 02	LMP	HEY, JOHN. CAN I GET A BAG FROM YOU.
				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 67115	240.0	ROCK, BRECCIA	SAME AS BAG 385 116-18624 DSB 116-18625 DSB 116-18626 XSB 116-18627 XSB 116-18628 XSA	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 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 67435*	353.5	GLASS COATED ROCK	106-17320 XSB 106-17321 XSB 106-17322 XSA	06 23 18 23	LMP	OKAY - HERE'S AN OLD GLASSY ROCK, TONY, THAT'S GLASS COATED. ANYWAY, IT WENT INTO 415.
				06 23 18 45	LMP	AND IT WAS HACKLY LOOKING ON THE SURFACE - THAT'S WHY I STOPPED TO GET IT.

BAG 416 67455*	942.2	ROCK, FRIABLE BRECCIA	106-17331 XSB 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. - - -
				06 23 19 26	LMP	I'M GOING TO GIVE YOU A LITTLE STEREO ON THIS BOULDER - - -
				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. - - -
				06 23 21 57	CC	CHARLIE, IF POSSIBLE, WE'D LIKE SOME SAMPLES ON THAT STUFF ON TOP OF THE BOULDER. - -
				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 67460*		FILLET SOIL	116-18632 LSA 116-18633 DSA 106-17333 XSB 106-17334 XSB 106-17335 XSA 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? - - -
				06 23 21 30	LMP	HEY, TONY, WE'LL FILLET SAMPLE FOR YOU UP HERE. - - -
				06 23 23 37	LMP	JOHN. COULD WE GET A FILLET UP THERE WHERE THAT GNOMON IS? 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 67475*	175.1	BLACK CLAST CHIPPED FROM 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.

C5

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		**WHITE ROCK**	116-18636 DSB	06 23 27 38	CDR	I HAVE A ROCK HERE THAT IS A FINE WHITE CRYSTALLINE
67415*			116-18634 XSB			ROCK. IT'S PRETTY WELL DUST COVERED, BUT I DON'T
			116-18635 XSB			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		**SOIL**		06 23 28 48	CDR	LET'S GET A SOIL SAMPLE RIGHT HERE.
67480*				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		**RAKE FRAGMENTS**	116-18637 XSB	06 23 30 07	LMP	LET'S GET IN A CLEAR SPOT, JOHN, TO RAKE. OK?
67510*	**468.4**		116-18638 XSB			THEN WE CAN DO IT DOWN THERE TOO.
			116-18639 XSB	06 23 30 11	LMP	IT LOOKS ALMOST FRUITLESS UP HERE.
			116-18640 XSA		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 67610*		RAKE FRAGMENTS	106-17338 DSB 116-18641 XSB 116-18642 XSB 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 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 67710*	694.1	RAKE FRAGMENTS UNSORTED	106-17339 DSB 116-18644 XSB 116-18645 XSB 116-18646 XSA 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.

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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
67700	142.6	RESERVE FINES	BAG 423			SAMPLE.
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
67937	59.67		116-18647 XSD			RASCAL.
			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.
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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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				
67941	105.9	< 1 MM		06 23 49 13	CDR	NO, WE DON'T.
67942	12.23	1-2 MM				- - -
67943	9.36	2-4 MM		06-23-49-29	CDR	THE HOLE UNFORTUNATELY IS A SORT OF AN...EAST-WEST SPLIT THERE, CHARLIE.
67944	8.59	4-10 MM				
67945	4.37	FRAGMENT		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.
67946	3.2	FRAGMENT				
67947	2.43	FRAGMENT		06 23 49 46	CC	WHY DON'T YOU GO AHEAD AN. KE A SOIL OUT OF THAT.
67948	1.59	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.
				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.
				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 67975	446.6	"FROTHY" ROCK		06 23 53 07	LMP	THERE'S A REAL FROTHY ROCK RIGHT THERE, JOHN. WANT TO THROW THAT IN? - - - GOT A GRAB SAMPLE GOING IN 393 (392), WHITE MATRIX WITH GLASS ON IT.
PADDED BAG NO. 2 67235*		ROCK	116-18656 DSB 116-18654 XSB 116-18655 XSB 116-18657 LOC	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,
				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. - - -
				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 67215*		ROCK	106-17355 XSB 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. - - -
				07 00 02 58	CDR	THAT'S A BETTER SIZED ONE. - - -
				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 3[illegible]	CDR	THE VELCRO CAME OFF BOTH THOSE BAGS AND WE WEREN'T ABLE TO PUT EM TIGHT LIKE THEY'RE SUPPOSED TO BE. - - -
				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 116-18659 USB 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. THIS IS GOING TO BE SOMETHING GOING DOWN THIS HILL. - - -
				07 00 10 53	LMP	LOOK AT THAT SLOPE. THIS IS AT LEAST 15 DEGREES SLOPE WE'RE GOING DOWN AND THAT ROVER CAME RIGHT UP IT AND YOU NEVER EVEN KNEW IT. - - -
				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. - - -
				07 00 15 53	CDR	SEE THAT BIG ROCK OVER THERE? MAYBE THAT'S A PERMANENTLY SHADOWED ONE. TRY IT? - - -
				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. - - -
				07 00 17 23	LMP	OKAY, BE ABLE TO SEE THAT BIGGY. THAT ROCK LOOKS LIKE THAT GREAT BIG ONE WE SAMPLED UP ON THE RIM, JOHN.
				07 00 17 31	CDR	SURE DOES. - - -
				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 63320*	351.0	SHADOWED SOIL UNSORTED	106-17413 XS 106-17414 XS 106-17415 XS AS A PAN OF BOULDER	07 00 27 49	CC	WHILE JOHN'S DOING THE LPM WE'D LIKE YOU TO HAMMER ON THAT ROCK A BIT. - - -
				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 63340*	180.0	SOIL (CONTROL) UNSORTED	SAME AS BAG 426	07 00 32 21	CC	ANY CHANCE GETTING SOIL UNDERNEATH THAT NOW FOR THE CONTROL?
				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 63335*	65.4	ROCK CHIPS FROM SHADOW ROCK	SHADOW ROCK IS SHOWN IN 106-17413 XS 106-17414 XS 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. - - -
				07 00 35 50	CDR	COULDN'T BE ZAP HOLES. - - -
				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. - - -
				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. - - -
BAG 429 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 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. - - -
				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. - - -
				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
			117-18825 LOC			FRAGS HERE, TONY.
				07 01 23 14	LMP	THE RAKE.. I DON'T SEE ANYTHING THAT LOOKS -
				07 01 23 19	CDR	GET ANOTHE .
				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				

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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
60018	1501.0	FROM BOULDER	116-18690 XSB			THE DOUBLE CORE?
			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
60135*	137.7		116-18695 XSB			BALLS.
			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
FSR 9?						BIG ROCKS AND PUT THEM IN THE BIG ROCK BAG, CHARLIE.
				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 60235*		ROCK	117-18828 XSB 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 60255*		ROCK	117-18830 XSB 117-18831 XSB 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 60275	255.2	ROCK	117-18833 XSB 117-18834 XSB 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 60315	787.7	CRYSTALLINE ROCK	117-18836 XSB 117-18837 XSB 117-18838 XSB	07 01 56 44	LMP	THERE'S A NEAT ROCK. RIGHT THERE. DOESN'T LOOK LIKE A BRECCIA. - - -
				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.
FSR 12? (FSR 4?) 60016	4307.0	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.
			110-17866 XSB 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.
BAG 331 60335*		ROCK FOR LPM	116-18712 XSB 116-18713 XSB 116-18720 LPM 116-18721 LPM	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. - - -
				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.

TABLE 9. - - SAMPLE INDEX BY CONTAINER

CONTAINER	LRL NO.	PAGE	CONTAINER	LRL NO.	PAGE
DEEP CORE	60001-60007	19-20,192	381	60115*	39-40,229
	(BIT) (TOP)		382	67035	144-145,231
D.T. U43/L38	64002/64001*	88-89,208	383	67055	146-147,231
D.T. U29/L36	68002/68001*	125-126,221	384	67075	148-149,232
D.T. U45/L54	60010/60009	21-22,229	385	67095	150-151,232
D.T. U27/L32	60014/60013	23-24,247	386	67115	150-151,232
D.T. L34 CSVC	69001	136-137,227	387	67415*	156-158,234
2	61195*	64-66,197	388	67700-08	171-172,236
4	60095*	37-38,193	389	67935-37	173-175,236-237
5	62235*-37*	80-81,202	390	67940-48	174,176-177,238
6	62240*	80-81,202	391	67960	174,176-177,238
7	62255*	82-83,202	392	67975	174,176,239
9	62275*	84-85,203	394	64435*	92-93,206
10	62295*	86-87,203	395	64510*	96-97,206
11	62280*	86-87,203	396	64500*	96-97,207
13	60215*	43-44,247	397	64455*	94-95,207
15	60235*	45-46,248	398	64475*	207
17	60255*	47-48,248	399	64420*	90-91,208
18	60275	49,248	400	64600*	98-99,209
20	60315	50-52,249	401	64610*	98-99,209
331	60335*	53-54,249	402	65600*	112-113,212
332	65510	109-111,210	403	65075*	105-106,213
333	65500	109,111,211	404	65035*	101-102,213
334	65610*	112-113,211	405	65310*	101-102,214
335	65710*	114-115,214	406	65700*	114-115,215
336	65095*	107-108,215	407	66030*	116,118,217
337	65055*	103-104,216	408	66055*	116-118,218
338	66040	116-118,218	409	66075	119-120,219
339	66080-86	121-122,218	410	66095*	123-124,219
340	68115	129-130,222	411	68510*	127-128,221
341	68415,1; 68416	131-132,223	412	68500*	127-128,221
342	68415,2	131-132,223	413	68035*	127-128,222
343	68815,2	133-134,225	415	67435*	159-160,232
344	68840*	133,135,226	416	67455*	157,161-162,233
345	63510*	182-183,241	417	67460*	157,163-164,233
346	63500-09	182-183,241	418	67475*	157,165-166,233
	63515		419	67480*	157,167-168,234
			420	67510*	157,167-168,234
347	60610*	57-58,244	421	67610*	169-170,235
348	60600	57-58,245	422	67600*-05*	169-170,235
349	60510*	55-56,245	423	67710*	171-172,235
350	60500	55-56,246	425	67955-57	173-175,238
351	60035*	33-34,193	426	63320*	180-181,242
352	61240*-49*	75-76,198	427	63340*	180-181,242
	61255*		428	63335*	180-181,243
			429	63355*-57*	180-181,243
353	61295*	77-79,199	430	60135*	41-42,246
354	61120* 2]	70-71,195	FSR-1	61015*	60-61,200
355	60050*	35-36,194	FSR-2	61016*	62-63,200
356	61160*	72,74,197	FSR-3	60015*	25-26,203-204
357	61220*	75-76,198	FSR-4	60016	27-28,205
362	61135*	64-66,197	FSR-4A?		59,205
363	61500* 3]	67-69,196	FSR-5	65015*	100,216
364	61175*	72-74,196-19	FSR-6	68815	133-134,225
368	61280*	77-79,200	FSR-7	67015	142-143,231
369	61180*	64-66,198	FSR-8	67915	173-175,237
371	61155*-58*	67-68,196	FSR-8B		178-179,239
372	61510*	70-71,195	FSR-9?	60017 1]	180-181,243
373	60075*	35-36,194	FSR-10	60018	29-30,246
374	68120	129-130,223	FSR-11	60019	31-32,247
375	68820*	133-134,225	PADDED BAG 1	67215*	152-153,239
376	69920*	138-139,227	PADDED BAG 2	67235*	154-155,239
377	69940*	138-139,227	SURFACE		
378	69935*	138-139,227	SAMPLE 1	69003*	138-139,226
379	69960*	138,140,228	SURFACE		
380	69955*	138,140,228	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

LRL NO.	CONTAINER	PAGE
63340*	427	180-181,242
63355*	429	180-181,243
63356*	429	180-181,243
63357*	429	190-181,243
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	332	109,111,211
65510	332	109-111,210
65500*	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

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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
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68416	341	131-132,223
68500*	412	127-128,221
68510*	411	127-128,221
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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.

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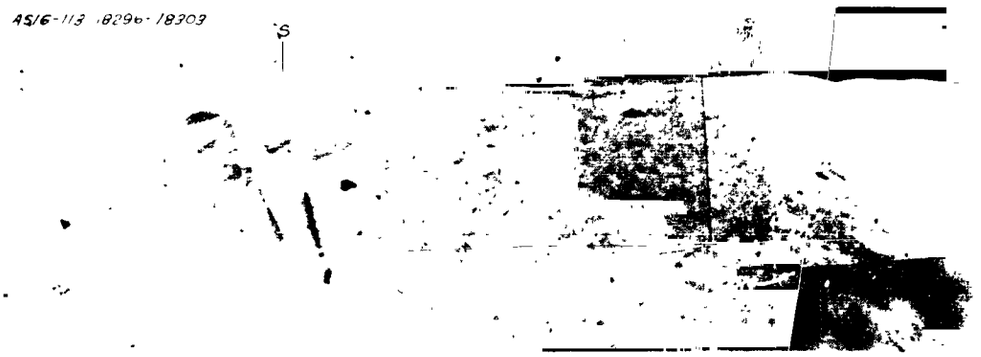
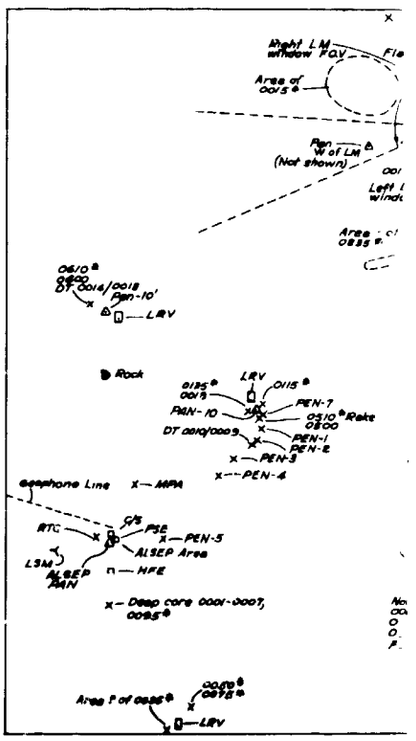


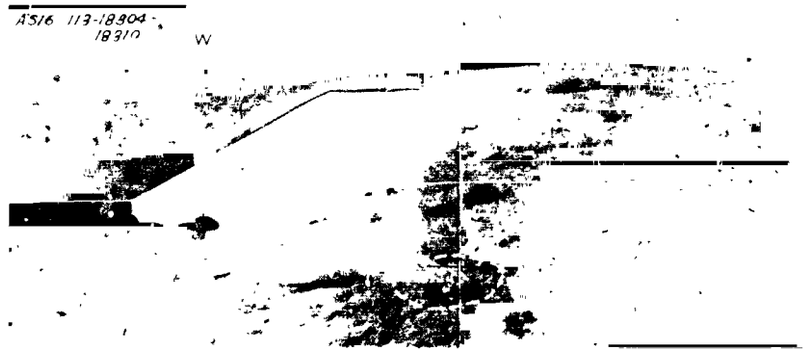
Left LM window pan



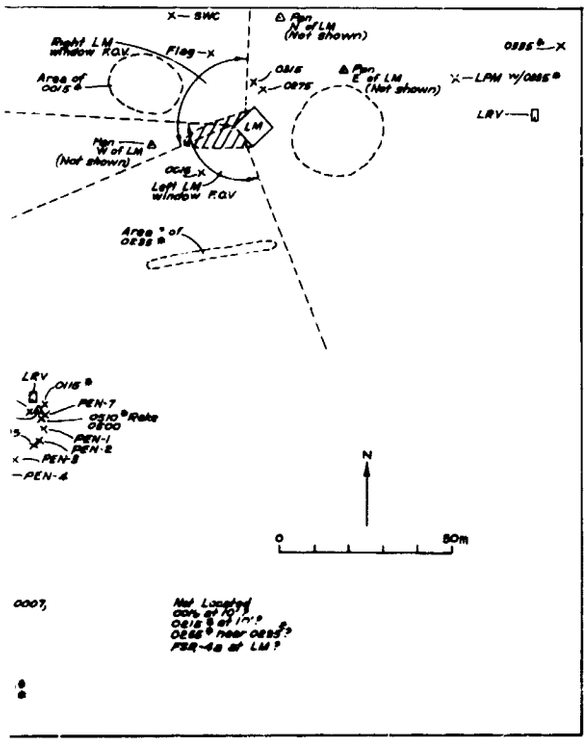
Planimetric sketch map of LM/ALSEP

Station 10' pan

FOLDOUT FRAME 2

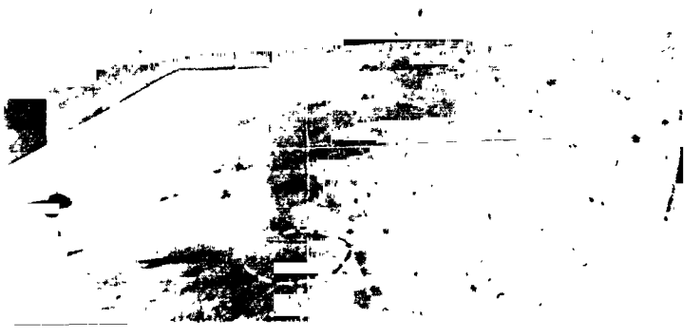


Right LM window pan

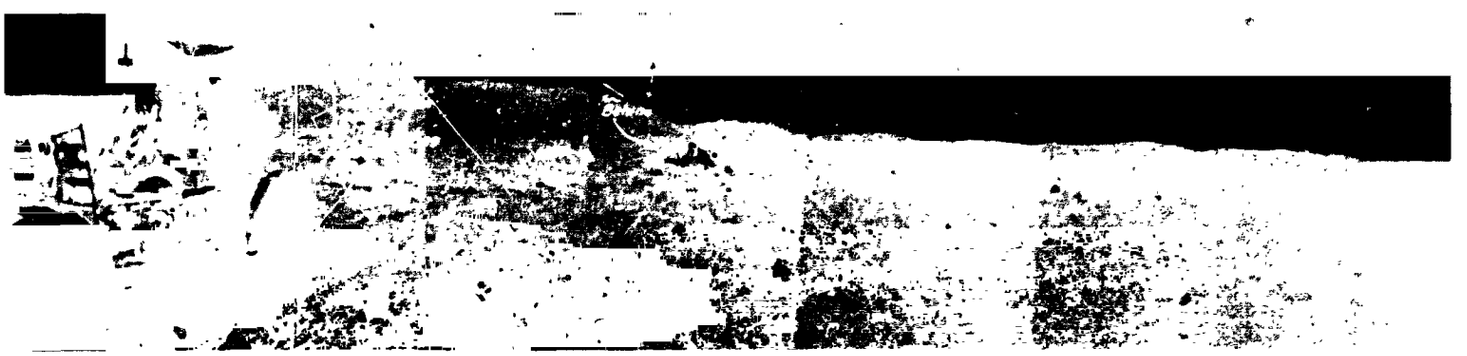


of LM/ALSEP - Station 10 - Station 10' area

FOLDOUT FRAME 3



indow pan



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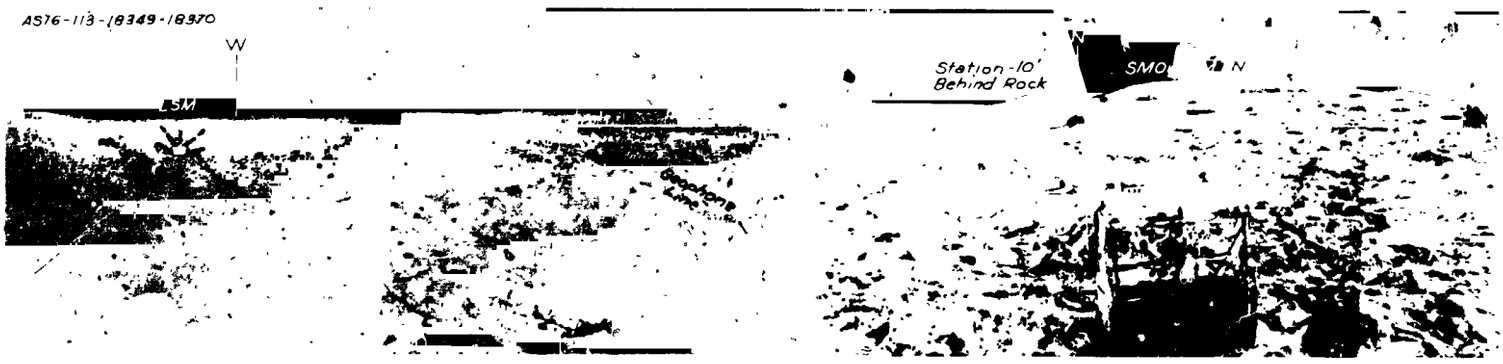
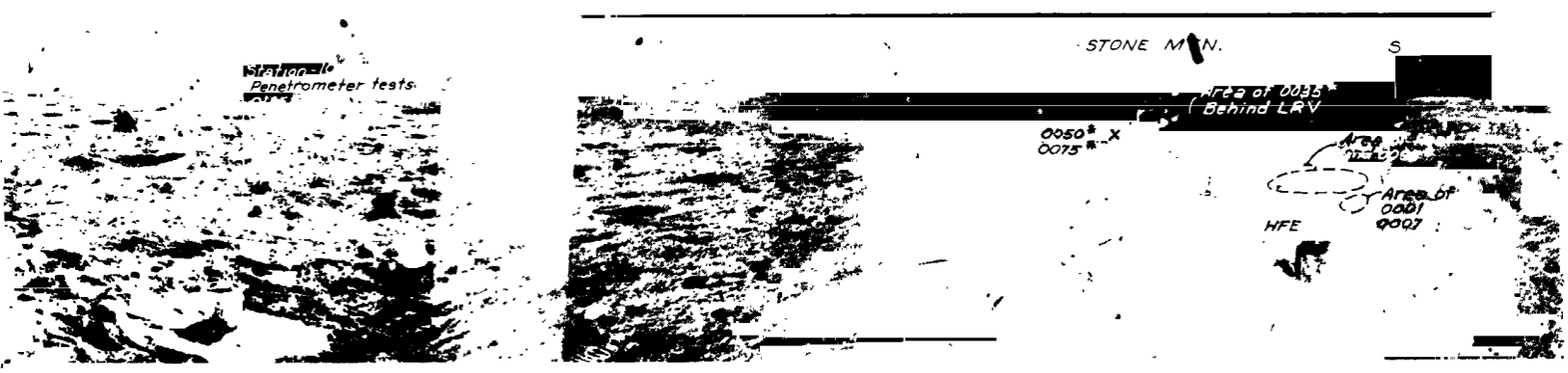
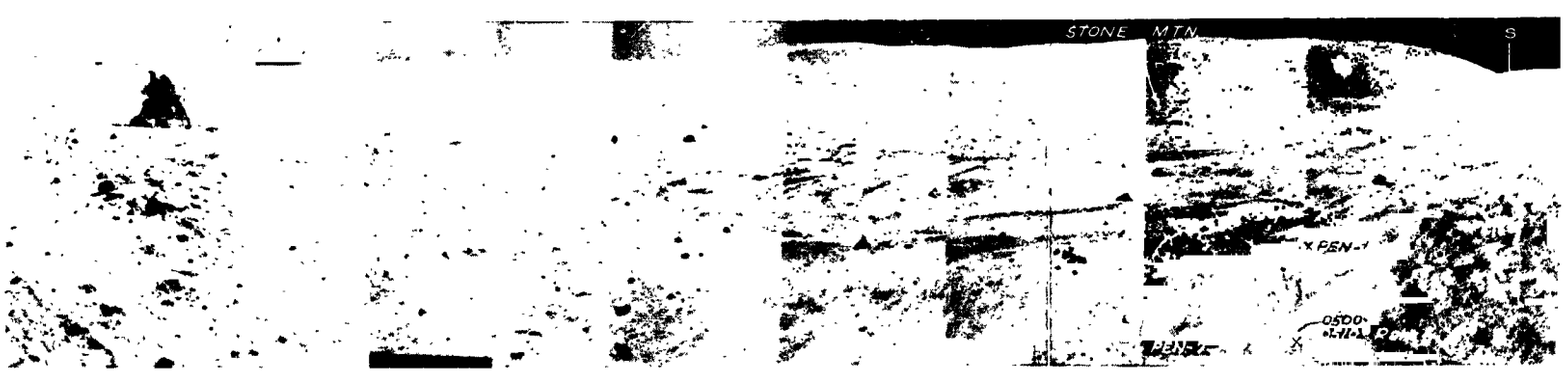


ALSEP pan

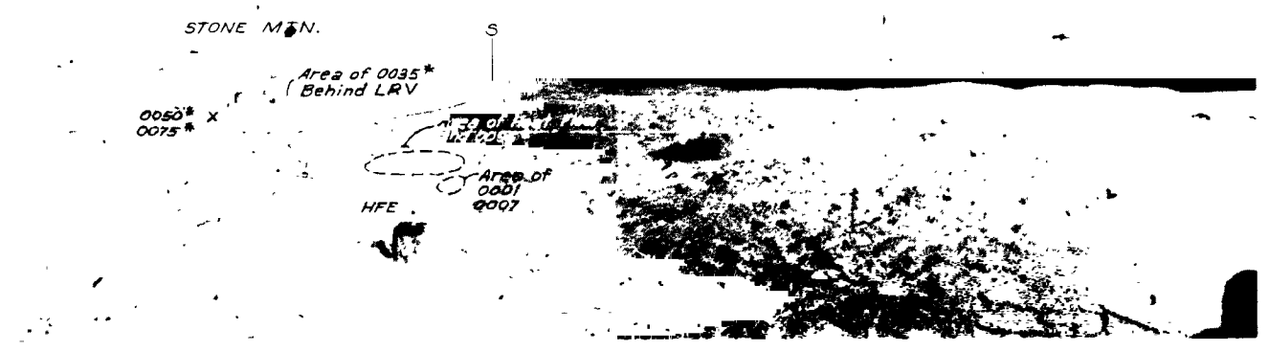
Station 10 pan

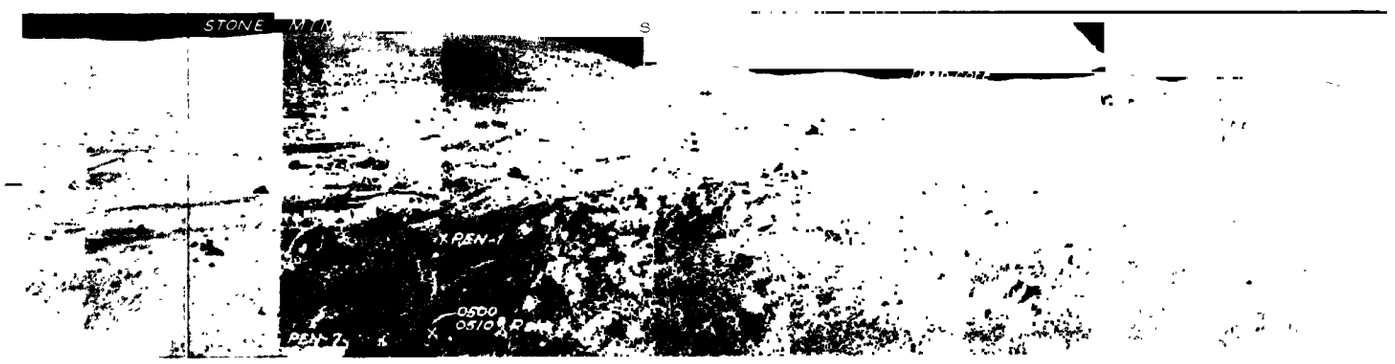
2


Penetrometer tests
STONE MTN.
S
Area of 0033
Behind LRV
0050
0075
X
Area
Area of
0001
0007
HFE


STONE MTN.
S
X PEN-1
0500
LM-1

FOLDOUT FRAME 3





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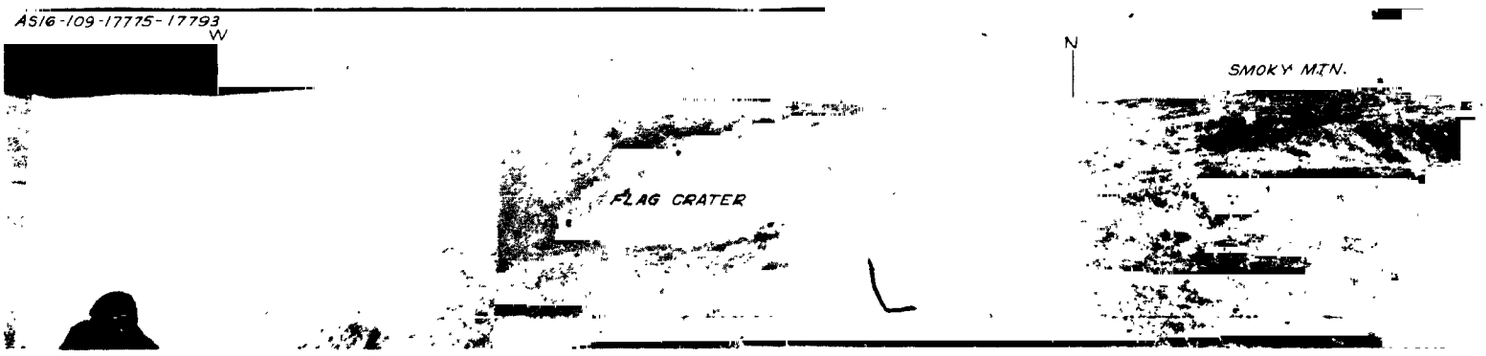
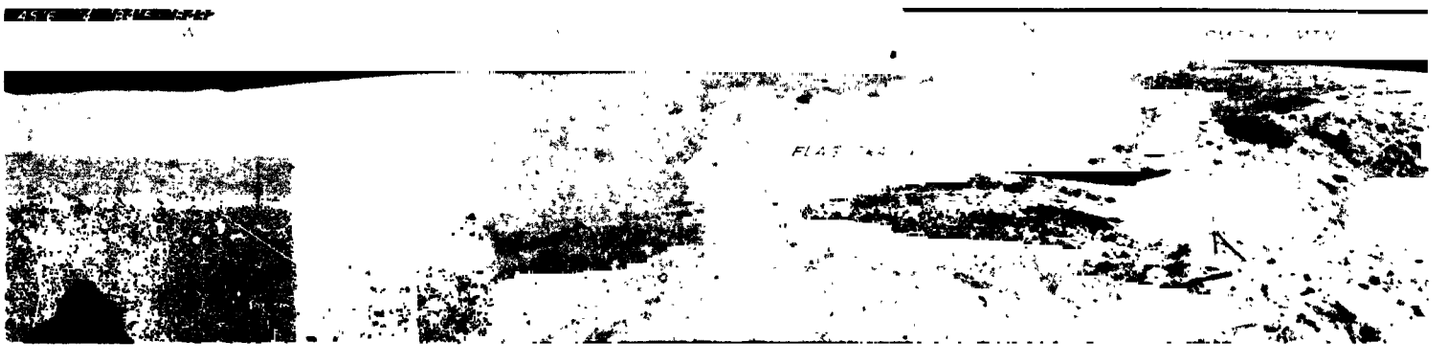
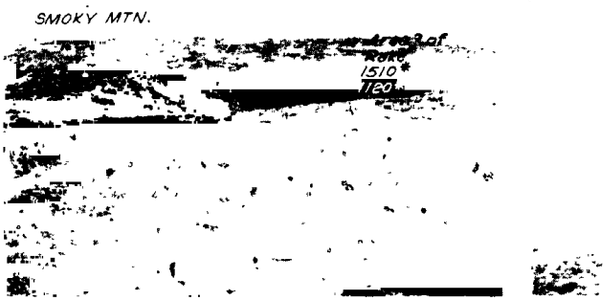


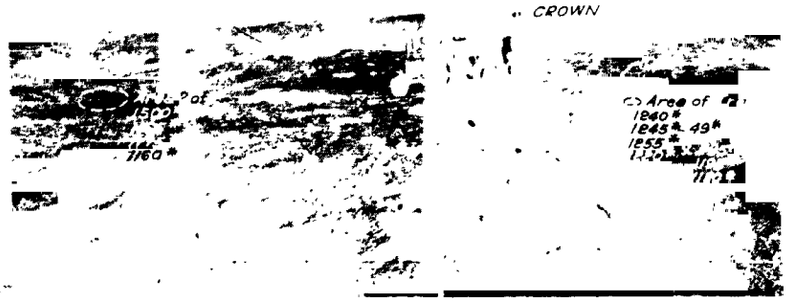
Station 1 northeast pan

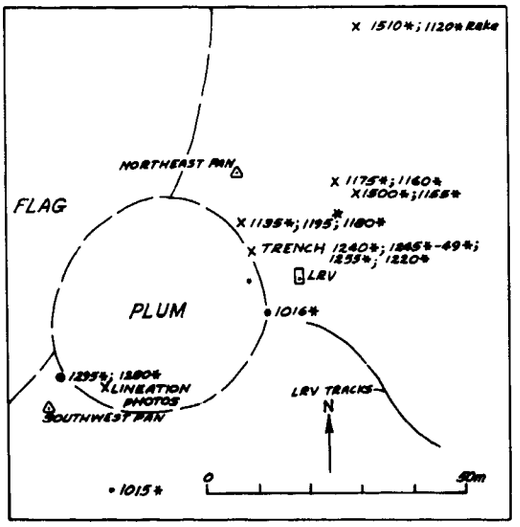


Station 1 southwest pan

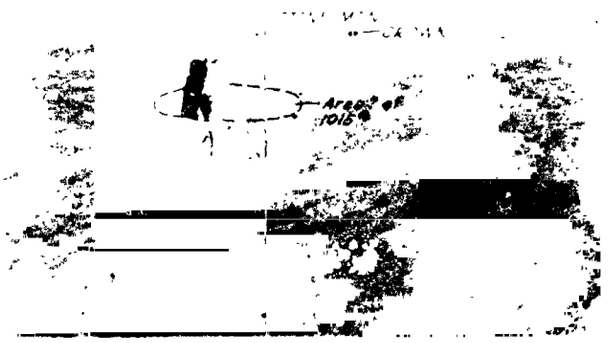
FOLDOUT FRAME 2







Plarimetric sketch map of station 1



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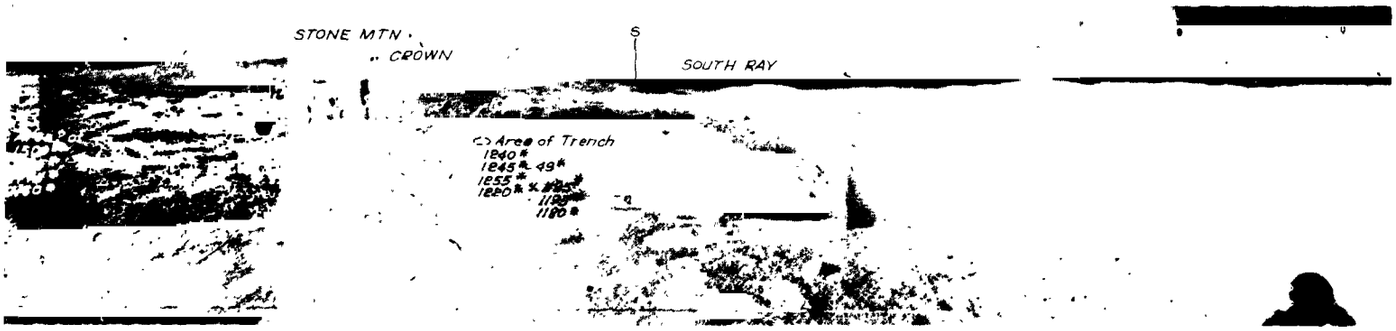

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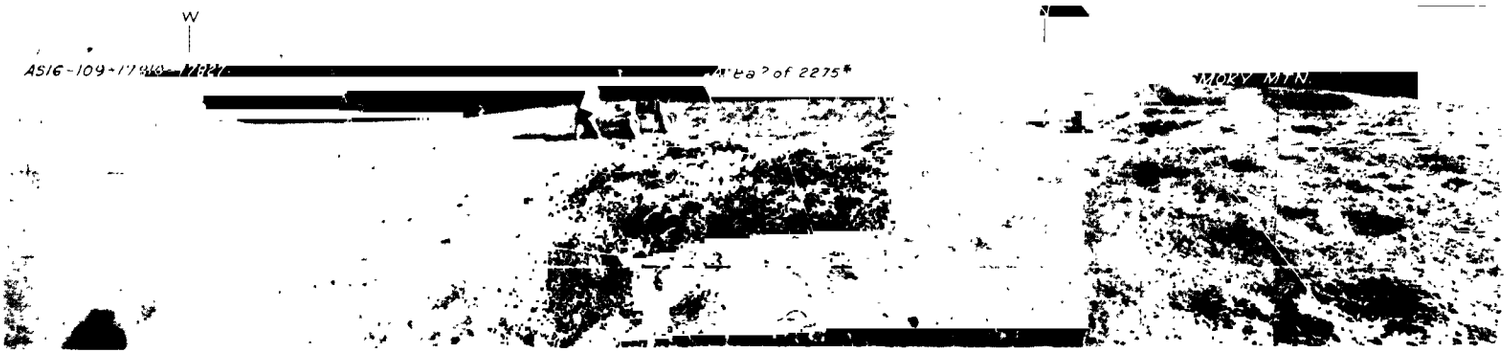
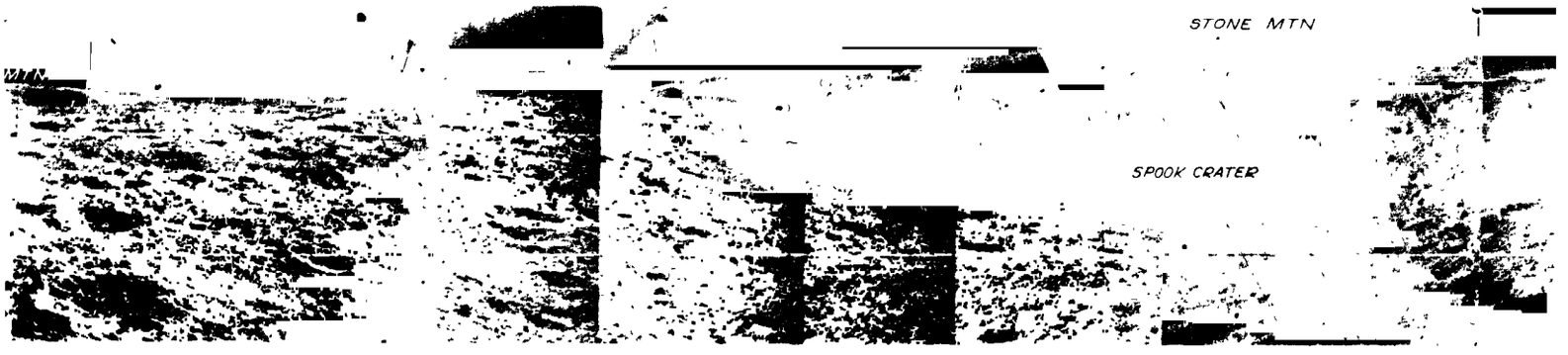
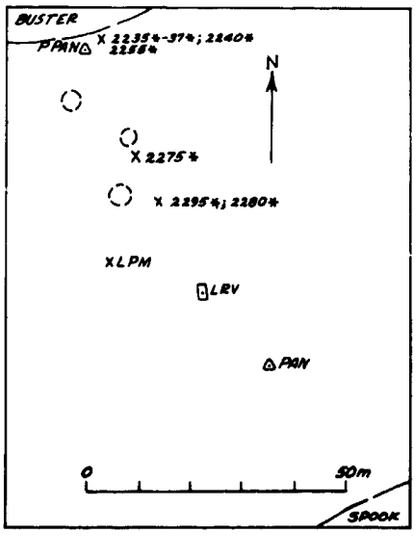


Station 2 pan

FOLDOUT FRAME 2





Planimetric sketch map of station 2

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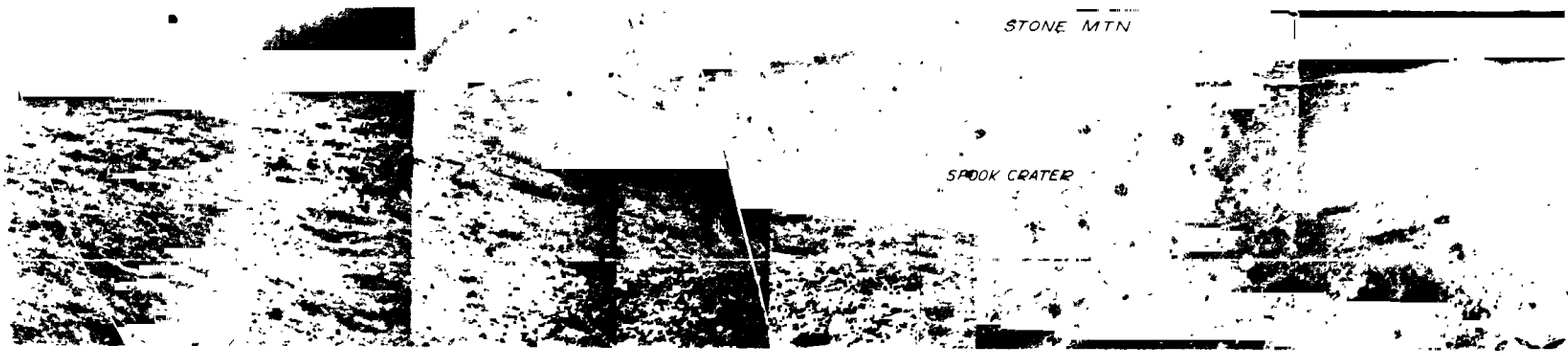
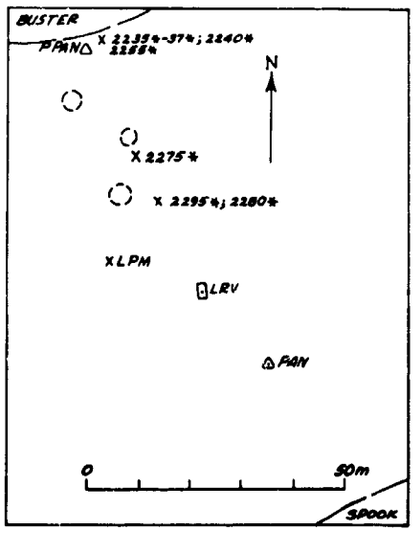
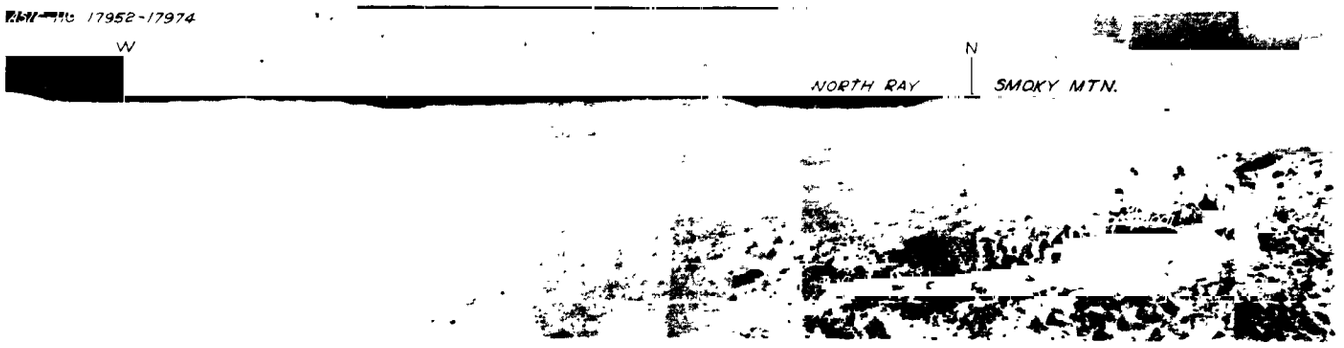


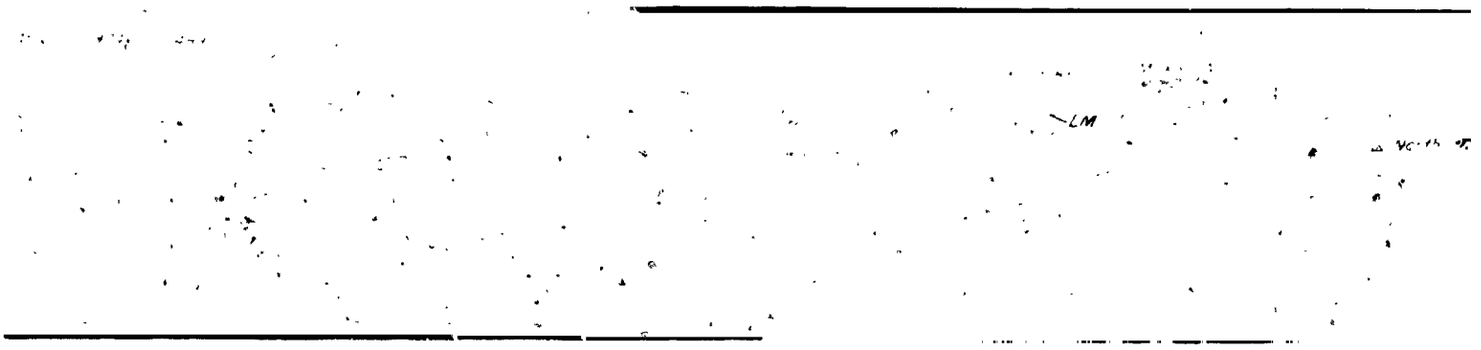


.animetric sketch map of station 2

FOLDOUT FRAME



Station 4 north pan



Station 4 south pan

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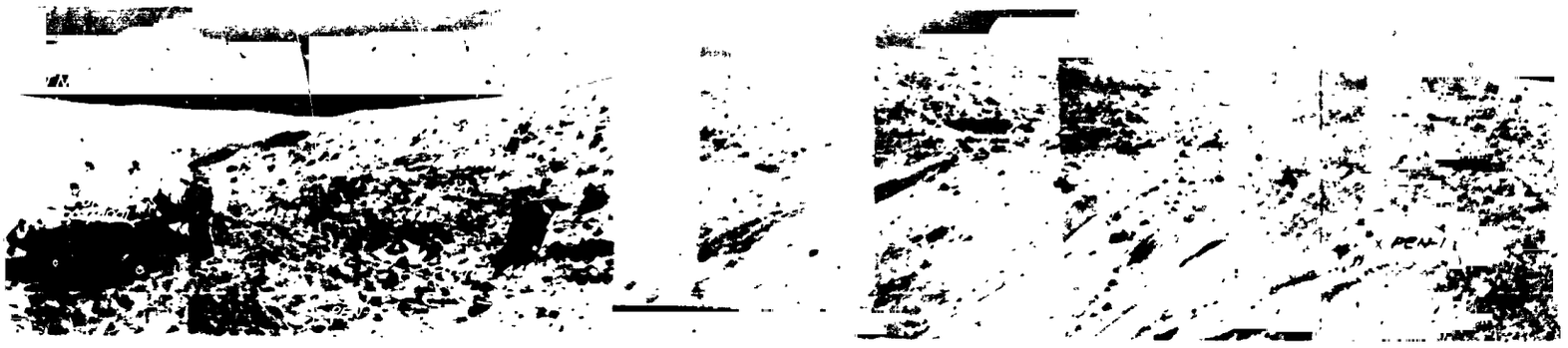

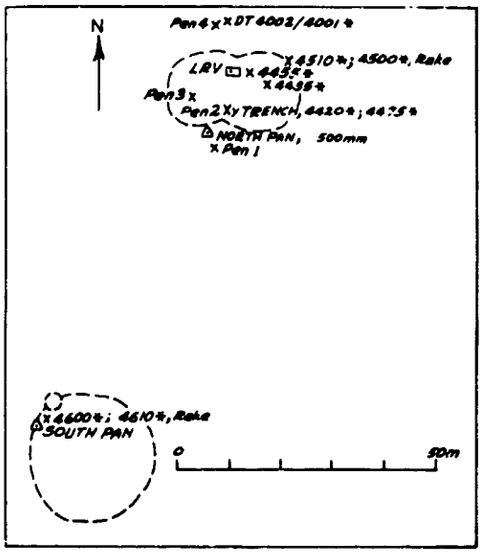

Planimetric sketch map of station 4

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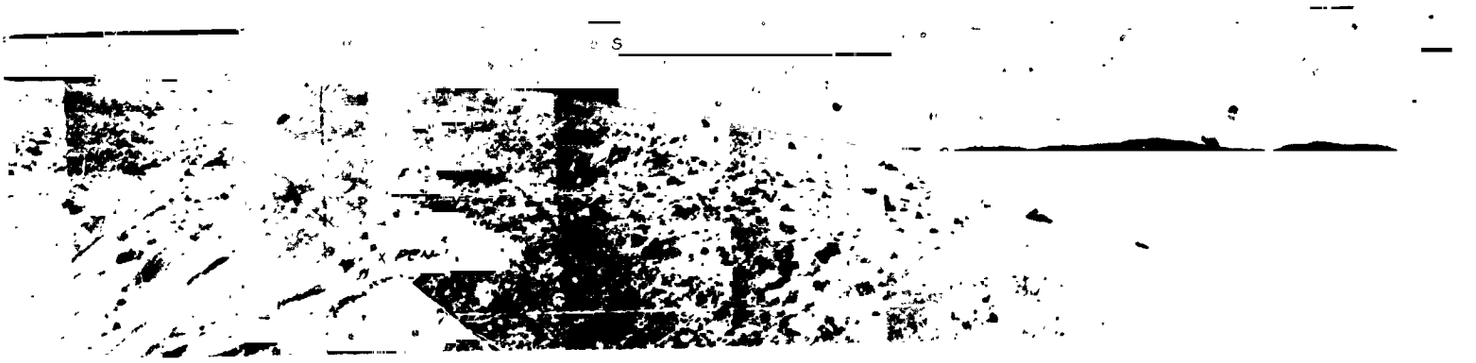

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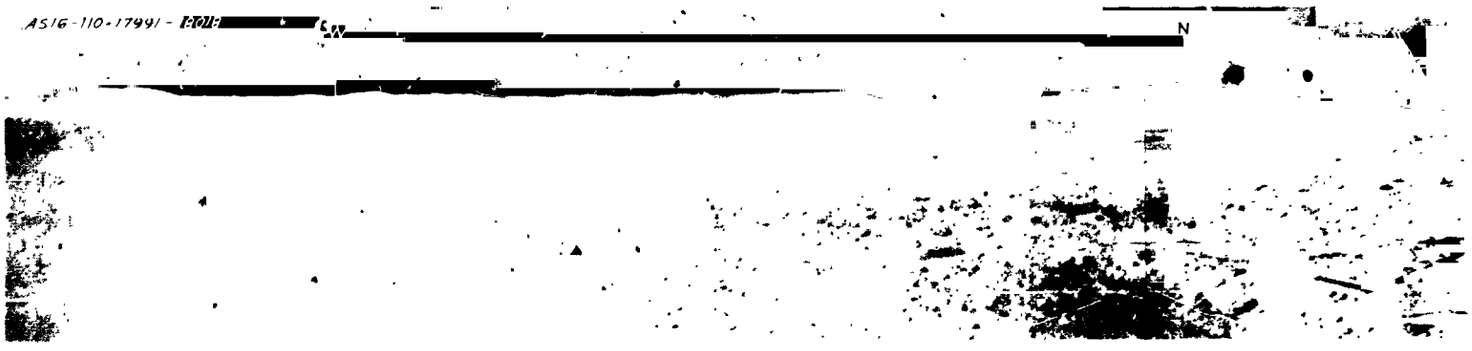
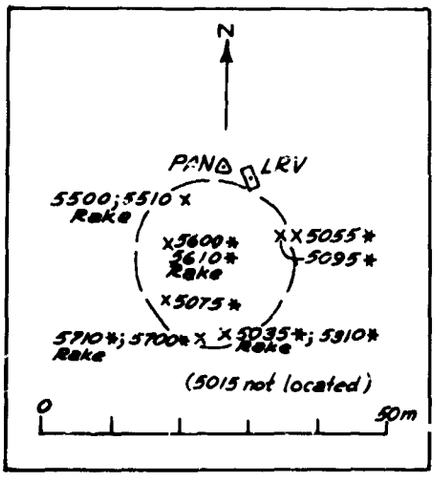
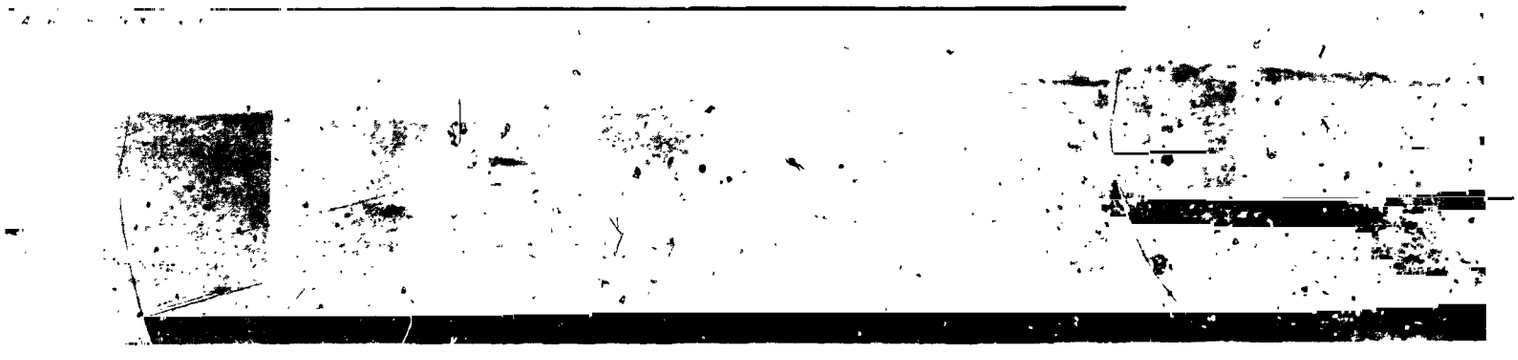


Station 5 pan



Planimetric sketch map of station 5



Station 6 pan

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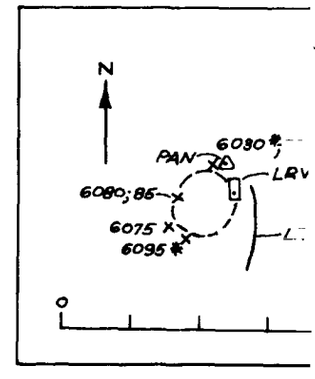
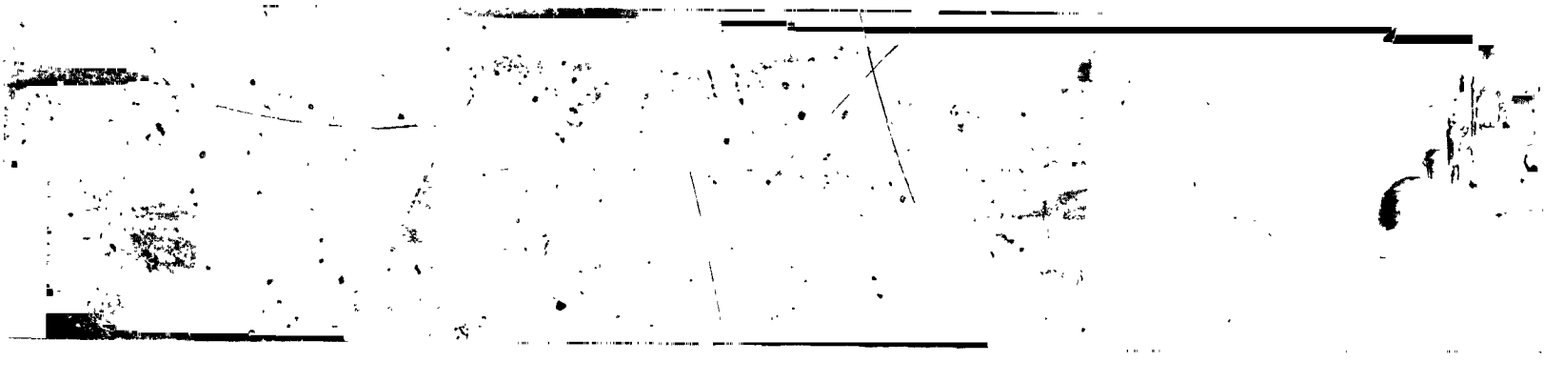


Planimetric sketch m



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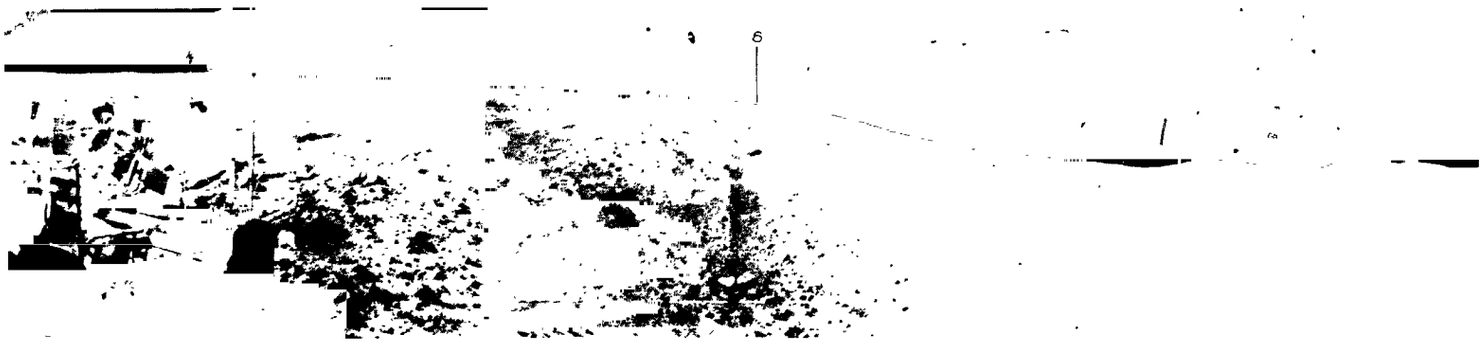
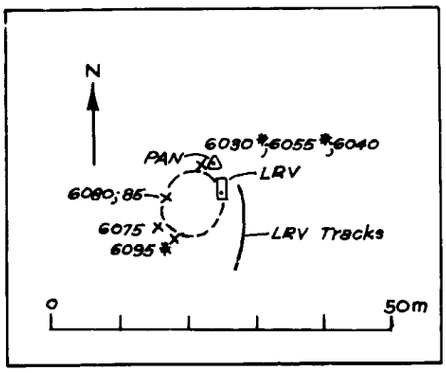
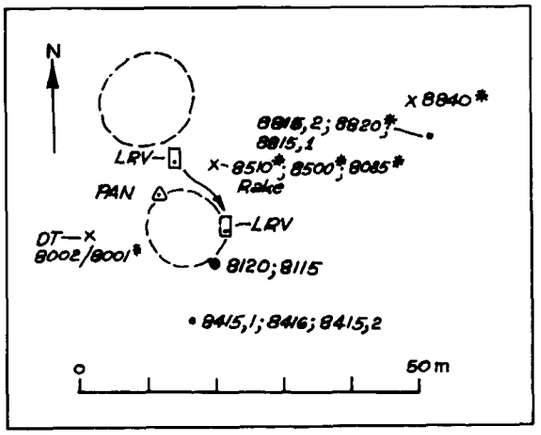




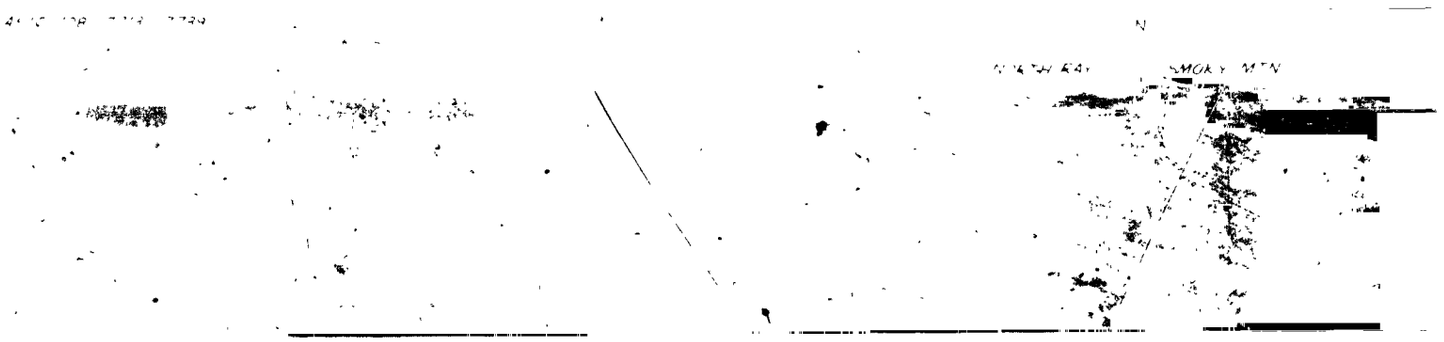
Planimetric sketch map of station 6

FOLDOUT FRAME 1

Station 8 pan



Planimetric sketch map of station 8



Station 9 pan

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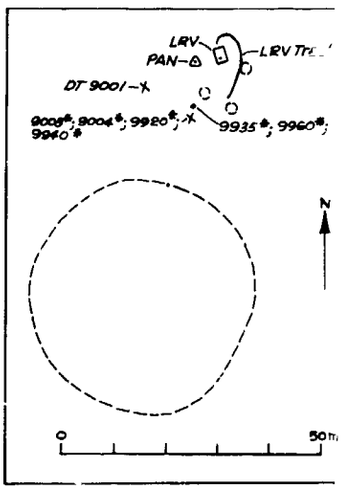

Planimetric sketch map of s

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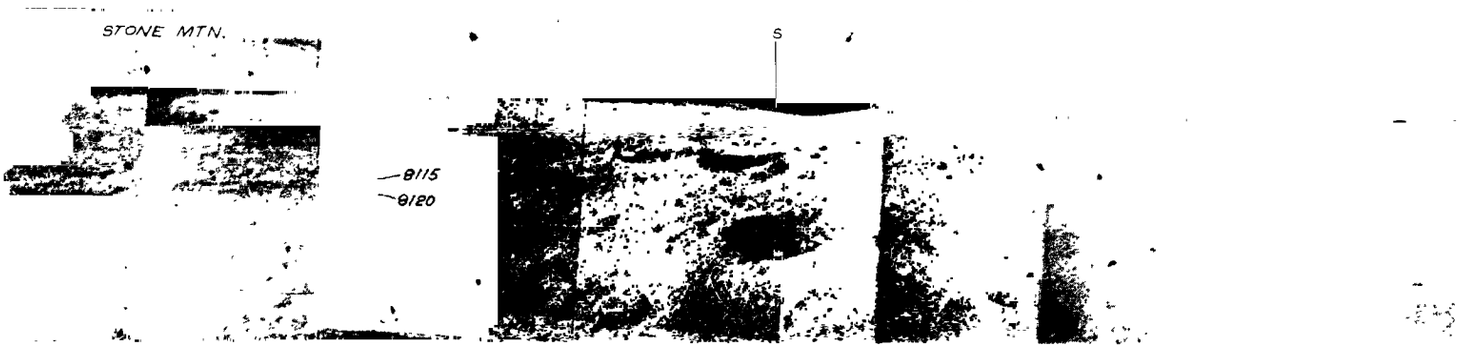
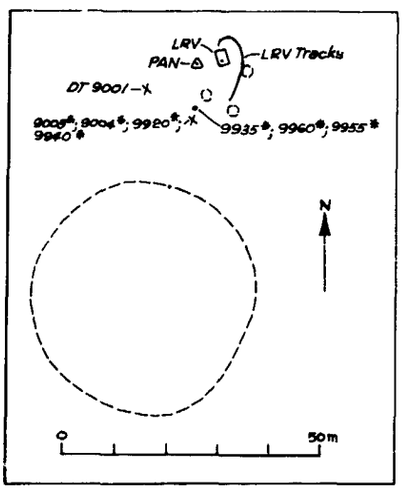
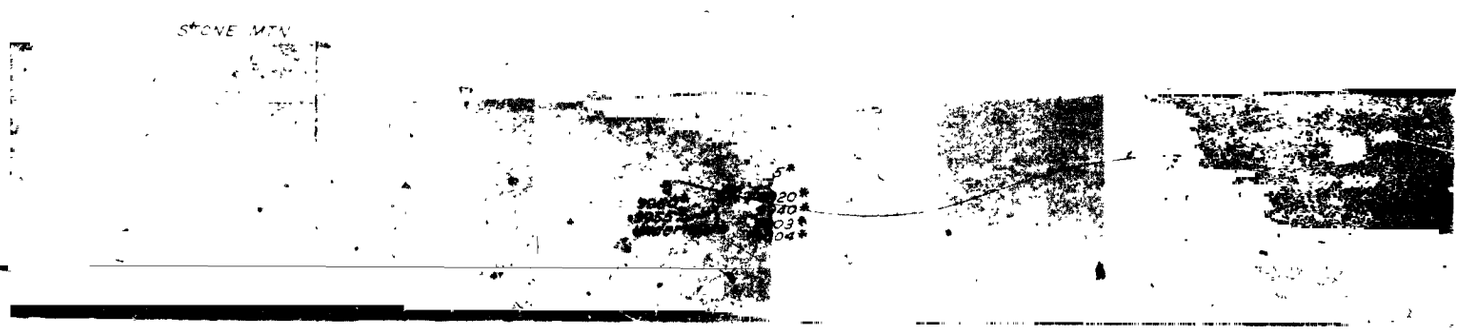
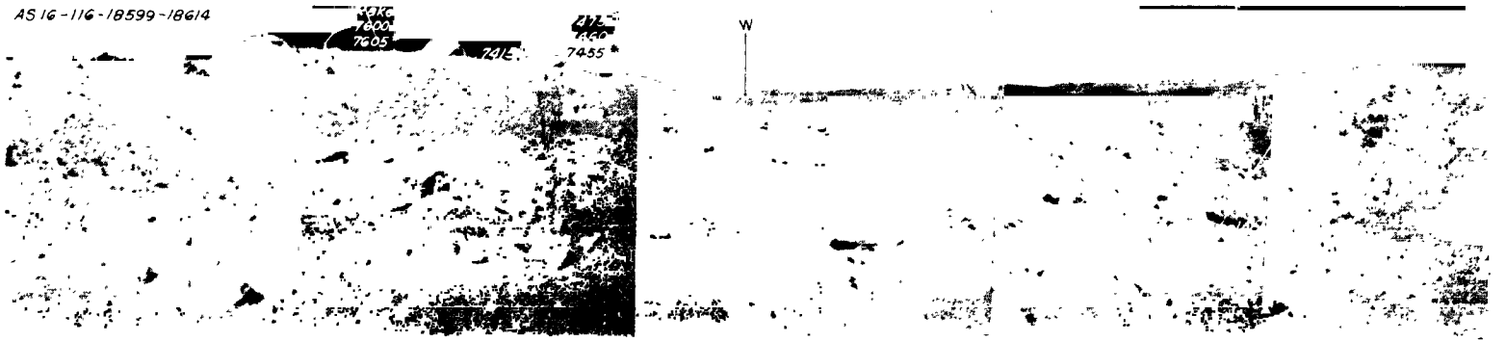




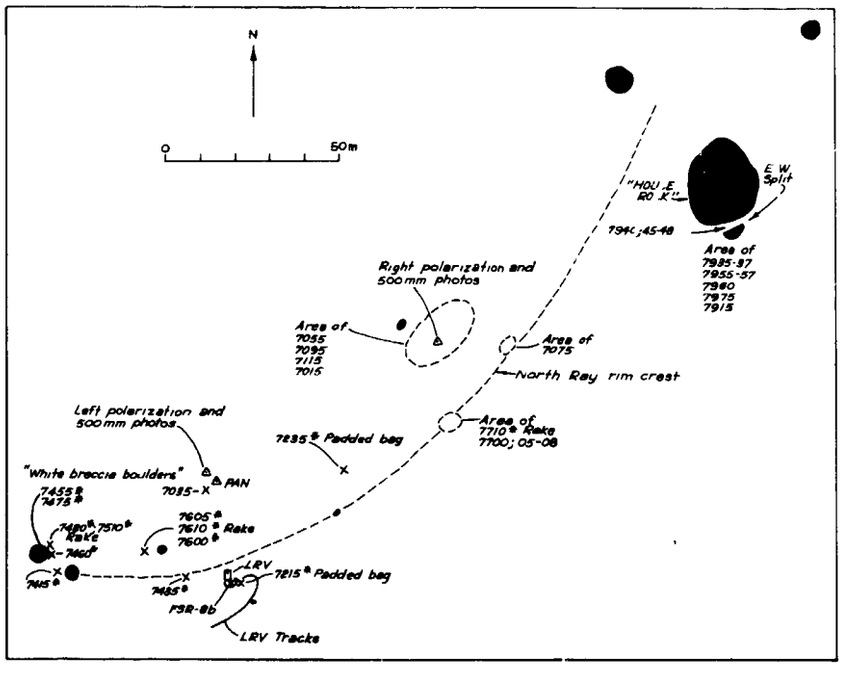
Planimetric sketch map of station 9



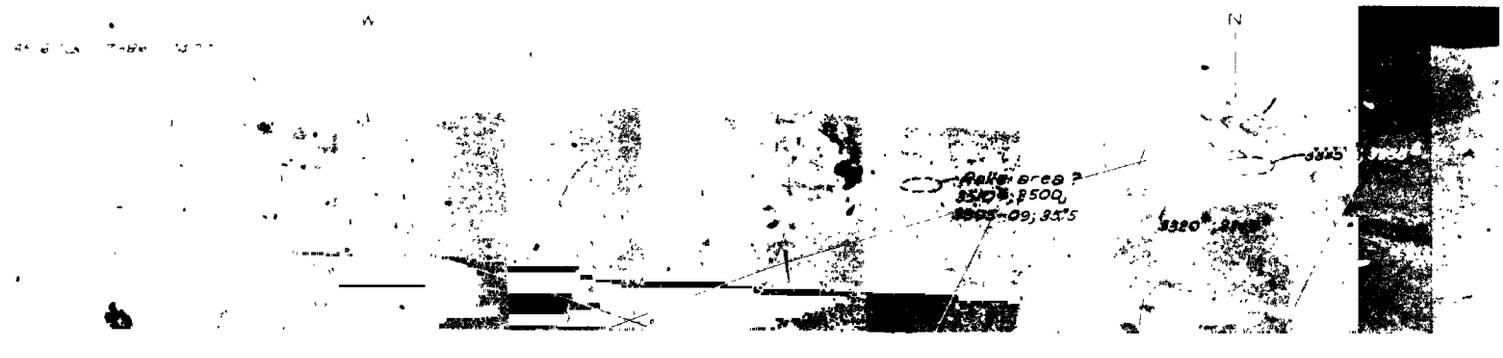


Station 11 pan

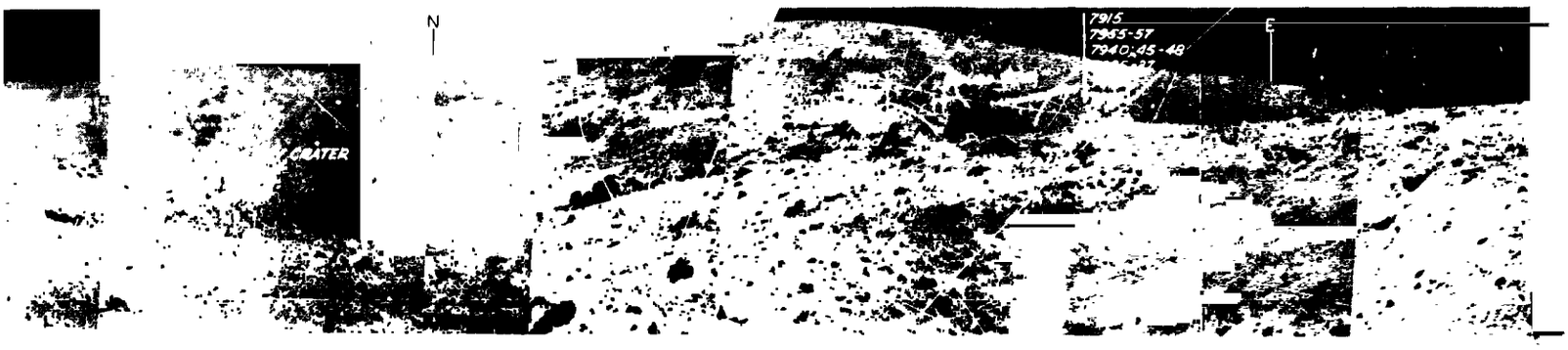
FOLDOUT FRAME 1



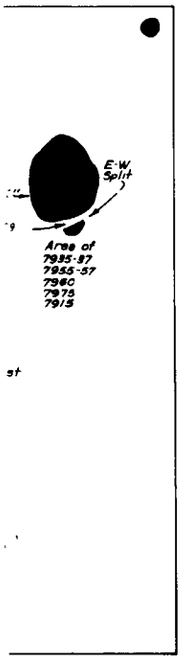
Planimetric sketch map of station 11

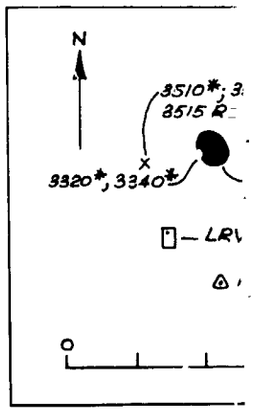


Station 13 pan

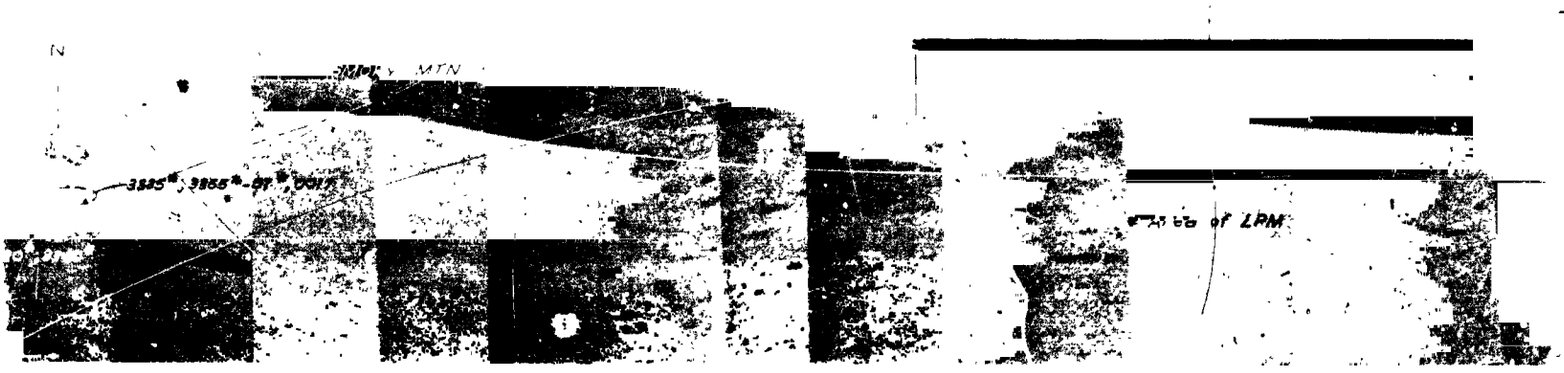


FOLDOUT FRAME 2

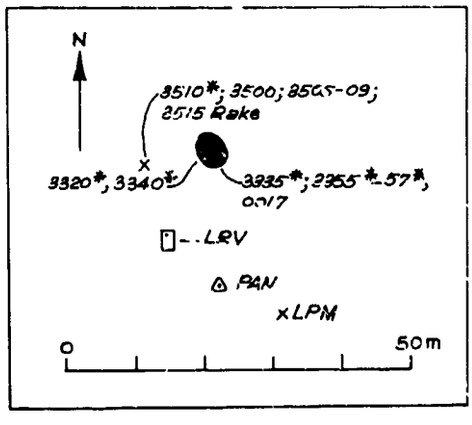




Planimetric sketch



FOLDOUT FRAME 3



Planimetric sketch map of station 13