INTERAGENCY REPORT: ASTROGEOLOGY 51

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

by

Apollo Lunar Geology Investigation Team
U.S. Geological Survey

May 26, 1972

Prepared under NASA Contract No. T-5874A

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

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

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 south-west of the LM.

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

Rock types at station LA fall into three major types: (1) breccias with dark vesicular matrices and light clasts; (2) breccias with light matrices and dark clasts; and (3) white, fine-grained crystalline to chalky rocks. Type (1) appears to be the predominant material. Many samples in the LA area are at least partially glass coated. Rocks range from very angular to subrounded. In general, the fine-grained chalky to
crystalline rocks are smaller (6-12 cm range) than the breccia fragments and represent about 5 percent of the rocks observed. The soil in the LA area is generally medium gray, but scattered areas of high albedo soil were present near the ALSEP area. White soils are more abundant to the west.

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

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

Station 1

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

Rocks larger than small cobbles are present on about one percent of the surface. A rounded, partly buried 1 to 1.5 m block, one of the largest in the area, was sampled. Most of the rocks that are visible in surface photographs and that were sampled appear to be subangular, and most were only slightly buried. Most of the angular, perched rocks are probably ray material from South Ray crater.
Samples collected here for the most part are breccias with light-colored matrices and dark clasts. Most of these resemble breccias sampled in areas thought to be North and South Ray ejecta, but others appear restricted to the Plum-Flag area. At two places on the rim of Plum crater, the crew noted that the regolith is white beneath a top 1-2 cm thick layer of gray material. Elsewhere, for example in the rake sample area, the white regolith was not noted.

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

Flag crater can reasonably be assumed to have penetrated the upper layers of the Cayley Formation. North and South Ray crater ejecta may have extended to the Flag crater area, but would have been thin. Ray materials from other large craters cover the site, but the aggregate thickness probably is only a few meters and most was probably derived from Cayley materials. Flag crater has an average diameter of about 200 m, giving a calculated original penetration of about 40 m, which is probably greater than the thickness of the total regolith. The Plum crater impact was into the rim of Flag crater and penetrated to a calculated depth of 7 or 8 m. Exposure ages, and degree of erosion by impacts, should reveal the original sources of many of the samples.
Station 2

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

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

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

The Buster crater samples should include local Cayley bedrock (rim samples) and re-excavated Spook crater ejecta. South Ray crater ejecta
no doubt exist as a thin and perhaps discontinuous surface cover, possibly diluting the Spook and Buster crater ejecta.

**Station 4**

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

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

The LRV was parked near the rim of a subdued crater (site 4a) about 15 m across, amid a field of blocks thought to be derived from South Ray crater. Perhaps 10-20 percent of the surface is covered by rocks up to about 30 cm, interspersed with scattered blocks as large as a meter; pebble-size rocks (<5 cm) are abundant. Most of the blocks and cobbles are angular, but some of the smaller rocks are subrounded to rounded. Minor fillets are common, particularly around large blocks. Some fragments are apparently perched.
The rocks are mainly white, but glass and dust coatings obscure many of the rock surfaces. Clasts are readily visible in some of the blocks photographed, and the predominant rock type is probably breccia. Within the 15 m crater rocks are much less numerous on the southwest wall, which was likely shielded from South Ray crater ejecta. The regolith surface is gray, but near the rim of the 15 m crater white material, similar to that in the Cayley regolith at station 1, occurs at a depth of about a centimeter. A trench in the floor of the crater, however, exposed no white soil or evidence of layering. Four penetrometer measurements and a drive tube indicated that the material was unconsolidated to depths of at least 75 cm, but at one location (penetrometer 3) progressive resistance suggested that bedrock or more indurated regolith was approached.

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

The second sampling site (4b) was at a 20 m crater southwest of 4a (pan 4b). Angular blocks are concentrated on the northeast wall and rim of the crater, apparently continuous with a well-defined stream of blocks to the northeast. The remainder of the crater rim is relatively block free. Soil and rake samples consisting mainly of friable, poorly consolidated clods, were collected from the south rim. No white soil or evidence of layering was found beneath the surface at this location. The blocks on the northeast wall of the crater are apparently breccias with large white clasts in black matrices, and are
probably ejecta from South Ray crater. The strongly asymmetric distribution of these blocks, the lack of recognizable ejecta elsewhere around the crater, and the relatively large size of the crater suggest that it is probably not of secondary origin but formed prior to South Ray, and was subsequently mantled by ray materials. The indurated regolith samples from the block-free rim of the crater may thus have been partly derived from underlying Descartes materials, reworked by local impacts.

Station 5

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

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

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

Station 6

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

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

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

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 north-easterly 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: 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

COMMENT: Core tubes may reveal stratification reflecting ejecta from 50-60 cm crater
Post-sampling, looking north-northeast (115-18557)
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 cm 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: 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.

Fillets: 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 10 x 20 cm.
Color: White and gray; tan.
Shape: Rounded, equidimensional.
Fillets: 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: 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.
Fillet: 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: 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: 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: 0050*, 0075* (355, 373)
Station: ALSEP (1A)
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
Fillets: 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)

Stone Mtn

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.
Fillets: 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: 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 crater-sized craters in the immediate sample vicinity. Local region of station 10 rather heavily cratered including a probable South Ray crater secondary with projectile on rim (see figure b).
Shape: Larger craters subdued.
Ejecta: None except from secondary (indicated on figure b)

SAMPLE CHARACTERISTICS
Size: 11 cm x 4 cm x 4 cm
Color: Black
Shape: Semi-tabular to angular, elongate.
Fillet: Poorly developed.
Apparent burial: Less than 1/4 to 1/3.
Dust cover: Low to moderate.
Comparison with other fragments in area: Uniquely darker, more tabular and angular. Nearest fragments of similar size are white-chalky, irregularly shaped with knobby surfaces.
Probable origin: 0115* may have been most recently excavated from the 18 m crater north of the sample location. (Depth of maximum penetration about 4 m.) Sample may also represent South Ray or North Ray crater ejecta.
a) Pre-sampling, looking south (114-18446)

b) Pre-sampling, looking northeast (114-18455)
SAMPLE: 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.
Filletts: 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: Back?
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...

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: 0235* (15)
Station: LM (LA)
Landmark: Approx. 30-40 m south to southwest of LM -Y footpad
Rock type: Probably breccia with bluish-black matrix and light-colored crystalline clasts; subangular.

SURFACE CHARACTERISTICS OF SAMPLE AREA
Slopes: Locally gentle, immediate vicinity of sample, slope is several degrees to northeast into 1.5 m subdued crater

Fragment population
Size range and distribution: Up to 20 cm; pea size very abundant; up to 10 cm moderately abundant
Color: Moderate dark gray to light gray; two types distinct in sample area
Shapes: Semi-angular to knobby-irregular; semi-angular frags tend to be lighter with smoother surfaces
Fillets: Very little on fist-sized frags
Apparent burial: 0235* and rock "A" perched--rest of fist-sized and smaller moderately well buried
Dust cover: Appears to be moderately heavy on unperched frags

Fines
Color: Darker fragments are medium gray; lighter frags lighter than soil
Compaction: Loose to moderate in immediate sample area on rim of 1.5 m diameter crater

Craters
Size range and distribution: Six 8 cm to 1.5 m diameter craters in immediate sample area
Shape: Small 20-cm sized craters immediately south of 0235* and frag "A" appear to be very fresh, possibly secondaries; larger craters moderately subdued
Ejecta: Present as clods in floor and on rims of two 20-cm craters labeled secondary(?)

SAMPLE CHARACTERISTICS
Size: 5 cm
Color: Light gray, chalky color
Shape: Subangular, coherent
Fillet: None
Apparent Burial: Perched.
Dust cover: Not visible
Comparison with other fragments in area: 0235* typical of the lighter colored, smaller, more subangular frags in vicinity. Other class of frags larger, darker gray with knobby surfaces.
Probable origin: 0235* probably came into this position as a secondary projectile from a nearby primary (probably not South Ray) due to extreme freshness of small 2-3 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: 0275 (18)
Station: LM (LA)
Landmark: \textasciitilde 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
\begin{itemize}
  \item Size range and distribution: Limit of resolution to \textasciitilde 12 cm; pea size abundant
  \item Color: Light gray to chalky
  \item Shapes: Subangular to subrounded to irregular
  \item Fillets: Few on larger frags; many perched
  \item Frags range from filleted to perched
  \item Apparent burial: Little on 2 cm to 12 cm sized frags
  \item Dust cover: Moderate to heavy on all sizes
\end{itemize}

Fines
\begin{itemize}
  \item Color: Medium gray
  \item Compaction: Moderate to moderately high
\end{itemize}

Craters
\begin{itemize}
  \item Size range and distribution: None in near environment
\end{itemize}

SAMPLE CHARACTERISTICS
\begin{itemize}
  \item Size: 8 x 7 x 6 cm.
  \item Color: Medium gray to white chalky, glass coated
  \item Shape: Subrounded, lumpy
  \item Fillet: None
  \item Apparent burial: Perched
  \item Dust cover: Light to moderate
  \item Comparison with other fragments in area: Appears to be typical of other perched \textasciitilde 7-cm sized fragments in local area
  \item 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.
\end{itemize}

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.
Fillet: 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: 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 sub-rounded.
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: ~2-6 cm in diameter.
Color: Light gray to whitish.
Shape: Primarily subrounded and irregular.
Fillets: 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.
a) Pre-sampling, looking south-southeast (117-18825)

Disturbed area

Rake area

0600

Soil area

0610*

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

Disturbed area

Moved

Sampled

Rake area

Soil area

Moved

Moved

0600

Rake area

0610*

Samples 0600 and 0610*

c) Post-sampling, looking north (116-18683)
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: 0 to 1 cm abundant; up to 4 cm common; larger fragments absent in sample area.
Color: Light grey.
Shape: 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.

Probably 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.

S.“PLE 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.

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

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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*, 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.
Fillet: 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.
Fillet: 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.

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 rounder.

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 allelo 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.

Pits
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
Fillets: 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 (109-174)

d) Sampling, looking west (109-17802)

SAMPLES 70° 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.
Fillets: 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: 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 220 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.
Fillet: 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; frag- ments <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 subrounded.

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 con- centric 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)
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
Siopes: 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 Northwest (110-17962)

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

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

SAMPLES 4470*, 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: 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: 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, <?0 cm abundant; else-
where, regolith surface relatively smooth except for scattered
cobbles; rocks <5 cm absent in sample area.
Color: Mainly gray, but large white clets apparent in blocks
on NE wall of crater.
Shanes: Angular
Fillets: None apparent.
Apparent burial: nil; small 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: Subrounded to subangular; clds very friable.
Comparison with other fragments in area: Typical of rim
materials; fragments mainly clds.
Probable origin: Regolith, possibly derived mainly from underlying
Descartes materials; clds possibly indurated by local crater impacts.
a) Sample location immediately below foreground; on rim of 20 m crater; looking northeast (107-17474)

20 m crater rim

~2 m crater

b) Post-sampling 4600*, presampling 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 discussed in future 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 #1.
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

**"t"** Local slope =5°, regional slope =10° northwest off Stone untain.

**Fragment population**
- Size range and distribution: Fragments <5 cm abu. ant; 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 sub. and 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 subrounded in sample area
Fillets: Minor to none
Apparent burial: A few blocks are partly buried, but most are not
Dust cover: Prevalent
Fings
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

105
a) Pre-sampling, looking south (110-18015)

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

SAMPLE 5075*

106
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° northeast 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 platy, 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: 6 cm
Color: White streaks.
Shape: Rounded, somewhat egg-shaped, apparently spalled and fractured.
Fillet: Poorly developed.
Apparent burial: One-fourth.
Dust cover: Present.
Comparison with other fragments in area: Typical of most rounded cobbles nearby.
Probable origin: Shape unlike typical angular blocks of South Ray crater ejecta; possibly representative of Descartes materials, "reworked" by local impacts.
a) Pre-sampling, looking southeast (110-18010)

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

SAMPLE 5095*
SAMPLE: 5500, 5510 (333, 332)

Station: 5
Landmark: Bench approx. 50 m wide, rim of 20-m crater
Rock type: Rake (5510) - soil (5500) sample

SURFACE CHARACTERISTICS OF SAMPLE AREA

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

Size range and distribution: Meter-size blocks absent; few scattered blocks approx. 30 cm; 10-20 cm cobbles common and widely distributed; surface mainly sand size up to 5 cm; some cobbles highly fractured
Color: Gray
Shapes: Large blocks (>20 cm) angular to subangular; cobble size and smaller mainly subround to round
Fillets: Slight to none
Apparent burial: No burial of large blocks; some rounded cobbles and pebbles partly buried
Dust cover: Most prevalent on smaller, rounded rocks; probably light on large blocks

Fines
Color: Gray surface; whitish subsurface
Compaction: Loose

Craters

Size range and distribution: Numerous small 1/2-1 m size craters superposed on 20-m crater; sample apparently taken from small (1 1/2 m) crater near rim
Shape: Small craters relatively distinct with slightly raised rims; larger (>2 m) craters mainly shallow and subdued
Ejecta: Clods around small craters probably locally derived; rounded cobbles probably ejecta from large craters; angular blocks possibly ejecta from South Ray crater

SAMPLE CHARACTERISTICS FOR 5500:
Size: Mostly <1 cm
Color: Gray surface, lighter beneath (not as white as subsurface soil on Cayley plain at station 1)
Comparison with other soil in area: Probably typical of local soil composition, but possibly more indurated as result of small impact at sample locality; light color unique among soil samples from station 5
Probable origin: Regolith possibly derived from underlying but reworked Descartes materials as well as ejecta superposed on Descartes

COMMENTS: Friable clods included in sample
SAMPLE CHARACTERISTICS FOR 5510:

Size: Mostly >1 cm
Color: Gray at surface, lighter fragments underneath
Shape: Subround to subangular clods; very friable
Comparison with other fragments in area: Typical, but formation of glass and induration of clods possibly caused by local small impact
Probable origin: Regolith derived from underlying reworked Descartes material as well as superposed ejecta from distant impact craters; rounded fragments. Probably not South Ray ejecta.
a) During-sampling, looking east (110-18020)

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

SAMPLES 5500 AND 5510
SAMPLE: 5600*, 5610* (402, 334)
Station: 5
Landmark: Interior wall of 20 m crater
Rock type: Rake (5610*) - soil (5600*) sample

SURFACE CHARACTERISTICS OF SAMPLE AREA

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

Fragment population
Size range and distribution: Large blocks (up to approx. 1/2 m)
very sparsely distributed outside 20-m crater rim; cobbles 10-
15 cm common in and around crater; in local sample area, cobbles
rare; fragments mainly <2 cm
Color: Gray, no subsurface white material
Shapes: Large blocks angular; cobbles subangular to rounded, but
predominantly subrounded in sample area; some rocks very crumbly
and friable
Fillets: Poorly developed
Apparent burial: Most cobbles not buried; crumbly rocks partly
buried; few rocks perched
Dust cover: Prevalent

Fines
Color: Gray
Compaction: Very loose

Craters
Size range and distribution: Few 1/2-1 m craters on larger
crater wall
Shape: Generally subdued
Ejecta: Slightly raised rims visible around some craters

SAMPLE CHARACTERISTICS FOR 5600*
Size: <1 cm
Color: Gray; white material not present below surface, in contrast
to that in sample 5500
Comparison with other soil in area: Apparently typical of most
soil on crater wall
Probable origin: Derived from underlying reworked Descartes
material

SAMPLE CHARACTERISTICS FOR 5610*
Size: Generally greater than 1 cm; up to several cm
Color: Whitish
Shape: Mostly rounded, a few angular fragments
Dust cover: Covered
Comparison with other fragments in area: Probably typical of
fragments in this size range
Probable origin: Regolith derived in part from underlying
Descartes material, much "reworked"; rounded fragments probably
not South Ray crater ejecta

COMMENTS: Slight glass coating on one fragment
a) Pre-sampling, looking southwest (110-18016)

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

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

SAMPLES 5600* AND 5610*
SAMPLE: 5700*, 5710* (406, 335) 
Station: 5 
Landmark: Interior wall of 20-m crater, just west of small superposed crater (? m) 
Rock type: Rake (5710*) - soil (5700*) sample 
SURFACE CHARACTERISTICS OF SAMPLE AREA 
Slopes: Steep part of crater wall, probably W 20° - 25° 
Fragment population 
Size range and distribution: Few scattered cobbles 5-10 cm on otherwise sandy surface; no large blocks near sample locality 
Color: Gray 
Shapes: Subangular 
Fillets: Not apparent 
Apparent burial: None 
Dust cover: Prevalent 
Fines 
Color: Gray 
Compaction: Extremely loose 
Craters 
Size range and distribution: Numerous 1/2-2 m craters superposed on interior wall of 20-m crater; sample locality west of small (=2 m) crater 
Shape: Generally shallow, subdued 
Ejecta: Slightly raised rims visible around some craters 
SAMPLE CHARACTERISTICS OF 5700* 
Size: Soil, mostly <1 cm; probably several larger fragments as well 
Color: Gray soil; rock possibly whitish 
Comparison with other soil in area: Apparently typical regolith soil; occasional white splotch observed in rake pit, but no white layer reported 
Probable origin: Possibly derived from underlying Descartes material, "reworked" by numerous local impacts; crater wall at this locality apparently shielded from South Ray crater ejecta 
SAMPLE CHARACTERISTICS OF 5710* 
Size: Mostly >1 cm 
Color: Gray, occasional white splotch in sample pit 
Shape: Irregular clods 
Comparison with other soil in area: Marked scarcity of rocks compared with rake sample 5050* taken 2-3 m east 
Probable origin: Indurated regolith, possibly derived initially from underlying Descartes materials, "reworked" by numerous local impacts; crater wall at this locality apparently shielded from South Ray crater ejecta
a) Pre-sampling, looking south (110-18014)

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

SAMPLES 5700* AND 5710*
SAMPLE: 6030*, 6040, 6055* (407, 338, 408)

Station: 6
Landmark: 10 m crater rim, on lowest "bench" of Stone Mountain; near base.
Rock type: Rounded rock (6030*), angular rock (6055*); soil (6040)

SURFACE CHARACTERISTICS OF SAMPLE AREA
Slopes: Gentle regional slope northwest off Stone Mountain; local slope 2-3°.

Fragment population
Size range and distribution: >30 cm blocks very sparse; 15-30 cm blocks relatively common; 5-15 cm cobbles relatively abundant; <5 cm fragments abundant.
Color: Generally dark with white clasts.
Shapes: All sizes angular to subrounded; 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.
Fillets: 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.
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 - 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: 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
Fillets: 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: Non-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)
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
Slope: 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.
Compection: 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.

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a) Pre-sampling, looking southeast (108-176-6)

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
8815, 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)
Station: 9

**Landmark:** Surface samplers (9003*, 9004*) 30-50 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 30 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:** 9955* 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 rolling, looking west (107-17575)

SAMPLES 9955* AND 9960*

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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: 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: 7075 (384)
Station: 11
Landmark: Southeast rim of North Ray crater
Rock type: "White shocked rock", friable, fine-grained, possibly
shattered crystalline rock.
SURFACE CHARACTERISTICS OF SAMPLE AREA
Slopes: Not determined
Fragment population
Size range and distribution: Two visible 1/2 to 1 m boulders;
1-2% of area covered by 1-10 cm fragments; 30% covered by <1 cm
clods.
Color: Medium gray
Shapes: Most are rounded to subrounded.
Fillets: Small fillet on 1 m boulder to the south. No others
apparent.
Apparent burial: None
Dust cover: Possibly on smoother surfaces
Fines
Color: Medium gray.
Compaction: Perched fragments indicate compact surface.
Craters
Size range and distribution: None visible in photographs of
immediate area.
Shape: NA
Ejecta: NA
SAMPLE CHARACTERISTICS
Size: Originally 2 fragments, each 5-8 cm diameter.
Color: White
Shape: Subrounded; angular at fracture corners
Fillet: Perched, no fillet.
Apparent burial: None
Dust cover: Possibly on smaller fragments to right (north).
Comparison with other fragments in area: Two others in area are
mottled and look like breccias. Remainder are uniform gray and
rounded clods or dust-covered breccias.
Probable origin: Unique in local area indicates possible exotic
origin; although sample may be typical of white rock breccias
150 m to west and therefore is ejecta from North Ray.
COMMENTS: Broke into several pieces in bag; very friable rock.
a) Pre-sampling photo (106-17318)

b) Sample area in above photo twice enlarged

SAMPLE 7075
SAMPLE: 7095, 7115 (385, 386)

Station: 1
Landmark: Southeast rim of North Ray crater
Rock type: 7095 is black glass-covered rock; probably breccia beneath. 7115 is breccia, gray to white matrix, black clasts.

SAMPLE CHARACTERISTICS OF SAMPLE AREA

Slopes: Possibly gentle slope down to northwest on North Ray rim.

Fragment population
Size range and distribution: 30% of surface is covered by 5-20 cm clods; one 0.3 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-sampling (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 CHARACTERISTICS
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 Nort. 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 northeast (TV documentation)

b) Pre-sampling (116-10656)

c) Pre-sampling (116-10654)

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: Pounded 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.
a) Pre-sampling (116-18636)

b) Pre sampling (116-18634)
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: 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 boulder.
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: 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.
Fillets: 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*

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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.

169
Area of 7600*, 7605*, 7610*

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 large, 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)
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 sample
taken is gray with white clasts.
Shapes:  Rounded to angular; large boulder from which samples
taken rounded except under overhang, knobby.
Fillet:  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.
Possible 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 (89)
Size:  3 fragments, total more than 100 cm.
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.
Possible 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.
Possible origin:  Collected to represent white clast; 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 (116-10653)

b) Post-sampling photo of above boulder (106-17345)

c) Pre-sampling photo of above boulder (106-17345)

SAMPLES 7915, 7935-37, 7940, 7945-48, 7955-57
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.
Pre-sampling, looking north (116-18658). Inset is pre-sampling, looking east (116-18660).
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 abxuc 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: Cobble 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 00171, 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 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
Shapes: 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)

<table>
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<th>Container number</th>
<th>LRL number</th>
<th>Station</th>
<th>AET</th>
<th>Type</th>
</tr>
</thead>
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<td>382</td>
<td>67035</td>
<td>11</td>
<td>06 22 52 30</td>
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</tr>
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<td>383</td>
<td>67055</td>
<td>11</td>
<td>06 23 02 56</td>
<td>breccia</td>
</tr>
<tr>
<td>FSR-7</td>
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<tr>
<td>384</td>
<td>67075</td>
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<td>06 23 12 02</td>
<td>white rock</td>
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<td>385</td>
<td>67095</td>
<td>11</td>
<td>06 23 11 20</td>
<td>glassy rock</td>
</tr>
<tr>
<td>386</td>
<td>67115</td>
<td>11</td>
<td>06 23 15 44</td>
<td>rock</td>
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<tr>
<td>FSR-10</td>
<td>60018</td>
<td>10</td>
<td>07 01 31 30</td>
<td>breccia</td>
</tr>
<tr>
<td>FSR-4</td>
<td>60016</td>
<td>LM</td>
<td>05 23 15 08</td>
<td>breccia</td>
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<td>18</td>
<td>60275</td>
<td>LM</td>
<td>07 01 55 23</td>
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<td>20</td>
<td>60315</td>
<td>LM</td>
<td>07 01 56 44</td>
<td>&quot;igneous&quot; rock</td>
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<td>FSR-9?</td>
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<td>13?</td>
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<td>D.T. 27/</td>
<td>60014</td>
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</tr>
<tr>
<td>Residue</td>
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<td></td>
</tr>
</tbody>
</table>

D.T. indicates drive tube

One, two, and three digit numbers indicate documented bags

FSR indicates loose (unbagged) sample

? indicates tentative identification

As reported by the Apollo 16 crew and, for the most part, confirmed by very preliminary examinations in the Lunar Receiving Laboratory.

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)

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<td>333</td>
<td>65500</td>
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<td>06 01 23 08</td>
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<td>338</td>
<td>66040</td>
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<td>white rocks</td>
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<td>340</td>
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<td>374</td>
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<td>FSR-6</td>
<td>68815</td>
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<td>D.T. 45/54</td>
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<td>06 04 02 33</td>
<td>drive tube (CSVC)</td>
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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.

1As 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)

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<td>06 23 35 46</td>
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</tr>
<tr>
<td>388</td>
<td>67700; 05-08</td>
<td>11</td>
<td>06 23 39 09</td>
<td>rake soil</td>
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<td>389</td>
<td>67935-37</td>
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<td>06 23 42 03</td>
<td>house rock</td>
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<td>FSR-8</td>
<td>67915</td>
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<td>06 23 46 15</td>
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<td>425</td>
<td>67955-57</td>
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<td>06 23 47 58</td>
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<td>67940; 45-48</td>
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<td>06 23 49 07</td>
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<td>13</td>
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<td>rake fragments</td>
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<td>346</td>
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</table>

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

1As 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)

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<td>06 23 18 23</td>
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<tr>
<td>416</td>
<td>67455*</td>
<td>11</td>
<td>06 23 16 31</td>
<td>breccia</td>
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<tr>
<td>417</td>
<td>67460*</td>
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<td>418</td>
<td>67475*</td>
<td>11</td>
<td>06 23 26 00</td>
<td>breccia</td>
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<td>67480*</td>
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<td>06 23 28 48</td>
<td>soil</td>
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<tr>
<td>422</td>
<td>67600*</td>
<td>11</td>
<td>06 23 18 38</td>
<td>white rock</td>
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<td>63320*</td>
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<td>63340*</td>
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<td>soil</td>
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<td>63335*</td>
<td>13</td>
<td>07 00 35 37</td>
<td>shadow rock</td>
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<tr>
<td>429</td>
<td>63355*-57*</td>
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<td>07 00 40 23</td>
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</tr>
<tr>
<td>430</td>
<td>60135*</td>
<td>10'</td>
<td>07 01 33 15</td>
<td>glass ball</td>
</tr>
<tr>
<td>13</td>
<td>60215+</td>
<td>10'</td>
<td>07 01 45 49</td>
<td>white rock</td>
</tr>
<tr>
<td>15</td>
<td>6023L*</td>
<td>LM</td>
<td>07 01 47 29</td>
<td>breccia</td>
</tr>
<tr>
<td>17</td>
<td>60255*</td>
<td>LM</td>
<td>07 01 49 28</td>
<td>breccia</td>
</tr>
<tr>
<td>331</td>
<td>60335*</td>
<td>LRV</td>
<td>07 02 32 05</td>
<td>LPM rock</td>
</tr>
</tbody>
</table>

One, two, and three digit numbers indicate documented bags

1As 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)

<table>
<thead>
<tr>
<th>Container number</th>
<th>LRL number</th>
<th>Station</th>
<th>AET</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>351</td>
<td>60035*</td>
<td>ALSEP</td>
<td>05 02 37 02</td>
<td>white rock</td>
</tr>
<tr>
<td>355</td>
<td>60050*</td>
<td>ALSEP</td>
<td>05 02 44 15</td>
<td>soil</td>
</tr>
<tr>
<td>373</td>
<td>60075*</td>
<td>ALSEP</td>
<td>05 02 46 28</td>
<td>white rocks</td>
</tr>
<tr>
<td>372</td>
<td>61510*</td>
<td>ALSEP</td>
<td>05 03 29 02</td>
<td>rake fragments</td>
</tr>
<tr>
<td>354</td>
<td>61120*</td>
<td>ALSEP</td>
<td>05 03 34 15</td>
<td>rake soil</td>
</tr>
<tr>
<td>371</td>
<td>61155*-58*</td>
<td>ALSEP</td>
<td>05 03 37 42</td>
<td>mixed rocks</td>
</tr>
<tr>
<td>363</td>
<td>61500*</td>
<td>ALSEP</td>
<td>05 03 39 25</td>
<td>soil</td>
</tr>
<tr>
<td>364</td>
<td>61175*</td>
<td>ALSEP</td>
<td>05 03 40 45</td>
<td>breccia</td>
</tr>
<tr>
<td>356</td>
<td>61160*</td>
<td>ALSEP</td>
<td>05 03 42 31</td>
<td>soil</td>
</tr>
<tr>
<td>362</td>
<td>61135*</td>
<td>ALSEP</td>
<td>05 03 45 28</td>
<td>breccia</td>
</tr>
<tr>
<td>369</td>
<td>61180*</td>
<td>ALSEP</td>
<td>05 03 50 01</td>
<td>soil</td>
</tr>
<tr>
<td>352</td>
<td>61240*; 45*-49*;</td>
<td>ALSEP</td>
<td>05 03 50 59</td>
<td>soil</td>
</tr>
<tr>
<td></td>
<td>61255*</td>
<td>ALSEP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>61220*</td>
<td>ALSEP</td>
<td>05 03 53 57</td>
<td>soil</td>
</tr>
<tr>
<td>353</td>
<td>61295*</td>
<td>ALSEP</td>
<td>05 03 57 29</td>
<td>breccia</td>
</tr>
<tr>
<td>368</td>
<td>61280*</td>
<td>ALSEP</td>
<td>05 04 01 05</td>
<td>soil</td>
</tr>
<tr>
<td>FSR-1</td>
<td>61015*</td>
<td>ALSEP</td>
<td>05 04 04 08</td>
<td>breccia</td>
</tr>
<tr>
<td>5</td>
<td>62235*-37*</td>
<td>ALSEP</td>
<td>05 04 32 33</td>
<td>mixed rocks</td>
</tr>
<tr>
<td>6</td>
<td>62240*</td>
<td>ALSEP</td>
<td>05 04 36 20</td>
<td>soil</td>
</tr>
<tr>
<td>7</td>
<td>62255*</td>
<td>ALSEP</td>
<td>05 04 37 06</td>
<td>breccia</td>
</tr>
<tr>
<td>9</td>
<td>62255*</td>
<td>ALSEP</td>
<td>05 04 40 44</td>
<td>white rock</td>
</tr>
<tr>
<td>10</td>
<td>62295*</td>
<td>ALSEP</td>
<td>05 04 44 07</td>
<td>breccia</td>
</tr>
<tr>
<td>11</td>
<td>62280*</td>
<td>ALSEP</td>
<td>05 04 45 18</td>
<td>soil</td>
</tr>
<tr>
<td>Residue</td>
<td>61010</td>
<td>ALSEP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

1As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972.

2Since preparation of these data the LRL number of sample 61120 has been changed to 61500

3Since 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)

<table>
<thead>
<tr>
<th>Container number</th>
<th>LRL number</th>
<th>Station</th>
<th>AET</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSR-3</td>
<td>60/115*</td>
<td>LM</td>
<td>05 05 02 36</td>
<td>bluish &quot;genesis&quot;</td>
</tr>
</tbody>
</table>

Contents of BSLSS (opened in NNPL, 19 May)

<table>
<thead>
<tr>
<th>Container number</th>
<th>LRL number</th>
<th>Station</th>
<th>AET</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSR-2</td>
<td>61016*</td>
<td>1</td>
<td>05 04 07 30</td>
<td>&quot;Muley&quot;</td>
</tr>
<tr>
<td>FSR-8B</td>
<td>not assigned</td>
<td>11</td>
<td>07 00 07 53</td>
<td>breccia</td>
</tr>
</tbody>
</table>

*indicates provisional number unlisted in the Curator's Lunar Sample Data Inventory as of May 12, 1972

FSR indicates loose (unbagged) sample

1As 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)

<table>
<thead>
<tr>
<th>Container number</th>
<th>LRL number</th>
<th>Station</th>
<th>AET</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>394</td>
<td>64435*</td>
<td>4</td>
<td>06 00 16 05</td>
<td>glassy rock</td>
</tr>
<tr>
<td>395</td>
<td>64510*</td>
<td>4</td>
<td>06 00 20 05</td>
<td>rake fragments</td>
</tr>
<tr>
<td>396</td>
<td>64500*</td>
<td>4</td>
<td>06 00 23 22</td>
<td>rake soil</td>
</tr>
<tr>
<td>(?)2</td>
<td>not assigned</td>
<td>4</td>
<td>06 00 29 08</td>
<td>breccia</td>
</tr>
<tr>
<td>397</td>
<td>64455*</td>
<td>4</td>
<td>06 00 25 57</td>
<td>glass spatter</td>
</tr>
<tr>
<td>398</td>
<td>64475*</td>
<td>4</td>
<td>06 00 35 31</td>
<td>dusty rocks</td>
</tr>
<tr>
<td>399</td>
<td>64420*</td>
<td>4</td>
<td>06 00 45 09</td>
<td>soil</td>
</tr>
<tr>
<td>400</td>
<td>64600*</td>
<td>4</td>
<td>06 00 45 37</td>
<td>rake fragments</td>
</tr>
<tr>
<td>401</td>
<td>64610*</td>
<td>4</td>
<td>06 00 51 37</td>
<td>glass beads</td>
</tr>
<tr>
<td>(?)</td>
<td>not assigned</td>
<td>5</td>
<td>06 01 22 27</td>
<td>glass-covered rock</td>
</tr>
<tr>
<td>334</td>
<td>65610*</td>
<td>5</td>
<td>06 01 26 35</td>
<td>soil</td>
</tr>
<tr>
<td>402</td>
<td>65600*</td>
<td>5</td>
<td>06 01 29 05</td>
<td>crystalline rock</td>
</tr>
<tr>
<td>403</td>
<td>65075*</td>
<td>5</td>
<td>06 01 30 34</td>
<td>glassy rock</td>
</tr>
<tr>
<td>404</td>
<td>65035*</td>
<td>5</td>
<td>06 01 32 33</td>
<td>soil</td>
</tr>
<tr>
<td>405</td>
<td>65310*</td>
<td>5</td>
<td>06 01 34 29</td>
<td>soil</td>
</tr>
<tr>
<td>335</td>
<td>65710*</td>
<td>5</td>
<td>06 01 39 04</td>
<td>soil with rock</td>
</tr>
<tr>
<td>406</td>
<td>65700*</td>
<td>5</td>
<td>06 01 44 35</td>
<td>round rock</td>
</tr>
<tr>
<td>336</td>
<td>65095*</td>
<td>5</td>
<td>06 01 49 32</td>
<td>2 documented rocks</td>
</tr>
<tr>
<td>337</td>
<td>65055*</td>
<td>5</td>
<td>06 01 53 13</td>
<td>soil and rock</td>
</tr>
<tr>
<td>407</td>
<td>66030*</td>
<td>6</td>
<td>06 02 05 06</td>
<td>angular rock</td>
</tr>
<tr>
<td>408</td>
<td>66055*</td>
<td>6</td>
<td>06 02 14 53</td>
<td>two crystalline rocks</td>
</tr>
<tr>
<td>410</td>
<td>66095*</td>
<td>6</td>
<td>06 02 21 56</td>
<td>glass ball</td>
</tr>
<tr>
<td>4</td>
<td>60095*</td>
<td>LM</td>
<td>06 01 32 33</td>
<td>white rock</td>
</tr>
<tr>
<td>FSR-5</td>
<td>65015*</td>
<td>5</td>
<td>06 01 34 29</td>
<td>soil</td>
</tr>
<tr>
<td>411</td>
<td>68510*</td>
<td>8</td>
<td>06 02 47 05</td>
<td>soil</td>
</tr>
<tr>
<td>412</td>
<td>68500*</td>
<td>8</td>
<td>06 02 53 50</td>
<td>black glass</td>
</tr>
<tr>
<td>413</td>
<td>68035*</td>
<td>8</td>
<td>06 02 56 13</td>
<td>drive tube</td>
</tr>
<tr>
<td>375</td>
<td>68820*</td>
<td>8</td>
<td>06 03 21 30</td>
<td>soil</td>
</tr>
<tr>
<td>344</td>
<td>68840*</td>
<td>8</td>
<td>06 03 29 34</td>
<td>soil</td>
</tr>
<tr>
<td>Surface sampler 1</td>
<td>69003*</td>
<td>9</td>
<td>06 03 56 45</td>
<td>soil</td>
</tr>
<tr>
<td>Surface sampler 2</td>
<td>69004*</td>
<td>9</td>
<td>06 03 56 45</td>
<td>soil</td>
</tr>
<tr>
<td>376</td>
<td>69920*</td>
<td>9</td>
<td>06 04 06 05</td>
<td>soil</td>
</tr>
<tr>
<td>377</td>
<td>69940*</td>
<td>9</td>
<td>06 04 06 48</td>
<td>soil</td>
</tr>
<tr>
<td>378</td>
<td>69935*</td>
<td>9</td>
<td>06 04 11 46</td>
<td>breccia</td>
</tr>
</tbody>
</table>
Table 7 (con't)

<table>
<thead>
<tr>
<th>Container number</th>
<th>LRL number</th>
<th>Station</th>
<th>AET</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>379</td>
<td>69960*</td>
<td>9</td>
<td>06 04 13 14</td>
<td>soil</td>
</tr>
<tr>
<td>380</td>
<td>69955*</td>
<td>9</td>
<td>06 04 16 29</td>
<td>chip</td>
</tr>
<tr>
<td>381</td>
<td>60115*</td>
<td>10</td>
<td>06 05 11 36</td>
<td>breccia</td>
</tr>
<tr>
<td>(?)</td>
<td>not assigned</td>
<td>10</td>
<td></td>
<td>glass ball</td>
</tr>
<tr>
<td>L38</td>
<td>64001*</td>
<td>4</td>
<td>06 00 37 23</td>
<td>drive tube</td>
</tr>
<tr>
<td>FSR-4A(?)</td>
<td>not assigned</td>
<td>LM</td>
<td>05 23 28 21</td>
<td>rock</td>
</tr>
</tbody>
</table>

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

1As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972

2(?) indicates questionable sample.
<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>WEIGHT (G)</th>
<th>SAMPLE TYPE</th>
<th>LUNAR-SURFACE PHOTOGRAPHIC ACT</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA 1 - STATION: ALSEP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEEP DRILL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60007</td>
<td>105.7</td>
<td>TELEVISION DOCUMENTATION (TOP)</td>
<td>05 01 25 36 LMP OKAY, STARTING ON THE DEEP DRILL.</td>
<td></td>
</tr>
<tr>
<td>60006</td>
<td>165.6</td>
<td>ONLY</td>
<td>05 01 25 46 LMP MARK. THAT ONE WENT IN LIKE GANGBUSTERS!</td>
<td></td>
</tr>
<tr>
<td>60005</td>
<td>76.1</td>
<td>05 01 29 21 LMP OKAY, TONY; I HAD A TOUCH TIME GETTING THE BIT OFF THE FIRST STICK. GOT A LITTLE DUSTY IN THERE, BUT I GOT IT CLEANED OUT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60004</td>
<td>202.7</td>
<td>STICK IN THE GROUND, AND WHEN I TRY TO GET THIS STUFF ON, IT SPINS THE WHOLE DEAL INSTEAD OF THE - -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60003</td>
<td>215.5</td>
<td>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 - -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60002</td>
<td>211.8</td>
<td>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 - -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60001</td>
<td>30.1</td>
<td>(BIT)</td>
<td>(BOTTOM)</td>
<td></td>
</tr>
<tr>
<td>INSERTED IN PAIRS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 33 19 LMP OKAY, SECOND ONE GOING IN, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 33 24 LMP OKAY, SECOND ONE GOING IN, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 33 32 LMP OKAY, SECOND ONE GOING IN, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEAM WAS BROKEN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BETWEEN 3RD AND</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 34 16 LMP OKAY, THE SECOND ONE WENT IN WITH NO PROBLEM, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4TH SECTIONS FOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RETURN TO EARTH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 36 47 LMP OKAY, LAST ONE GOING ON, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 37 04 LMP OKAY, LAST ONE GOING ON, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 38 19 LMP OKAY, LAST ONE GOING ON, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 38 21 LMP OKAY, LAST ONE GOING ON, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 38 38 LMP OKAY, LAST ONE GOING ON, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 39 44 LMP OKAY, LAST ONE GOING ON, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 41 52 LMP OKAY, LAST ONE GOING ON, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 01 44 04 LMP OKAY, LAST ONE GOING ON, TONY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 02 28 56 CC CHARLIE, WHAT WAS THE CAP ON THE BOTTOM END?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 02 29 02 LMP BAKER.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 02 29 06 LMP BAKER.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 02 29 43 LMP DELTA AND BAKER ON THE BOTTOM.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 02 29 58 LMP YOU'RE LOSING A LITTLE BIT OUT OF THE THIRD SECTION HERE. GET THE CAP ON.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 02 30 14 LMP AND ECHO IS ON THE BOTTOM OF THE THIRD SECTION.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 loose IT.
05 01 54 10 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 YES, 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.

ROCK(S)

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 WHITE, AND I'LL GET A COUPLE OF CROSS-BORES 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.
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

<table>
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<tr>
<th>SAMPLE NUMBER</th>
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<tbody>
<tr>
<td>BAG 355</td>
<td></td>
<td>SCOOPED SOIL</td>
<td>114-10385 XSA</td>
<td>LMP</td>
<td>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.</td>
</tr>
<tr>
<td>60035*</td>
<td></td>
<td></td>
<td>114-10385 XSA</td>
<td>LMP</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>114-10387 LOC</td>
<td>LMP</td>
<td>GOSH, CHARLIE, IT DOES LOOK LIKE CALICHE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>114-10388 LOC</td>
<td>LMP</td>
<td>DOESN'T IT LOOK LIKE CALICHE?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 02 40 15 LMP</td>
<td>LMP</td>
<td>YEAH, BUT IT'S JUST A BUNCH OF WHITE FRAG', I BELIEVE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 02 45 15 LMP</td>
<td>LMP</td>
<td>I'M GOING TO GET THIS ROCK HERE, TOO.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 02 45 25 LMP</td>
<td>LMP</td>
<td>NO, GO AHEAD, I'LL GET ANOTHER BAG FOR THAT.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 02 45 27 LMP</td>
<td>LMP</td>
<td>OKAY, THAT - SAMPLE OF WHITE MATERIAL IS GOING IN BAG 355.</td>
</tr>
<tr>
<td>BAG 373</td>
<td>05 02 46 28 LMP</td>
<td>ROCK</td>
<td>SAME AS BAG 355</td>
<td>LMP</td>
<td>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.</td>
</tr>
<tr>
<td>60075*</td>
<td></td>
<td></td>
<td>05 02 47 28 LMP</td>
<td>LMP</td>
<td>OKAY, THIS WHITE ROCK - THAT I PICKED UP IS IN BAG 373.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 02 50 29 LMP</td>
<td>LMP</td>
<td>I KNOW IT - MOST OF THEM IN HERE ARE BRECCIAS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 02 50 33 LMP</td>
<td>LMP</td>
<td>I PICKED UP ONE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 02 50 40 LMP</td>
<td>LMP</td>
<td>YES, THAT'S ABOUT A TWO-ROCK BRECCIA THERE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 03 04 23 CC</td>
<td>LMP</td>
<td>THOSE ROCKS THAT YOU COLLECTED; WERE THEY ALL BRECCIAS, OR COUL'T YOU TELL?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 03 04 32 LMP</td>
<td>LMP</td>
<td>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.</td>
</tr>
</tbody>
</table>
RAKE FRAGMENTS

109-17794 DBB 05 03 29 02 LMP WE'RE GOING UP TO WHERE IT'S MORE COBBLY.
114-18390 XSB TONY, TO GET THE RAKE SAMPLE. IT'S PRETTY
114-18391 XSB SMOOTH RIGHT HERE.
114-18392 XSA OKAY, THE RAKE SAMPLE SHOULD BE ONE CRATER
114-18393 XSA DIAMETER AWAY FROM PLUM.
114-18394 XSA AND IT DOESN'T HAVE TO BE TOO COBBLY THERE.
109-17795 LOC 05 03 29 03 CDR OKAY, THIS IS ABOUT IT THEN.
109-17795 LOC 05 03 29 35 CDR YEAH, BUT I DON'T THINK ANY OF - THE ROCKS
109-17795 LOC FROM HERE MAY HAVE COME FROM PLUM, BUT THEY
109-17795 LOC MAY BE SOME OTHER PLACE, TOO.

05 03 29 49 CDR HOW ABOUT RIGHT OUT THERE, IN MY SHADOW? THERE'S
05 03 29 55 CDR SOME RIGHT THERE THAT MIGHT BE -
05 03 30 03 CDR I'M SURE GOING TO GET THEM.
05 03 30 05 LMP YEAH, THAT'S FINE.
05 03 30 40 LMP THERE'S THE LOCATOR, AND WE'LL START THE
05 03 31 38 LMP OLD RAKE, FOR THE FIRST TIME. GET THAT BEAUTY
05 03 32 24 LMP RIGHT THERE. LOOK AT IT COME THROUGH THAT
05 03 32 26 LMP REGOLITH, WOULD YOU?
05 03 32 27 LMP MOVE OUT AND LET'S GET AROUND OUT OF THE WAY THERE
05 03 32 36 LMP ANOTHER RAKE.
05 03 32 36 CDR HEY, MAN, I'M LOSING ALL OF THOSE.
05 03 32 37 LMP YEAH.
05 03 32 37 LMP THERE'S THREE LITTLE ONES, NOW.
05 03 32 37 LMP "BYE, BETTER GET ANOTHER ONE.
05 03 32 37 CDR THERE'S A PRETTY GOOD ONE.
05 03 32 37 LMP JOHN, THERE'S A GLASSY ONE RIGHT THERE. I CAN'T
05 03 32 57 LMP 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 DUCKING GOING
05 03 33 12 LMP 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
05 03 33 30 LMP GOT - MORE SMALLER ONES BUT THEY Fell THROUGH THE
05 03 33 30 LMP TIMES.

RAKE SOIL

114-18395 XSA (LIL NUMBER HAS BEEN CHANGED BY CURATOR TO 61500)
109-17795 LOC 05 03 34 15 LMP OKAY, JOHN, IF YOU'LL STEP ASIDE, I'LL GET A
109-17795 LOC SOIL SAMPLE.
109-17795 LOC 05 03 34 54 LMP THAT'S ABOUT A KILO. ONE MORE SCOOPEFUL?
109-17795 LOC 05 03 34 56 CDR YEAH. A LITTLE ONE.
109-17795 LOC 05 03 34 59 LMP OKAY.
109-17795 LOC 05 03 35 02 LMP ROCK.
109-17795 LOC 05 03 35 06 CDR ALMOST LOOKS LIKE BLACK SOIL.
109-17795 LOC 05 03 35 10 LMP OKAY. MAN, IT'S REALLY SOFT HERE, TONY ON THE
109-17795 LOC RIM. YOU DON'T SINK FAR, BUT WHEN YOU WALK ON
109-17795 LOC IT, IT GETS VERY -
109-17795 LOC 05 03 35 40 LMP OKAY, THIS IS 354 GOING IN BAG 354, HOUSTON.
109-17795 LOC 05 03 35 58 LMP WE OUGHT TO START FROM HERE, JOHN, AND DO A
109-17795 LOC RADIAL SAMPLING IN TOWARDS PLUM...
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<tr>
<td>BAG 371</td>
<td></td>
<td>4 ROCKS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61155*</td>
<td></td>
<td></td>
<td>109-17796 DSB 05 03 37 42</td>
<td>LMF</td>
<td>WHAT ARE YOU PICKING UP? THAT LITTLE OLD THING?</td>
</tr>
</tbody>
</table>
| 61156*    |        |             | 114-18396 XSS 05 03 37 45 | "DR Charlie, that's as good as any of them."
| 61157*    |        |             | 114-18397 XSS 05 03 37 47 | LMF | IT LOOKS LIKE IT IS GONNA COME APART, THOUGH, 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 | LMF | I'LL GET THESE IN THE SHOVEL.                     |
|           | 05 03 38 02 | CDR | OKAY.                                              |
|           | 05 03 38 04 | LMF | 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 | LMF | THEY ARE ALL COVERED, TONY.                      |
|           | 05 03 38 27 | LMF | DUST.                                              |
|           | 05 03 38 41 | CDR | THEY'RE ANGULAR.                                   |
|           | 05 03 38 43 | LMF | ALL ANGULAR, THOUGH, I'LL TELL YOU THAT. HERE'S ONE WITH A WHITE STREAK, LOOKS LIKE A CALCITE STREAK THROUGH IT. LEAVE IT. THAT'S ALL; IT'S A WHITE ROCK. |
|           | 05 03 39 05 | LMF | YOU HAVE FOUR SAMPLES, JOHN. IS THAT GOOD ENOUGH?  |
|           | 05 03 39 08 | CDR | YEAH. THAT'S IN BAG 371.                          |
| BAG 363   |        | SOIL        |                           |     |                                                                                |
| 61506*    |        |             | 109-17796 DSB 05 03 39 25 | LMF | HEY, WAIT A MINUTE; WE NEED A SOIL FROM THERE.                              |
| (61140)   |        |             | 114-18399 XSS 114-18390 XSS 114-18392 XSS 114-18397 XSS | -- |                                                                                |
| (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 | LMF | OKAY. HERE'S ONE RIGHT HERE, JOHN, THAT'LL MAKE A GOOD ONE. SEE THAT ONE RIGHT THERE BY THAT FOOTPRINT? THAT'S A GOOD SAMPLE SIZE. ABOUT 5 CENTIMETERS ACROSS. |
| 61175*    |        |             | 114-18400 XSS 114-18401 XSS 114-18402 XSS 114-18403 XSS |     |                                                                                |
|           | 05 03 40 45 | LMF | OKAY. HERE'S ONE RIGHT HERE, JOHN, THAT'LL MAKE A GOOD ONE. SEE THAT ONE RIGHT THERE BY THAT FOOTPRINT? THAT'S A GOOD SAMPLE SIZE. ABOUT 5 CENTIMETERS ACROSS. |
|           | 05 03 41 02 | CDR | THAT ONE RIGHT THERE.                            |
|           | 05 03 41 04 | LMF | NO, THAT ONE RIGHT HERE TO THE RIGHT OF MY SHADOW. SEL, RIGHT THERE. LET ME SHOW YOU. |
|           | 05 03 41 10 | CDR | RIGHT THERE.                                     |
|           | 05 03 41 16 | LMF | 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 | LMF | IT'S ALL - EVERYTHING HERE IS DUST COVERED.       |
|           | 03 03 41 43 | LMF | 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 GREDDISH-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
109-17798 DKB 05 03 42 31 CDR OKAY. LET ME GET THAT SOIL SAMPLE.
114-18400 XSB
114-18401 XSB 05 03 44 24 CDR IT'S GOING IN BAG 356, HOUSTON. SOIL SAMPLE.
114-18402 XSA
114-18403 XSA

---

BAG 362
61135* 245.1
ROCK
WHITE-CLAST BRECCIA
109-17799 DKB 05 03 45 28 CDR WANT TO GET SOME OF THESE HERE, CHARLIE?
114-18404 XSB 05 03 45 30 LMP YES, THAT'S GREAT - THAT DEFINITELY IS A BRECCIA
114-18405 XSB RIGHT THERE, JOHN.
114-18406 XSA 05 03 45 34 CDR YES, SEE THE CLAST IN IT.
114-18407 XSA 05 03 45 35 LMP YES.
114-18408 XSA
109-17800 FDC 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 LIMESTONES 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 "LAST BRECCIA.
GOING INTO 362.

---

BAG 3
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 CLAST COATED ON
ONE SIDE AND THEN TYPICAL CLASS - LUNAR-SURFACE
CLAST COAT repercussions.
05 03 48 33 LMP OKAY, THOSE ARE BIG CLASTS, AREN'T THEY?
05 03 48 36 CDR YES. SEE THAT CLAST RIGHT THERE, ON THE TOP?
05 03 48 39 CDR YEAH.
05 03 47 26 CDR THAT'S ROCK BAG 352, HOUSTON.
05 03 49 36 CDR I TAKE IT BACK; THAT'S ROCK BAG NUMBER 2.
<table>
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</tr>
<tr>
<td>BAG 352</td>
<td>TRENCH SOIL (TOP)</td>
<td>105-17801 USA 05 03 50 59 LMP</td>
<td>NOW, JOHN! LOOK AT THAT FOOTPRINT. LOOK UNDERNEATH THAT REGOLITH. WHEN YOU KICKED THAT CENTIMETER OF THE REGOLITH IS GRAY, AND YOU GET DOWN UNDER THAT, AND IT'S WHITE.</td>
<td>114-18410 USA</td>
<td></td>
</tr>
<tr>
<td>611220*</td>
<td>RESERVE FINES</td>
<td>155.0</td>
<td>OKAY, TONY, LET ME DESCRIBE WHAT IT IS. THE TOP CENTIMETER OF THE REGOLITH IS GRAY, AND YOU GET DOWN UNDER THAT.</td>
<td>05 03 51 45 LMP</td>
<td></td>
</tr>
<tr>
<td>611221</td>
<td>247.1</td>
<td>1&lt;1 MM</td>
<td>THAT'S GOING TO BE A HARD JOB, JOHN. WE'LL SAMPLE RIGHT THERE AND GET YOU A SCOFFFUL OF THIS UNDERLYING REGOLITH.</td>
<td>05 03 52 09 LMP</td>
<td></td>
</tr>
<tr>
<td>611222</td>
<td>17.26</td>
<td>1-2 MM</td>
<td>I'LL DIG YOU A LITTLE TRENCH HERE. BOY, THAT'S GOING TO BE A HARD JOB, JOHN. WE'LL SAMPLE RIGHT THERE AND GET YOU A SCOFFFUL OF THIS UNDERLYING REGOLITH.</td>
<td>05 03 52 30 LMP</td>
<td></td>
</tr>
<tr>
<td>611223</td>
<td>13.8</td>
<td>2-4 MM</td>
<td>IT'S A DIFFERENT ALBEDO; IT'S AMAZING.</td>
<td>05 03 52 33 CC</td>
<td></td>
</tr>
<tr>
<td>611224</td>
<td>13.25</td>
<td>4-10 MM</td>
<td>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.</td>
<td>05 03 52 42 LMP</td>
<td></td>
</tr>
<tr>
<td>611225</td>
<td>8.25</td>
<td>FRAGMENT</td>
<td>ALL RIGHT.</td>
<td>05 03 52 00 LMP</td>
<td></td>
</tr>
<tr>
<td>611226</td>
<td>6.05</td>
<td>FRAGMENT</td>
<td>OKAY; LET ME GET A SHOVELFUL OF THIS. RIGHT OFF THE TOP HERE. THERE WE GO.</td>
<td>05 03 52 33 CC</td>
<td></td>
</tr>
<tr>
<td>611227</td>
<td>2.48</td>
<td>FRAGMENT</td>
<td>THAT IS GOING - THAT TOP SCOOP IS GOING IN BAG 352 HOUSTON.</td>
<td>05 03 53 40 LMP</td>
<td></td>
</tr>
<tr>
<td>611228</td>
<td>1.71</td>
<td>FRAGMENT</td>
<td></td>
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<tr>
<td>611229</td>
<td>1.71</td>
<td>FRAGMENT</td>
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<tr>
<td>611230</td>
<td>1.13</td>
<td>FRAGMENT</td>
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<tr>
<td>BAG 357</td>
<td>TRENCH SOIL (BOTTOM)</td>
<td>SAME AS</td>
<td>AAH! TRY TO GET WAY DOWN THERE, JOHN, AND GET A -</td>
<td>05 03 53 57 LMP</td>
<td></td>
</tr>
<tr>
<td>611220*</td>
<td></td>
<td>BAG 352</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>105-17801 USA 05 03 54 20 LMP</td>
<td>Uh-oh, what?</td>
<td>05 03 54 20 LMP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>114-18409 USA 05 03 54 21 LMP</td>
<td>I JUST - HAD A GOOD SCOOPFUL, AND I LOST IT. LET ME DIG OUT A LITTLE - ANOTHER LITTLE TRENCH.</td>
<td>05 03 54 21 LMP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>114-18410 USA</td>
<td>THERE SHE BE, COMING UP ALL WHITE. THAT'S ALL THAT'S IN THERE, JOHN.</td>
<td>05 03 55 11 CDR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>114-18411 USA</td>
<td>OKAY, AND IT'S GOING INTO BAG 357.</td>
<td>05 03 55 11 CDR</td>
<td></td>
</tr>
</tbody>
</table>
CHIP FROM BouDLeR

109-17802 DSB 05 03 57 29 CDR
LOOK AT THAT, CHARLIE!

109-17803 DSB 05 03 57 31 LMP
WHAT'S THAT?

114-18412 XSB 05 03 57 32 CDR
THAT THING HAS - GREENISH-BLACK CLAST IN IT.

114-18414 XSA 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 'ROUND THAT, I AM.
HERE HE COMES, FOLKS. HE'S GOT THE HAMMER OUT, I
KNOW 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.
GOING TO DO IT. THERE'S A PIECE... LET ME HOLD YOU
DOWN A LITTLE BIT. NOT 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 TAKE UP 5 PERCENT OF THE ROCK. ONE BIG CRISTAL
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
YEY, 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,
SOMEBODY, OR DOWN THERE SOMEWHERE.
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<tr>
<td>BAG 368</td>
<td>61280*</td>
<td>FILLET SOIL FROM SAMB BOULDER AS BAG 353</td>
<td>SAME AS BAG 353</td>
<td>05 04 01 05</td>
<td>LMP OKAY, I'M TAKING A SOIL SAMPLE OF THE FILLET AROUND THIS ROCK.</td>
</tr>
<tr>
<td>05 04 01 28</td>
<td>CDR THIS STUFF IS GOING INTO, HOUSTON.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 01 31</td>
<td>CC OKAY, 368, THE SOIL.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 04 01 35</td>
<td>LMP OKAY, I'LL GET THE AFTER ON THAT, JOHN. OKAY?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 04 01 39</td>
<td>CDR CHARLIE'S GETTING THE AFTER ON THAT SOIL IN 368.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEB-1</td>
<td>1803.0</td>
<td>ROCK</td>
<td>109-17808 XSB 109-17809 XSB 109-17810 LOC</td>
<td>05 04 04 08</td>
<td>LMP TONY, I'LL DOCUMENT THIS ONE WHILE JOHN - COMING</td>
</tr>
<tr>
<td>05 04 04 36</td>
<td>CDR DID YOU GET THAT BIGGY, CHARLIE?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 04 38</td>
<td>LMP THAT ONE RIGHT THERE IS WHAT I'M GONNA GET. THINK IT WILL GO IN THE BAG?</td>
<td></td>
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<tr>
<td>05 04 04 41</td>
<td>CDR NO.</td>
<td></td>
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</tr>
<tr>
<td>05 04 04 59</td>
<td>LMP DON'T WANT TO TRY IT? OKAY, THIS ANGULAR ROCK IS TOO BIG FOR A BAG, AND IT'S GOT SOME CLASS ON IT AND IT THINK IT'S A BRECCIA ALSO, TONY. IT'S GOING IN JOHN'S SRC.</td>
<td></td>
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</tr>
<tr>
<td>FEB-2</td>
<td>61018*</td>
<td>ROCK &quot;MULEY&quot;</td>
<td>05 04 07 30</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>05 04 07 39</td>
<td>LMP THIS ONE RIGHT HERE?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 07 41</td>
<td>CC THAT'S IT.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 07 48</td>
<td>LMP THIS ONE RIGHT HERE?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 07 45</td>
<td>CC THAT'S IT. YOU GOT IT, RIGHT THERE.</td>
<td></td>
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<tr>
<td>05 04 07 50</td>
<td>CDR THAT'S A FOOTBALL-SIZE ROCK.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 07 52</td>
<td>LMP IT'S A &quot;DAVE SCOTT&quot; SIZE.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 08 03</td>
<td>CDR THAT'S 20 POUNDS OF ROCK RIGHT THERE.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 08 05</td>
<td>LMP OKAY, IT HAS SOME BIG CLAPS IN IT, JOHN.</td>
<td></td>
<td></td>
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<tr>
<td>05 04 08 13</td>
<td>CDR IT SURE HAS.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 08 27</td>
<td>LMP IF I FALL INTO PLUM CRATER GETTING THIS ROCK MUEHLBERGER HAS HAD IT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 04 08 39</td>
<td>LMP OKAY, I'VE GOT IT. THAT'S 20 POUNDS OF ROCK!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 04 08 56</td>
<td>LMP OH, TONY, IT'S GOT SOME BEAUTIFUL CRYSTALS IN IT THOUGH.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>05 04 09 07</td>
<td>LMP OKAY, PUT IT IN THERE, JOHN.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 04 09 10</td>
<td>CDR PUT IT IN WHERE?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>05 04 09 11</td>
<td>LMP IN YOUR SCB.</td>
<td></td>
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<tr>
<td>05 04 09 13</td>
<td>CDR I DON'T THINK IT'LL FIT.</td>
<td></td>
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<tr>
<td>05 04 09 23</td>
<td>LMP IT AIN'T GONNA FIT.</td>
<td></td>
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<tr>
<td>05 04 09 27</td>
<td>CDR PUT IT UNDER YOUR SEAT.</td>
<td></td>
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<tr>
<td>05 04 09 30</td>
<td>LMP YEA. KIND OF DUSTY.</td>
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</tbody>
</table>
05 05 28 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 18 CC OKAY, FINE. WE'LL TAKE IT.

05 05 25 28 LMP OKAY. I DROPPED IT ONTO THE STUNT; PART OF IT BROKE OFF. I'M SORRY.

05 05 48 19 CDR WHEN? THAT OTHER BIG MULEY WE'LL GET WHEN THE - WITH A BIG ROCK BAG LATER ON.

05 08 28 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 CRYSAL. THE OTHER, WHEN I TURNED IT OVER, IT HAD ANOTHER ONE OF THOSE WHITE SPHERES 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

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>SAMPLE Type</th>
<th>LUNAR-SURFACE PHOTOGRAPHS</th>
<th>AET</th>
<th>CREW COMMENTS</th>
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<tbody>
<tr>
<td>BAG 5</td>
<td>3 ROCKS, RIM OF 6 ROCKS, RIM OF BUSTER CRATER</td>
<td>109-17837 XSB 109-17838 XSB</td>
<td>05 04 32 33 LMP</td>
<td>IF THAT IS A SECONDARY, THAT IS A BIG ROCK THAT MI IN THERE.</td>
</tr>
<tr>
<td>62235*</td>
<td>BUSTER CRATER</td>
<td>109-17839 XSB 109-17840 LOC</td>
<td>05 04 32 38 LMP</td>
<td>THE ROCKS DOWN THERE ARE EXTREMELY FRACUTRED - YOU CAN SEE A MAJOR FRACUTRE SET RUNNING - DIPPING ABOUT NORTH 30 DEGREES ON ONE ROCK. THE OTHER ONE IS SUBHORIZONTAL, SO IT'S A - JUST A VERY IMPRESSIVE SIGHT AS FAR AS THE BOULDER GOES. THEY'RE ALL ANGULAR. SOME OF THEM - WELL, I CALL SOME OF THEM SURROUNDED, 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.</td>
</tr>
<tr>
<td>62236*</td>
<td></td>
<td>109-17841 LOC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62237*</td>
<td></td>
<td>05 04 34 26 LMP</td>
<td>OK, THERE'S A SORT OF ANGULAR TO SURROUNDED BLOCK GOING IN BAG NUMBER 5, TONY.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>05 04 34 33 LMP</td>
<td>OK, TONY. FROM HERE IS A SOIL SAMPLE GOING INTO BAG 6. THIS IS ON THE RIM OF BUSTER.</td>
<td></td>
<td></td>
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<tr>
<td>BAG 6</td>
<td>SOIL</td>
<td>SAME AS BAG 5</td>
<td>05 04 36 20 LMP</td>
<td></td>
</tr>
<tr>
<td>62240*</td>
<td></td>
<td>109-17838 XSB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAG 7</td>
<td>ROCK, RIM OF BUSTER CRATER</td>
<td>109-17843 XSB 109-17844 XSB</td>
<td>05 04 37 08 LMP</td>
<td>THAT'S THE ROCK I WANT, BUT IT'S TOO BIG FOR THE BAG. BUT IT MIGHT GO IN THE BAG.</td>
</tr>
<tr>
<td>62255*</td>
<td>1192.0</td>
<td>109-17844 XSB</td>
<td>05 04 38 11 LMP</td>
<td>THERE'S ANOTHER ROCK GOING INTO BAG 7.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 04 38 20 LMP</td>
<td>OK, I'M GOING ABOUT A QUARTER OF A DIAMETER AWAY FROM BUSTER AND SAMPLE SOME MORE.</td>
</tr>
</tbody>
</table>
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.

THIS IS REALLY SOME ROCK, REALLY SHOCKED.

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.

IT BROKE IN TWO IN MY HAND.

OK, AND THAT'S IN BAG NUMBER 9.

OKAY, BAG NUMBER 10, IS ANOTHER ONE.

IT'S AN ANGULAR ROCK.

HOUSTON, I HATE TO TELL YOU THIS, BUT THOSE ROCKS, THESE LIGHT ONES HERE, THEY LOOK LIKE CALICHÉ TO ME.

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.

TONY, THE ROCKS IN THIS BAY 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 Location, Photographs, Apollo-Elapsed Times, and Excerpts from the Air-to-Ground Transcript

<table>
<thead>
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<tr>
<td>1972021174-207</td>
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</tbody>
</table>

**EVA 1 - STATION: LM**

- **LTP 05 05 08 40** OKAY, HOUSTON. THESE ROCKS - I PICKED UP ONE --
- **LMP 05 05 08 44** RIGHT OUT HERE THAT I DESCRIBED THAT BLUE --
- **LMP 05 05 08 50** THAT BLUE ONE THAT I DESCRIBED FROM THE LUNAR MODULE WINDOW, AND BY BLUSH 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.
- **LMP 05 09 29** OKAY. HOW BIG WAS IT?
- **LMP 05 09 33** IT'S ABOUT FOOTBALL SIZE, LITTLE BIT SMALLER.
- **LMP 05 09 34 27** TONY, ONE OF THESE 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 SRC, WHY DON'T WE JUST LEAVE IT THERE AND GET IT FOR NEXT TIME, TONY?
- **LMP 05 09 34 51** I TELL YOU WHAT, I'M GONNA GET IT. BAG 5.
- **CDR 05 05 09 48 04** OKAY. HARDLY NOTHING IN THE SRC, RIGHT?
- **LMP 05 05 09 48 08** ONE BIG ROCK IS ALL.
- **LMP 05 05 09 48 54** OKAY, TONY. WE'RE BRINGING SRC NUMBER 5 IN WITH A BIG ROCK.
- **LMP 07 07 14 06** OKAY, HOUSTON. SRC NUMBER 5 IS IN SAMPLE CONTAINMENT BAG NUMBER 5, AND IT WEIGHS 18 POUNDS.
- **LMP 07 07 14 48** THAT WAS ONLY ONE ROCK, AND THAT WAS A GRAB SAMPLE THAT I TOOK 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, CHARLIE.

05 23 10 13 CC AND JOHN, IF YOU'RE PICKING UP A ROCK, COULD YOU GET THAT -- 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 MULLEN -- 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 HAVE TO TELL YOU, BUT I NEED YOUR CAMERA FOR THE -- HERE, TAKE MINE WITH THE BLACK-AND-WHITE AND LET ME HAVE YOURE 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 BAGASLE, 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.

---

PSR 4  ROCK
60016  R307.0

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 CLASS LAYER ON THE BACK OF IT, OR WHAT APPEARS TO BE BLACK CLASS - A THICK BLACK CLASS; AND IT'S ABOUT A HAND-SIZE SPECIMEN. I CAN'T GET IT IN THE BAG, BUT I'LL GET IT ANYWAY. AND IT HAS A LOT OF ZAP CRATERS IN IT, AND LINING THE ZAP CRATERS ARE SOME WHITISH SUBSTANCE.

---

SAMPLE #17  MAY REFER TO PSR-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 CLASS COVERED, DON'T YOU THINK?

05 23 28 31 LMP THEY ARE. I PICKED UP ONE OUT THERE. SEE WHERE MY FOOTPRINTS GO?
<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>WEIGHT (G)</th>
<th>SAMPLE TYPE</th>
<th>LUNAR-GUARFACE PHOTOGRAPHS</th>
<th>ALT</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAG 398</td>
<td>64835</td>
<td>ROCK</td>
<td>107-17443 XSB 06 00 16 05 CDR</td>
<td>MOST OF THESE ROCKS HAVE A WHITISH CAST TO THEM, HOUSTON, BUT.</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>107-17444 XSB 06 00 17 08 LMP</td>
<td>LOOK UPSLOPE, TONY. OK, LOOK ON UPSLOPE, AND YOU SEE ALL THIS ROCK FIELD THAT WE'RE IN HERE.</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>107-17445 XSB 06 00 17 19 CDR</td>
<td>I WAS JUST GOING TO GET THIS ONE SAMPLE.</td>
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<tr>
<td></td>
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<td>107-17446 LOC 06 00 18 38 CDR</td>
<td>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.</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>107-17447 XSB 06 00 19 02 LMP</td>
<td>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.</td>
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<td>107-17448 LOC 06 00 19 35 CDP</td>
<td>LET ME PUT THIS IN YOUR BAG, CHARLIE.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>107-17449 LOC 06 00 19 37 LMP</td>
<td>MOST OF THEM ARE DUST COVERED. WELL, NOT MOST OF THEM; IN FACT, MOST OF THEM ARE NOT DUST COVERED.</td>
<td>-</td>
</tr>
</tbody>
</table>

<p>| BAG 395       | 64510      | RARE FRAGMENTS | 110-17947 DSB 06 00 20 05 LMP | LET ME TAKE THIS TIME AND THEN I'LL GET ON WITH THE FEHREMETER, OHAY? | -   |
|               |            |               | 107-17948 XSB 06 00 20 16 CDR | OKAY, FINE. | -   |
|               |            |               | 107-17949 XSB 06 00 20 18 LMP | THERE'S A PLACE RIGHT UP HERE, JOHN, THAT LOOKS LIKE IT'S A GOOD. | -   |
|               |            |               | 107-17950 XSB 06 00 20 38 LMP | OK, GOT IT, AND LET ME CUT A LOCATOR FROM UP HERE, TOO. UNDERNEATH THIS REGOLITH UP HERE, WE'VE STILL GOT THE SAME DEAL. TOP CENTIMETER OR SO IS. | -   |
|               |            |               | 110-17948 LOC 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 CLASS COATED, TOO - A LITTLE. | -   |
|               |            |               | 06 00 21 45 CDR CLASS COATED. | -   |
|               |            |               | 06 00 21 50 CDR THERE'S 12 OR 13 IN THAT FIRST SCOOP, AND THEY'RE MOSTLY WHITE CLAST ROCKS. | -   |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Code</th>
<th>Comment</th>
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<tbody>
<tr>
<td>06 00 22 00</td>
<td>LMP</td>
<td>HERE COMES ONE THAT'S GOT A LOT OF GLASS ON IT.</td>
</tr>
<tr>
<td>06 00 22 10</td>
<td>CC</td>
<td>YOU THINK YOU'RE GETTING BRECCIAS THERE, THEN?</td>
</tr>
<tr>
<td>06 00 22 17</td>
<td>CDR</td>
<td>NO, WE'RE NOT SURE BECAUSE THEY'RE DUST COATED TO, AND THERE'S GLASS - THERE'S GLASS ON THEM. THEY COULD BE JUST SHOCKED ROCK.</td>
</tr>
<tr>
<td>06 00 22 27</td>
<td>CDR</td>
<td>OK, THAT'S GOING INTO BAG 395.</td>
</tr>
<tr>
<td>06 00 22 30</td>
<td>LMP</td>
<td>I DON'T GET THE IMPRESSION - -</td>
</tr>
<tr>
<td>06 00 22 33</td>
<td>LMP</td>
<td>-- THEY'RE BRECCIAS, MYSELF.</td>
</tr>
<tr>
<td>06 00 22 34</td>
<td>CDR</td>
<td>I DON'T EITHER, BUT IT'S JUST AN IMPRESSION.</td>
</tr>
<tr>
<td>06 00 22 48</td>
<td>LMP</td>
<td>YOU WANT TO GET AN AFTER OF THAT, JOHN? I'LL GET A SHOVELFUL.</td>
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<tr>
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<th>Soil Type</th>
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<tr>
<td>396</td>
<td>Rake Soil</td>
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<th>Rocks</th>
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<td>107-17453 DSB</td>
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<td>107-17451 XSB</td>
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<td>107-17457 XSB</td>
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<td>107-17458 LOC</td>
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<td>397</td>
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<td>107-17455 XSB</td>
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<td>107-17456 XSB</td>
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<td>EVA 2 - STATION 4</td>
<td></td>
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<tr>
<td>BAG 399</td>
<td>64420*</td>
<td>TRENCH SOIL</td>
<td>107-17458 XSA 06 00 35 31 CDR OKAY, HOUSTON. I'M DIGGING AN EXPLORATORY TRENCH RIGHT HERE TO SEE IF THE MATERIAL IS BLACK.</td>
<td>107-17459 XSA 06 00 35 43 CDR - IT'S SURE NOT WHITE. IT'S JUST THE SAME AS IT IS.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>107-17460 XSA 06 00 36 19 CDR I'VE GONE DOWN ABOUT A SHOVEL WIDTH, AND IT'S ALL THE SAME MATERIAL. AND I DON'T SEE ANY LAYERING IN IT OR ANYTHING.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>107-17461 XSA 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 -</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>107-17462 XSA 06 00 38 00 CDR BAG 399.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-03/L38</td>
<td>64002*</td>
<td>DOUBLE DRIVE TUBE</td>
<td>110-17949 XSD 06 00 37 23 LMP TONY, DO YOU WANT THIS DOUBLE CORE - IN THE DITCH HERE OR DOMINO TUBE WHERE I THINK IS PROBABLY CLOSER TO DESCARTES?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>64001*</td>
<td></td>
<td>110-17950 XSD 06 00 38 16 CC CHARLIE. WHY DON'T WE JUST GO AHEAD AND TAKE IT DOMINO TUBE ABOUT YOUR LAST PENETROMETER PLACE.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>110-17951 LOC 06 00 41 05 LMP THE OLD DOUBLE CORE IS ASSEMBLED. TONY, IN THE DESCARTES, YOU SEE LITTLE BRIGHT SPECKLES LOOKING AT YOU, AND I THINK IT'S GLASS PARTICLES. JOHN HAS ALREADY SAMPLED - SOME OF THEM.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>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.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>06 00 44 00 LMP OK. TONY, ABOUT HALF WAY UP THE SECOND ONE - IT'S GETTING A LITTLE HARDER, BUT IT'S GOING ON IN.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>06 00 44 18 CC OK. MAYBE WE'RE GETTING DOWN TO DESCARTES THERE.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 00 46 11 LMP CAPPED, BOTTOM SECTION.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 00 46 35 LMP THAT'S FULL. BOTTOM SECTION WAS 38.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 00 47 31 LMP TOP SECTION IS NUMBER 43.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAG 800</td>
<td>SCOOP SOIL</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>107-17463 DSB</td>
<td>06 00 45 09 CDR</td>
<td>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.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>107-17464 DSB</td>
<td>06 00 47 05 CDR</td>
<td>WHAT I'LL DO, HOUSTON, IS GET A SOIL SAMPLE OFF THIS SLM. THAT'S THE ONLY THING I CAN BE ASSURED OF THAT'S DESCANTES RIGHT AT THIS POINT.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-17465 DSB</td>
<td>06 00 47 20 CDR</td>
<td>THAT'S GOING IN BAG 800.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-17466 XSF</td>
<td>06 00 59 23 CDR</td>
<td>I THINK THE FACT THAT WE DIDN'T RUN ACROSS ANY WHITE SOIL MAY BE SIGNIFICANT AROUND HERE.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BAG 801</th>
<th>RAKE FRAGMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAME AS</td>
<td>BAG 800</td>
</tr>
<tr>
<td>107-17490 XSF</td>
<td>06 00 51 37 CDR</td>
</tr>
<tr>
<td>107-17491 XSF</td>
<td>06 00 51 43 LMP</td>
</tr>
<tr>
<td>06 00 51 48 CDR</td>
<td>THAT'S WHERE I'LL RAKE - RIGHT THERE.</td>
</tr>
<tr>
<td>06 00 52 01 LMP</td>
<td>YEAH. HERE, LET ME HAVE THE SHOVEL. OK. I GOT IT.</td>
</tr>
<tr>
<td>06 00 52 13 LMP</td>
<td>THAT'S A CLOTH. THAT'S AN INSULATED CLOTH. HERE'S SOME ROCKS. GOOD DEEP, BOY. THAT'S GREAT. OKY, LET'S FILL THIS UP. AND THEN -</td>
</tr>
<tr>
<td>06 00 52 2 TONY</td>
<td>REAL DUST-COVERED, MOSTLY CENTIMETER SIZE.</td>
</tr>
<tr>
<td>06 00 52 41 LMP</td>
<td>TONY - ABOUT 15 FRAGS - SOME SMALLER THAN THAT.</td>
</tr>
<tr>
<td>06 00 52 52 CDR</td>
<td>I'VE ALREADY GOT MY SHOVEL FILL HERE, CHARLIL.</td>
</tr>
<tr>
<td>06 00 52 34 LMP</td>
<td>OK. OF THE DIRT.</td>
</tr>
<tr>
<td>06 00 53 03 LMP</td>
<td>I HATE TO TELL YOU THIS, BUT I THINK IT'S INSULATED REGOLITH.</td>
</tr>
<tr>
<td>06 00 53 07 LMP</td>
<td>BECAUSE I'M JUST BREAKING IT UP.</td>
</tr>
<tr>
<td>06 00 53 10 CDR</td>
<td>VERY FRIABLE. LIKE DUST - DIRT CLODS.</td>
</tr>
<tr>
<td>06 00 53 14 LMP</td>
<td>WHICH IS PROBABLY WHAT IT IS.</td>
</tr>
<tr>
<td>06 00 53 17 CDR</td>
<td>WANT TO GET ANOTHER ONE?</td>
</tr>
<tr>
<td>06 00 53 19 LMP</td>
<td>YEAH. CAN YOU TRY ANOTHER ONE?</td>
</tr>
<tr>
<td>06 00 53 28 LMP</td>
<td>I DON'T THINK THESE ARE ROCKS. IF THEY ARE, THEY ARE VERY FRIABLE. I THINK IT'S JUST INSULATED REGOLITH.</td>
</tr>
<tr>
<td>06 00 53 20 CDR</td>
<td>THE WELL, THERE MAY BE A ROCK OR TWO IN THERE.</td>
</tr>
<tr>
<td>06 00 53 55 CDR</td>
<td>MAYBE SOME OF THEM ARE ROCKS. THAT WAS THREE SCOPS, 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 -</td>
</tr>
<tr>
<td>06 00 54 19 CDR</td>
<td>THE LOCATOR SHOT WILL BE IN THE PAN, AND I'M GOING TO SHOOT THIS - THIS IS AN UP-CM, AFTER, OF THE RAKE SAMPLE, STEREO.</td>
</tr>
<tr>
<td>06 00 54 11 LMP</td>
<td>THAT WAS IN BAG 801.</td>
</tr>
</tbody>
</table>
### Cross-Reference of Lunar Samples with Locations, Photographs, Apollo-Elapsed Times, and Excerpts from the Air-to-Ground Transcript

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<th>ART</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
</table>
| RAG 332       | 65510      | RAKE FRAGMENTS | 110-18019 DSB 06 01 09 41 LMP IT MIGHT BE A PRIMARY IMPACT, BUT I THINK
|               |            |              | 107-17492 XSB             |     |               |
|               |            |              | 107-17493 XSB             |     |               |
|               |            |              | 107-17494 XSA             |     |               |
|               |            |              | 107-17495 XSA             |     |               |
|               |            |              | 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 |
|               |            |              | 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. |
|               |            |              | 06 01 17 02 CDR HERE'S ABOUT A FOOT AND A HALF ACROSS SECONDARY - |
|               |            |              | 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 |
|               |            |              | 06 01 17 55 LMP YEAH, IT DOES, JOHN. THERE'S SOME ROCKS RIGHT IN |
|               |            |              | 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 |
|               |            |              | 06 01 18 05 LMP DON'T YOU GET THAT SCOOP GOING? AND I'LL GO OVER |
|               |            |              | 06 01 18 05 LMP HERE AND GET A LOCATOR. |
NOW, THAT'S A GOOD BAGFUL.
ONE SCOOP.
WELL, WE GOT A BAGFUL.
NOTICE THE COLOR OF THE MATERIAL, CHARLIE. IT'S WHITE. WE GET A KILO
OF SOIL.
THAT'S WHAT THIS IS. THIS ISN'T ROCKS.
FRIABLE SOIL?
YEAH.
THAT COULD BE DESCARTE'S, CHARLIE.
THAT RAKE SOIL - SAMPLE WAS IN 332, AND I JUST, PINCHED ONE OF THE ROCKS, AND IT BROKE.
IT'S PROBABLY GOING TO BE A BAGFUL OF SOIL WHEN WE GET IT BACK.
WELL, THAT MAY STILL BE DESCARTE'S.
IT MAY BE.
I THINK IT IS.

BAG 333
RAKE SOIL
SAME AS
BAG 332
06 01 20 08 LMP WANT ANOTHER ONE?
06 01 20 10 CDR YEAH, LIGHTER ALBEDO MUCH LIGHTER ALBEDO. AND IF I HAD MY DRUMSTICKS, IT'S SOMEWHERE BETWEEN THE GRAY AND THE WHITE OUT ON THE PLAINS.
06 01 20 24 LMP THAT'S GOOD, JOHN. IT'S ABOUT A KILO.
06 01 20 25 CDR IT'S SOMEWHERE BETWEEN THE GRAY OF THE SURFACE AND THE WHITE MATERIAL THAT WE PICKED UP OUT ON THE PLAINS. AND WE GOT A BUNCH 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.
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?
AND JUST RIGHT HERE IN FRONT THE GNOMON AND SEE WHAT YOU GET. ONE SCOOP AND - IT MIGHT BE -
CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

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<td>EVA 2 - STATION 5</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>06 01 23 27</td>
<td>CDR</td>
<td>I DON'T THINK YOU'RE GONNA GET ANYTHING BUT SOIL.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 23 31</td>
<td>LMP</td>
<td>I DON'T EITHER. THERE'S SOFE ROCKS. 2.</td>
<td></td>
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<tr>
<td>06 01 24 12</td>
<td>LMP</td>
<td>THERE WE GOT A PUN OF THOSE.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 24 17</td>
<td>CC</td>
<td>OKAY. DO THOSE LOOK LIKE CLods 20?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 28 23</td>
<td>LMP</td>
<td>NO, THEY DON'T. THERE'S AT LEAST ONE OF THEM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 28 34</td>
<td>CDR</td>
<td>THAT'S CLASS COATED.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 28 36</td>
<td>LMP</td>
<td>THESE ARE WHITISH TYPE ROCKS, VERY SMALL, THEY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 28 49</td>
<td>LMP</td>
<td>MAY HAVE COME FROM SOUTH RAY.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 25 10</td>
<td>CDR</td>
<td>HEY, LOOK AT THAT.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 25 14</td>
<td>LMP</td>
<td>AND ALL OF THOSE ARE ROUNDED.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 25 14</td>
<td>CDR</td>
<td>AS CHARLIE POINTED OUT, THE DIFFERENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDR</td>
<td>CHARACTERISTICS OF THESE ROCKS THAT WE'RE JUST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDR</td>
<td>CUTTING RIGHT NOW, AND MAYBE THAT'S THE KEY, IS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDR</td>
<td>THAT THEY'RE MORE ROUNDED THAN THE SOUTH RAY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDR</td>
<td>CRATER ROCKS ARE.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 25 31</td>
<td>CDR</td>
<td>THERE ARE A FEW ANGULAR IN THERE, BUT THESE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDR</td>
<td>ARE MOSTLY ROUNDED; AND I SEE SOME LITTLE BLACK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDR</td>
<td>CLASS ON ONE, BUT THEY'RE MOSTLY ROUNDED, WHITISH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDR</td>
<td>ROCKS COVERED WITH DUST, OF COURSE.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 01 25 42</td>
<td>LMP</td>
<td>THESE ARE A COUPLE OF GOOD ONES.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>06 01 25 49</td>
<td>LMP</td>
<td>BAG 334.</td>
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<table>
<thead>
<tr>
<th>BAG 402 SOIL</th>
<th>SAME AS BAG 334</th>
<th>65600*</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 01 26 35</td>
<td>LMP</td>
<td>OKAY. LET ME GET SOME SOIL HERE.</td>
</tr>
<tr>
<td>06 01 26 51</td>
<td>CDR</td>
<td>WAIT A MINUTE, CHARLIE.</td>
</tr>
<tr>
<td>06 01 26 53</td>
<td>LMP</td>
<td>YOU REALLY FEEL LIKE YOU'RE ON THE VERGE OF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INSTABILITY, DON'T YOU?</td>
</tr>
<tr>
<td>06 01 26 59</td>
<td>CDR</td>
<td>YES.</td>
</tr>
<tr>
<td>06 01 27 04</td>
<td>CDR</td>
<td>I'VE GOT THE GLOVES SO DIRTY.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OKAY. THAT'S GOING INTO BAG 402.</td>
</tr>
</tbody>
</table>
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 BLUSHING CRISTAL,
A COUPLE OF MILLIMETERIZE.
06 01 29 49 CDR  BLUSHING?
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 HALP A CENTIMETER THICK.
06 01 20 08 LMP  IT DOESN'T LOOK LIKE A BRECCIA, TONY. IT LOOKS
LIKE A CRISTALINE ROCK.
06 01 30 13 CDR  YEAH, IT'S GOT A LOT OF - IT'S FINE GRAINED -
IT SEEMS TO BE A FINE-GRAINED CRISTALINE 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.

ROCK, GLASSY

110-18023 XSB  06 01 30 34 LMP  HEY, JOHN, I'M HAVING ABOUT STRIKE OUT ON THIS
RAKE HERE. I CAN'T - GET A COUPLE OF LITTLE ONES
EACH TIME, BUT --
06 01 30 47 LMP  WANT TO MOVE ON AROUND THERE ABOUT 10 FEET OR SO?
110-18024 XSB  06 01 30 50 CDR  OKAY.
107-17503 XSB  06 01 30 51 LMP  PICK A SPOT. I'LL FOLLOW IN YOUR TRACKS. YOU'RE
SLIDING DOWNHILL ABOUT 2 INCHES EVERY TIME YOU -
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 38 LMP  CONNA BE JUST ONE ROCK AND ONE BAG HERE.
06 01 31 52 LMP  HEY, TONY. WE JUST PICKED 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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<tr>
<td>BAG 405</td>
<td>65310*</td>
<td>RAKE FRACENTS, PLUS LAYER, ROUNDED ROCK</td>
<td>BAC 404 107-17504 XSE 107-17505 XSA 107-17506 XSA 110-18026 XSA</td>
<td>06 01 33 32 33 LMP 06 01 32 56 LMP 06 01 33 26 CDR 06 01 33 33 CDR</td>
<td>OKAY, LET ME RAKE UP HERE. HERE'S SOME - THESE ARE EITHER CLODS OR -- THAT WAS A WHITISH ROCK. THAT ONE PROBABLY CAME FROM SOUTH RAY. WAIT A MINUTE. HERE' SOME GOOD ONES - DUSTY ONES. MOST OF THOSE ARE EITHER LITTLE ROCKS -- THERES A ROUND ONE, CHARLIE. HEY, THERE'S A GREAT ONE, JOHN. THERE'S A GOOD ROCK RIGHT THERE. I DON'T THINK THIS IS GOING TO BE A SIMPLE PROBLEM, EVEN AFTER YOU -- GET THE ROCKS BACK BECAUSE THEY'RE SO DARK - SO DARK - DARK -- IT'S 405. GO IN BAG 405. THAT'S A BIG ROUND ROCK THAT'S DUST COVERED. I SEE WHITE SPEAKS 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 CLAYS ON IT OR NOT. BUT IT'S A FRIABLE WHITE ROCK, AND IT'S ROUND.JD. GOING INTO BAG 405 WITH CHARLIE'S RAKE SAMPLE.</td>
</tr>
<tr>
<td>BAG 335</td>
<td>65710*</td>
<td>RAKE SOIL, DEEP</td>
<td>107-17508 XSA 107-17509 XSA</td>
<td>06 01 34 29 CC</td>
<td>WE'D LIKE YOU TO FIND THE STEEP,STEPIE SLOPE THAT YOU CAN WORK ON THERE, AND DIG AS &quot;KEEP AS YOU CAN WITH THAT RAKE.&quot; LET ME DO THAT, CHARLIE. WE'RE ON IT RIGHT NOW, BABE. I'LL TELL YOU. OK, CAN YOU DIG INTO THE FACE OF THE SLOPE A BIT? LET ME DIG. CHARLIE, LET ME DO THAT. OK. I'LL SWAP WITH YOU. HOLD THE CHRONOM. STEEPEST IS CLOSEST TO THE RIM. THAT'S RIGHT. RIGHT THERE. OK, TONY. WE'VE GONE VERTICALLY INTO THE WALL, ABOUT A FOOT, AND IT ALL LOOKS THE SAME. OCCASIONALLY, YOU SEE A WHITE SPLOTTCH.</td>
</tr>
</tbody>
</table>
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 RECOLITH, 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
SOIL AND ROCK
65700*

107-17508 XEA
107-17509 XEA
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
ROUNDED, DUSTY
65999*

ROCK
110-18027 XSB
110-18028 XSB
06 01 41 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.
<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>WEIC.T</th>
<th>SAMPLE TYPE</th>
<th>LUNAR-SURFACE PHOTOGRAPHS</th>
<th>ALT</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA 2 - STATION: 2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>FSR-5 65015*</td>
<td>ROCK, CRYSTALLINE</td>
<td>NO PHOTOGRAPHS</td>
<td>06 01 47 08 CDR</td>
<td>HEY, CHARLIE, WHERE I TRIPPED OVER HERE IS A LOT OF WHITE ROCK.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 01 47 21 LMP</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 01 47 51 CDR</td>
<td>LOOK AT THIS ROCK. THAT HAS GOT TO BE FLAG.</td>
<td></td>
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<td>06 01 48 04 LMP</td>
<td>WHEREABOUTS DID YOU FIND IT, JOHN?</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>06 01 48 05 CDR</td>
<td>RIGHT DOWN THERE IN THAT HOLE - -</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>06 01 48 08 CDR</td>
<td>- - WITH ALL THAT WHITE ROCK.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>06 01 48 10 CDR</td>
<td>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.</td>
<td></td>
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<td></td>
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<td>06 01 48 58 CDR</td>
<td>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-BLUSH CAST.</td>
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<td>06 01 49 26 CDR</td>
<td>I SEE SOME VIBRATIONS IN IT, TOO. THEY MAY BE MY IMAGINATION...</td>
<td></td>
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<td></td>
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<td></td>
<td>06 01 49 47 CDR</td>
<td>OK, I'M PUTTING THIS ROCK UNDER YOUR SEAT.</td>
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<td></td>
<td></td>
<td></td>
<td>06 01 50 46 CC AND, JOHN, DO YOU HAVE A BAG NUMBER FOR YOUR WHITE ROCK, OR HAVE YOU COLLECTED IT YET?</td>
<td></td>
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<td></td>
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<td>06 01 50 52 CDR</td>
<td>I MAKE A GRAB SAMPLE OUT OF IT, HOUSTON.</td>
<td></td>
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<tr>
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<td>06 01 50 58 LMP</td>
<td>TOO BIG FOR A BAG, WASN'T IT, JOHN?</td>
<td></td>
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<td></td>
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<td></td>
<td>06 01 51 00 CDR</td>
<td>YEP, IT WAS TOO BIG FOR A BAG.</td>
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<td></td>
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<td></td>
<td>06 01 53 10 LMP</td>
<td>THIS IS A CRYSTALLINE ROCK IF I'VE EVER SEEN A CRYSTALINE ROCK.</td>
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<td></td>
<td></td>
<td></td>
<td>06 01 53 14 CDR</td>
<td>FIRE - ONE TODAY.</td>
<td></td>
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<td></td>
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<td>06 01 53 40 LMP</td>
<td>IT'S NOT VERY BIG, BUT IT'S JUST A NICE ROCK.</td>
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<td></td>
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<td></td>
<td>06 01 53 46 LMP</td>
<td>YEAH, IT WAS MADE ABOUT - IT LOOKS LIKE IT'S ABOUT 2 DAYS OLD. NO, IT MUST BE ON THE ORDER OF 4 BILLION.</td>
<td></td>
</tr>
<tr>
<td>BAG 337</td>
<td>2 ROCKS</td>
<td>110-18029 XSB</td>
<td>06 01 49 32 LMP</td>
<td>TONY, I'VE GOT TWO MORE ROCKS DOCUMENTED IN 337.</td>
<td></td>
</tr>
</tbody>
</table>

110-18030 XSB
EVA 2 - STATION: 6

BAG 407  ROUNDED ROCK  108-17627 DES  06 02 02 06 LMP HERE'S A CRATER, JOHN, THAT'S ABOUT 10 METERS,  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 02 16 CDR NOW THIS IS HARDER ...  107-17515 XSA  06 02 02 18 LMP IT IS.  107-17516 XSA  06 02 02 22 CDR YEAH, WE DIDN'T SINK NEAR - OF COURSE, WE'RE NOT  107-17517 XSA  STANDING ON THE RIM OF A CRATER. BUT THIS IS  06 02 02 31 LMP HARDER, BECAUSE WE JUST SORT OF BOUNCE HERE.  06 02 02 31 LMP YEAH, IT'S A LOT MORE - THE REGOLITH CHARACTER -  06 02 02 44 LMP AS JOHN SAID, IT'S REALLY CHANGED.  06 02 02 04 LMP WHEN WE WALK, WE DON'T BOUNCE AS MUCH - I MEAN,  06 02 02 04 LMP WE DON'T SINK IN AS MUCH.  06 02 10 05 DEL MAN, THAT IS SOME ROCK.  06 02 10 05 LMP THAT MATRIX THERE'S PURE WHITE WITH BLACK  06 02 10 05 LMP PHENOCHERT IN IT. IT MIGHT BE CLAST. IT MIGHT  06 02 10 05 LMP BE A BRECCIA. AND IT'S GOT SOME LATHLIKE CRYSTALS  06 02 10 31 LMP IN IT.  06 02 10 31 LMP THAT'S THE ONE I'M TALKING ABOUT. SEE, I JUST  06 02 10 31 LMP BROKE THAT OPEN.  06 02 10 34 CDR YEAH, THAT'S A TWICE ROCK BRECCIA. LET ME GET A  06 02 10 37 LMP BIGGER PIECE OF IT, CHARLIE.  06 02 10 40 CDR CAN'T WHACK IT OFF.  06 02 10 40 CDR TOO HARD TO WHACK?  06 02 10 41 LMP YEAH, I'VE WHACKED AROUND FIVE TIMES, AS I  06 02 10 44 CDR COULD.  06 02 10 44 LMP IT WAS A WHITE MATRIX WITH A SQUARE CLAST AND  06 02 10 44 LMP ELONGATE CLASTS IN IT.  06 02 10 44 CDR AND IT'S ROUNDED, TOO.  06 02 10 59 LMP LOOKS LIKE SOME MORE OF THEM RIGHT DOWN HERE,  06 02 11 05 LMP JOHN, THAT ARE - THAT ARE SAMPLE --  06 02 11 05 LMP  06 02 11 08 CDR OKAY, LET'S GET SOME OF THOSE.  06 02 13 08 CDR WHERE DO YOU WANT TO GO?  06 02 13 10 LMP I DON'T CARE. ANYWHERE IS FINE. HERE'S A NICE  06 02 13 15 LMP LITTLE CRACKED ONE RIGHT THERE.  06 02 13 21 LMP THESE ARE ANGULAR - THERE'S SOME ANGULAR AND  06 02 13 21 LMP 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  06 02 14 37 LMP SOME DIRT, A ROUNDED ROCK.
<table>
<thead>
<tr>
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<tr>
<td><strong>BAG 408</strong></td>
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<td><strong>66055</strong></td>
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<tr>
<td><strong>SAME AS</strong></td>
<td><strong>06 02 14 53</strong></td>
<td>CDR</td>
<td>LET'S GRAB THIS ANGULAR ONE NEXT.</td>
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<td></td>
</tr>
<tr>
<td><strong>BAG 407</strong></td>
<td><strong>06 02 15 03</strong></td>
<td>CDR</td>
<td>LET ME GET IT WITH THE TONGS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>107-17514 XSB</strong></td>
<td><strong>06 02 15 16</strong></td>
<td>LMP</td>
<td>THAT'S THE SAME KIND, JOHN, THAT YOU PICKED UP UP THE WAY THERE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>06 02 15 30</strong></td>
<td>LMP</td>
<td>THAT IS - PARTIALLY SACKED. THERE WE GO. YOU GOT IT.</td>
<td></td>
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<tr>
<td><strong>06 02 15 33</strong></td>
<td>CDR</td>
<td>GET THE AFTER. GOT IT. 408 IS THE BAG NUMBER.</td>
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</table>

| **BAG 330** |
| **66040** | **166.5** | RESERVE FINES | SAME AS | **06 02 15 55** | CDR | WHY DON'T YOU GET A SOIL SAMPLE?

| **66041** | **375.4** | | | **06 02 15 57** | LMP | OK; THAT'S A GOOD IDEA. |
| **66042** | **19.5** | | | **06 02 16 07** | LMP | MAYBE WE COULD GO TO ONE MORE AREA. AND SO WE WON'T SALT IT WITH IT, THIS IS JUST ONE BROKEN-UP BLOCK HERE. |
| **66043** | **15.5** | | | **06 02 16 28** | LMP | SEE ANYTHING DOWN UNDER THERE, JOHN? 338 IS THE SOIL SAMPLE. |
| **66044** | **513.5** | | | **06 02 16 36** | LMP | SEE ANYTHING DOWN UNDER THERE, JOHN? |
| **107-17515 XSB** | **06 02 16 45** | CDR | NUT. THIS IS THE SECOND - THIS IS RIM OF IT. IT'S VERY SOFT. I DIDN'T HAVE ANY TROUBLE DIGGING DOWN WITH THE SHOVEL. |
| **107-17515 XSA** | | | | **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** |
| **66080** | **106.1** | RESERVE FINES | **108-17628 XSB** | **06 02 17 15** | LMP | THIS MIGHT HAVE BEEN A SECONDARY. |
| **66081** | **177.3** | | | **06 02 17 17** | LMP | LOOK AT THAT RIGHT OVER THERE, CHARLIE. |
| **66082** | **9.85** | | | **06 02 17 18** | LMP | IT'S A REALLY UNIQUE WHITE-LookING SOMETHING-OR-OTHER. |
| **66083** | **4.53** | | | **06 02 17 28** | LMP | I THINK IT'S SOIL. |
| **66084** | **3.13** | | | **06 02 17 40** | CDR | WELL, YOU WANT TO GET SOME OF IT? IT'S UNUSUAL SOIL, IF IT IS. |
| **66085** | **3.66** | FRAGMENT | | **06 02 17 45** | LMP | IT LOOKS LIKE A LITTLE TINY IMPACT, DOESN'T IT? |
| **66086** | **2.03** | FRAGMENT | | **06 02 17 56** | LMP | HEY, LET'S GET A QUICK ONE AND THEN GO ON UP HERE AND GET SOME OF THESE BLOCKS ON THE UPPER RIM. |
| | | | | **06 02 18 18** | 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 28** | LMP | LET'S GET A LITTLE BIT MORE OF THE WHITE, JOHN. THAT CUT MOST OF IT; IT WAS JUST ON THE END OF THE SCOOP. |
| | | | | | LMP | THAT'S GOT IT. I'LL GET YOUR AFTER. |
| | | | | | **06 02 19 24** | LMP | THAT'S GOT IT. I'LL GET IT, CHARLIE. |
| | | | | | **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. |
I've been hankering for a piece off that rock.

Here's an oldrounded one right here, John. With the white spots - in it. Here's a regular angular one right over here.

Let's get this rounded one, Charlie - --

Gray, I agreed. Down-sun, here.

Wait a minute. Get a locator 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.

Charlie, put that one in mine. Yours is full.

Bring me the scoop a minute. Let me whack this thing right here. It's so good that I can't pass it up. All right, there's a good place to whack.

Oh, that's hard - you got it!

Dismembered it.

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.

OK, let's go ahead and document it now - --

So we get the location of the one that's still in place. It didn't look like it moved.

No, he didn't move anything there. I'm gonna do an up-sun on this documentation.

OK, I'll get a cross-sun here. It's a grayish bluish rock, Tony, in the matrix with some white clast in it.

Let me get it with this - it isn't any trouble, John.

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 flag to me.

And then, needle-like black crystals in it, too!

I see one in there that's a millimeter wide by 3 millimeters long, and some other needle-like crystals in it.

Here's another piece - came off the same rock.

It has this white clast in it. It's got to be a breccia, Charlie.

Think so?

They don't really look like --

That's going in bag 410.

Look at that blue rock - that we just whacked on:
CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLO-ELAPSLED TIMES,
AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

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</table>

06 02 01 16 LMP THIS IS REALLY A RAY. COMING OUT OVER THE RIDE
- YOU CAN DISTINCTLY SEE THE RAYS FROM SOUTH
RAY - THE WHITER ALBEDO AND THE CONTACT BETWEEN
THE WHITE RAY AND THE CASLELY HERE. QUITE
APPARENT.
-
-
06 02 02 42 CDR THAT'S THE FIRST ROCK I'VE SEEN WITH VESICLES
-
-
06 02 02 10 LMP HOW ABOUT STOPPING UP THERE IN THE MIDDLE OF ALL
OF THOSE BIG BOULDERs, JOHN?
06 02 02 25 CDR CALL THAT STATION 87?
06 02 02 16 LMP CALL THAT STATION 87. THAT'S GONNA BE ABOUT IT.
06 02 02 50 LMP THERE'S ONE THAT'S OVERTURBABLE. I'LL BET YOU.
RIGHT THERE. LOOK AT THAT ELONGATE ONE.
-
06 02 02 12 LMP OK, TONY, WE'RE AT 010 AND 30, AND WE'VE GOT
ABOUT THREE OR FOUR - 2- OR 3-METER-SIZE BLOCKS,
ONE BLACK AND SOME WHITE ONES.
-
06 02 03 23 LMP AND THE REGOLITH HERE, IS FINEER 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 M. "5. AND YOU'LL SEE THAT 12 O'CLOCK
FROM THE R.
-
06 02 04 51 LMP IT HAS A... I CAST IT TO - BLACK MAYBE. OK, YOU
ALREADY SAW IT, HUH? AND BEYOND THAT, THERE'S A
WHITE ONE. IT LOOKS LIKE THAT BIG ONE THAT JOHN
SAMPLED. THINK WE MIGHT 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 04 47 87 CC HOW NEAR ARE YOU TO THE EDGE OF THIS RAY?
06 02 04 56 LMP GOES IN BOTH DIRECTIONS AS FAR AS WE CAN SEE.
06 02 04 08 01 LMP THE WHOLE AREA IS JUST COVERED WITH THESE ROCKS.
06 02 04 48 31 CC I GUESS WE'RE JUST LOOKING FOR A VARIETY THEN
IN THE BOULDER PROTOCOL.
06 02 04 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.
<table>
<thead>
<tr>
<th>Time</th>
<th>Call Sign</th>
<th>Status</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 02 48 58</td>
<td>08-17682 XDB</td>
<td>LMP</td>
<td>OK, I PULLED THE DOUBLE CORE IN ABOUT HALFWAY UP THE &quot;INH&quot;.</td>
</tr>
<tr>
<td>06 02 49 58</td>
<td>108-17683 XDB</td>
<td>CDR</td>
<td>WHAT'S THE MATTER, CHARLIE?</td>
</tr>
<tr>
<td>06 02 50 01</td>
<td>108-17683 XDB</td>
<td>LMP</td>
<td>NOT GOING IN TOO WELL.</td>
</tr>
<tr>
<td>06 02 50 05</td>
<td>108-17683 XDB</td>
<td>CDR</td>
<td>PRETTY HARD AROUND HERE.</td>
</tr>
<tr>
<td>06 02 50 55</td>
<td>108-17683 XDB</td>
<td>LMP</td>
<td>AND THE HAMMER. I DON'T THINK THE DOUBLE CORE IS GOING TO GO IN. DO YOU WANT ME TO PULL IT OUT AND SHAKE IT OUT AND TRY ANOTHER PLACE? I THINK I HIT A ROCK.</td>
</tr>
<tr>
<td>06 02 51 06</td>
<td>108-17683 XDB</td>
<td>CC</td>
<td>OK, YEAH, WE'D SURE LIKE YOU TO DO THAT.</td>
</tr>
<tr>
<td>06 02 51 08</td>
<td>108-17683 XDB</td>
<td>LMP</td>
<td>THAT ONE JUST STOPPED ALL AT ONCE, SO I THINK I DID HIT A ROCK.</td>
</tr>
<tr>
<td>06 02 54 46</td>
<td>108-17685 XBD</td>
<td>LMP</td>
<td>BOY, IT'S HARD UNDER HERE, TONY.</td>
</tr>
<tr>
<td>06 02 54 49</td>
<td>108-17685 XBD</td>
<td>CC</td>
<td>RIGHT, IT SURE LOOKS IT, BUT I CAN SEE YOU'RE GETTING IT DOWN.</td>
</tr>
<tr>
<td>06 02 54 50</td>
<td>108-17686 XSB</td>
<td>LMP</td>
<td>IT'S A LITTLE OFF VERTICAL, BUT YOU'RE JUST GOING TO HAVE TO TAKE IT.</td>
</tr>
<tr>
<td>06 02 54 55</td>
<td>108-17529 LOC</td>
<td>LMP</td>
<td>THAT WAS A HARD ONE, WHAD!</td>
</tr>
<tr>
<td>06 02 55 25</td>
<td>108-17529 LOC</td>
<td>LMP</td>
<td>I CAN'T BELIEVE IT. IT COMES OUT SO EASY.</td>
</tr>
<tr>
<td>06 02 47 05</td>
<td>107-17530 DSB</td>
<td>CDR</td>
<td>OK, WELL I CAN GET A RAKE SOIL HERE WHILE YOU'RE DOING THAT (DOUBLE CORE).</td>
</tr>
<tr>
<td>06 02 47 24</td>
<td>107-17530 DSB</td>
<td>CDR</td>
<td>RAKE SOIL AWAY FROM THE BOULDER.</td>
</tr>
<tr>
<td>06 02 52 05</td>
<td>107-17531 DSB</td>
<td>CDR</td>
<td>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 MIST THERE'S NOT MUCH OF THAT MATERIAL AROUND HERE. THAT'S GOING INTO BAG A.1.</td>
</tr>
<tr>
<td>06 02 52 39</td>
<td>107-17531 DSB</td>
<td>CDR</td>
<td>WHERE YOU'RE AWAY FROM BOULDER THERE'S HARDLY ANYTHING BUT SOIL - VERY FEW ROCKS, IN OTHER WORDS.</td>
</tr>
<tr>
<td>06 02 53 50</td>
<td>107-17532 XSB</td>
<td>LMP</td>
<td>HEY, THERE ARE LITTLE GLASS BEADS ALL OVER THE PLACE HERE, JOHN.</td>
</tr>
<tr>
<td>06 02 53 53</td>
<td>107-17532 XSB</td>
<td>CDR</td>
<td>AND PLACES WHERE LITTLE WHITE ROCKS SEEN TO HAVE HIT, TOO. I'LL GET A SOIL SAMPLE HERE.</td>
</tr>
<tr>
<td>06 02 53 53</td>
<td>107-17533 XSB</td>
<td>CDR</td>
<td>OK, THE SOIL SAMPLE HERE IS GOING IN BAG 412.</td>
</tr>
</tbody>
</table>
CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>WEIGHT (g)</th>
<th>SAMPLE TYPE</th>
<th>L &amp; SURFACE PHOTOGRAPHS</th>
<th>AET</th>
<th>CLM COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA 2 - STATION: 8</td>
<td></td>
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</tbody>
</table>

**BAG 413**

<table>
<thead>
<tr>
<th>DATE</th>
<th>06 02 56 13</th>
<th>CDR</th>
<th>I DON'T KNOW WHAT THIS IS STANDING HERE AT ME HERE, BUT IT'S GOING TO PICK IT UP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-7532 XEB</td>
<td>06 02 56 24</td>
<td>CDR</td>
<td>IT'S A GLASS, BUT IN THIS SUNLIGHT, IT'S REFLECTING RED, GREEN LIKE A RAINBOW.</td>
</tr>
<tr>
<td>107-7535 XEB</td>
<td>06 02 56 45</td>
<td>LMP</td>
<td>FOUND THE FIRST PRISM ON THE MOON, JOHN.</td>
</tr>
<tr>
<td>107-7537 LOC</td>
<td>06 02 58 01</td>
<td>CDR</td>
<td>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.</td>
</tr>
</tbody>
</table>

06 03 03 02 LMP THERE'S A LOT OF GLASS AROUND HERE.

**BAG 380**

<table>
<thead>
<tr>
<th>DATE</th>
<th>06 03 08 01</th>
<th>LMP</th>
<th>THIS IS REALLY SOME ROCK. IT'S A TWO-ROCK BRECCIA, WITH THE MATRIX BEING BLUE TO ME, IN THIS LIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-7541 XEB</td>
<td>06 03 08 42</td>
<td>CDR</td>
<td>THAT'S THE ONE YOU WANT TO TURN OVER, CHARLIE.</td>
</tr>
<tr>
<td>107-7543 XEB</td>
<td>06 03 08 45</td>
<td>LMP</td>
<td>THIS THING! GOSH! I CAN'T EVEN BUDGE IT.</td>
</tr>
<tr>
<td>107-7545 XEB</td>
<td>06 03 08 48</td>
<td>CDR</td>
<td>IT'S A BIGGIE.</td>
</tr>
</tbody>
</table>

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 CRYSSTALINE 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-TWISTING THIS ONE, BUT MAYBE YOU CAN GET A FILLET HERE. IF YOU HAVEN'T MESSSED UP THE FILLET BY GETTING IN THERE TOO CLOSE.

06 03 11 30 LMP OK, JOHN, LET'S 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 NOT RIGHT AT A FRACTURE, SO IT'LL COME OFF IN GOOD SHAPE.
06 03 14 20 LMP PAN, 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.

---

RAG 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-RUN 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 RAG 374.

---

RAGF 341, 342           ROCK CHIPS FROM
                     108-17697 DES  06 03 15 57 LMP LOOK AT THAT BEAUTY, JOHN! THAT IS A CRYSSTALINE ROCK, NO BRECCIA.
                     107-17548 XSB
68415,1  202.5  CRYSTALLINE  107-17549 XSB  06 03 16 03 CDR A NO-BRECCIA, CRYSSTALINE ROCK, HUH?
68415,2  168.6  BOULDER  107-17550 XSA  06 03 16 07 LMP AND IT IS WHITISH TO GRAY, WITH A LOT OF ZAP FITS IN IT.
68416  178.4

06 03 16 18 CDR THOSE ARE ZAP FITS, 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.

---
<table>
<thead>
<tr>
<th>SAMPLE NUMBER (G)</th>
<th>WEIGHT</th>
<th>SAMPLE TYPE</th>
<th>LUNAR-SURFACE PHOTOGRAPHS</th>
<th>ACT</th>
<th>CREW COMMENTS</th>
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**EVA 2 - STATION: 8**

<table>
<thead>
<tr>
<th>Time</th>
<th>CDR</th>
<th>LMP</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 03 16 55</td>
<td>CDR</td>
<td>WHERE DO YOU WANT A SAMPLE FROM?</td>
<td></td>
</tr>
<tr>
<td>06 03 17 00</td>
<td>CDR</td>
<td>OFF THE TOP?</td>
<td></td>
</tr>
<tr>
<td>06 03 17 02</td>
<td>LMP</td>
<td>YEAH</td>
<td></td>
</tr>
<tr>
<td>06 03 17 06</td>
<td>CDR</td>
<td>OK. ***THINK I CAN GET THAT. IT'S FRACTURED RIGHT THERE.</td>
<td></td>
</tr>
<tr>
<td>06 03 17 27</td>
<td>CDR</td>
<td>WELL, IF THAT AIN'T PURE PLAG, I NEVER SEEN IT.</td>
<td></td>
</tr>
<tr>
<td>06 03 17 32</td>
<td>CDR</td>
<td>I DON'T KNOW WHAT IT IS, THOUGH.</td>
<td></td>
</tr>
<tr>
<td>06 03 17 35</td>
<td>LMP</td>
<td>IT'S PURE FELDSPAR, LOOKS LIKE --</td>
<td></td>
</tr>
<tr>
<td>06 03 17 38</td>
<td>CDR</td>
<td>PURE FELDSPAR. DON'T IT LOOK LIKE IT'S BEEN -- IT'S SO SANDY LOOKING, IT COULD HAVE BEEN REMOVED OR SOMETHING.</td>
<td></td>
</tr>
<tr>
<td>06 03 17 48</td>
<td>LMP</td>
<td>MAYBE PARTIALLY SHOCKED.</td>
<td></td>
</tr>
<tr>
<td>06 03 17 49</td>
<td>CDR</td>
<td>SHOCKED, YEAH.</td>
<td></td>
</tr>
<tr>
<td>06 03 17 51</td>
<td>LMP</td>
<td>BUT IT'S PURE PLAG -- IT'S PLAG, TONY.</td>
<td></td>
</tr>
<tr>
<td>06 03 17 56</td>
<td>LMP</td>
<td>AND IT'S IN 341. WHACK OFF - ANOTHER PIECE RIGHT HERE, JOHN.</td>
<td></td>
</tr>
<tr>
<td>06 03 18 03</td>
<td>LMP</td>
<td>THIS ROCK IS PRETTY PREDOMINANT.</td>
<td></td>
</tr>
<tr>
<td>06 03 18 08</td>
<td>CDR</td>
<td>NO, IT ISN'T FRIABLE; IT JUST FRACTURED.</td>
<td></td>
</tr>
<tr>
<td>06 03 18 12</td>
<td>CDR</td>
<td>WHERE DO YOU WANT TO HIT IT OFF, CHARLIE?</td>
<td></td>
</tr>
<tr>
<td>06 03 18 14</td>
<td>LMP</td>
<td>RIGHT AT THAT SHARP - RIGHT THERE; YEAH. SEE HOW THAT COMES OFF, PRETTY FRIABLE ISN'T IT?</td>
<td></td>
</tr>
<tr>
<td>06 03 18 22</td>
<td>CDR</td>
<td>YEAH. BUT IT'S SHOCKED.</td>
<td></td>
</tr>
<tr>
<td>06 03 18 25</td>
<td>LMP</td>
<td>YEAH.</td>
<td></td>
</tr>
<tr>
<td>06 03 18 32</td>
<td>CDR</td>
<td>PUT THAT IN THE SAME BAG?</td>
<td></td>
</tr>
<tr>
<td>06 03 18 33</td>
<td>LMP</td>
<td>YEAH, LET'S PUT THEM ALL - AND THERE'S ANOTHER PIECE DOWN THERE.</td>
<td></td>
</tr>
<tr>
<td>06 03 18 56</td>
<td>LMP</td>
<td>341.</td>
<td></td>
</tr>
<tr>
<td>06 03 18 58</td>
<td>LMP</td>
<td>WE'RE GONNA HAVE ANOTHER PIECE THAT CAME OUT OF THE SAME - THE SECOND WHACK.</td>
<td></td>
</tr>
<tr>
<td>06 03 19 08</td>
<td>LMP</td>
<td>JOHN, LET'S PUT THIS OTHER PIECE IN ANOTHER BAG, BECAUSE THIS ONE HAS GOT NO DUST IN IT AT ALL.</td>
<td></td>
</tr>
<tr>
<td>06 03 19 43</td>
<td>LMP</td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>
FILLET SOIL

68820

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.

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, ? FOOT AT P/8. I GOT IT. HET, 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 A WAY, 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.

PSR-6

68815 1791.0

ROCK FROM BRECCIA Boulder

108-17699 XSB 108-17700 XSB 108-17701 XSB

06 03 24 35 CDR OKAY, LET'S GET THE CHIP.

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, 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

68815,2 34.49

ROCK CHIP FROM BRECCIA Boulder

SAME AS PSR-6

06 03 27 36 LMP ANOTHER PIECE THAT FELL OFF HERE.

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.
<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>WEIGHT (g)</th>
<th>SAMPLE TYPE</th>
<th>LUNAR-SURFACE PHOTOGRAPHS</th>
<th>ALT</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAG 346 68840*</td>
<td></td>
<td>SOIL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>108-17760 DE</td>
<td>06 03 29 3p LMP</td>
<td>WE GOT TO GO OFF 5 METERS AND GET A REFERENCE SOIL.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-17555 XSR</td>
<td>06 03 30 04 CDR</td>
<td>I THINK THE REFERENCE SOIL IS BACK THERE AT THE SOIL SAMPLE.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-17556 XSR</td>
<td>06 03 30 08 LMP</td>
<td>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 WE'LL SET THE 5 METERS.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-17557 XSA</td>
<td>06 03 30 24 CDR</td>
<td>YEAH, THAT'S ABOUT 5 METERS. FIFTEEN FEET, BABY.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>108-17702 LOC</td>
<td>06 03 31 10 LMP</td>
<td>YEAH, AH-HAH, OKAY, TONY, IS ONE SCOOPFUL ENOUGH?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 03 31 18 CC</td>
<td>06 03 31 32 LMP</td>
<td>ONE SCOOPFUL.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 03 31 34 LMP</td>
<td>06 03 31 36 LMP</td>
<td>GOT A LITTLE Class BEAD IN IT, JOHN.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 03 31 56 LMP</td>
<td>06 03 31 56 LMP</td>
<td>THAT'S GOOD. WENT RIGHT IN. OKAY, THAT ONE SHOVELFUL IS IN 344.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>06 03 31 56 LMP</td>
<td>PUT IT IN IT'S BAG, JOHN. YOURS IS FULL.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>SURFACE</th>
<th>SPECIAL samples</th>
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</tr>
</thead>
<tbody>
<tr>
<td>69004*</td>
<td>06 03 50 45 LMP</td>
<td>06 03 50 04 CDR</td>
<td>06 03 50 24 CDR</td>
<td>06 03 50 30 LMP</td>
<td>06 03 50 40 LMP</td>
<td>06 04 01 51 CC</td>
<td>06 04 02 06 CDR</td>
</tr>
<tr>
<td></td>
<td>OKAY, PAN IS COMPLETE. OKAY, WE NEED THE SURFACE SAMPLES. AND THAT STARTS WITH THE BLUE AND THEN THE VELVET AND THEN A SKIN AND A SCOOPL.</td>
<td>HAY, WE SHOVELLED THAT ROCK OVER THERE, THE ONE I'LL GONNA SNEAK UP ON, CHARLIE.</td>
<td>IT'S BETWEEN US AND THE LM. IT'S BETWEEN THE LM AND US.</td>
<td>THEY DON'T WANT YOU TO OPEN THIS THING UNTIL YOU PUT IT RIGHT UP NEXT TO THE ROCK.</td>
<td>I'M GOING TO GET THE OTHER ONE.</td>
<td>OKAY, DID THAT DISTURB THE SPACE ON THE OTHER SIDE THERE?</td>
<td>NO, WE DIDN'T DISTURB IT AT ALL.</td>
</tr>
<tr>
<td></td>
<td>OKAY, IF YOU'LL PAN LEFT, WE'LL SHOW YOU THE ROCK WE'RE GOING TO SNEAK UP ON.</td>
<td>OKAY, IF YOU'LL PAN LEFT, WE'LL SHOW YOU THE ROCK WE'RE GOING TO SNEAK UP ON.</td>
<td>OKAY, IF YOU'LL PAN LEFT, WE'LL SHOW YOU THE ROCK WE'RE GOING TO SNEAK UP ON.</td>
<td>OKAY, IF YOU'LL PAN LEFT, WE'LL SHOW YOU THE ROCK WE'RE GOING TO SNEAK UP ON.</td>
<td>OKAY, IF YOU'LL PAN LEFT, WE'LL SHOW YOU THE ROCK WE'RE GOING TO SNEAK UP ON.</td>
<td>OKAY, IF YOU'LL PAN LEFT, WE'LL SHOW YOU THE ROCK WE'RE GOING TO SNEAK UP ON.</td>
<td>OKAY, IF YOU'LL PAN LEFT, WE'LL SHOW YOU THE ROCK WE'RE GOING TO SNEAK UP ON.</td>
</tr>
<tr>
<td></td>
<td>BEAUTIFUL, YOU PICKED SOME UP ON THAT ONG. ONLY ON ONE CORNER. HE'S GOT SOME ON ONE CORNER, HOUSTON.</td>
<td>BEAUTIFUL, YOU PICKED SOME UP ON THAT ONG. ONLY ON ONE CORNER. HE'S GOT SOME ON ONE CORNER, HOUSTON.</td>
<td>BEAUTIFUL, YOU PICKED SOME UP ON THAT ONG. ONLY ON ONE CORNER. HE'S GOT SOME ON ONE CORNER, HOUSTON.</td>
<td>BEAUTIFUL, YOU PICKED SOME UP ON THAT ONG. ONLY ON ONE CORNER. HE'S GOT SOME ON ONE CORNER, HOUSTON.</td>
<td>BEAUTIFUL, YOU PICKED SOME UP ON THAT ONG. ONLY ON ONE CORNER. HE'S GOT SOME ON ONE CORNER, HOUSTON.</td>
<td>BEAUTIFUL, YOU PICKED SOME UP ON THAT ONG. ONLY ON ONE CORNER. HE'S GOT SOME ON ONE CORNER, HOUSTON.</td>
<td>BEAUTIFUL, YOU PICKED SOME UP ON THAT ONG. ONLY ON ONE CORNER. HE'S GOT SOME ON ONE CORNER, HOUSTON.</td>
</tr>
</tbody>
</table>
**BAG 376**

**SPECIAL**

108-17740 XS 06 04 06 05 LTP WE GOT TO GET A SKIM.

**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 CDR WE'D LIKE TO SKIM NEXT TO IT.

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 28 LMP YEAH, I CAN SEE. OK, HERE WE GO. GET ME A BAG READY.

**REFERENCE SOIL**

106-17741 LOC 06 04 06 59 CDR WHAT GETTING 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 LDR THAT'S GOING INTO BAG 376?

06 04 07 52 CDR OK, I'LL GET YOU A LITTLE FLIGHT LINE OF THAT.

CHARLIE'S SCOPP IS BEING TAKEN RIGHT UNDER THE-

06 04 08 10 LMP YOU CUT 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.

06 04 10 56 LMP MAY I BORROW YOUR HANDER, JOHN? THIS CORE, I THINK MIGHT BE ABLE TO PUSH IT IN, NOT

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. PUSH 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 8

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 TILLY-MYOR.

06 04 22 54 CC ALL RIGHT CHARLIE, THAT CSVC GOES IN THE SRC.

---

**BAG 378**

**CHIP FROM TOP OF BRECCIA BOULDER**

107-17558 XSB 06 04 11 46 CDR THE TOP OF THAT ROCK IS A HARD BRECCIA, AND

107-17559 XSB 06 04 11 46 CDR I'M JUST GOING TO THROW IT UNDER YOUR SEAT.

107-17572 XSA 06 04 11 58 LMP IS IT IN A BAG?

107-17560 LOC 06 04 11 59 LMP IS IT IN A BAG?

107-17558 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 CDP YEAH, THAT'S GOT IT ALL - ON THREE SIDES.

06 04 12 38 CDR HERE'S THE PICTURE TO SHOW WHERE THE TOP ROCK

CAME OUT. CHARLIE, I GOT IT!
<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>SAMPLE TYPE</th>
<th>LUNAR SURFACE PHOTOGRAPHS</th>
<th>AET</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
</table>
| BAG 379       | SOIL BENEATH BOULDER | 107-17575 DSB 06 04 13 14 LMP HE DID IT, HOUSTON! HE DID IT.  
107-17576 LSB 06 04 13 23 CC SO YOU CAN NOT ONLY SNEAK UP ON THEM, YOU CAN  
FLIP THEM OVER, HUR?  
107-17577 XSB 06 04 13 31 CDR YEAH, THAT’S A BIGGIE. OURS IT LOOKS LIKE IT’S  
BEEN SITTING THERE FOR QUITE A WHILE, LOOK AT  
THAT SOIL UNDERNEATH.  
107-17578 XSB 06 04 13 33 CDR BEFORE I STOMP ALL OVER IT', CHARLIE, SNEAK OVER  
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 SPARKLE 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 CAVED 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.  
06 04 15 04 CDR YEAH.  
06 04 15 32 LMP AND IT LOOKS JUST LIKE AN ALKAI 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  
PERFORATION THAT BOULDER MADE.  
06 04 16 02 LMP THERE’S A SACKFUL. 379. |
| BAG 380       | CHIP FROM BOTTOM OF BOLDER | 107-17575 DSB 06 04 16 19 LMP WHERE ARE YOU GOING TO WHACK IT, JOHN?  
107-17576 DSB 06 04 16 37 LMP OK. REAL FRIKILF, ISN’T IT?  
107-17577 XSB 06 04 16 50 LMP AHAA! LOOK AT THAT PIECE HERE, LET ME GET IT.  
107-17578 XSB 06 04 16 50 LMP JOHN, BACK UP. I’LL GO GET IT, THERE IT IS  
RIGHT THERE.  
107-17579 XSB 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 DIRT.  
06 04 17 38 LMP OK, WE CUT YOU ABOUT A 4-CENTIMETER CHIP,  
AND THAT’S NOT GLASS, JOHN. THERE ARE CRYSTALS.  
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  
CLASS IT THE FRACTURE PATTERN. |
### EVA 2 - STATION: 10

<table>
<thead>
<tr>
<th>U45/L54</th>
<th>DOUBLE DRIVE TUBE</th>
<th>115-18555 XSB</th>
<th>06 04 59 44</th>
<th>CDR</th>
<th>DOUBLE CORE. OK, CAN BE ANYWHERE OUT IN FRONT OF THE ROVER.</th>
</tr>
</thead>
<tbody>
<tr>
<td>60010/635.3</td>
<td></td>
<td>115-18556 XSB</td>
<td>06 05 00 29</td>
<td>CDR</td>
<td>WANT ME TO HELP YOU WITH THE PENETROMETER?</td>
</tr>
<tr>
<td>60009/755.8</td>
<td></td>
<td>115-18557 XSB</td>
<td>06 05 00 32</td>
<td>LMP</td>
<td>WELL, I'VE GOT THE DOUBLE CORE RIGHT NOW.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>115-18558 XSB</td>
<td>06 05 00 46</td>
<td>LMP</td>
<td>I BET YOU I DON'T GET THIS IN HERE, BUT I'LL TRY IT.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 00 49</td>
<td>CDR</td>
<td>I THINK YOU WILL.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 00 55</td>
<td>LMP</td>
<td>I DON'T KNOW. OK, THAT'S PUSHED IN.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 00 59</td>
<td>CDR</td>
<td>LET ME DO THAT, AND YOU DO THE PENETROMETER BECAUSE I KNOW HOW TO DO THAT ONE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 01 02</td>
<td>LMP</td>
<td>OK, THAT'S A GOOD SNAP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 02 07</td>
<td>LMP</td>
<td>OK, IT GETS HARD DOWN THERE, DOESN'T IT, JOHN?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 02 32</td>
<td>CDR</td>
<td>YEAH, I DON'T THINK IT'S GOING TO GO. HOW MANY HITS DO YOU WANT ME TO GIVE IT, HOUSTON, BEFORE I QUIT?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 03 15</td>
<td>LMP</td>
<td>NOW, YOU'RE GETTING IT A LITTLE BIT, JOHN. IT'S GOING IN, JOHN, ABOUT A QUARTER INCH A STROKE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 04 52</td>
<td>LMP</td>
<td>IT'S IN. JOHN, IT'S IN. THAT'S FAR - HOW FAR DO YOU WANT TO DRIVE IT, CHARLIE?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 04 36</td>
<td>CDR</td>
<td>THAT'S FAR ENOUGH.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 04 38</td>
<td>LMP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 04 42</td>
<td>CDR</td>
<td>GEE, IT CAME RIGHT BACK OUT, TOO.</td>
</tr>
</tbody>
</table>

### BAG 381 - ANGULAR ROCK

<table>
<thead>
<tr>
<th>U45/L54</th>
<th>ANGULAR ROCK</th>
<th>114-18445 XSB</th>
<th>06 05 11 36</th>
<th>CC</th>
<th>HEY, JOHN. WHILE YOU'RE SAMPLING - -</th>
</tr>
</thead>
<tbody>
<tr>
<td>60115*</td>
<td></td>
<td>114-18446 XSB</td>
<td>06 05 11 38</td>
<td>CC</td>
<td>THERE. MIGHT LOOK AROUND AND SEE IF YOU SEE ANY VESICULAR BASALT.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>114-18447 XSA</td>
<td>06 05 11 46</td>
<td>CDR</td>
<td>THAT'S WHAT I'M LOOKING FOR.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>114-18448 LOC</td>
<td>06 05 16 04</td>
<td>CDR</td>
<td>BUT, CHARLIE. I JUST DON'T SEE ANY VESICULAR BASALT.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 16 46</td>
<td>CDR</td>
<td>OK, HOUSTON. I COLLECTED ONE SAMPLE, WHICH WAS A SHARP ANGULAR.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06 05 19 16</td>
<td>CDR</td>
<td>THAT SAMPLE IS GOING IN BAG SAMPLE 38.</td>
</tr>
</tbody>
</table>
CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

<table>
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<tr>
<th>SAMPLE NUMBER</th>
<th>WEIGHT</th>
<th>SAMPLE TYPE</th>
<th>LUNAR-SURFACE PHOTOGRAPHS</th>
<th>ART</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 22 42 28</td>
<td>LMP</td>
<td>WE'RE DEFINITELY ON THE EJECTA BLANKET HERE. AND, OH, WITHIN 100 METERS OR SO IT THINK IS THE RIM. (OF NORTH RAY CRATER)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 42 44</td>
<td>LMP</td>
<td>THE ROCKS ARE JUST WHITE, CRYSTALLINE WHITE LOOKING.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 43 10</td>
<td>LMP</td>
<td>GO ON OUT TO THE RIM. OK THAT'S A BRECCIA.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 43 20</td>
<td>CDR</td>
<td>THAT WHITE ONE IS A BRECCIA. THERE'S THE RIM.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 43 33</td>
<td>LMP</td>
<td>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.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 49 34</td>
<td>CDR</td>
<td>THE UNFORTUNATE THING ABOUT IT, HOUSTON, IS THAT NASCALLY HIM -- 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.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 50 37</td>
<td>CDR</td>
<td>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?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 51 30</td>
<td>CDR</td>
<td>IN THIS LIGHT THEY APPEAR TO BE DARK BOULDER.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 51 36</td>
<td>CC</td>
<td>THE WHITE ROCKS YOU SEE THERE. DO THEY LOOK LIKE THE CONE CRATER TYPE WHITE ROCKS?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 51 48</td>
<td>LMP</td>
<td>NO, NOT TO ME.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 22 51 55</td>
<td>CDR</td>
<td>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.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 23 02 02</td>
<td>LMP</td>
<td>RIGHT UNDER THE UPPER DULL GRAY SOIL THERE'S A LAYER OF WHITISH MATERIAL, MUCH LIKE IT WAS AT SOUTH RAY.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAG 382</td>
<td>ROCK, BRECCIA</td>
<td>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 CLASTS IN IT — CLASTS 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.</td>
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</tr>
<tr>
<td>67035</td>
<td>ROCK</td>
<td>245.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67031</td>
<td>FINES</td>
<td>52.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67032</td>
<td>FRAGMENT</td>
<td>13.3</td>
<td></td>
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<tr>
<td>67033</td>
<td>FRAGMENT</td>
<td>14.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67034</td>
<td>FRAGMENT</td>
<td>14.55</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>BAG 383</th>
<th>ROCK</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>67055</td>
<td>ROCK</td>
<td>221.4</td>
</tr>
<tr>
<td>67050</td>
<td>RESIDUE</td>
<td>17.56</td>
</tr>
<tr>
<td>116-18616 XSB</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>116-18617 XSB</td>
<td>---</td>
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</tr>
<tr>
<td>116-18618 XSA</td>
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<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>ESR 7</th>
<th>ROCK</th>
<th>1194.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>67015</td>
<td>ROCK</td>
<td>1194.8</td>
</tr>
</tbody>
</table>

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| 116-18617 DSB | 06 23 07 54 LMF | LOOK AT THIS ROCK RIGHT HERE, JOHN. PURE WHITE. |
| 116-18621 XSB | 06 23 08 00 LMF | 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 TAKE IT 5 CENTIMETERS LONG, BROKEN OPEN, LET'S GET THIS ONE DOCUMENTED. OK, THE POLARIZING FILTERS COMING OFF, I HOPE. |
| 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 LINER() THAT HAD THAT WHITE CLASTS IN IT ON APOLLO 15, ALTHOUGH HERE, THE MATRIX IS WHITE AND THE CLASTS ARE BLACK. |

---

| 06 23 9 59 CC | HOW LARGE ARE THE CLASTS? |
| 06 23 09 57 CC | IS THIS BLACK BRECCIA FROTHY TOO? |
| 06 23 10 03 CDP | 3 CENTIMETERS. NO, IT'S NOT FROTHY AT ALL. IT'S DENSE. |
## Cross-Reference of Lunar Samples with Locations, Photographs, Apollo-Elapsed Times, and Excerpts from the Air-To-Ground Transcript

<table>
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<tr>
<th>Sample Number</th>
<th>Weight (G)</th>
<th>Sample Type</th>
<th>Lunar-Surface Photographs</th>
<th>Alt</th>
<th>Crew Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA 3 - Station 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 23 10 10 CDR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It could be a very dense basalt-like rock. It looks like it has the 90 degree cleavage 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.</td>
<td></td>
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<tr>
<td>06 23 10 36 CDR</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>At least it has a shocked appearance.</td>
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</tr>
</tbody>
</table>

| Bag 385 |
| 67095 | 339.8 | Rock |
| 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's right angles to it. It did, before I picked it up. |

| Bag 384 |
| 67079 | 219.7 | White Breccia |
| 106-17318 XSB | 06 23 12 02 LMP |
| Hey, John. Can I get a bag from you. |
| 106-17319 XSB | 06 23 12 19 LMP |
| I picked up that white. |
| 06 23 12 26 LMP |
| Thank you. That white shocked rock. It's broke in two. There's two pieces of it. Partially documented, a before anyway, and 384. |

| Bag 386 |
| 67115 | 240.0 | Rock, Breccia |
| 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 | 06 23 18 23 LMP |
| Okay - here's an old glassy rock. Tony, that's glass coated. Anyway, it went into 415. And it was basically looking on the surface - that's why I stopped to get it. |
**DAG 416**

ROCK, FRIABLE BRECCIA

106-17331 XSB 06 23 16 31 LMP I WAS JUST GOING UP HERE A LITTLE BIT, JOHN, AND DO SOME OF THE SOFT STUFF OF THE 3 METER BLOCK IN THE REPORT.

06 23 19 26 LMP I'M GOING TO GIVE YOU A LITTLE STEREO OF 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 YES, 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-FUCK BRECCIA.

06 23 25 15 CDR YEAH, I SEE AT LEAST 2 DIFFERENT COLORS OF LIGHT-DARK CLASTS. THEY MUST BE AT LEAST A 3 RICKER.

**DAG 417**

FILLET SOIL

116-18532 LSA
116-18633 DBA
105-17333 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 GONNAY 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.

**DAG 418**

BLACK CLAST CHIPPED FROM BRECCIA BOULDER

106-337 XSA 06 23 26 00 LMP HEY, JOHN, I'M CHIPPING OUT A LITTLE TINY, THIS BIG BLACK CLAST HERE. IT'S COMING RIGHT OUT. I DON'T THINK WE'VE 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 IF AN APHASIC 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 ON THE APOLLO SAMPLES.
### CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES, AND EXCERPTS FROM THE AIR-TO-GROUND TRANSCRIPT

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<tbody>
<tr>
<td>EVA 3 - STATION: 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67415*</td>
<td>WHITE ROCK</td>
<td>116-18636 DSB 06 23 27 38 CDR  I HAVE A ROCK HERE THAT IS A FINE WHITE CRYSTALLINE ROCK. IT'S PRETTY WELL DUST COVERED, BUT I DON'T SEE ANY CLASTS IN IT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>116-18634 XSB 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 187 AS FINE AS THESE ROCKS ARE, I DON'T SEE HOW YOU CAN MISS ONE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67480*</td>
<td>SOIL</td>
<td>06 23 28 48 CDR  LET'S GET A SOIL SAMPLE RIGHT HERE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>06 23 28 51 LMP  OK.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td></td>
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<td></td>
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<td>06 23 29 46 LMP  THE SOIL SAMPLE HERE IS 419.</td>
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<tr>
<td>67510*</td>
<td>RAKE FRAGMENTS</td>
<td>116-18637 XSB 06 23 30 07 LMP  LET'S GET IN A CLEAR SPOT, JOHN. TO RAKE. OK?</td>
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<td>116-18638 XSB 06 23 30 11 LMP  THEN WE CAN DO IT DOWN THERE TOO.</td>
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<td></td>
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<td>116-18639 XSB 06 23 30 21 LMP  IT LOOKS ALMOST FRUITLESS UP HERE.</td>
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<td>116-18640 XSA 06 23 30 29 LMP  OH, THERE'S SOME ROCK.</td>
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<td>06 23 30 29 CDR  LOT OF ROCKS THERE, CHARLIE, ONE RAKE SAMPLE.</td>
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<td>06 23 30 29 LMP  ONE RAKE SAMPLE RIGHT OUT HERE, TONY.</td>
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<td>06 23 30 49 LMP  IT'S GOING IN 420.</td>
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<td>06 23 30 49 LMP  OH, HE'S GOT SOME NICE ONES THERE.</td>
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<td></td>
<td>06 23 30 51 LMP  THEY'RE SO DUST COVERED I CAN'T REALLY SEE WHAT THEY ARE.</td>
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</tbody>
</table>
BAG #21
RAKE FRAGMENTS

106-17338 DSB 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.

116-18641 XSB 06 23 31 43 CDR ALRIGHT.

116-18642 XSB 06 23 31 46 LMP THAT'LL BE ABOUT 150 METERS RADIAL - NOT RADIAL, BUT CONCENTRIC SAMPLING.

116-18643 XSA 06 23 33 35 CDR COME RIGHT DOWN THIS WAY.

06 23 33 35 CDR 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 VEHICLES IN ONE OF THEM.

06 23 34 17 LMP YES, I COULD TOO. THAT'S IN #21.

BAG #22
RAKE SOIL

SAME AS
BAG #21

06 23 38 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 #23
RAKE FRAGMENTS

57710* 694.1 UNSORTED

106-17339 DSB 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.

116-18644 XSB -- --

116-18645 XSB -- --

116-18646 XSA -- --

106-17340 LOC -- --

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 SCOPS AND A BAG FULL. IT'S ALL SALTED WITH THAT ONE WHITE ROCK HERE.

06 23 38 53 LMP THAT'S IN #23.

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.
<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>WEIGHT (g)</th>
<th>SAMPLE TYPE</th>
<th>LUNAR-SURFACE PHOTOGRAPHS</th>
<th>AET</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAG 388</td>
<td></td>
<td>RAKE SOIL</td>
<td>SAME AS</td>
<td>06 23 39 09</td>
<td>LMP GET AN AFTERT OF THAT, JOHN, I'LL GET THE SOIL SAMPLE.</td>
</tr>
<tr>
<td>67700</td>
<td>142.6</td>
<td>RESERVE FINES</td>
<td>BAG 423</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67701</td>
<td>355.0</td>
<td>&lt; 1 MM</td>
<td>116-18646 XSB</td>
<td>06 23 39 14</td>
<td>CDR THERE'S THE AFTERT.</td>
</tr>
<tr>
<td>67702</td>
<td>21.69</td>
<td>1-2 MM</td>
<td></td>
<td>06 23 39 15</td>
<td>LMP IT'S HARD UNDER THERE, YOU KNOW IT.</td>
</tr>
<tr>
<td>67703</td>
<td>13.71</td>
<td>2-8 MM</td>
<td></td>
<td>06 23 39 15</td>
<td>LMP YES, THAT'S WHY THE RAKE WOULDN'T GO DOWN.</td>
</tr>
<tr>
<td>67704</td>
<td>7.47</td>
<td>8-10 MM</td>
<td></td>
<td>06 23 39 22</td>
<td>CDR I'M NOT GOING ANYWHERE. HIT IT AGAIN.</td>
</tr>
<tr>
<td>67705</td>
<td>6.27</td>
<td>CLOD</td>
<td></td>
<td>06 23 39 27</td>
<td>LMP TONY, THERE MUST BE A BIG ROCK RIGHT UNDER HERE.</td>
</tr>
<tr>
<td>67706</td>
<td>2.08</td>
<td>CLOD</td>
<td></td>
<td>06 23 39 32</td>
<td>LMP I CAN'T GET THE RAKE IN.</td>
</tr>
<tr>
<td>67707</td>
<td>1.84</td>
<td>CLOD</td>
<td></td>
<td>06 23 39 32</td>
<td>LMP I CAN'T GET THE RAKE IN.</td>
</tr>
<tr>
<td>67708</td>
<td>1.43</td>
<td>CLOD</td>
<td></td>
<td>06 23 39 32</td>
<td>LMP I KNOW, IT'S ALL WHITE UNDER HERE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>06 23 39 47</td>
<td>LMP DOWN ABOUT A CENTIMETER OR LESS, IT'S ALL WHITE.</td>
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<td>06 23 39 59</td>
<td>LMP I THINK IT MIGHT BE A ROCK SURFACE, AND ITS, ONE OF THOSE PRIABLY 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.</td>
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<td></td>
<td>06 23 40 23</td>
<td>LMP OKAY, YOU WANT ANOTHER ONE?</td>
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<td></td>
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<td></td>
<td>06 23 40 34</td>
<td>LMP THAT SOIL SAMPLE IS GOING IN BAG 388</td>
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<td></td>
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<td></td>
<td>06 23 41 21</td>
<td>CDR IN THE SUNLIGHT, HOUSTON, THIS WHITE ROCK HAS SOFT OF A GREENISH HUE TO IT, THIS ROCK BRECCIA. WHICH IS WHAT ALL THIS IS WE'RE WALKING ON RIGHT NOW IT'S 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 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.</td>
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</tbody>
</table>

BAG 389

<table>
<thead>
<tr>
<th>ROCK CHIPS FROM</th>
<th>WEIGHT (g)</th>
<th>LUNAR-SURFACE PHOTOGRAPHS</th>
<th>AET</th>
<th>CREW COMMENTS</th>
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<tbody>
<tr>
<td>HOUSE ROCK</td>
<td>108.9</td>
<td>116-18653 XSB</td>
<td>06 23 42 03</td>
<td>LMP LOOK AT THE SIZE OF THAT ROCK.</td>
</tr>
<tr>
<td>BOULDER</td>
<td>61.82</td>
<td>106-17345 XSB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67937</td>
<td>59.67</td>
<td>106-17346 XSB</td>
<td>06 23 42 43</td>
<td>CDR AND LOOK AT THOSE -- LOOK AT THE SHAPE OF THAT RASCAL.</td>
</tr>
<tr>
<td></td>
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<td>116-18647 XSB</td>
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<tr>
<td></td>
<td></td>
<td>116-18649 XSB</td>
<td>06 23 42 50</td>
<td>LMP YES, WE DON'T SEE ANY GLASS, THOUGH, PARTICULARLY.</td>
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<tr>
<td></td>
<td></td>
<td>116-18649 XSB</td>
<td>06 23 42 57</td>
<td>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.</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>MEW, TONY, THAT'S YOUR HOUSE ROCK RIGHT THERE.</td>
</tr>
</tbody>
</table>
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 DAMNED.
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.

PSR B

7795 2559.0 ROCK CHIPS FROM 116-18652 DSA
BOULDER HOUSE ROCK 116-18652 XSA

06 23 46 15 LMP THAT'S BLACK. THERE'S FAINT -- LOOK AT THAT
VEINLET RUNNING THROUGH -- 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 22 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 UNEAGGED, AND IT'S GRAPEFRUIT SIZE, AND IT
WAS A WHITE MATRIX. IT'S NOT AS HEARLY SHOCKED,
AND IT'S A LARGE CLAST ABOUT A 1 METER CLAST OUT OF
THIS BIG BLACK ROCK. PART OF IT.
## Cross-Reference of Lunar Samples with Locations, Photographs, Apollo-elapsed Times, and Excerpts from the Air-to-Ground Transcript

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Weight (g)</th>
<th>Sample Type</th>
<th>Lunar-Surface Photograph</th>
<th>AET</th>
<th>Crew Comments</th>
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<td>EVA 3 - Station: 11</td>
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<tr>
<td>BAG 425</td>
<td>67955</td>
<td>ROCK CHIPS FROM 116-18653 DSA</td>
<td>06 23 47 58 LMP OK, JOHN, I'M GOING TO BREAK OFF ANOTHER - COULD YOU GET A PICTURE OF THIS, WITH THE HAMMER IN. LET ME GET SOME OF THE UNHACKED WHITE STUFF.</td>
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<tr>
<td>67956</td>
<td>3.7</td>
<td>BOULDER</td>
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<tr>
<td>67957</td>
<td>1.73</td>
<td>HOUSE ROCK</td>
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<td>06 23 48 27</td>
<td>CDR HARD ISN'T IT.</td>
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<tr>
<td>06 23 48 28</td>
<td>LMP YEAH, IT'S HARD, BUT I'M GOING TO GET A PIECE.</td>
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<td>06 23 48 33</td>
<td>CDR I GOT IT, CHARLIE.</td>
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<tr>
<td>06 23 48 34</td>
<td>LMP OK, HERE'S A GOOD PIECE RIGHT UP HERE.</td>
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<td>06 23 48 46</td>
<td>LMP OK, I'VE GOT IT. OF THE WHITE CLAST WITH IT'S NOT NEARLY AS SHOCKED, IS GOING IN 425.</td>
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<td>BAG 390</td>
<td>67940</td>
<td>SOIL, E-W SPLIT 116-18653 DSB</td>
<td>06 23 49 07 CC DID YOU ALL SEE A PERMANENTLY SHADOWED SAMPLE AROUND THERE?</td>
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<td>67941</td>
<td>103.9</td>
<td>RESERVE FINES</td>
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<td>67942</td>
<td>12.23</td>
<td>1-2 MM</td>
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<td>67943</td>
<td>5.36</td>
<td>2-4 MM</td>
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<td>67944</td>
<td>8.59</td>
<td>4-10 MM</td>
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<tr>
<td>06-23 49-29</td>
<td>CDR THE HOLE UNFORTUNATELY IS A SORT OF AN...EAST-WEST SPLIT THERE, CHARLIE.</td>
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<tr>
<td>06 23 49 36</td>
<td>LMP I KNOW, IT IS AN EAST-WEST SPLIT. TONY, WE GOT AN EAST-WEST SPLIT HERE, IF WE CAN GET THE RAKE IN.</td>
<td></td>
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<tr>
<td>06 23 49 46</td>
<td>CC WHY DON'T YOU GO AHEAD AND KE A SOIL OUT OF THAT.</td>
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<tr>
<td>06 23 50 11</td>
<td>LMP YEAH, I CAN GET IN HERE. RIGHT UP NEXT TO THIS ROCK RIGHT HERE WOULD BE A GOOD POINT. I GOT IT.</td>
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<tr>
<td>06 23 50 46</td>
<td>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.</td>
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<tr>
<td>06 23 50 51</td>
<td>CDR BAG 390.</td>
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<tr>
<td>06 23 50 52</td>
<td>CC OK, BAG 390. AND WE'LL NEED A REFERENCE SOIL.</td>
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<tr>
<td>BAG 391</td>
<td>67960</td>
<td>REFERENCE SOIL 106-17347 XSB</td>
<td>06 23 51 34 CDR WE'RE GOING TO DO A REFERENCE SAMPLE. LET'S GET THAT HUGH MASS RIGHT THERE.</td>
<td></td>
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<tr>
<td>67961</td>
<td>12.11</td>
<td>106-17348 XSB</td>
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<tr>
<td>06 23 51 35</td>
<td>LMP OK.</td>
<td></td>
<td></td>
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<tr>
<td>06 23 51 39</td>
<td>CDR THE TONGS ARE NOT GOING TO GO IN THIS GROUND, CHARLIE.</td>
<td></td>
<td></td>
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<tr>
<td>06 23 51 41</td>
<td>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.</td>
<td></td>
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<tr>
<td>06 23 52 00</td>
<td>CDR GOT IT, YOU GOT IT.</td>
<td></td>
<td></td>
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<tr>
<td>06 23 52 10</td>
<td>LMP OK, TONY, THIS SOIL HERE IS VERY HARD, AND THE RAKE REALLY WON'T GO INTO IT. IT'S BENDING TIMES LIKE WE USE TO IN TRAINING.</td>
<td></td>
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<tr>
<td>06 23 52 24</td>
<td>CDR THERE'S NOTHING LOOSE.</td>
<td></td>
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<tr>
<td>06 23 52 35</td>
<td>LMP OK, THERE'S ABOUT 25 GRAMS.</td>
<td></td>
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</tbody>
</table>
BAG 392
67975  **"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*

| 116-18656 DSB | 06 23 57 11 CC | IF YOU SEE A FIST SIZE IGNEOUS ROCK NEAR THE ROVER WE'LL USE THE PADDED BAGS HERE, IF NOT WE'LL JUST FORGET THEM. |
| 116-18654 XSB |
| 116-18655 XSB |
| 116-18657 LOC | 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 WHAT 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 58 30 CDR | IT'D BE TOO BIG FOR A PADDED BAG. |
| 06 23 59 01 LMP | NO, IT'LL GO IN. |
| 06 23 59 29 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*

| 106-17355 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. |
| 106-17356 XSB | 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 WTH 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 38 CDR | THAT'S A BETTER SIZE 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 39 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. |

FSR 88
ROCK
116-18658 USB | 07 00 07 53 LMP | GOOD GRAB SAMPLE. |
| 116-18659 USB | 07 00 07 55 CDR | I THOUGHT YOU'D LIKE THAT ONE. |
| 116-18660 LOC | | |
CROSS-REFERENCE OF LUNAR SAMPLES WITH LOCATIONS, PHOTOGRAPHS, APOLLO-ELAPSED TIMES,
AND EXCEPITS FROM THE AIR-TO-GROUND TRANSCRIPT

<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>WEIGHT (G)</th>
<th>SAMPLE TYPE</th>
<th>LUNAR-SURFACE PHOTOGRAPHS</th>
<th>ALT</th>
<th>CREW COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRAVERSE - STATION 11 - 13</td>
<td>-------------</td>
<td>-------------</td>
<td>---------------------------</td>
<td>-----</td>
<td>---------------</td>
</tr>
</tbody>
</table>

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.  
07 00 10 53 LMP THIS IS GOING TO BE SOMETHING GOING DOWN THIS HILL.  
07 00 12 17 LMP LOOK AT THAT SLOPE.  
07 00 12 17 LMP 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 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 FILLED ROCK THAT WE'RE JUST PASSING NOW AT 1.8 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.
<table>
<thead>
<tr>
<th>BAG 345</th>
<th>BAG FRAGMENTS</th>
<th>106-17408 DSB 07 00 23 58 LMP HEY, JOHN. SEE THOSE 4 OR 5 LITTLE ROCKS RIGHT THERE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>63510*</td>
<td>UNSORTED</td>
<td>106-17409 XSB 07 00 24 00 CDR YES.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>116-18661 XSB 07 00 24 01 LMP STICK HER DOWN RIGHT THERE AND LET ME.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>116-18663 XSD 07 00 25 00 CDR GET A BAG FOR ME, CHARLIE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>116-18665 XSD 07 00 25 12 LMP OKAY, THERE'S SOME GLASS IN THERE, A BLACK CHIP. IN ONE BAG WE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GOT ABOUT 10 LITTLE, AND THE REGOLITH HERE SEEMS TO BE A LITTLE BIT MORE LOOSELY COMPACTED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>THEN UP ON THE TOP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>07 00 25 35 CDR I CAN'T GET MY GRABON IN.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>07 00 25 45 LMP NOT VERY PRODUCTIVE THOUGH, ON THE SMALL CHIPS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>07 00 26 30 CDR OKAY, THERE'S ABOUT 20 SMALL ROCKS GOING INTO TO BAG 342, (345)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>07 00 26 34 LMP THAT'S THREE SCOOP FULLS TONY.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BAG 346</th>
<th>BAG SOIL</th>
<th>07 00 26 46 LMP OKAY AND THE SOIL.</th>
</tr>
</thead>
<tbody>
<tr>
<td>63500</td>
<td>RESERVE PINES</td>
<td>07 00 26 51 CDR LET ME GET ANOTHER BAG FROM YOU CHARLIE.</td>
</tr>
<tr>
<td>63501</td>
<td>&lt; 1 MM PINES</td>
<td>07 00 27 10 CDR OK, THAT LOOKS LIKE 2 SCOOPFULS GOING INTO BAG 342.</td>
</tr>
<tr>
<td>63502</td>
<td>1-2 MM</td>
<td>07 00 27 26 LMP SACK IT.</td>
</tr>
<tr>
<td>63503</td>
<td>2-4 MM</td>
<td></td>
</tr>
<tr>
<td>63504</td>
<td>4-10 MM</td>
<td></td>
</tr>
<tr>
<td>63505</td>
<td>5.81 FRAGMENT</td>
<td></td>
</tr>
<tr>
<td>63506</td>
<td>4.9 FRAGMENT</td>
<td></td>
</tr>
<tr>
<td>63507</td>
<td>2.78 FRAGMENT</td>
<td></td>
</tr>
<tr>
<td>63508</td>
<td>2.61 FRAGMENT</td>
<td></td>
</tr>
<tr>
<td>63509</td>
<td>2.05 FRAGMENT</td>
<td></td>
</tr>
<tr>
<td>63515</td>
<td>1.32 FRAGMENT</td>
<td></td>
</tr>
<tr>
<td>SAMPLE NUMBER</td>
<td>WEIGHT (G)</td>
<td>SAMPLE TYPE</td>
</tr>
<tr>
<td>---------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>BAG 426</td>
<td>63320*</td>
<td>SHADOWED SOIL</td>
</tr>
<tr>
<td></td>
<td>351.0</td>
<td>UNSORTED</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BAG 427</th>
<th>63340*</th>
<th>SOIL (CONTROL)</th>
<th>SAME AS BAG 426</th>
<th>07 00 32 21 CC</th>
<th>ANY CHANCE GETTING SOIL UNDERNEATH THAT NOW FOR THIS CONTROL?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>180.0</td>
<td>UNSORTED</td>
<td></td>
<td>07 00 32 30 LMP</td>
<td>UNDERNEATH THE SHADOWED, YOU MEAN?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 32 33 CC</td>
<td>UNDERNEATH WHERE YOU JUST TOUCHED, JUST DIG DEEPER.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 32 40 LMP</td>
<td>YEAH, LET ME TIP MY VISOR F- F- THAT THING IS BRIGHT! GET OUT OF THE SUN, YEAH, I CAN GET THAT FOR YOU. THAT'S ABOUT 100 GRAMS, TONY, MAYBE 200.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 33 46 CDR</td>
<td>GET A PICTURE OF IT.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 34 21 CDR</td>
<td>CAN I HELP YOU CHARLIE? LET ME PUT THAT IN THE BAG.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 34 46 LMP</td>
<td>OKAY, THERE'S ABOUT 50 GRAMS IN THE CONTROL.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 35 50 CDR</td>
<td>IT'S GOING INTO THE BAG 427.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 35 00 CDR</td>
<td>BOY, IT JUST MIGHT BE PERMANENTLY SHADOWED HOUSTON, BECAUSE IT'S DOWNSLOPE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 35 07 LMP</td>
<td>I REACHED BACK IN THERE ABOUT 2 TO 3 FEET IT LOOKED LIKE TO ME.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 00 35 20 CDR</td>
<td>THAT THERE IS ONE OF THOSE Gopher HOLES.</td>
</tr>
</tbody>
</table>
BAG 428 63335 65.4 ROCK CHIPS FROM SHADOW ROCK IS SHOWN IN
106-74\(13\) XS
106-74\(14\) XS
106-74\(15\) XS
SHADOW ROCK
07 20 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 20 35 50 CDP CCOULDN'T BE ZAP HOLES.
07 20 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 20 38 16 LMP OK, I GOT A HANDFUL OF CHIPS THERE.
07 20 38 33 CDR SEE HERE -- CHARLIE, WHEN YOU GET UNDER THE
DIRT, IT'S ALL WHITE.
07 20 38 38 LMP I KNOW, HELL, 428, TONY.
07 20 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.
07 20 40 45 LMP GET THIS OTHER ROCK.
07 20 41 17 LMP AND, TONY, THIS ROCK HERE LOOKS LIKE THE SAME --
IT'S THE SAME CHARACTER AS THE ONE ON THE RIM.
07 20 41 34 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 CHASED THEM I DON'T KNOW.
07 20 42 00 CDR YEAH, THEY LOOK MORE VUGGY TO ME ALTHOUGH THEY'RE
ROUND.
07 20 42 03 LMP THEY LOOK LIKE DRILL HOLES IS WHAT THEY LOOK LIKE.
07 20 42 19 CDR OK, THEY LOOK LIKE THE HOLES THAT YOU GET IN ROCKS
WHERE YOU HAVE A VENTING OF GAS THAT COMES UP
THROUGHS THERE LIKE LONG --
07 20 42 31 LMP VESICLE PIPE.
07 20 42 33 CDR YEAH, VESICLE PIPE THAT'S IT.
07 20 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

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Type</th>
<th>Lunar-Surface Photographic</th>
<th>AET</th>
<th>Crew Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA 3 - Station: 10' (Prime)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Code</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 00 46 41</td>
<td>CC</td>
<td>Station 10 takes a triangle with ASSEP 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.</td>
</tr>
<tr>
<td>07 01 12 15</td>
<td>CC</td>
<td>Okay, if you can recognize an edge of the ray, in the neighborhood of 50 meters, north of the ASSEP area, that would be a good place to fix Station 10 prime. Our photo shows the edge of the ray in there.</td>
</tr>
<tr>
<td>07 01 12 36</td>
<td>CDR</td>
<td>Pick the edge of a ray, 50 meters or so north of an ASSEP site of the ASSEP. You can't hardly tell where one - they're not distinct - the gradational pattern is just too gradual.</td>
</tr>
<tr>
<td>07 01 12 57</td>
<td>CC</td>
<td>Just pick a place 50 meters, north and we'll call that 10 prime.</td>
</tr>
<tr>
<td>07 01 14 50</td>
<td>CC</td>
<td>Okay, we're looking for in the sampling here those vesicular basalts that you both described in the area.</td>
</tr>
<tr>
<td>07 01 15 04</td>
<td>LMP</td>
<td>That might be one over there, John, it's the Blutii...</td>
</tr>
<tr>
<td>07 01 15 17</td>
<td>CC</td>
<td>And to make a triangle with the other double core and the deep core.</td>
</tr>
<tr>
<td>07 01 15 38</td>
<td>LMP</td>
<td>We're stopped and we're just about directly north of the ASSEP.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Bag 347</th>
<th>rake fragments</th>
<th>60610* 750.9</th>
<th>UNSORTED</th>
<th></th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Code</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>117-16824</td>
<td>DSB</td>
<td>07 01 20 44</td>
</tr>
<tr>
<td>116-16861</td>
<td>XSB</td>
<td>07 01 22 44</td>
</tr>
<tr>
<td>116-16862</td>
<td>XSB</td>
<td>07 01 22 44</td>
</tr>
<tr>
<td>116-16863</td>
<td>XSA</td>
<td>07 01 22 44</td>
</tr>
<tr>
<td>117-16825</td>
<td>LOC</td>
<td>07 01 23 14</td>
</tr>
<tr>
<td>117-16825</td>
<td>LOC</td>
<td>07 01 23 19</td>
</tr>
<tr>
<td>117-16825</td>
<td>LOC</td>
<td>07 01 23 20</td>
</tr>
<tr>
<td>117-16825</td>
<td>LOC</td>
<td>07 01 23 30</td>
</tr>
<tr>
<td>117-16825</td>
<td>LOC</td>
<td>07 01 23 33</td>
</tr>
<tr>
<td>07 01 24 10</td>
<td>CDR</td>
<td>OK, that's in bag number 347.</td>
</tr>
<tr>
<td>BAG 348</td>
<td>RAKE SOIL</td>
<td>SAME AS</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>60600</td>
<td>182.6</td>
<td>RESERVE FINES</td>
</tr>
<tr>
<td>60601</td>
<td>330.2</td>
<td>4.1 MM</td>
</tr>
<tr>
<td>60602</td>
<td>18.93</td>
<td>1-2 MM</td>
</tr>
<tr>
<td>60603</td>
<td>8.57</td>
<td>2-4 MM</td>
</tr>
<tr>
<td>60604</td>
<td>3.94</td>
<td>8-10 MM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>07 01 28 25</th>
<th>CC</th>
<th>RIGHT, WE'RE GOING TO WANT A RAKE, OVER IN THE AREA OF THE OLD STATION 10, ALSO. SO IT'S UP TO YOU WHETHER IT'S EASIER TO GET IT NOW OR TO GET THE DOUBLE CORE NOW. AFTER YOUR THROUGH WITH THIS ONE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 01 25 43</td>
<td>LMP</td>
<td>AT OLD STATION 10.</td>
</tr>
</tbody>
</table>

| "WVA 3 - STATION: 10 | |

<table>
<thead>
<tr>
<th>BAG 349</th>
<th>RAKE FRAGMENTS</th>
<th>07 01 26 29</th>
<th>CDR</th>
<th>LOOK AT THESE NEAT LITTLE CRATERS, YOU JUST RUN RIGHT THROUGH THEM.</th>
</tr>
</thead>
<tbody>
<tr>
<td>60510*</td>
<td>76.1</td>
<td>117-18826 DSB</td>
<td>07 01 26 29</td>
<td>CDR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>116-18681 XSB</td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td>116-18682 XSB</td>
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<td></td>
<td></td>
<td>116-18687 XSA</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>116-18688 XSA</td>
<td>07 01 26 47</td>
<td>LMP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>117-13827 XSD</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>07 01 27 05</td>
<td>LMP</td>
<td>THIS IS THE OLD DOUBLE CORE SITE, WE'LL RAKE HERE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 27 13</td>
<td>CC</td>
<td>THAT'S EXACTLY WHAT WE WANT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 27 17</td>
<td>LMP</td>
<td>OK, WE'RE WITHIN THREE METERS OF IT.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 27 44</td>
<td>CDR</td>
<td>OK, YOU LOCATING IT, CHARLIE?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 27 53</td>
<td>LMP</td>
<td>YEAH, OK, WE'RE SACKING IT 349.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 28 20</td>
<td>LMP</td>
<td>JOHN'S GOT 2 SCOOPS--2 RAKE FULL, NOT NEARLY AS PRODUCTIVE OVER HERE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 28 29</td>
<td>CC</td>
<td>OK, YOU'RE PROBABLY ON A DIFFERENT PART OF THE RAY THAT'S GOOD.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 28 39</td>
<td>LMP</td>
<td>2 SCOOPS AND WE GOT 3 LITTLE FRAGS--1 OF THEM JUST DROPPED OUT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 28 44</td>
<td>CDR</td>
<td>3 IS ALL WE GOT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 28 46</td>
<td>LMP</td>
<td>2, 1 OF THEM DROPPED OUT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 28 53</td>
<td>CDR</td>
<td>HERE'S A COUPLE MORE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 29 16</td>
<td>CDR</td>
<td>OK, LET ME GET 1 MORE, CHARLIE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 29 16</td>
<td>LMP</td>
<td>HE HAD ABOUT 20 POUNDS OF SOIL, TONY, AND HE CAME UP WITH 1 LITTLE FRAG. AND WE JUST DROPPED IT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 29 45</td>
<td>LMP</td>
<td>THAT'S ENOUGH.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 29 47</td>
<td>CC</td>
<td>YEAH, LET'S JUST CALL THAT OUR RAKE SAMPLE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 01 29 48</td>
<td>LMP</td>
<td>OK, WE GOT ABOUT 4 FRAGS IN 349.</td>
<td></td>
<td></td>
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</tbody>
</table>
# Cross-Reference of Lunar Samples with Locations, Photographs, Apollo-Eplored Times, and Excerpts from the Air-to-Ground Transcript

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Weight (g)</th>
<th>Sample Type</th>
<th>Lunar-Surface Photographs</th>
<th>Alt</th>
<th>Crew Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAG 350</td>
<td>233.7</td>
<td>RAKE SOIL</td>
<td>SAME AS</td>
<td>07 01 29 57 LMP OKAY, WE NEED A SOIL SAMPLE, JOHN.</td>
<td></td>
</tr>
<tr>
<td>60500</td>
<td>306.7</td>
<td>RESERVE FINES</td>
<td>BAG 349</td>
<td>07 01 30 26 CDR OK, LET ME GET 1 MORE SCOOP FULL.</td>
<td></td>
</tr>
<tr>
<td>60501</td>
<td>17.69</td>
<td>1-2 MM</td>
<td>116-18697 XSB</td>
<td>07 01 30 42 CDR GET A LITTLE HERE.</td>
<td>---</td>
</tr>
<tr>
<td>60502</td>
<td>9.94</td>
<td>2-4 MM</td>
<td>116-18693 XSB</td>
<td>07 01 31 13 CC OK, WAS THAT BAG 350, WE DIDN'T GET A NUMBER.</td>
<td></td>
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<tr>
<td>60504</td>
<td>6.63</td>
<td>4-10 MM</td>
<td>116-18698 XSB</td>
<td>07 01 31 22 LMP YEAH, 355, TONY. IT WAS.</td>
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**FSR 10**

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<th>Sample Number</th>
<th>Weight (g)</th>
<th>Sample Type</th>
<th>Lunar-Surface Photographs</th>
<th>Alt</th>
<th>Crew Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSR 10</td>
<td>1501.0</td>
<td>ROCK CHIP BROKEN</td>
<td>116-18689 XSB</td>
<td>07 01 31 30 CDR WHAT ARE YOU SUPPOSED TO BE DOING WHILE I DO THE DOUBLE CORE?</td>
<td></td>
</tr>
<tr>
<td>60018</td>
<td></td>
<td>FROM BOULDER</td>
<td></td>
<td>07 01 31 32 LMP I'M SUPPOSED TO BE SAMPLING.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>116-18691 XSA</td>
<td>07 01 31 34 CC RIGHT, WE LOOKING AROUND FOR EXOTIC --</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>116-18692 XSA</td>
<td>07 01 31 39 CC ESPECIALLY THINGS LIKE THAT VESICULAR BASALT YOU DESCRIBED.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>116-18693 LOC</td>
<td>07 01 31 45 LMP THAT'S WHY I'M WHACKING ON THIS ONE.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 01 31 50 LMP THAT IS A HARD ROCK, RIGHT THERE, JOHN.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 01 32 13 LMP I GOT IT WITH THE RAM. WHY DON'T YOU TAKE THAT AND PUT IT IN MY SAC, AND I'LL GO OVER AND GET THE DOUBLE CORE?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 01 32 23 CDR CARRY THIS ONE OVER THERE AND THROW IT IN THE BIG BAG.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>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.</td>
<td></td>
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**BAG 430**

<table>
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<tr>
<th>Sample Number</th>
<th>Weight (g)</th>
<th>Sample Type</th>
<th>Lunar-Surface Photographs</th>
<th>Alt</th>
<th>Crew Comments</th>
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<td>60135*</td>
<td>137.7</td>
<td>GLASS BALL</td>
<td>116-18694 XSB</td>
<td>07 01 33 15 LMP WHY, HERE'S ANOTHER ONE OF THOSE GLASS BALLS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>116-18695 XSB</td>
<td>07 01 33 22 CDR YEAH, THAT'S A BIG ONE.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>116-18696 LOC</td>
<td>07 01 34 46 CDR THAT SON OF A GUN, MUST BE SOLID.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>116-18697 XSB</td>
<td>07 01 34 51 CDR HOUSTON, THIS GLASS BALL THAT WE'VE GOT DOESN'T HAVE ANY GIVE TO IT.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07 01 35 14 CDR IMPA'TY, WELL IT'S SMOOTH ON ONE SIDE AND HAS IMPACT PITS ON THE OTHER.</td>
<td></td>
</tr>
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**FSR 10**

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<th>Crew Comments</th>
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</thead>
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<td>FSR 10</td>
<td></td>
<td>07 01 36 25 CDR OK, HERE'S THE HAMMER. OK, I'M TAKING THESE 2 BIG ROCKS AND PUT THEM IN THE BIG ROCK BAG, CHARLIE.</td>
</tr>
<tr>
<td>FSR 97</td>
<td></td>
<td>07 01 36 29 LMP OK, HULEY'S GOT TO GO IN THERE TOO.</td>
</tr>
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<td>PSR 11</td>
<td>ROCK</td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>60019</td>
<td>1887.0</td>
<td></td>
</tr>
<tr>
<td>116-18701 XSB</td>
<td>07 01 37 13 CC</td>
<td>AND JOHN, WHILE YOU'RE LOOKING AROUND THERE, OUR NUMBER ONE PRIORITY IS A VESICULAR BASALT.</td>
</tr>
<tr>
<td>116-18702 XSB</td>
<td>07 01 39 48 CDR</td>
<td>I'M LOOKING, BUT I'M NOT SEEING ANY BASALT.</td>
</tr>
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<td>116-18703 USB</td>
<td>07 01 39 52 CC</td>
<td>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.</td>
</tr>
<tr>
<td>116-18704 XSA</td>
<td>07 01 42 20 CDR</td>
<td>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.</td>
</tr>
<tr>
<td>07 01 42 38 CDR</td>
<td>07 01 42 47 CDR</td>
<td>THE CLASTS WERE VERY DARK.</td>
</tr>
<tr>
<td>07 01 42 49 LMP</td>
<td>07 01 42 51 LMP</td>
<td>YOU WANT THIS TO GO IN YOUR BAG, CHARLIE?</td>
</tr>
<tr>
<td>07 01 42 51 LMP</td>
<td>07 01 42 51 LMP</td>
<td>YEAH, WHY DON'T YOU --</td>
</tr>
<tr>
<td>07 01 42 51 LMP</td>
<td>07 01 42 51 LMP</td>
<td>STICK IT IN MINE -- I THINK WE HAVE PLENTY OF ROOM IN MINE.</td>
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<td>60215*</td>
<td>385.8</td>
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<td>116-18705 XSB</td>
<td>07 01 45 49 CDR</td>
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and Excerpts from the Air-to-Ground Transcript

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<th>AET</th>
<th>CREW COMMENTS</th>
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<td><strong>BAG 15</strong> 60235*</td>
<td>ROCK</td>
<td>117-18828 XSB</td>
<td>07 01 47 29 LMP</td>
<td>HEY, TONY, I JUST PICKED UP ONE THAT IS IN BAG 15 THAT HAS A BLACK MATRIX. BLUSHING BLACK MATRIX WITH LIGHT-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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>117-18829 XSB</td>
<td>07 01 47 51 LMP</td>
<td>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 LED YOU ALL ASTRAY.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>07 01 48 09 LMP</td>
<td>THAT MIGHT HAVE BEEN JUST THE GLASS COATING ON THE ROCK.</td>
<td></td>
</tr>
<tr>
<td><strong>BAG 17</strong> 60255*</td>
<td>ROCK</td>
<td>117-18830 XSB</td>
<td>07 01 49 28 LMP</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>117-18831 XSB</td>
<td>07 01 49 49 LMP</td>
<td>IT'S GOOD HALF OF A GRAPEFRUIT SIZE.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>117-18832 XSB</td>
<td>07 01 50 57 LMP</td>
<td>OKAY, AND IT'S GOING IN BAG 17.</td>
<td></td>
</tr>
<tr>
<td><strong>BAG 18</strong> 60275 255.2</td>
<td>ROCK</td>
<td>117-18833 XSB</td>
<td>07 01 55 23 CC</td>
<td>AND CHARLIE, YOU CAN CONTINUE SAMPLING FOR ABOUT 5 MORE MINUTES AND THEN WE'LL HAVE TO LOAD UP.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>117-18835 XSB</td>
<td>07 01 56 01 LMP</td>
<td>OKAY. THAT'S ABOUT 3 SAMPLES. I'LL BE OUT OF BAGS THEN ANYWAY.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>07 01 56 25 LMP</td>
<td>THERES A GRAB SAMPLE IN 18.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>07 01 56 33 LMP</td>
<td>WELL, IT'S PARTIALLY DOCUMENTED I SHOULD SAY, NOT A GRAB SAMPLE.</td>
<td></td>
</tr>
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</table>
BAG 20
60315  787.7
CRISTALINE ROCK
117-18836 XSB 07 01 56 44 LMF THERE'S A NEAT ROCK.
RIGHT THERE. DOESN'T LOOK LIKE A BRECCIA.
----
117-18837 XSB
117-18838 XSB
07 01 57 31 LMP AND, TONY, THE LAST ONE I PICK UP IS AN IGNEOUS
ROCK, NO BRECCIA.
07 01 57 38 LMP AND IT'S GOT LATH CRYSTALS IN IT AND A BLACK
MATRIX BUT IT IS NOT BASALTIC.
07 01 58 01 LMP WELL, IT WAS GOING IN BAG 19, IT'S NOT ANYMORE.
07 01 58 05 LMP IN BAG NUMBER 20, TONY.

BAG 331
60335
ROCK FOR LPM
116-18712 XSB 07 02 32 03 CC OKAY, CHARLIE, WHY DON'T YOU GO 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.
----
116-18713 XSB
116-18720 LPM
116-18721 LPM
07 02 34 16 LMP OKAY, HARD BRECCIA OR IGNEOUS ROCK.
07 02 35 20 LMP DO YOU WANT THIS ROCK BROUGHT BACK, TONY - THAT
IS THAT I'M GOING TO --- FOR THE LPM.
07 02 35 25 CC ROG. WE'D LIKE YOU TO DOCUMENT IT BEFORE YOU
TOUCH IT AND WHEN YOU GET THE LPM FIRST MEASURE-
MENT, 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.

FEB 127
(PSR 47)
60016  4307.0
ROCK
110-17866 XSB 07 02 16 50 CDR I GOT ONE MORE ROCK HERE THAT I WAS LOOKING AT OUT
OF THE WINDOW OF THE LA, I GOT PLENTY OF PICTURES
OF IT FOR YOU.
----
110-17867 XSB
110-17868 DSA
07 02 16 50 LMP PUT IT IN THE BIG ROCK BAG -- IT'LL GO IN THAT ETC --
07 02 17 04 CDR IT'S NOT ALL THAT BIG.
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TABL/; 9. - - SAHPLE

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FSR INDICATES LOOSE (UNBAGGED) SAMPLE.
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• INDICATES PROVISIONAL
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D.T. INDICATES DRIVE TUBE.

ONE, TWO, AND THREE DIGIT NUMBERS INDICATE DOCUMENTED BAGS.

PER INDICATES LOOSE (UNBAGGED) SAMPLE.

7 INDICATES TENTATIVE IDENTIFICATION.

1) IN OUR JUDGMENT, SAMPLE 60017 WAS COLLECTED AT STATION 13. IF CORRECTLY LOCATED, THE SAMPLE MAY BE RENUMERATED.

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.
Left LM window pan

Planimetric sketch map of LM/ALSEP

Station 10' pan
Right LM window pan

of LM/ALSEP - Station 10 - Station 10' area
Station 1 northeast pan

Station 1 southwest pan
Planimetric sketch map of station 1
Planimetric sketch map of station 2
Animetric sketch map of station 2
Station 4 north pan

Station 4 south pan
Planimetric sketch map of station 4
Station 5 plan

Planimetric sketch map of station 5

Station 6 plan
Planimetric sketch map of station 6
Station 8 pan

Planimetric sketch map of station 8

Station 9 pan
Planimetric sketch map of s
Planimetric sketch map of station 9
Station 11 pan

FOLDOUT FRAME

Planimetric sketch map of station 11

Station 13 pan
Planimetric sketch map of station 13