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INTERAGENCY REPORT: ASTROGEOLOGY 49

Progress report:
Apollo 16 sample documentation

by

Apollo Lunar Geology Investigation Team
U.S. Geological Survey

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*National Aeronautics and Space Administration.

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1. Documentation of Apollo 15 samples, by R. L. Sutton, M. H. Huit, K. B. Larson, G. A. Swann, V. S. Reed, and G. G. Schaber. 257 p., 8 pl., 176 figs., 3 tables.

2. Progress report: Apollo 16 sample documentation, by the Apollo Lunar Geology Investigation Team, U.S. Geological Survey. 93 p., 78 figs., 9 tables.

* * * * *



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PROGRESS REPORT: APOLLO 16 SAMPLE DOCUMENTATION

by

Apollo Lunar Geology Investigation Team

INTRODUCTION

This report is intended as a working document for use during the opening of the Apollo 16 sample containers and during the early phases of examination of the samples in the Lunar Receiving Laboratory (LRL). The information in this report was drawn from voice transcripts of the astronaut crew while on the lunar surface, from video tapes of lunar surface television, and from a "quick-look" at the returned 60 mm Hasselblad photographs. The planimetric station maps were compiled almost entirely from the television tapes. A thorough review of all data, plus a comparison of the rocks shown in the photographs with those in the LRL, should eliminate any errors or discrepancies. A major purpose of this document is, in fact, to point up gaps in our present knowledge of sample location, orientation, and documentation. This report will be superseded by a more accurate and complete report about two weeks hence.

All sample numbers in the illustrations refer to container numbers. Those that have LRL numbers assigned as of this date are cross-referenced in table 1. The illustrations are grouped in order of ascending station numbers (fig. 1), and where possible are shown in order of ascending container numbers for each station. Table 1 also refers container numbers to page numbers of this report.

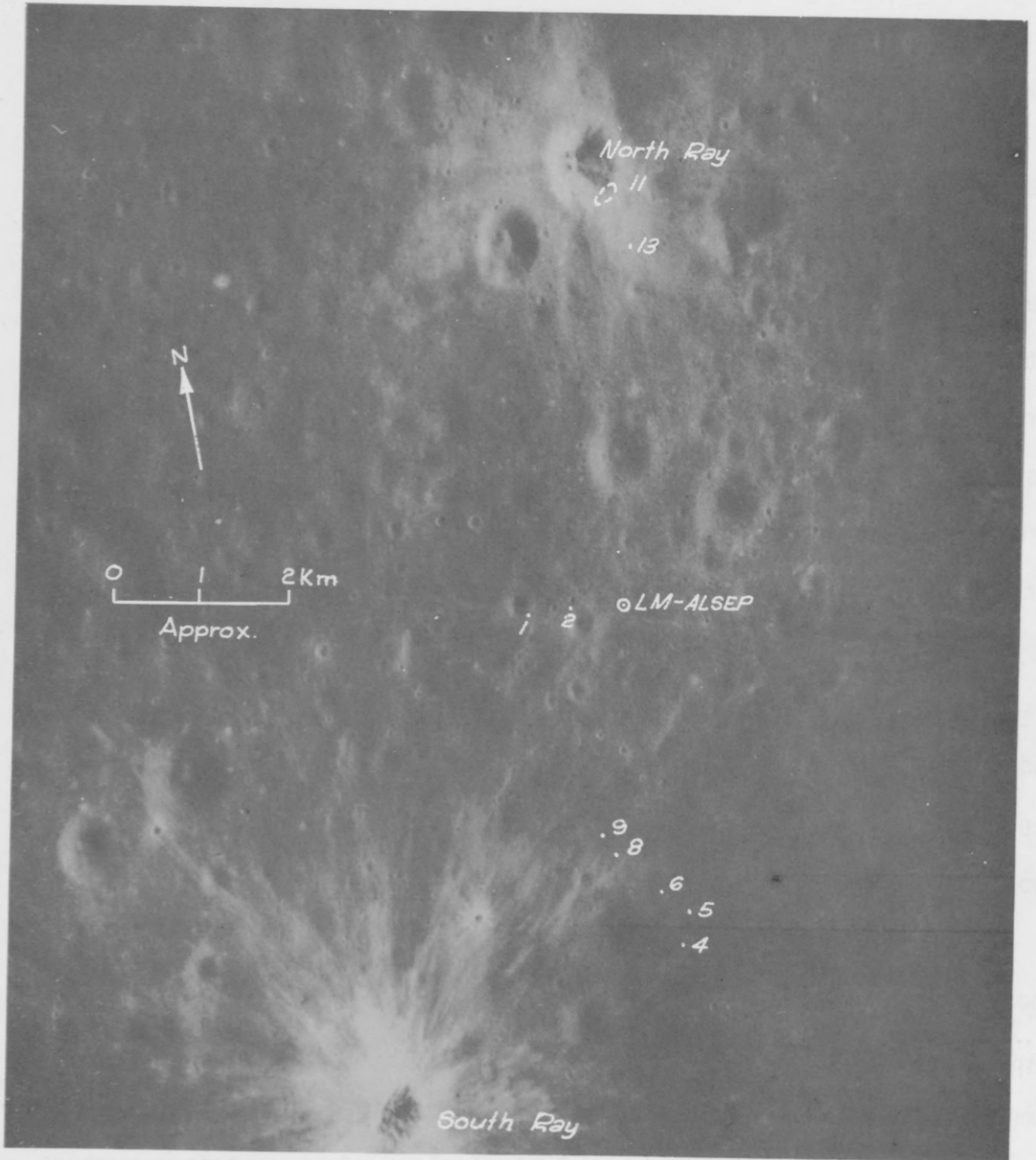


Figure 1. Preliminary map of station locations.

Table 1.--Index of samples*

<u>Container</u>	<u>LRL No.</u>	<u>Page</u>	<u>Container</u>	<u>LRL No.</u>	<u>Page</u>
Deep core		LA-3	355		LA-11
U43/L38	<u>64001</u>	4-2	356		1-6
U29/L36	<u>68002</u>	8-2	357		1-3
U45/L54		LA-7	362		1-2
U27/L32	<u>60014</u>	LA-6	363		1-7
L34	<u>60013</u>		364		1-6
2		9-2	368		1-4
5		1-2	369		1-2
6		1-2	371		1-7
7		2-2	372		1-5
9		2-2	373		LA-11
10		2-3	374	68120	8-3
11		2-2, 2-3	375		8-5
13		2-2, 2-4	376		9-3
15		2-4	377		9-3
17		LA-4	378		9-3
18	60275	LA-4	379		9-4
20	60315	LA-5	380		9-4
331		LA-5	381		LA-13
332	65510	LA-6	383	67055	11-2
333	65500	LA-8	384	67075	11-2
334		5-2	385	67095	11-3
335		5-2	386	67115	11-3
336		5-2	387		11-4
337		5-3	388	67700	11-5
338	65040	5-3	389	67935	11-6
339	66080	5-4	390	67940	11-6
340	68115	6-2	391	67960	11-6
341	68415, 1, 2	6-3	392	67975	11-6
342	68415, 3	8-3	393		11-6
343	68835	8-4	380 (second call)		LA-12
344		8-4	394		4-3
345	63510	8-5	395		4-4
346	63500	8-6	396		4-4
347	60610	13-2	397		4-5
348	60600	13-2	398		4-6
349	60510	LA-9	399		4-7
350	60500	LA-9	400		4-8
351		LA-10	401		4-8
352		LA-10	402		5-2
353		LA-11	403		5-4
354		1-3	404		5-5
		1-4	405		5-5
		1-5	406		5-3

Table 1.--Con't

<u>Container</u>	<u>LRL No.</u>	<u>Page</u>	<u>Container</u>	<u>LRL No.</u>	<u>Page</u>
407		6-2	426		13-3
408		6-2	427		13-3
409	66075	6-4	428		13-3
410		6-5	429		13-3
411		8-7	FSR-1		1-8
412		8-7	FSR-2		1-3, 1-9
413		8-7	FSR-4 or 12	60016	LA-14
415		11-4, 11-8	FSR-6	68815	8-5
416		11-4, 11-9	FSR-7	67015	11-13
417		11-4, 11-10	FSR-8	67915	11-6, 11-7
418		11-4, 11-11	FSR-8a? or 12	60019	11-14
419		11-4, 11-12	FSR-8b		11-15
420		11-4, 11-12	FSR-10	60018	LA-15
421		11-4, 11-13	FSR-11		LA-16
422		11-4, 11-13	Padded bag 1		11-16
423	67710	11-5	Padded bag 2		11-17
425	67955	11-6	Surface samples		9-3

*Samples that are not illustrated are those for which there appear to be no photographic documentation.

Table 2.--Contents of SCB-7
(opened in NNPL, 1 May)

Container number	LRL number	Station	GET ¹	Type ²
382	67035	11	167:05	breccia
383	67055	11	167:15	breccia
FSR-7	67015	11	167:21	breccia
384	67075	11	167:24	white rock
385	67095	11	167:26	glassy rock
386	67115	11	167:28	rock
FSR-10	60018	10	169:51	breccia
FSR-4? ³	60016	LM	143:27	breccia
or 12?			or 170:28	breccia
18	60275	LM	170:08	glassy rock
20	60315	LM	170:10	"igneous" rock
FSR?	60017			vesicular rock
D. T. 27/	60014	10'	169:50	drive tube
32	60013	10'		drive tube
Residue	67010			

¹Times are GET in Mission Control Center. True GET times are 12 minutes earlier. The latter times are keyed to the Apollo LGI Team Geologic Transcript, distributed April 29, 1972.

²As reported by the Apollo 16 crew and, for the most part, confirmed by very preliminary examinations in the Lunar Receiving Laboratory.

³? indicates as yet unidentified loose sample.

Table 3.--Contents of SRC-2
(opened in SNAP, 2 May)

Container number	LRL number	Station	GET ¹	Type ²
332	65510	5	145:31	rake fragments
333	65500	5	145:32	rake soil
338	66040	6	146:28	soil
339	66080	6	146:30	soil
409	66075	6	146:32	white rocks
340	68115	8	147:20	breccia
374	68120	8	147:24	soil
341	68415, 1, 2	8	147:28	crystalline rocks
342	68415, 3	8	147:32	crystalline rock
343	68835	8	147:40	breccia
FSR-6	68815	8	147:38	breccia
D. T. 45/ 54		LM	149:22	drive tube
D. T. 43	64001	4	144:59	drive tube
D. T. 29	68002	8	147:11	drive tube
D. T. 34		9	148:26	drive tube (CSVC)

¹Times are GET in Mission Control Center. True GET times are 12 minutes earlier. The latter times are keyed to the Apollo LGI Team Geologic Transcript, distributed April 29, 1972.

²As 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-4
(opened in NNPL, 5 May)

Container number	LRL no.	Station	GET ¹	Type ²
423	67710	11	167:51	rake fragments
388	67700	11	167:53	rake soil
389	67935	11	167:58	house rock
FSR-8	67915	11	168:00	house rock
425	67955	11	168:01	house rock
390	67940	11	168:03	soil
391	67960	11	168:04	soil
392	67975	11	168:05	rock
FSR-8A? ³ or 12?	60019	11? Li?		glassy rock
345	63510	13	168:37	rake fragments
346	63500	13	168:39	rake soil
347	60610	10'	169:35	rake fragments
348	60600	10'	169:37	rake soil
349	60510	10	169:41	rake fragments
350	60500	10	169:42	rake soil

¹Times are GET in Mission Control Center. True GET times are 12 minutes earlier. The latter times are keyed to the Apollo LGI Geologic Transcript, distributed April 29, 1972.

²As reported by the Apollo 16 crew and, for the most part, confirmed by very preliminary examinations in the Lunar Receiving Laboratory.

³? indicates as yet unidentified loose sample.

Table 5.--Probable contents of SCB-6
(not opened as of this date)

Container number	Collected by	Station	GET ¹	Type ²
415	LMP	11	167:30	glassy rock
416	LMP	11	167:35	breccia
417	LMP	11	167:36	soil
418	LMP	11	167:38	breccia
387	CDR	11	167:40	crystalline rocks
419	LMP	11	167:42	soil
420	LMP	11	167:43	rake fragments
421	LMP	11	167:46	rake fragments
422	LMP	11	167:47	rake soil
393	LMP	11	168:06	breccia
padded bag	CDR	11	168:10	rock
padded bag	LMP	11	168:14	rock
426	LMP	13	168:44	shadowed soil
427	LMP	13	168:47	soil
428	LMP	13	168:50	shadow rock
429	LMP	13	168:52	shadow rock
FSR-9	LMP	13	168:52	shadow rock
380 (430)	CDR	10 ¹	169:46	glass ball
(?) ³	CDR	LM	169:51	crumbly rock
13	CDR	LM	169:58	white rock
15	LMP	LM	170:00	bluish rock
17	LMP	LM	170:02	breccia
331	LMP	LRV	170:50	LPM rock

¹Times are GET in Mission Control Center. True GET times are 12 minutes earlier. The latter times are keyed to the Apollo LGI Team Geologic Transcript, distributed April 29, 1972.

²As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972.

³(?) indicates questionable sample; ? indicates questionable location of sample in this container.

Table 6.--Probable contents of SRC-1
(not opened as of this date)

Container number	Collected by	Station	GET ¹	Type ²
4	LMP	ALSEP	122:37	broken glass sphere
351	LMP	ALSEP	122:52	white rocks
355	LMP	ALSEP	122:56	"caliche"
373	LMP	ALSEP	122:58	breccias
370(?) ³	LMP	ALSEP	123:00	breccia
372	LMP	1	123:45	rake fragments
354	CDR	1	123:47	rake soil
371	CDR	1	123:51	white rocks
363	CDR	1	123:52	soil
364	LMP	1	123:53	breccia
356	CDR	1	123:56	soil
362	CDR	1	124:00	breccia
2	LMP	1	124:00	breccia
369	CDR	1	124:02	soil
352	CDR	1	124:06	soil
357	CDR	1	124:07	soil
353	CDR	1	124:12	breccia
368	CDR	1	124:13	soil
FSR-1	LMP	1	124:17	breccia
5	LMP	2	124:46	white rocks
6	LMP	2	124:48	soil
7	LMP	2	124:50	large rock
9	LMP	2	124:53	white rocks
10	LMP	2	124:56	angular rock
11	LMP	2	124:57	soil

¹Times are GET in Mission Control Center. True GET times are 12 minutes earlier. The latter times are keyed to the Apollo LGI Team Geologic Transcript, distributed April 29, 1972.

²As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972.

³(?) indicates questionable sample; ? indicates questionable location of sample in this container.

Table 7.--Probable contents of SCB-1
(not opened as of this date)

Container number	Collected by	Station	GET ¹	Type ²
394	CDR	4	144:29	glassy rock
395	CDR	4	144:34	rake fragments
396	CDR	4	144:36	rake soil
(?) ³	CDR	4	144:38	breccia
397?	CDR	4	144:42	glass spatter
398?	CDR	4	144:44	dusty rocks
399?	CDR	4	144:50	soil
400?	CDR	4	144:59	soil
401	LMP	4	145:06	rake fragments
(?)?	CDR	5	145:30	glass beads
(?)		5	145:34	glass-covered rock
334?	{ CDR LMP }	5	145:36	rake fragments
402	CDR	5	145:39	rake soil
403	LMP	5	145:42	crystalline rock
404?	LMP	5	145:44	glassy rock
405	CDR	5	145:45	rake fragments
335	LMP	5	145:50	rake clods
406	CDR	5	145:52	soil with rock
335?	LMP	5	145:58	round rock
337?	LMP	5	146:03	2 documented rocks
(?)	-	6	146:22	rock
407	CDR	6	146:26	soil and rock
408	CDR	6	146:28	angular rock
410	LMP	6	146:35	two crystalline rocks

¹Times are GET in Mission Control Center. True GET times are 12 minutes earlier. The latter times are keyed to the Apollo LGI Team Geologic Transcript, distributed April 29, 1972.

²As reported by the Apollo 16 crew. For fuller descriptions see Inter-agency Report: Astrogeology 48, April 27, 1972.

³(?) indicates questionable sample; ? indicates questionable location of sample in this container.

Table 8.--Probable contents of SCB-3
(not opened as of this date)

Container number	Collected by	Station	GET ¹	Type ²
FSR-5	CDR	5	146:01	white rock
411	CDR	8	147:05	rake fragments
412	CDR	8	147:08	rake soil
413	CDR	8	147:10	black glass
L36	LMP	8	147:11	drive tube
375	CDR	8	147:36	soil
344	LMP	8	147:42	soil
Surface sampler	CDR	9	148:14	soil
Surface sampler	CDR	9	148:15	soil
376	CDR	9	148:13	soil
377	LMP	9	148:20	soil
378? ³	CDR	9	148:24	breccia
379	LMP	9	148:28	soil
380	CDR	9	148:29	chip
381	CDR	10	149:31	breccia
(?)		10	149:47	glass ball
L38	LMP	4	144:59	drive tube

¹Times are GET in Mission Control Center. True GET times are 12 minutes earlier. The latter times are keyed to the Apollo LGI Team Geologic Transcript, distributed April 29, 1972.

²As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972.

³(?) indicates questionable sample; ? indicates questionable location of sample in this container.

Table 9.--Probable contents of SCB-5
(not opened as of this date)

Container number	Collected by	Station	GET ¹	Type ²
FSR-3	LMP	LM	125:21	bluish "genesis"

Probable Contents of BSLSS

FSR-2	LMP	1	124:20	"Muley"
FSR-8B	LMP	13	168:50	rock
FSR-11	CDR	10'	169:55	breccia

¹Times are GET in Mission Control Center. True GET times are 12 minutes earlier. The latter times are keyed to the Apollo LGI Team Geologic Transcript, distributed April 29, 1972.

²As reported by the Apollo 16 crew. For fuller descriptions see Interagency Report: Astrogeology 48, April 27, 1972.

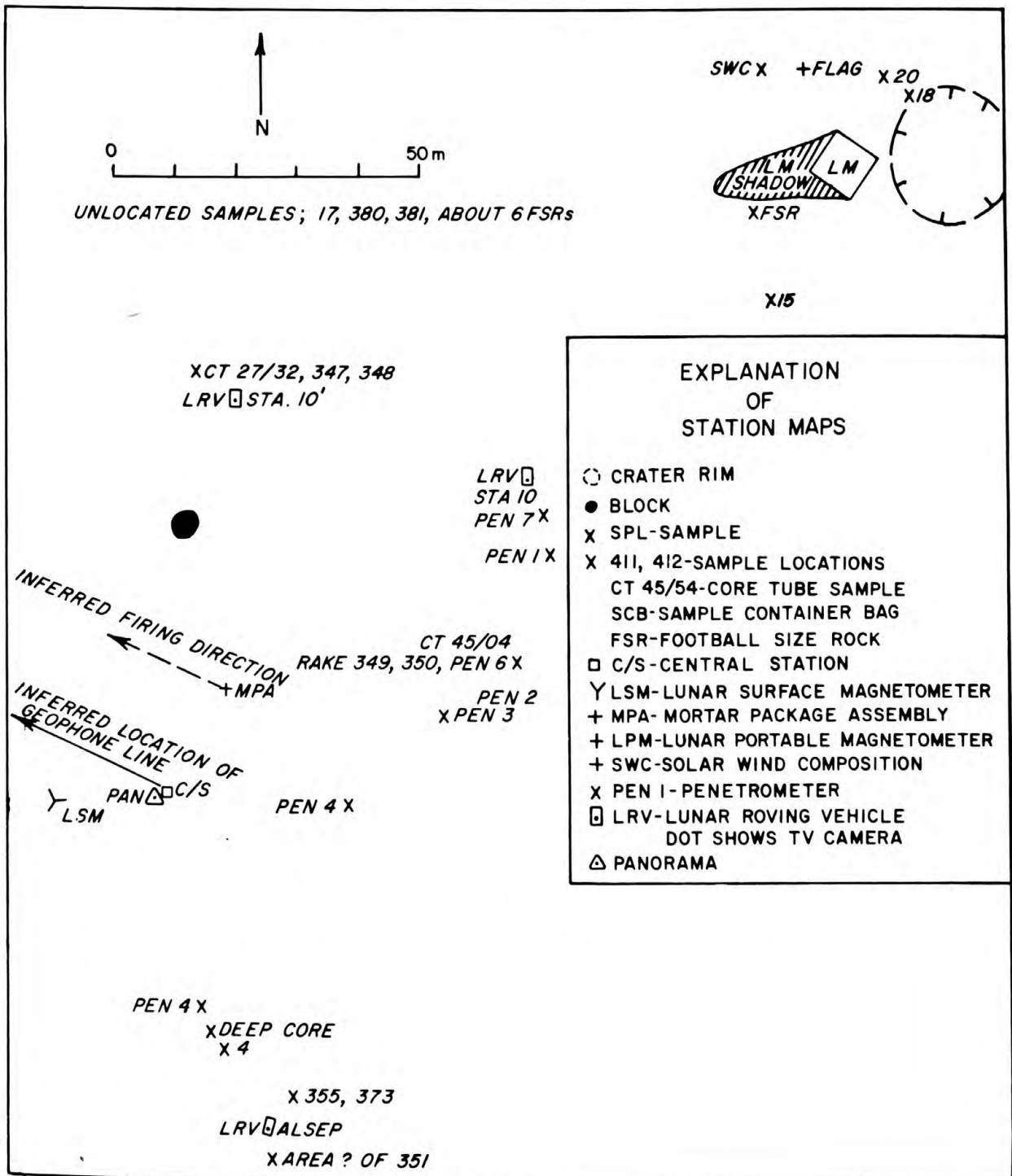


Figure LA-1a. Planimetric sketch map of LM-ALSEP area.

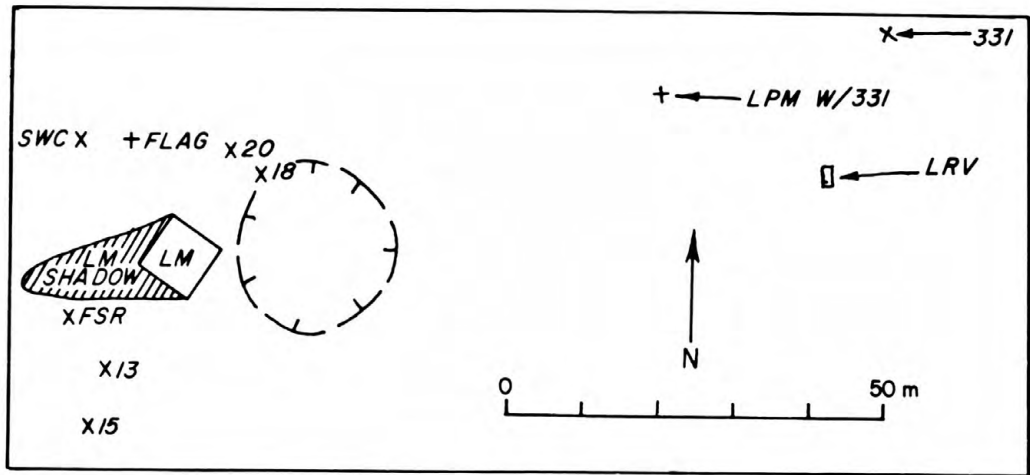


Figure LA-1b. Planimetric sketch map of LM-LRV park area.



Figure LA-2
Deep drill at the ALSEP site during EVA 1. Photograph of television image.

Figure LA-3

Bag 13 (tentative) collected at station 10'. Pre-sampling, cross-sun photo AS16-116-18705.



Figure LA-4

Bag 15 (tentative) collected from about 10 m southeast of LM. Pre-sampling, cross-sun photo AS16-117-18829.

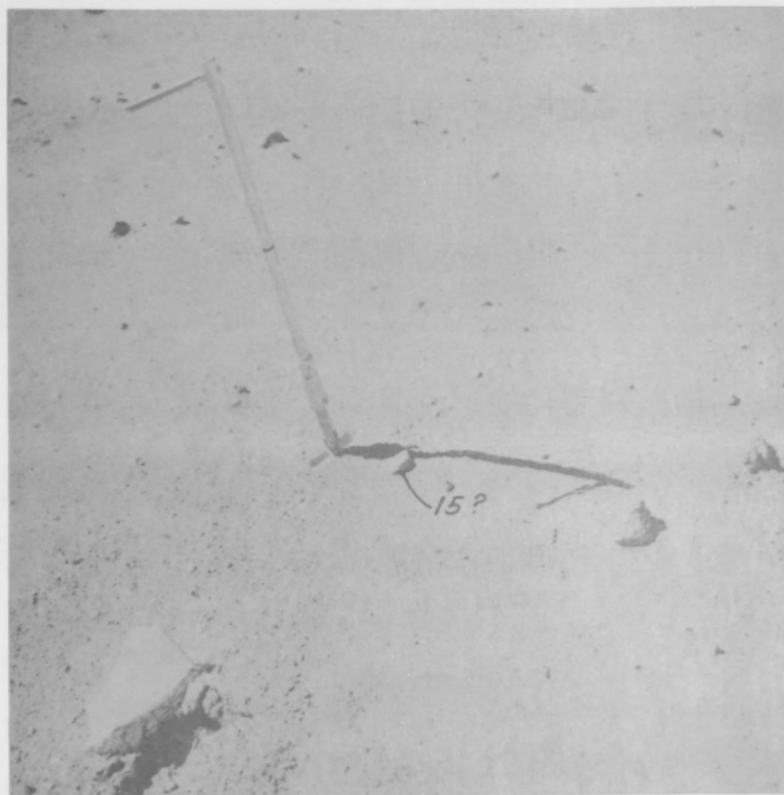


Figure LA-5
Bag 17 (tentative) collected at
LM. Pre-sampling, cross-sun
photo AS16-117-18831.

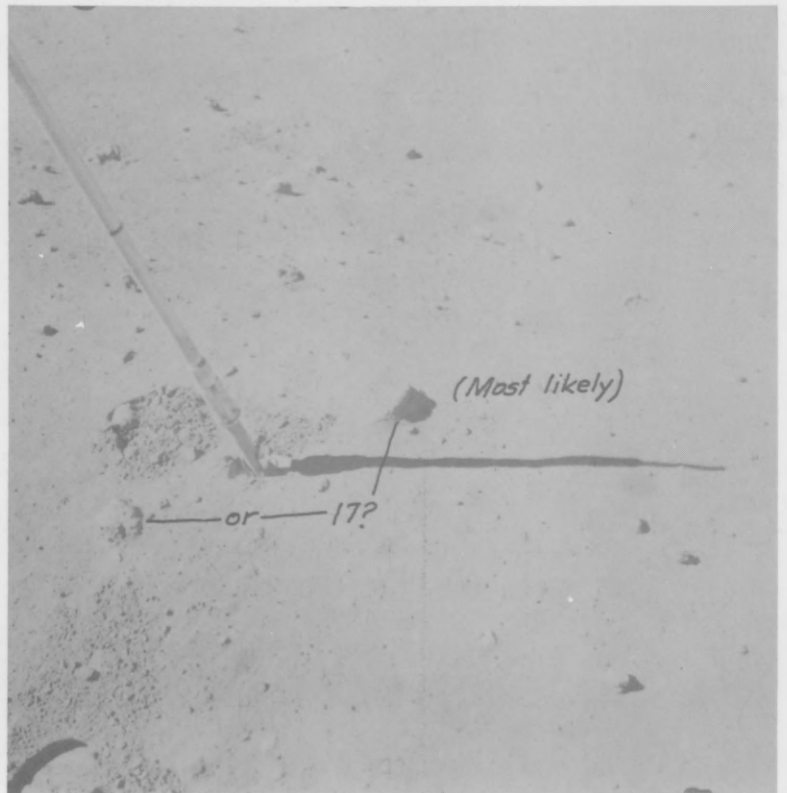


Figure LA-6
Bag 18, collected near the LM.
Pre-sampling, cross-sun photo
AS16-117-18834.

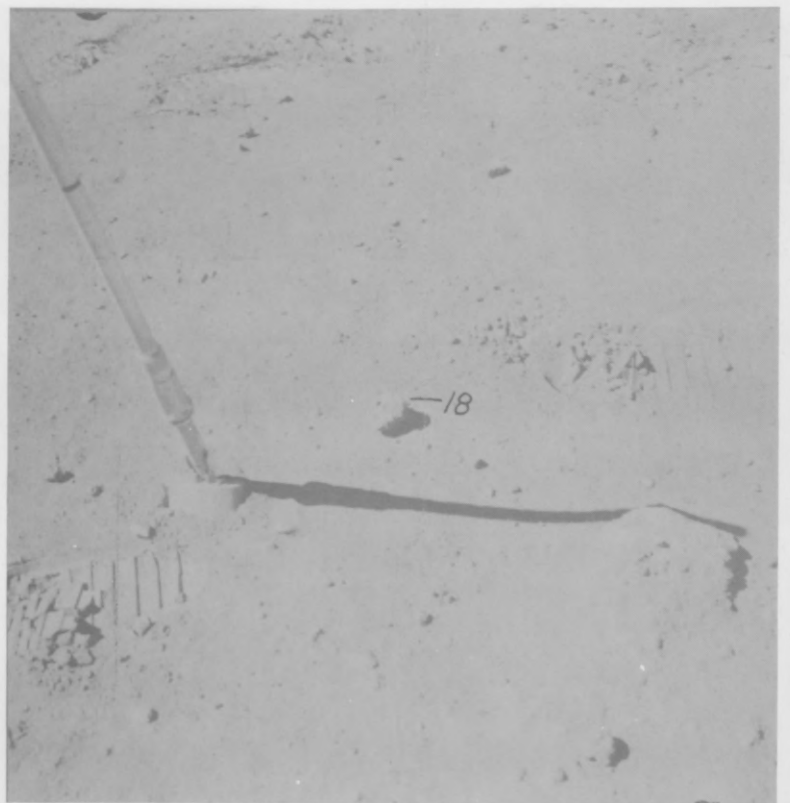


Figure LA-7
Bag 20 collected at LM.
Pre-sampling, cross-sun photo
AS16-117-18836.

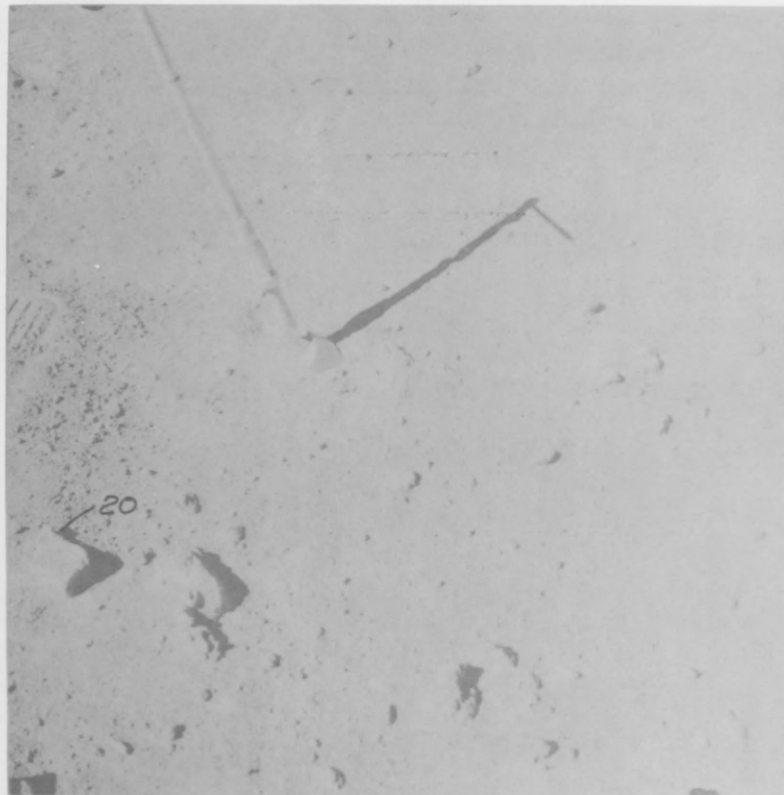
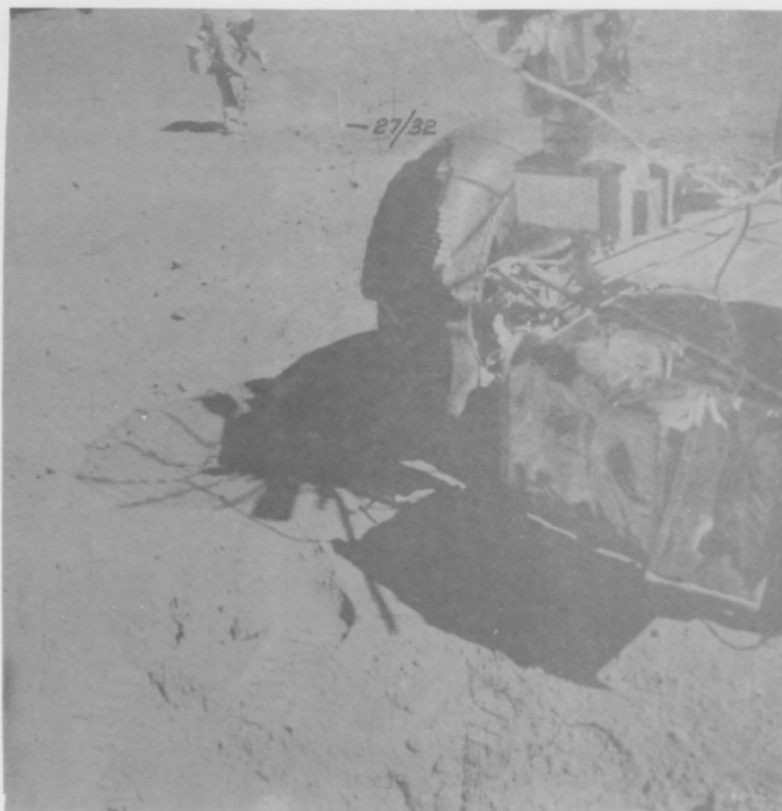


Figure LA-8
Double drive tube 27/32 col-
lected at station 10'. During-
sampling, cross-sun photo
AS16-116-18697.



LA-6

Figure LA-9
Area of double drive tubes 45/54
collected at station 10. Pre-
sampling oblique-to-sun photo
AS16-115-18556.



Figure LA-10
Double drive tube 45/54 col-
lected at station 10. During-
sampling, oblique-to-sun photo
AS16-115-18557.



Figure LA-11
Bag 331 collected at LM. Pre-
sampling, cross-sun photo
AS16-116-18712.

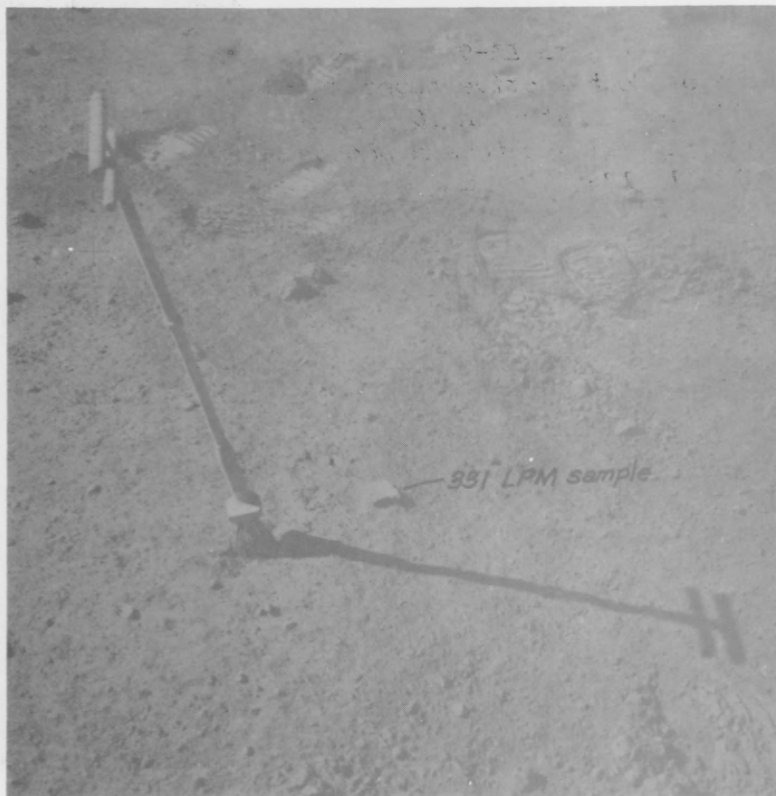


Figure LA-12
Bag 331 collected at LM. Rock
emplaced on Lunar Portable
Magnetometer. Post-sampling,
cross-sun photo AS16-116-18721.

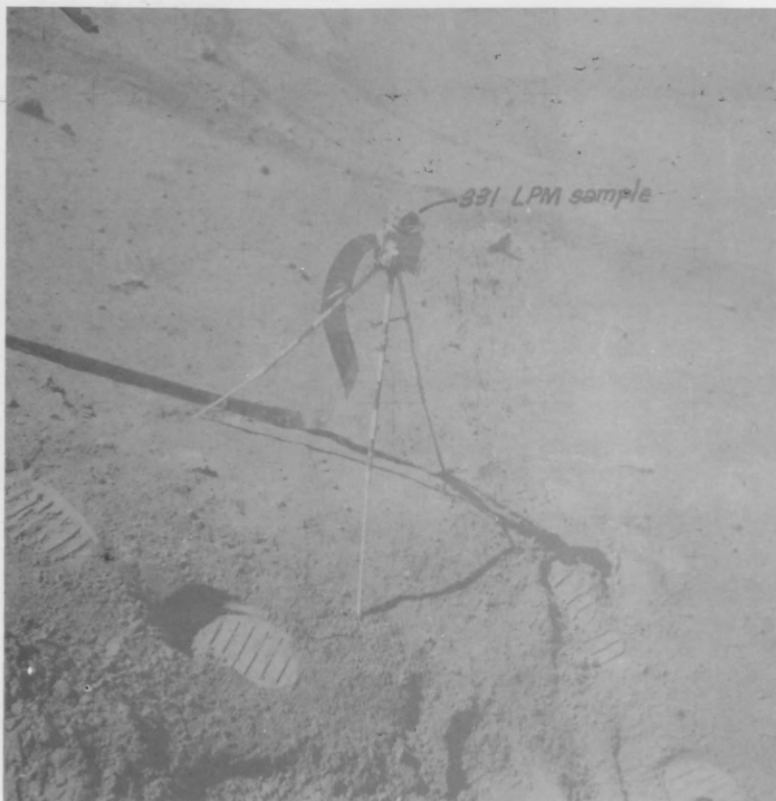


Figure LA-13

Bag 347 (rake) and bag 348 (soil)
collected at station 10'. Pre-
sampling, cross-sun photo
AS16-116-18681.



Figure LA-14

Bag 347 (rake) and bag 348
(soil) collected at station 10'.
Pre-sampling, cross-sun photo
AS16-117-18825.

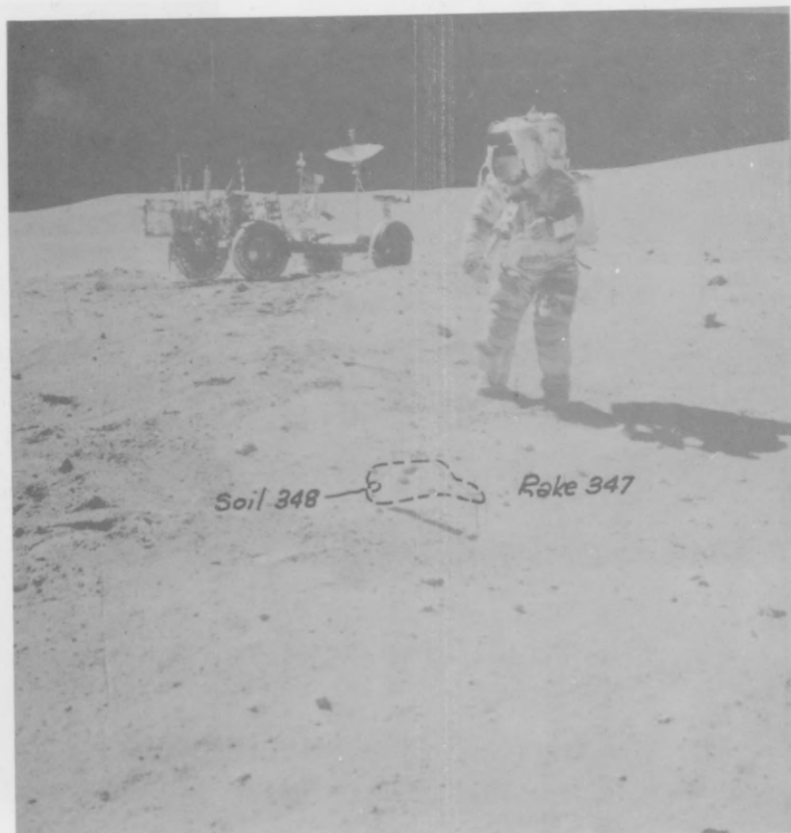


Figure LA-15

Bag 349 (rake) and bag 350 (soil)
collected at station 10. Pre-
sampling, cross-sun photo
AS16-116-18686.



Figure LA-16

Bag 349 (rake) and bag 350 (soil)
collected at station 10. Pre-
sampling, down-sun photo AS16-
117-18826.

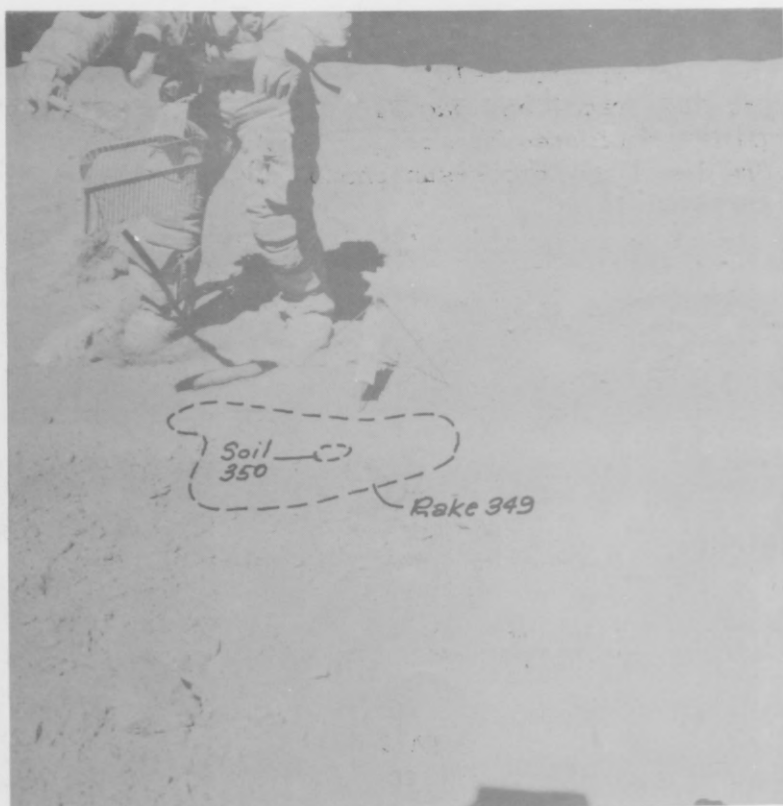


Figure LA-17
Bag 351, collected at the
ALSEP site. Pre-sampling,
cross-sun photo AS16-114-18384.



Figure LA-18
Bags 355 (scooped soil or
small fragments) and 373
(friable breccia), collected
at the ALSEP site. Post-
sampling (?), cross-sun
photo AS16-114-18386.

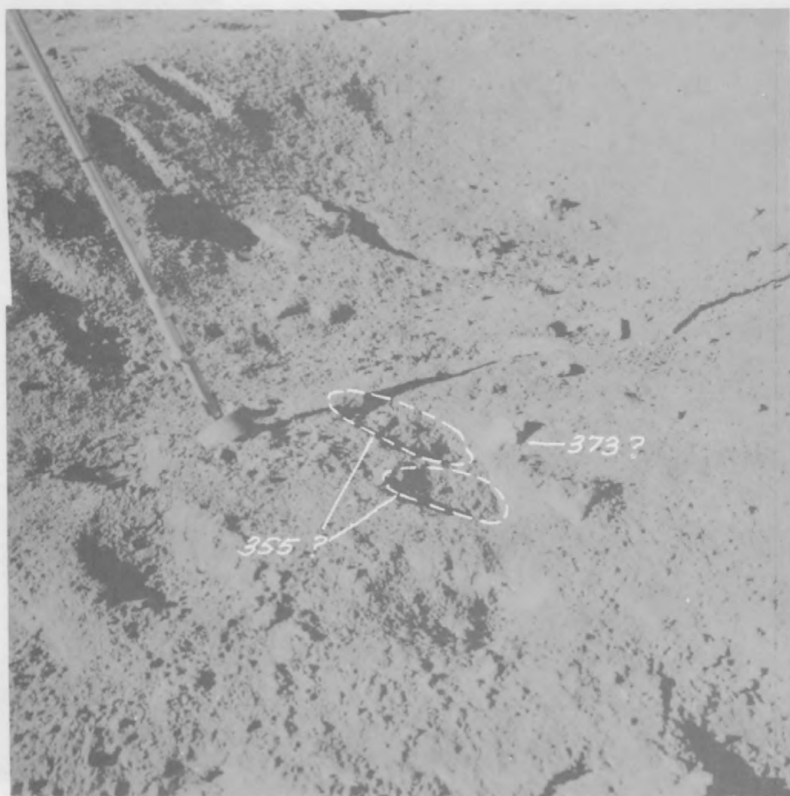


Figure LA-19

Bag 380 (second call), a glass
ball collected at station 10'.
Pre-sampling, cross-sun photo
AS16-116-18695.



Figure LA-20

Bag 380 collected at station 10'.
Pre-sampling, cross-sun photo
AS16-116-18696.

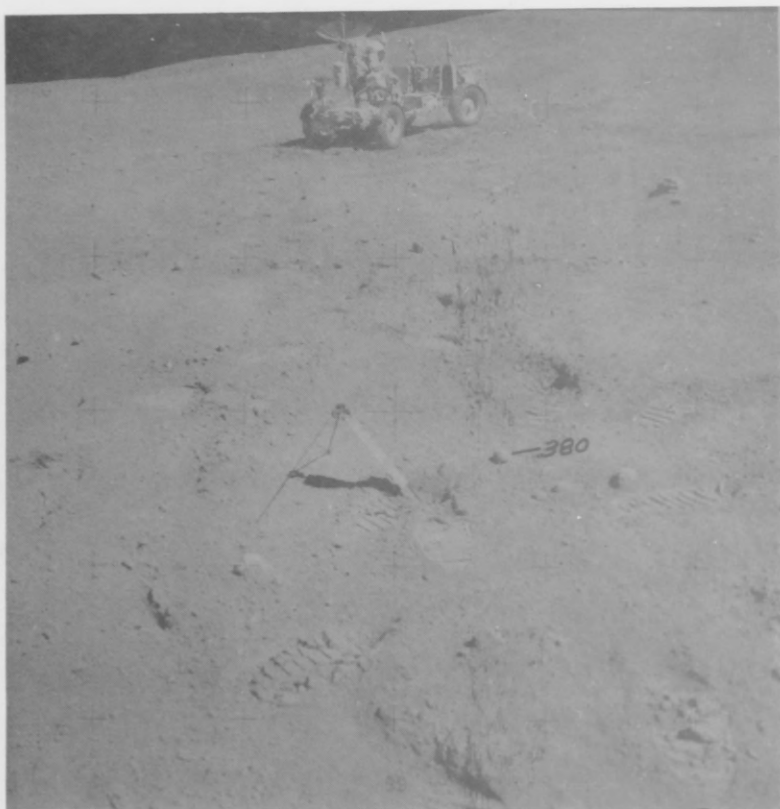


Figure LA-21

Bag 381, collected at station 10.
Pre-sampling, cross-sun photo
AS16-114-18446.

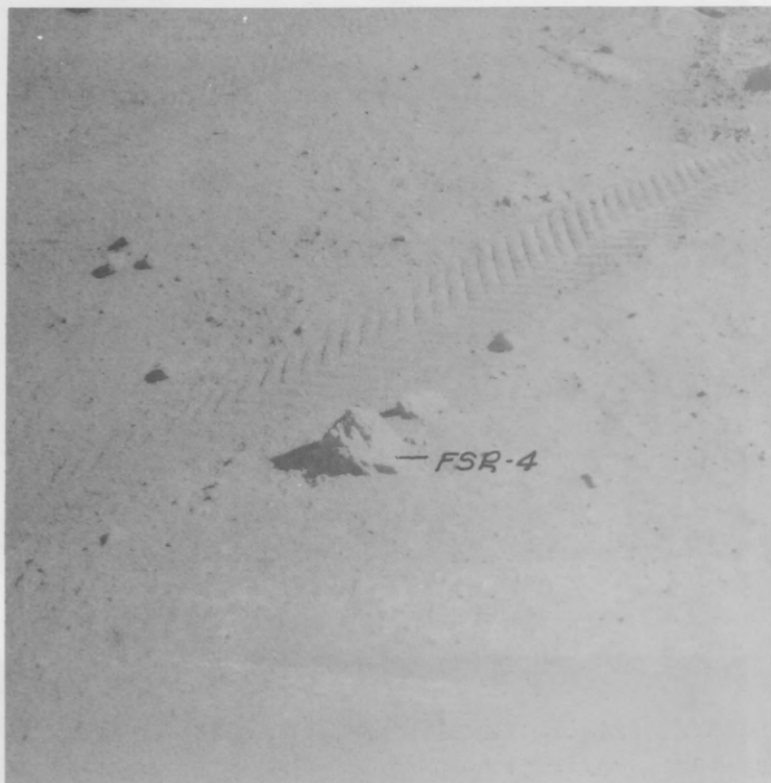


Figure LA-22

Bag 381, collected at station 10.
Post-sampling, down-sun photo
AS16-114-18448.



Figure LA-23
FSR-4 collected near LM (precise
location not known). Pre-sampling,
cross-sun photo AS16-110-17866.



LA-14

Figure LA-24

FSR-10 collected at station 10 on EVA III, from north side of boulder. Pre-sampling, cross-sun photo AS16-116-18689.



Figure LA-25

FSR-10 collected at station 10. Post-sampling, cross-sun photo AS16-116-18691.



Figure LA-26
FSR-11 collected at station 10'.
Pre-sampling, up-sun photo
AS16-116-18703.



Figure LA-27
FSR-11 collected at station 10'.
Pre-sampling, cross-sun photo
AS16-116-18702.



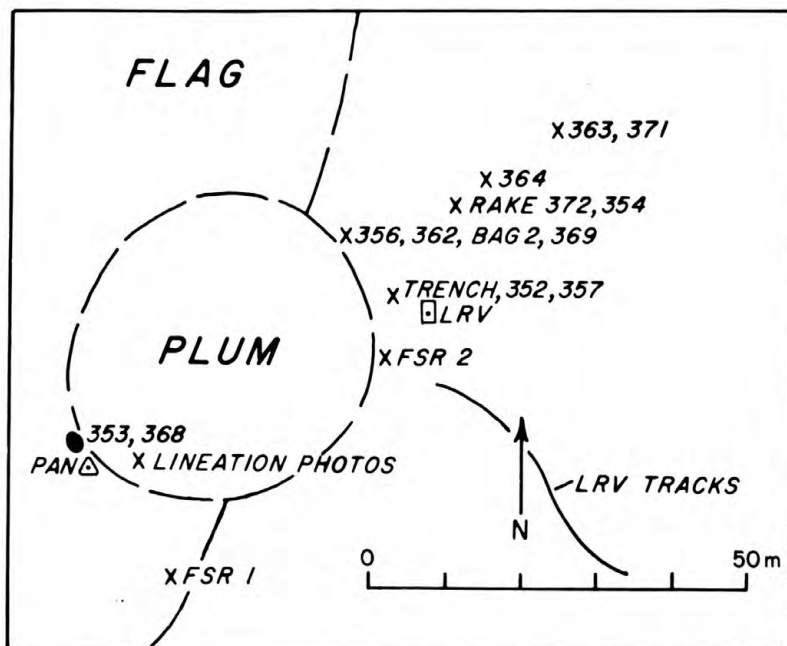


Figure 1-1. Planimetric sketch map of station 1.

Figure 1-2
Bags 2, 362, and 369 collected
at station 1. Pre-sampling,
cross-sun photo AS16-109-17800.

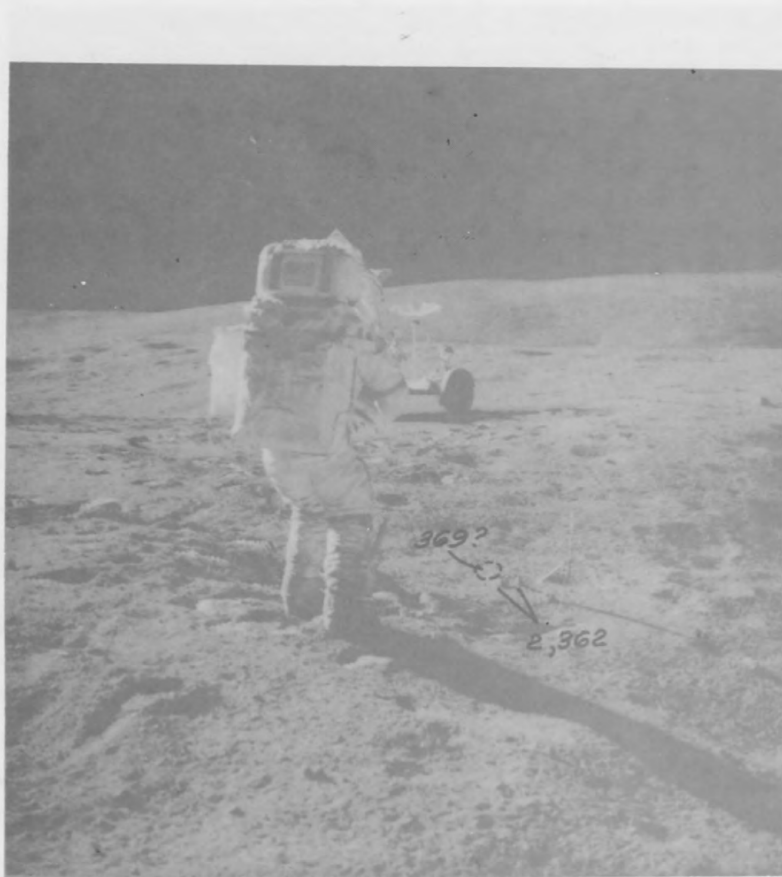


Figure 1-3
Bags 2, 362, and 369 collected
at station 1. Pre-sampling,
cross-sun photo AS16-114-18405.

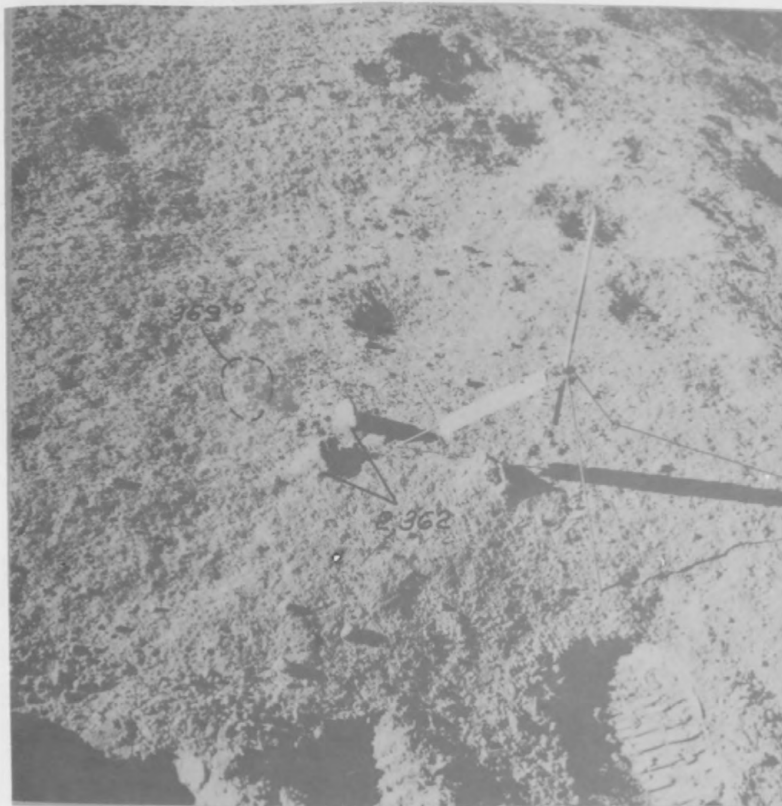


Figure 1-4a
Bags 352 and 357, and FSR-2
collected at station 1. Pre-
sampling, cross-sun photo
AS16-109-17789.



Figure 1-4b
Bags 352 and 357 collected
at station 1. Post-sampling,
down-sun photo AS16-109-17801.



Figure 1-5

Bags 353 (chip) and 368 (soil)
collected at station 1. Pre-
sampling, cross-sun photo
AS16-114-18413.

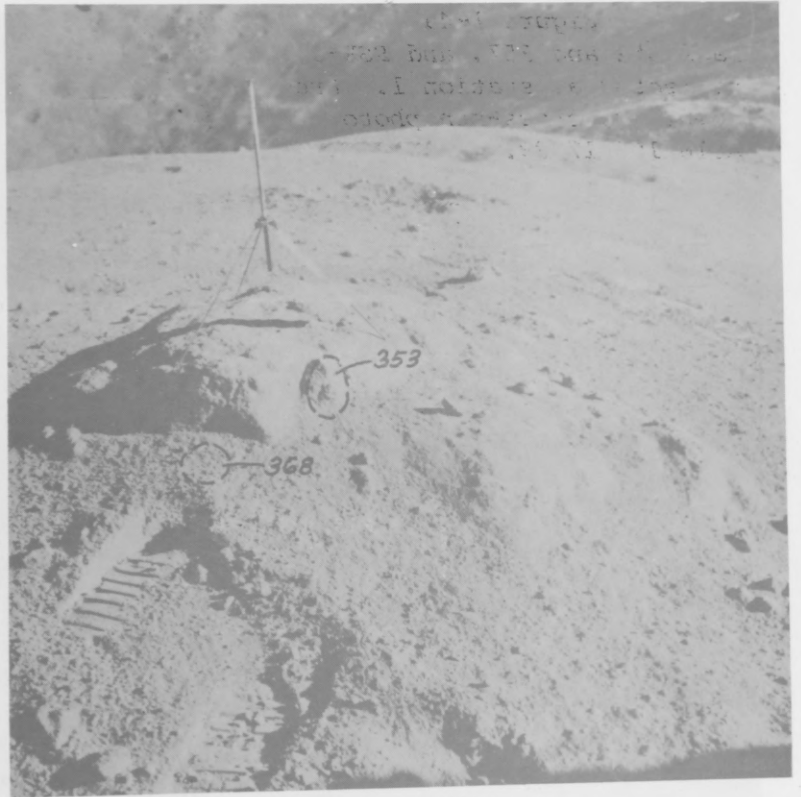


Figure 1-6

Bags 353 and 368 collected
at station 1. Post sampling
of 353, pre-sampling of 368,
cross-sun photo AS16-114-18414.



Figure 1-7
Bags 354 (soil) and 372 (rake)
collected at station 1. Pre-
sampling, cross-sun photo
AS16-109-17795.

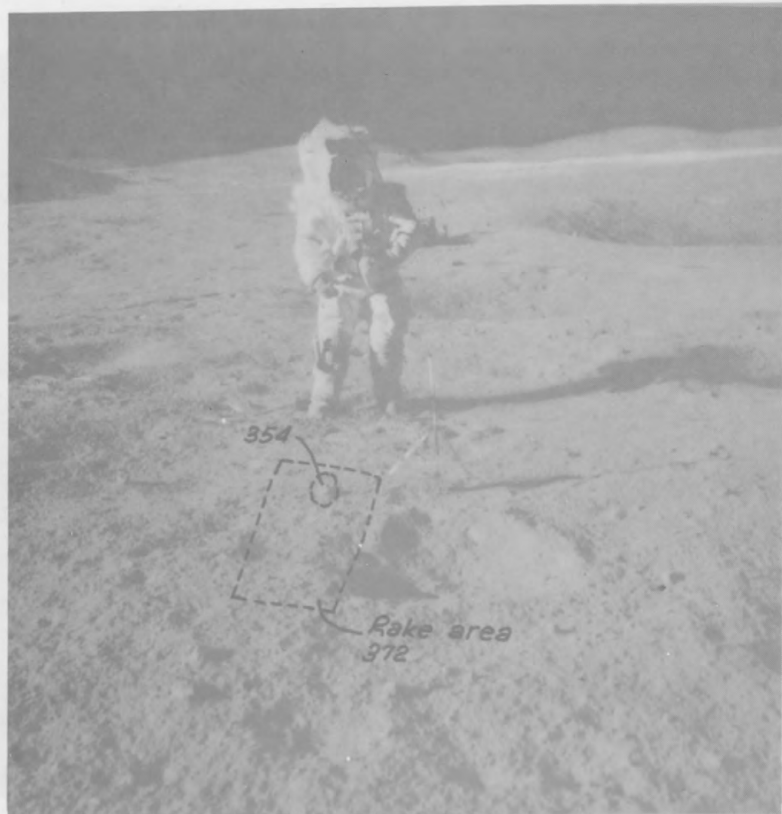


Figure 1-8
Bags 354 and 372 collected
at station 1. Pre-sampling,
cross-sun photo AS16-114-18390.

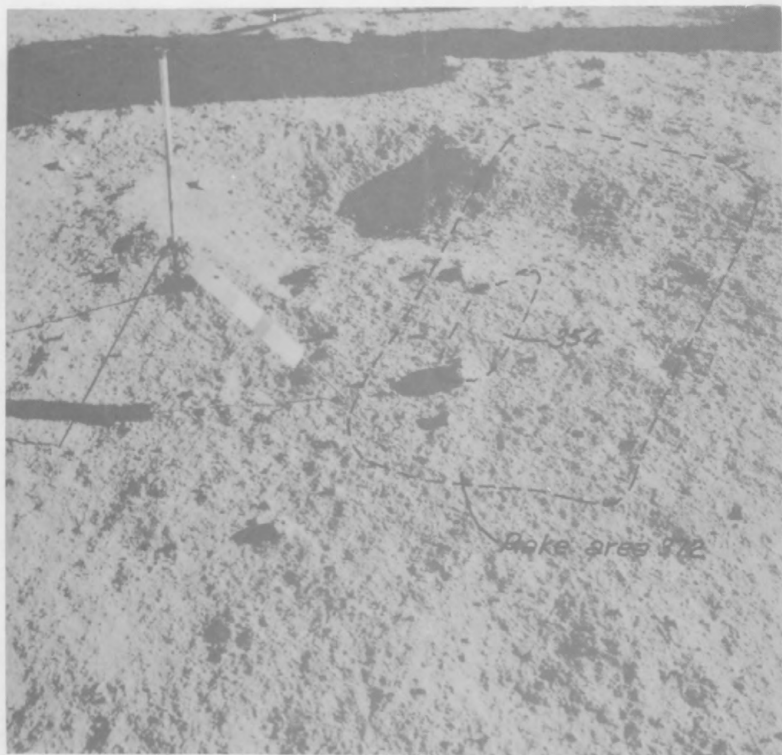


Figure 1-9
Bags 356 (soil) and 364 (frag-
ment) collected at station 1.
Pre-sampling, down-sun photo
AS16-109-17798.



Figure 1-10
Bags 356 and 364 collected
at station 1. Pre-sampling,
down-sun photo AS16-114-18403.

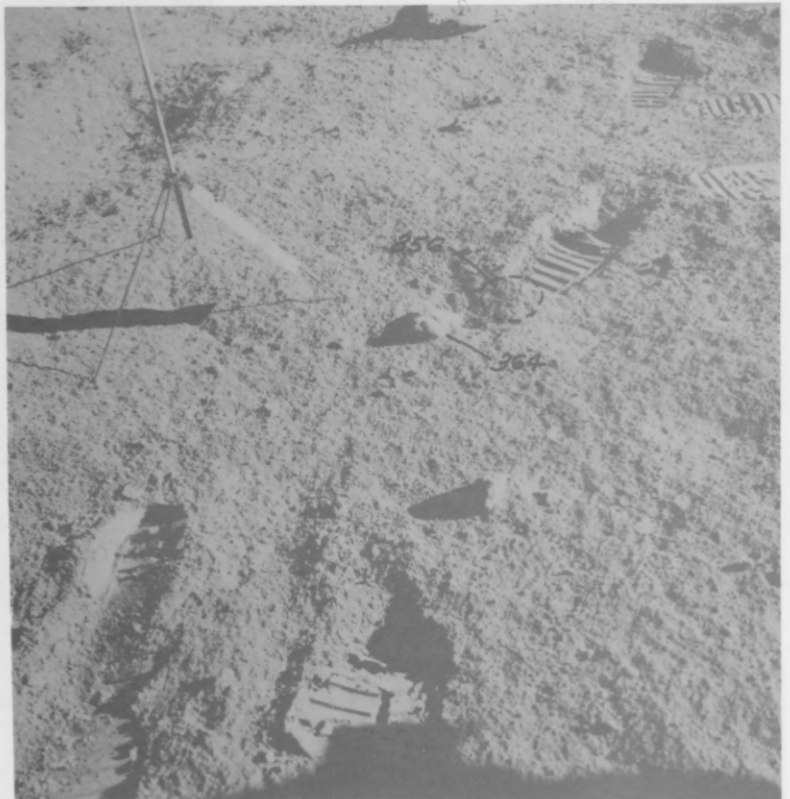


Figure 1-11
Bags 363 (soil) and 371 (four
fragments) collected at station 1.
Post-sampling, oblique-to-sun
photo AS16-109-17797.

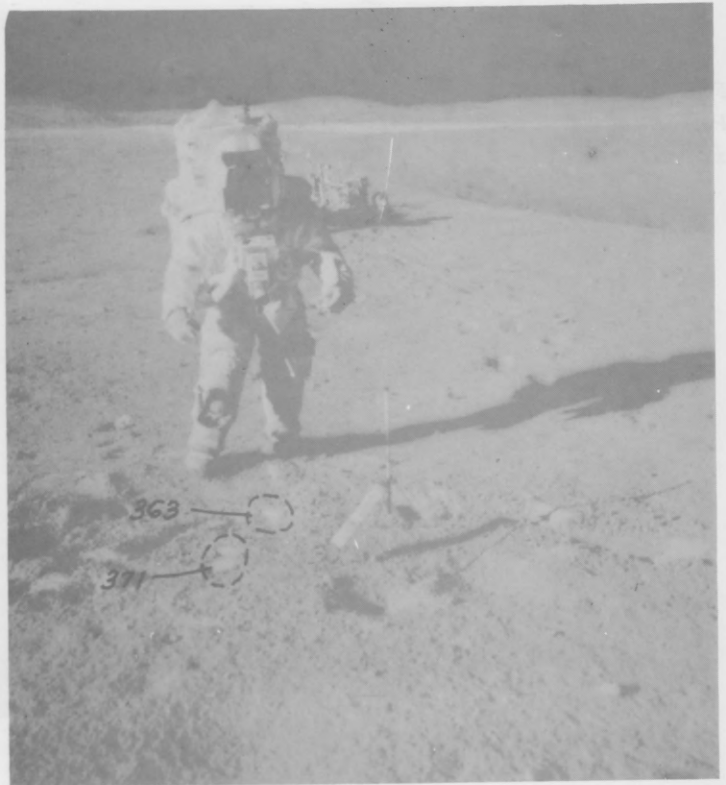


Figure 1-12
Bags 363 and 371 collected
at station 1. Pre-sampling,
cross-sun photo AS16-114-18397.



Figure 1-13
FSR-1 collected at station 1.
Pre-sampling photo AS16-109-17810,
looking northeast.



Figure 1-14
FSR-1 collected at station 1.
Pre-sampling, cross-sun photo
AS16-109-17809.



Figure 1-15
FSR-2 ("Big Muley") collected
at station 1. Photograph of
television image.



Figure 1-16
FSR-2 collected at station 1.
Photograph of television image.



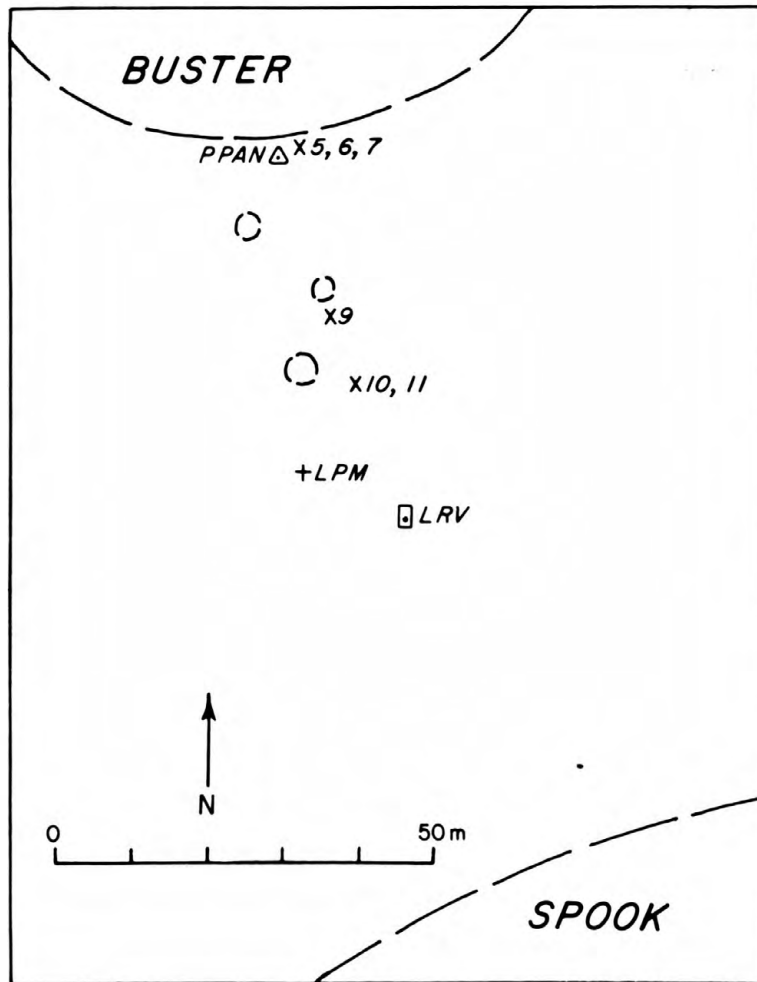


Figure 2-1. Planimetric sketch map of station 2.

Figure 2-2

Bags 5 (3 fragments), 6, 9, and 10 collected at station 2. Post-sampling of bag 5 and pre-sampling of bags 6, 9, and 10, cross-sun photo AS16-109-17840.



Figure 2-3

Bags 5 and 6 collected at station 2. Pre-sampling, cross-sun photo AS16-109-17838.

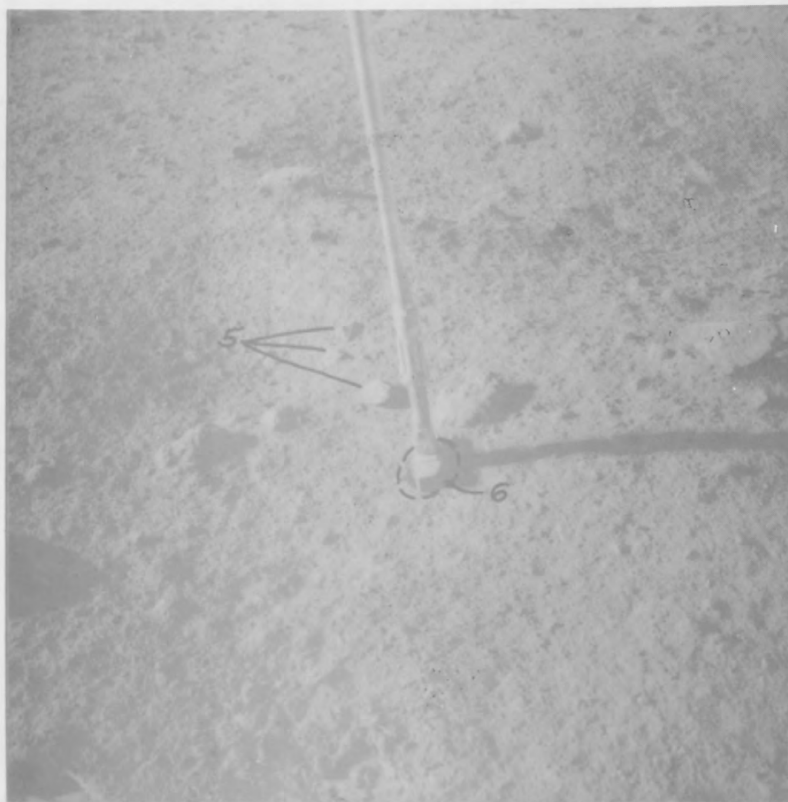


Figure 2-4

Bag 7 collected at station 2. Possible that a smaller rock from this area was collected, instead of the one shown. Pre-sampling, cross-sun photo AS16-109-17844.



Figure 2-5

Bag 9 collected at station 2. Rock shown best fits crew's description of sample, but fragment could be any of several in photograph. Pre-sampling, cross-sun photo AS16-109-17845. (Also see figure 2-2).

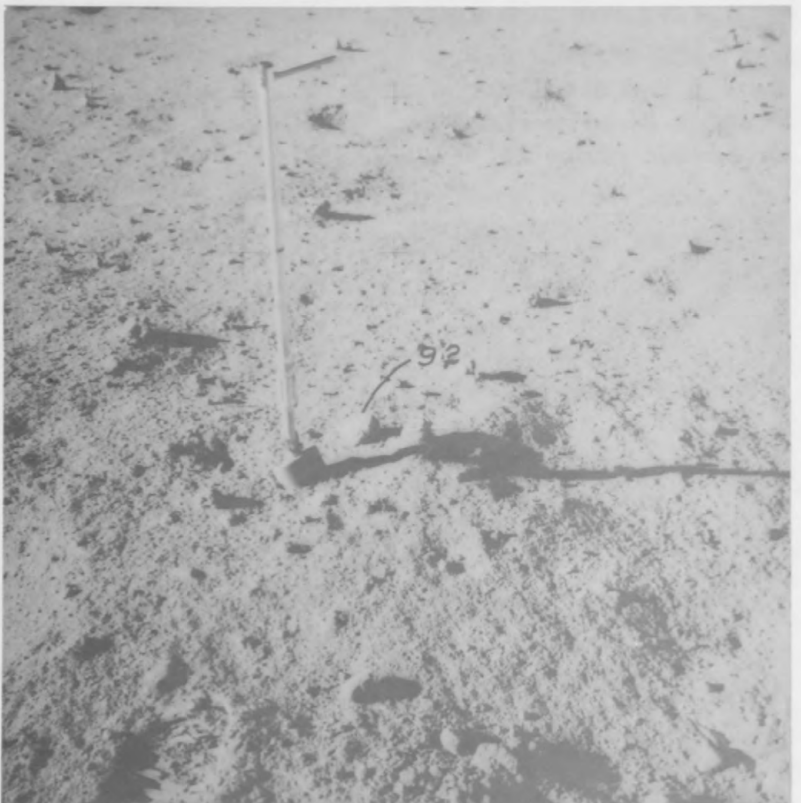
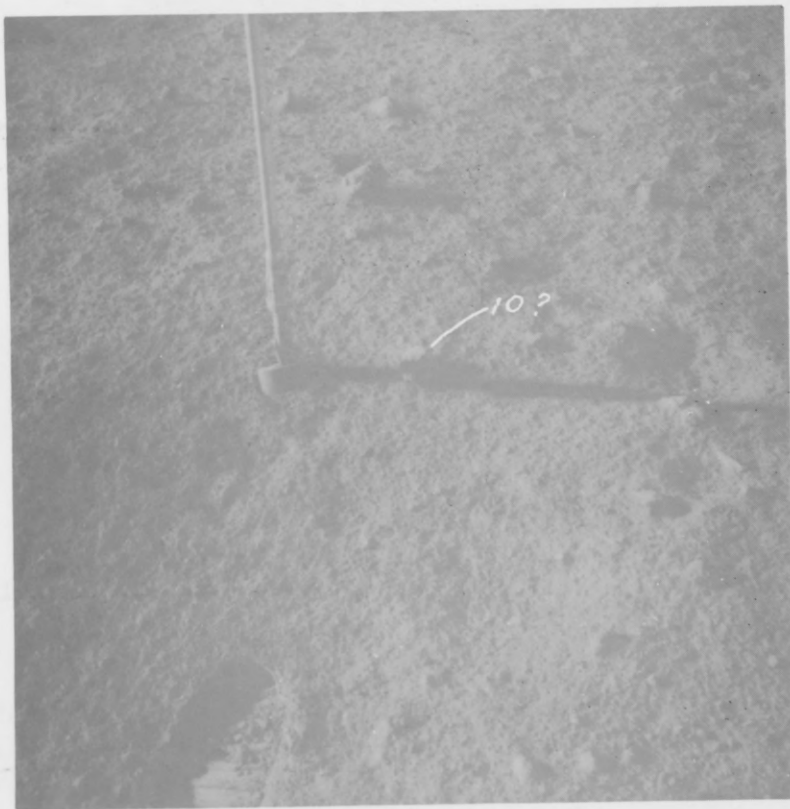


Figure 2-6

Bag 10 (tentative) and area
from which bag 11 collected
at station 2. Pre-sampling,
cross-sun photo AS16-109-17848.
(Also see figure 2-2).



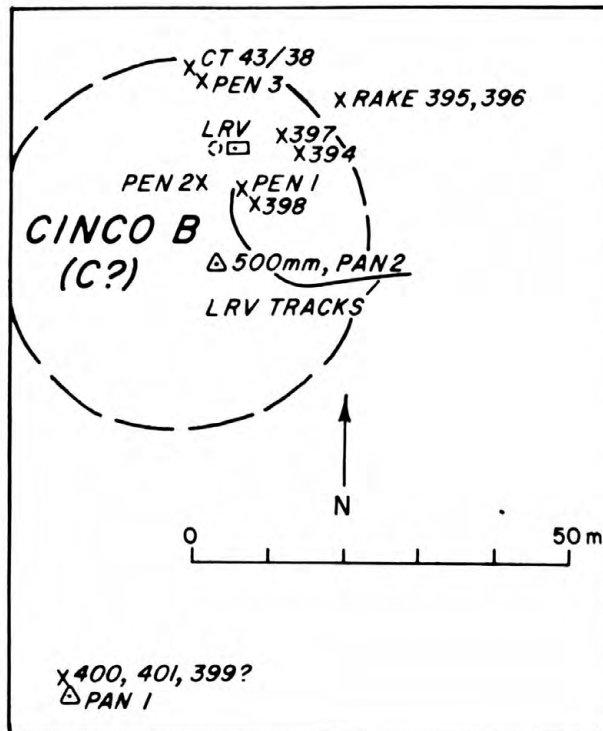


Figure 4-1. Planimetric sketch map of station 4.

Figure 4-2

Double drive tube 43/38 collected
at station 4. During-sampling,
cross-sun photo AS16-110-17951.

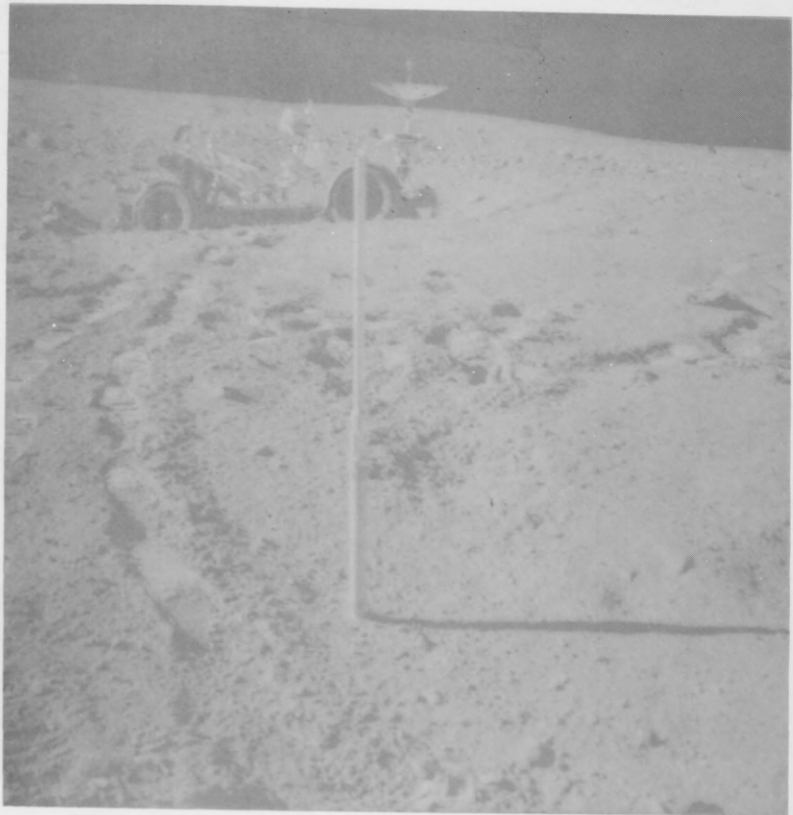


Figure 4-3

Double drive tube 43/38 collected
at station 4. During-sampling,
cross-sun photo AS16-110-17950.

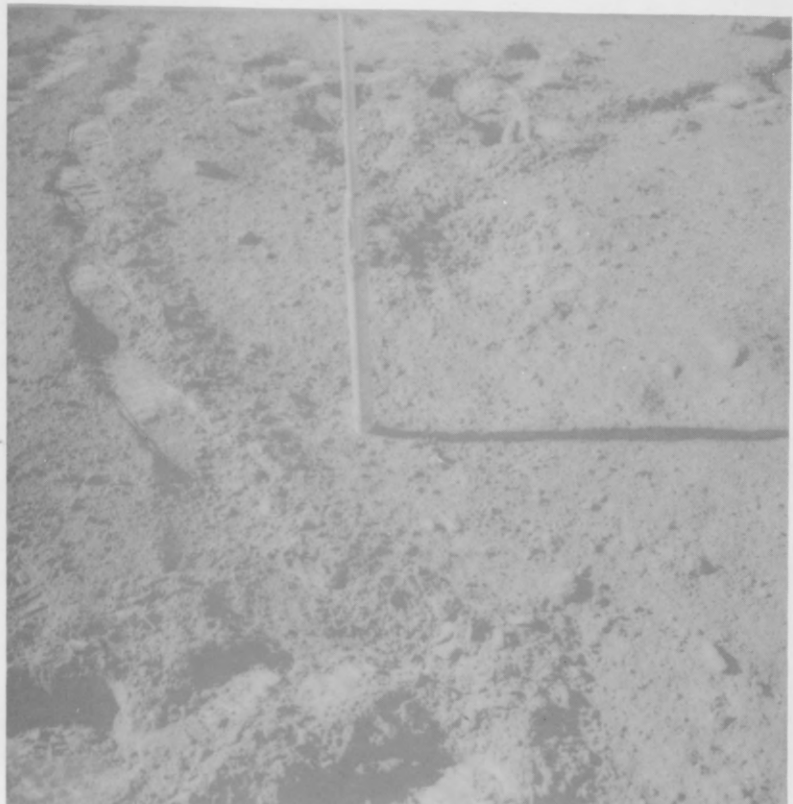


Figure 4-4
Bag 394 collected at station 4.
Pre-sampling cross-sun photo
AS16-107-17445.



Figure 4-5
Bag 394 collected at station 4.
Pre-sampling oblique-to-sun
photo AS16-107-17444.

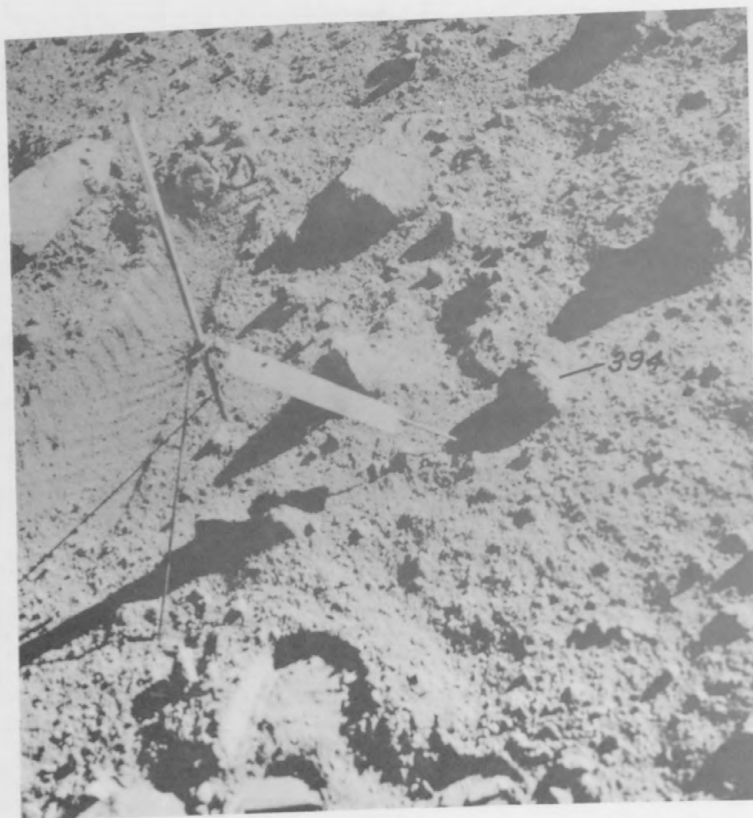


Figure 4-6
Bags 395 and 396 collected with
rake at station 4. Pre-
sampling, down-sun photo
AS16-110-17948.

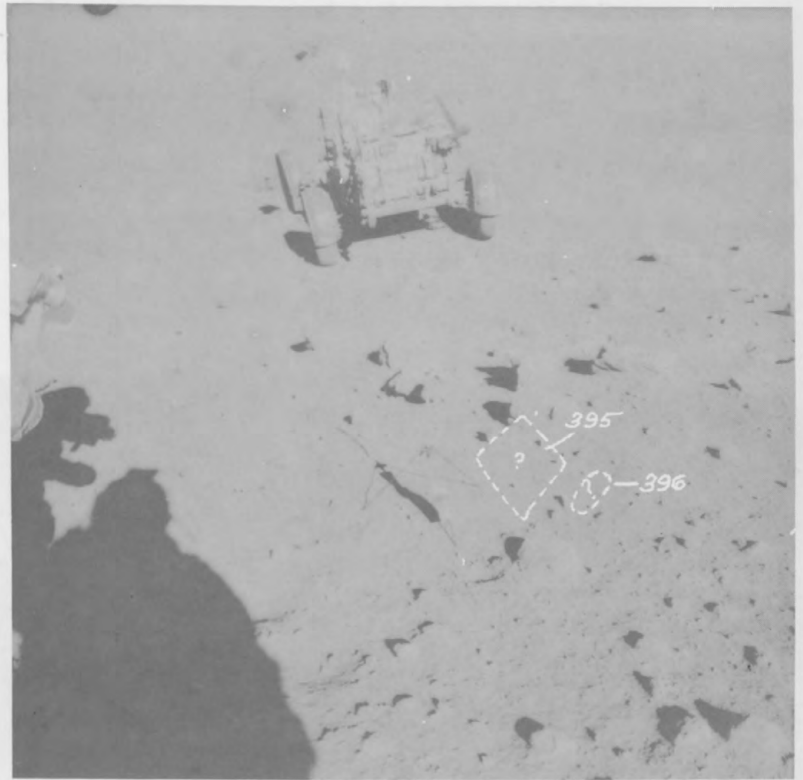


Figure 4-7
Bags 395 and 396 collected with
rake at station 4. Pre-
sampling, down-sun photo
AS16-107-17449.

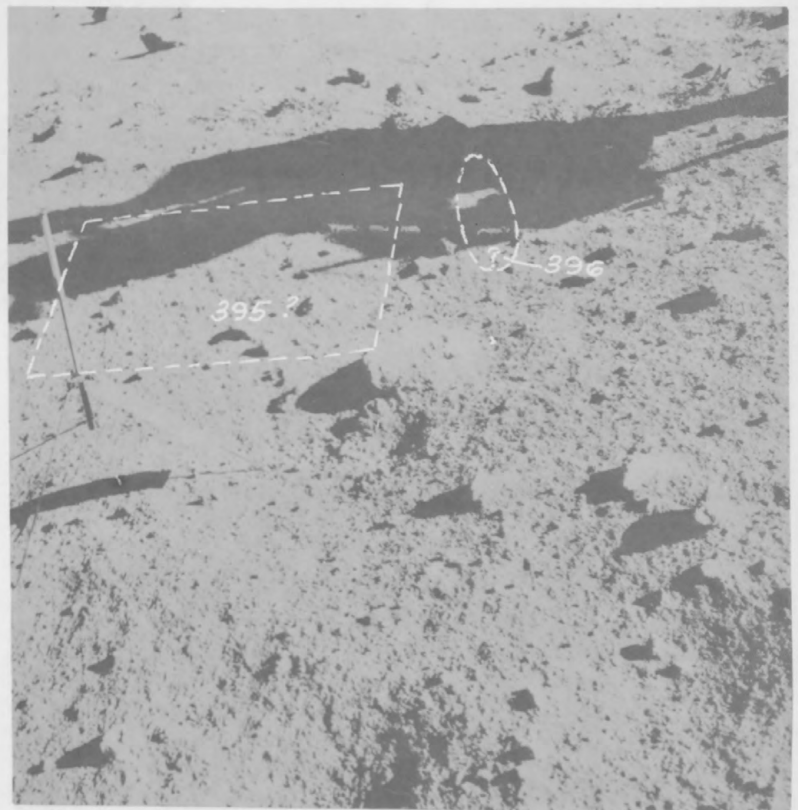


Figure 4-8
Area from which bag 397 was
collected at station 4; sample
not identified. Cross-sun
photo AS16-107-17456.



Figure 4-9
Bag 398 (four fragments) col-
lected at station 4. Pre-
sampling, down-sun photo
AS16-107-17454.



Figure 4-10
Bag 398 (four fragments) col-
lected at station 4. Pre-
sampling, cross-sun photo
AS16-107-17452.

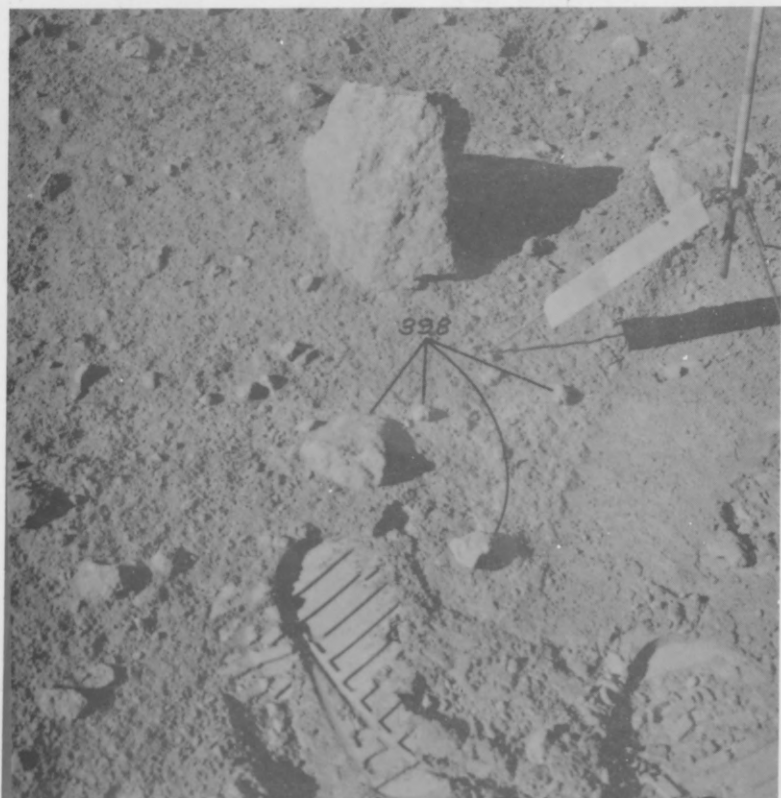


Figure 4-11

Bag 399 collected from bottom of trench at station 4. Post-trenching, oblique-to-sun photo AS16-107-17462.

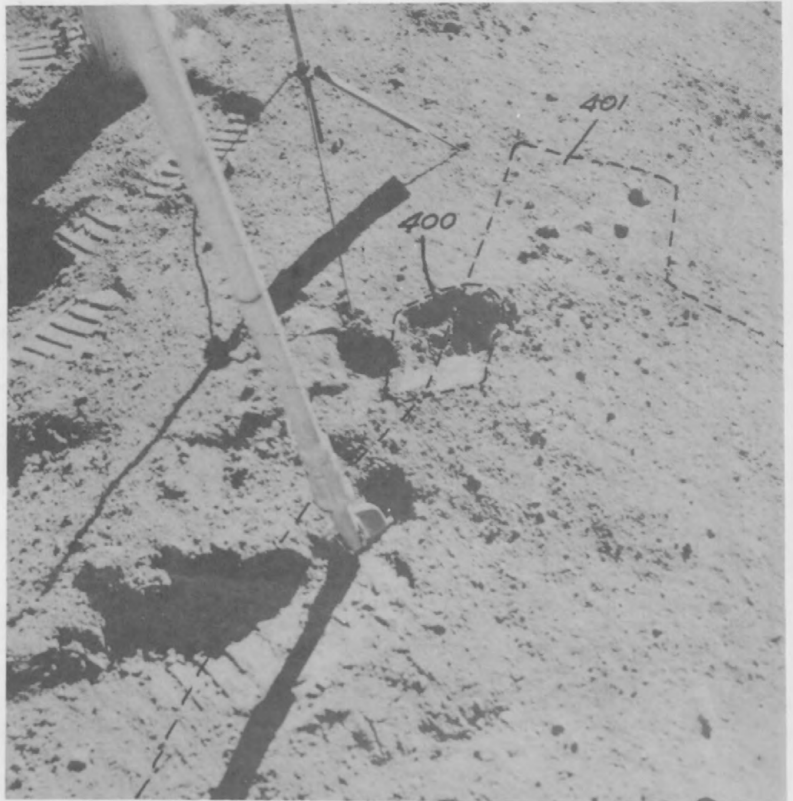


Figure 4-12

Bag 399 collected from bottom of trench at station 4. Post-trenching, cross-sun photo AS16-107-17461.



Figure 4-13
Bags 400 and 401 collected at
station 4. Bag 400 collected
with scoop; bag 401 collected
with rake. Post-sampling of
400 and pre-sampling of 401
oblique-to-sun photo
AS16-107-17465.



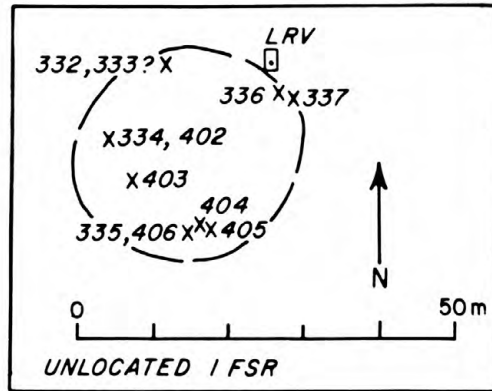


Figure 5-1. Planimetric sketch map of station 5.

Figure 5-2
Bags 332 and 333 collected with
the rake at station 5. Pre-
sampling, down-sun photo
AS16-110-18019.

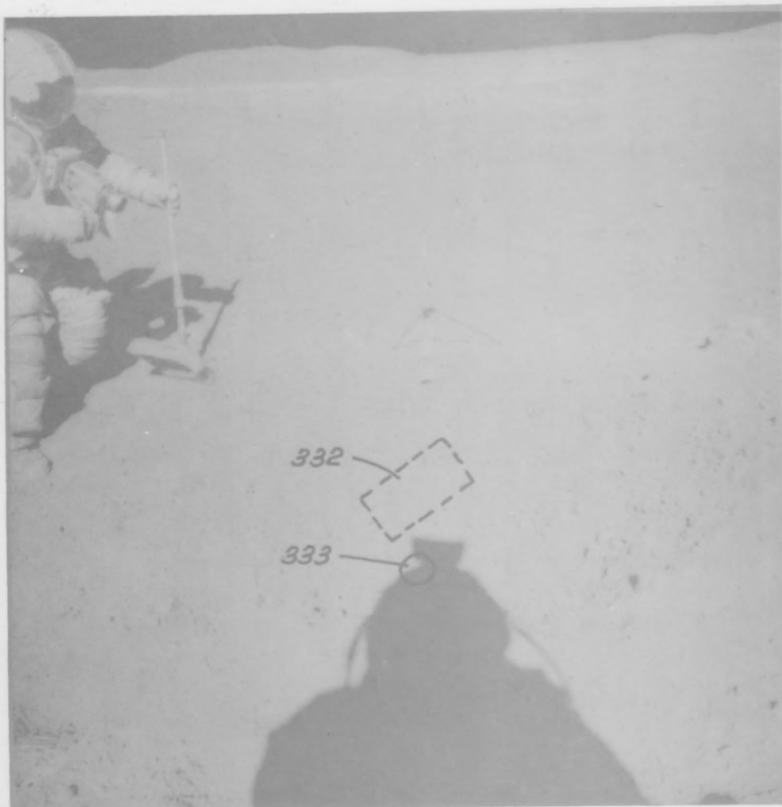


Figure 5-3
Bags 334 and 402 collected at
station 5 with rake. Post-
sampling of 334 and pre-
sampling of 402, oblique-to-
sun photo AS16-107-17497.

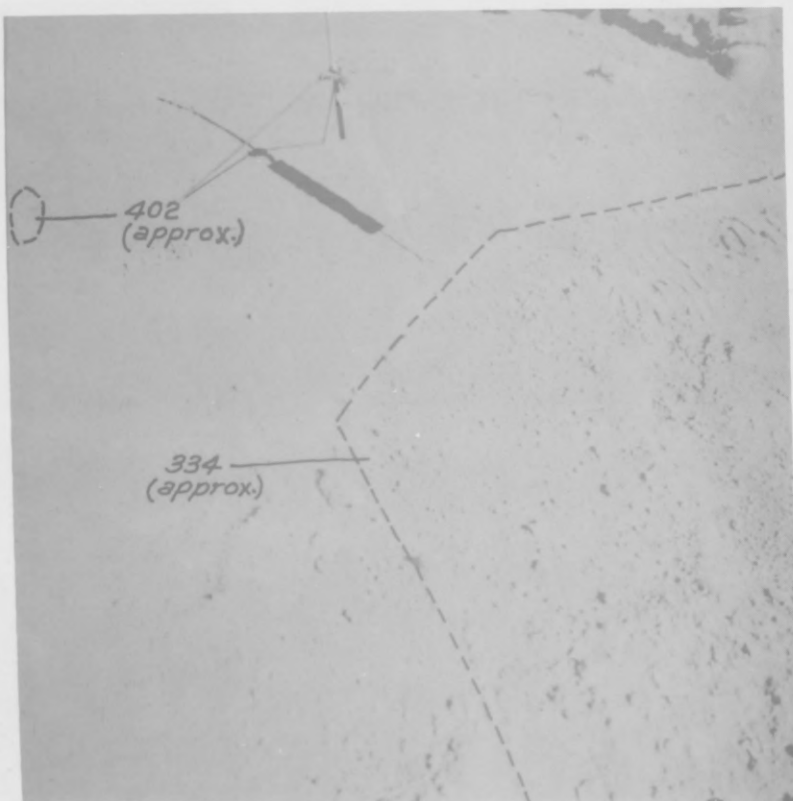


Figure 5-4
Bags 335 and 406 collected with
rake at station 5. Post-
sampling, oblique-to-sun
photo AS16-107-17509.

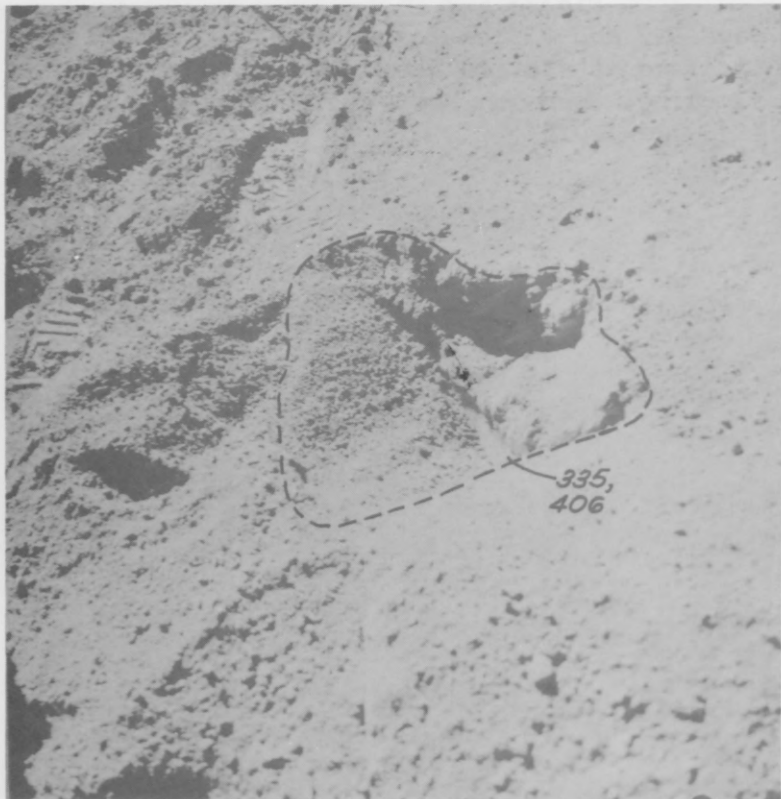


Figure 5-5
Bag 336 collected at station 5.
Pre-sampling, cross-sun photo
AS16-110-18027.



Figure 5-6
Bag 337 (two fragments) col-
lected at station 5. Pre-
sampling, cross-sun photo
AS16-110-18029.

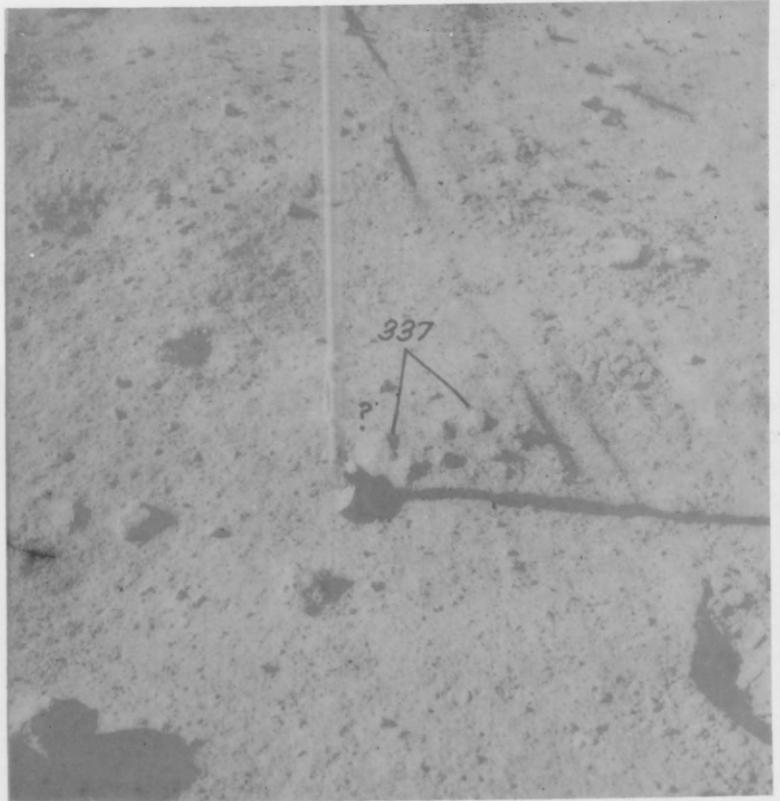


Figure 5-7
Bag 403 collected at station 5.
Pre-sampling, oblique-to-sun
photo AS16-107-17500.

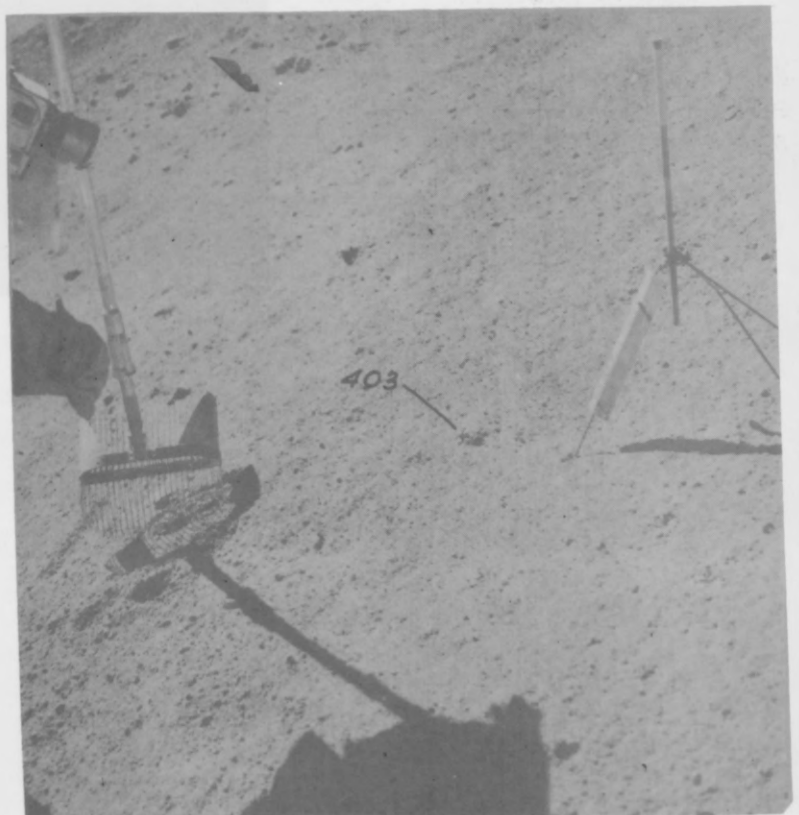
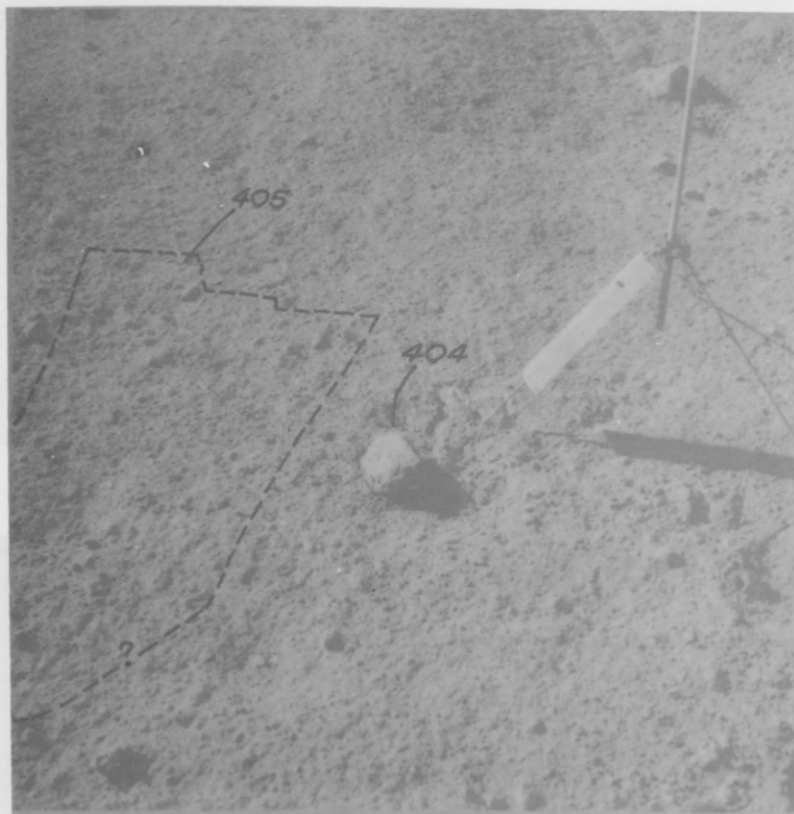


Figure 5-8
Bags 404 (rock) and 405 (rake)
collected at station 5. Pre-
sampling, cross-sun photo
AS16-110-18023.



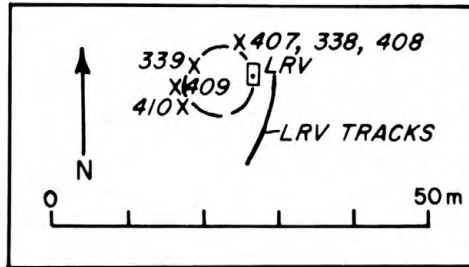


Figure 6-1. Planimetric sketch map of station 6.

Figure 6-2
Bags 338, 407, and 408 col-
lected at station 6. Pre-
sampling, down-sun photo
AS16-108-17627.

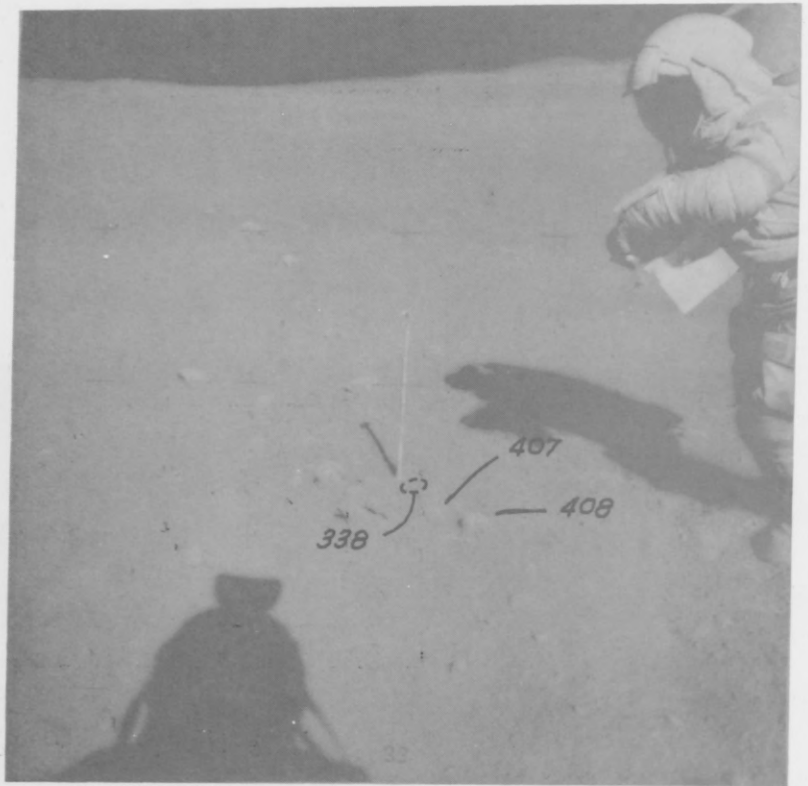


Figure 6-3
Bags 338, 407, and 408 col-
lected at station 6. Pre-
sampling, cross-sun photo
AS16-107-17513.

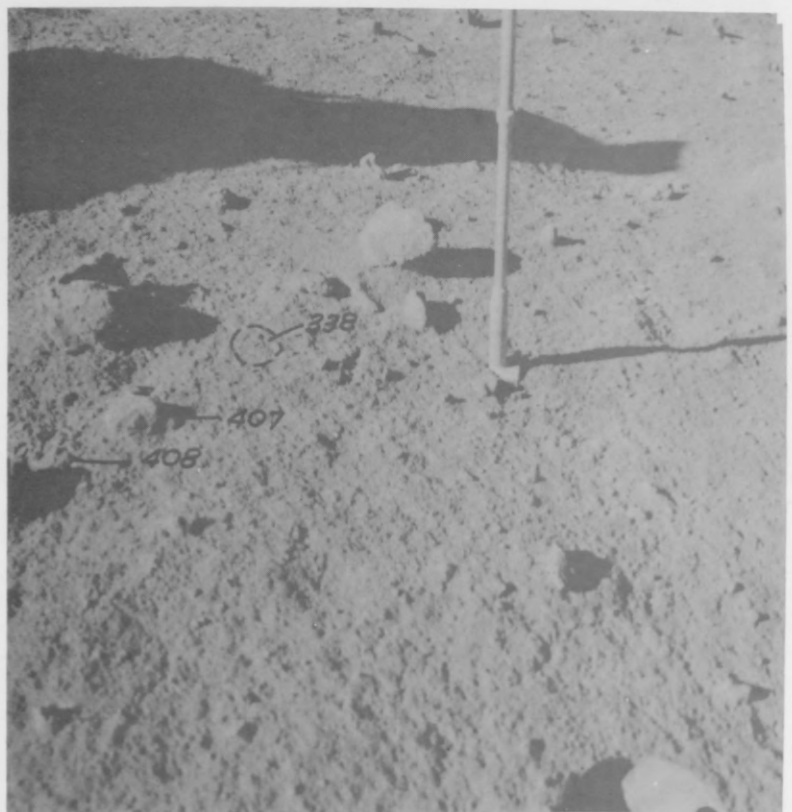


Figure 6-4

Bag 339 collected at station 6.
Pre-sampling, down-sun photo
AS16-108-17628.

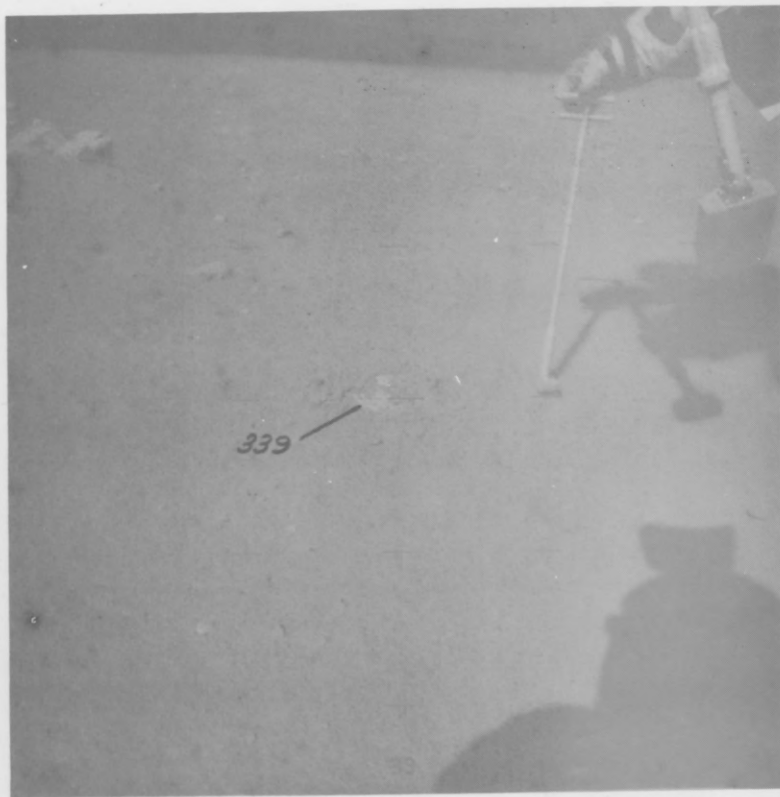


Figure 6-5

Bag 339 collected at station 6.
During-sampling, up-sun photo
AS16-108-17629.



Figure 6-6

Bag 409 collected at station 6.
Pre-sampling, up-sun photo
AS16-108-17631.

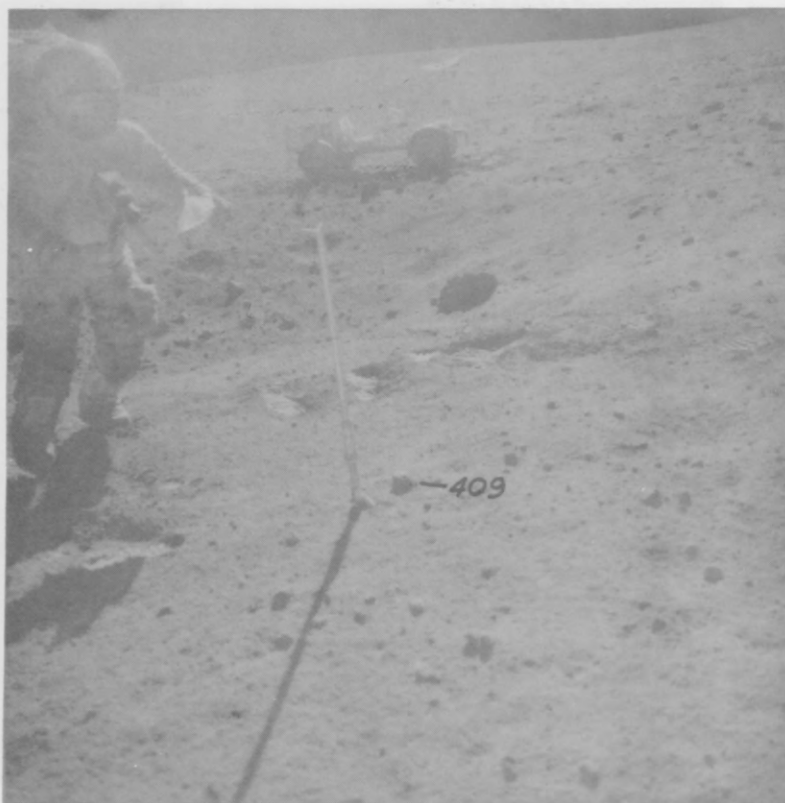


Figure 6-7

Bag 409 collected at station 6.
Pre-sampling, cross-sun photo
AS16-107-17522.



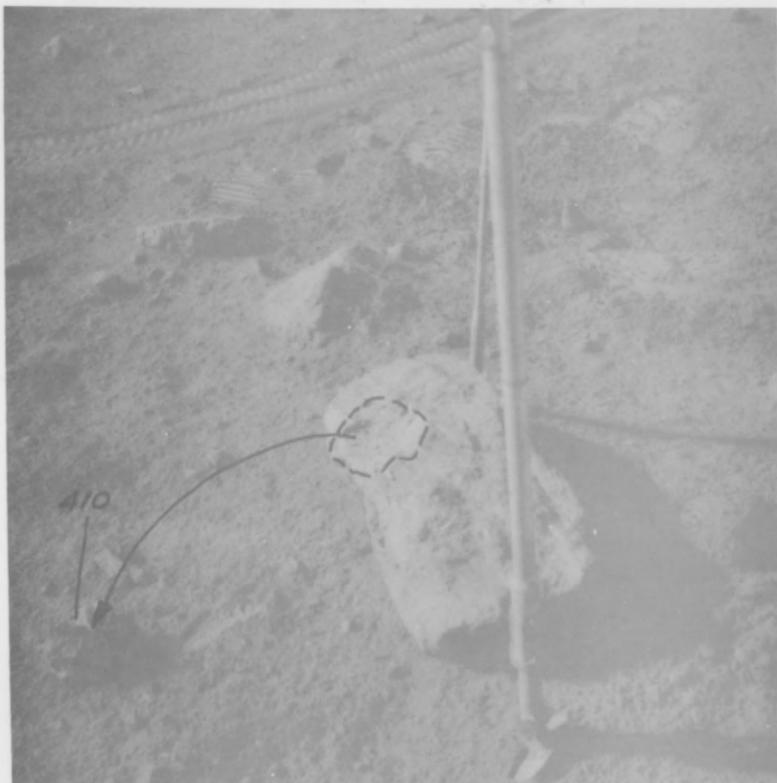
Figure 6-8

Bag 410 (2 fragments) collected from top of boulder at station 6. After chipping, before collection; oblique-to-sun photo AS16-107-17523.



Figure 6-9

Bag 410 (2 fragments) collected from top of boulder at station 6. After chipping, before collection; cross-sun photo AS16-108-17633.



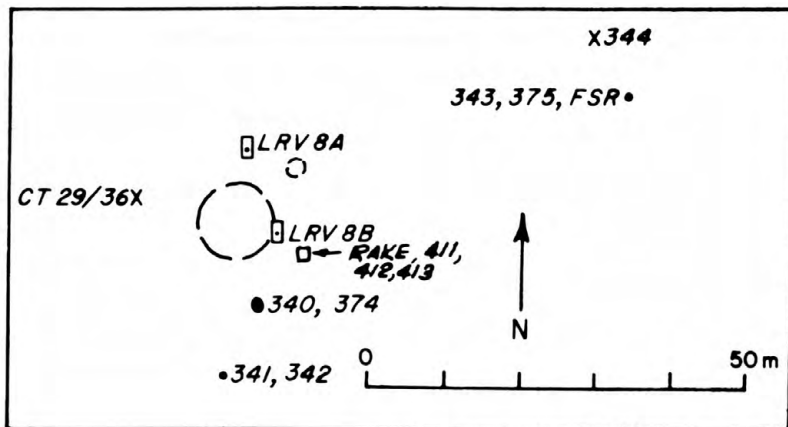


Figure 8-1. Planimetric sketch map of station 8.

Figure 8-2

Drive tube 29/36 collected at station 8a, showing location of first attempt and final location. Pre-sampling, cross-sun photo AS16-108-17683.

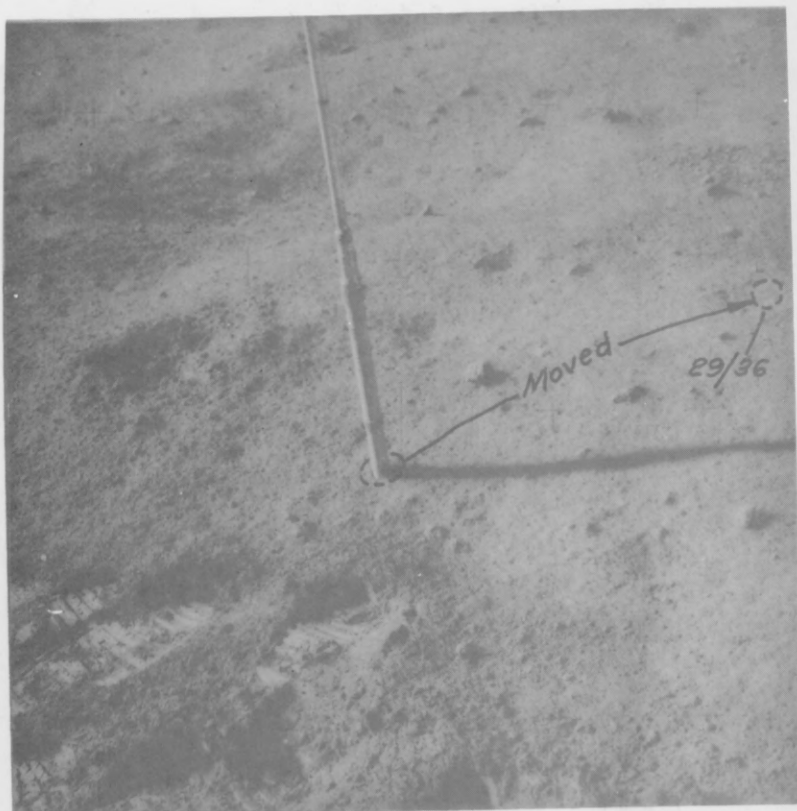


Figure 8-3

Drive tube 29/36 collected at station 8a. During-sampling, cross-sun photo AS16-108-17684.

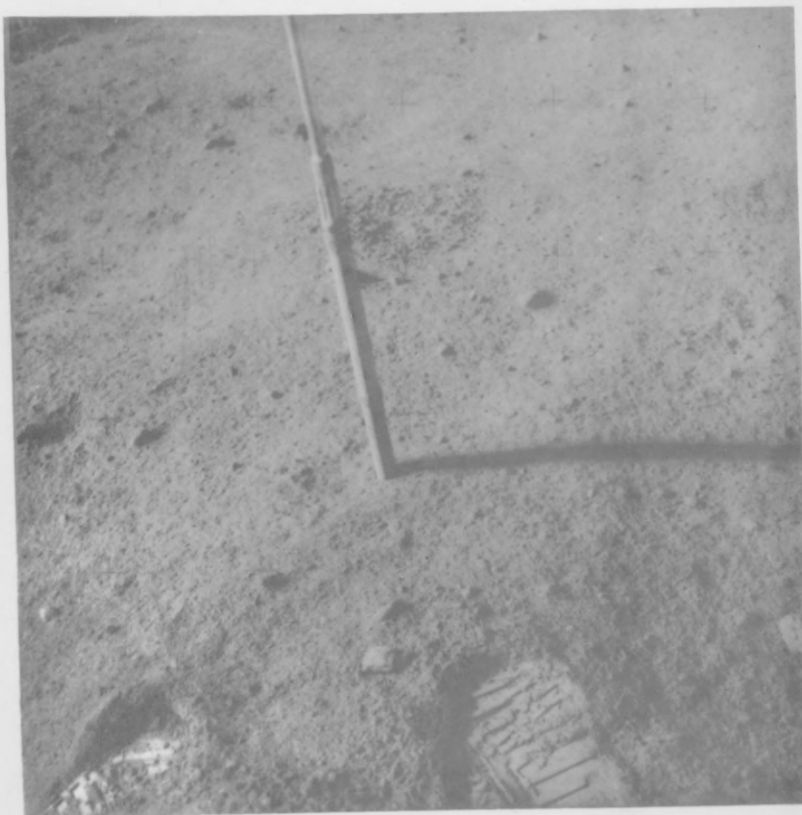


Figure 8-4
Bags 340 and 374 collected at
station 8b. Pre-sampling,
down-sun photo AS16-108-17690.

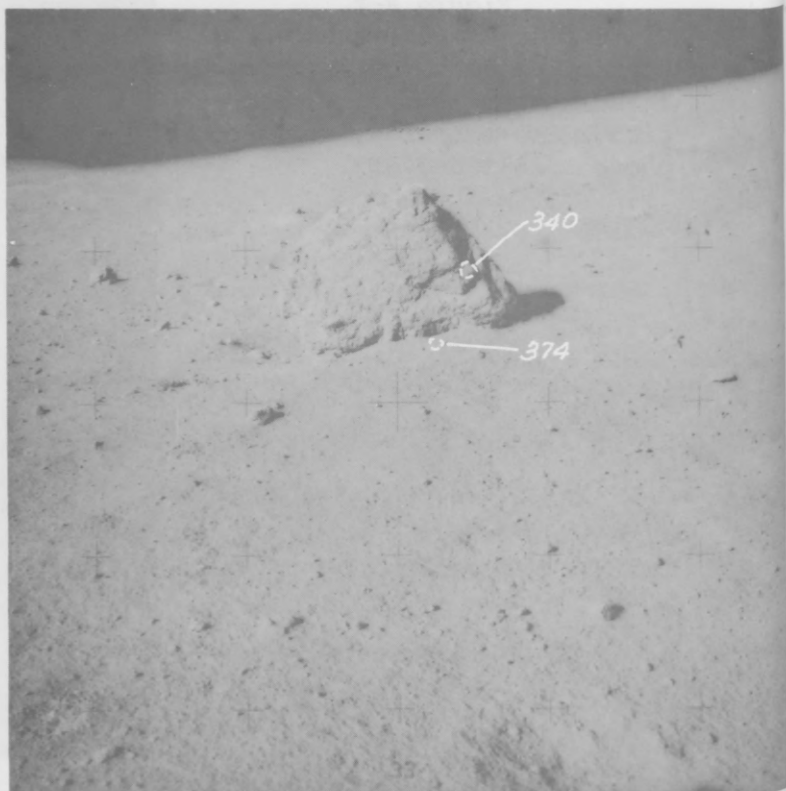


Figure 8-5
Bags 340 and 374 collected at
station 8b. Bag 340 is a large
fragment from the north side of
the boulder. Bag 374 is a
sample of the fillet. Pre-
sampling, cross-sun photo
AS16-107-17542.



Figure 8-6
Bags 341 and 342 (3 chips from
large boulder) collected at
station 8b. Pre-sampling,
cross-sun photo AS16-107-17549.

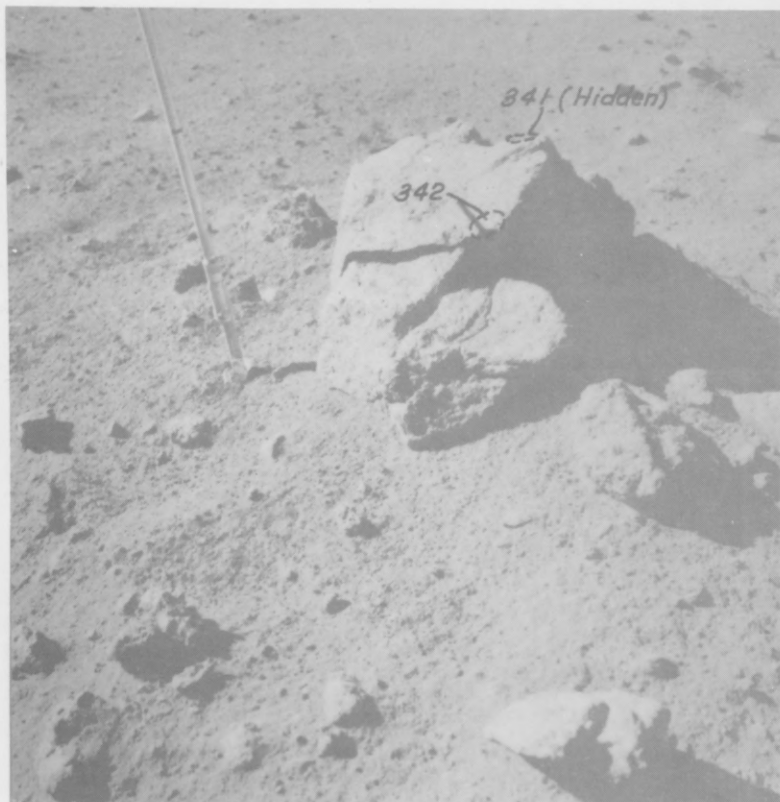


Figure 8-7
Bags 341 and 342 collected at
station 8b. Pre-sampling, down-
sun photo AS16-108-17697.

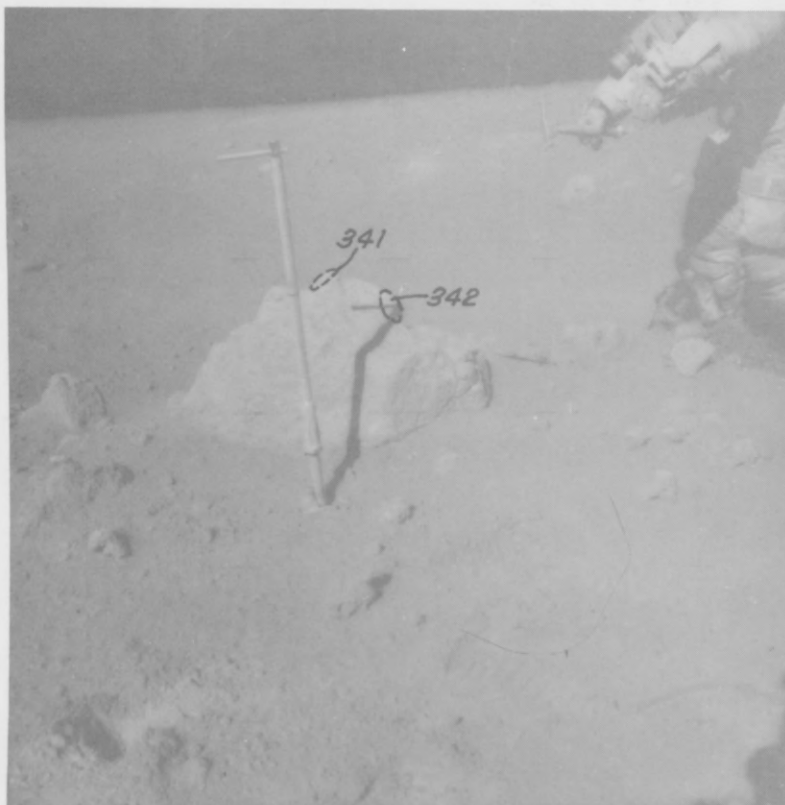


Figure 8-8

Bags 375, 343, and FSR-6 collected at station 8b. FSR-6 and bag 343 (location not identified) chips from the boulder. Bag 375 sample of fillet on the north side. Pre-sampling of 343 and FSR-6, post-sampling of 375, cross-sun photo AS16-108-17701.

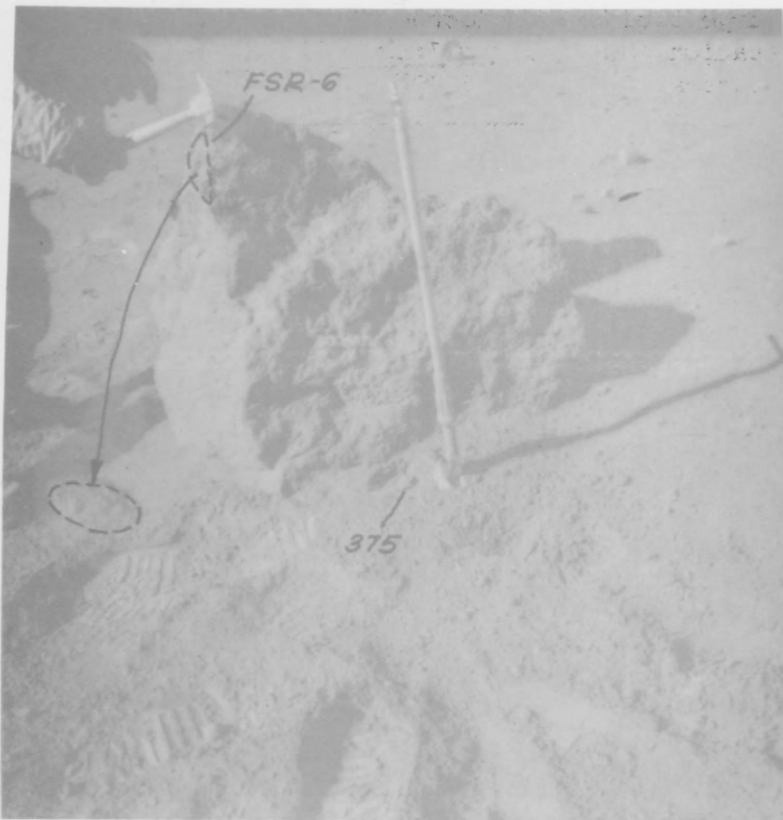


Figure 8-9

Bags 375, 343 (location not identified), and FSR-6 collected at station 8b. Pre-sampling, cross-sun photo AS16-108-17700.



Figure 8-10
Bag 344 collected at station 8b. Pre-sampling, cross-sun photo AS16-107-17555.



Figure 8-11
Bag 344 collected at station 8b. Pre-sampling, down-sun photo AS16-108-17702.



Figure 8-12
Bags 411 and 412 collected with
the rake at station 8a. Pre-
sampling, cross-sun photo
AS16-107-17528.

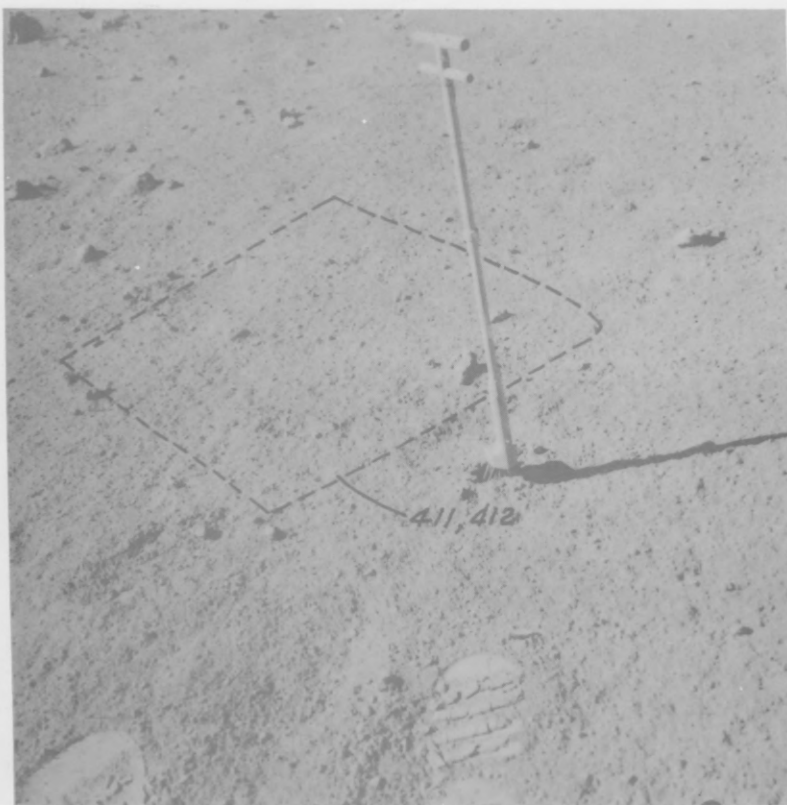


Figure 8-13
Bags 411, 412, and 413 (glass
fragment) collected at sta-
tion 9. During-sampling,
cross-sun photo AS16-107-17533.



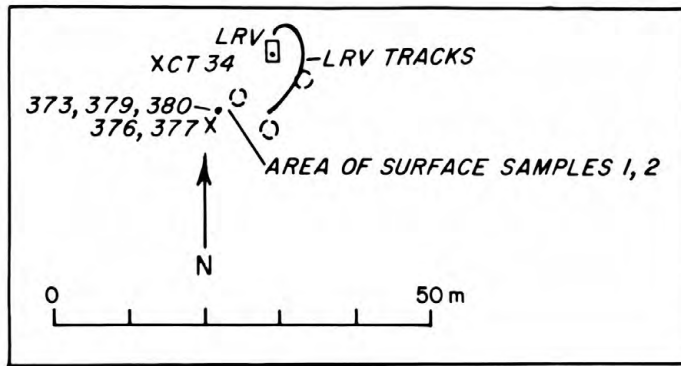


Figure 9-1. Planimetric sketch map of station 9.

Figure 9-2
CSVC-34 collected at station 9.
During-sampling, cross-sun
photo AS16-108-17742.

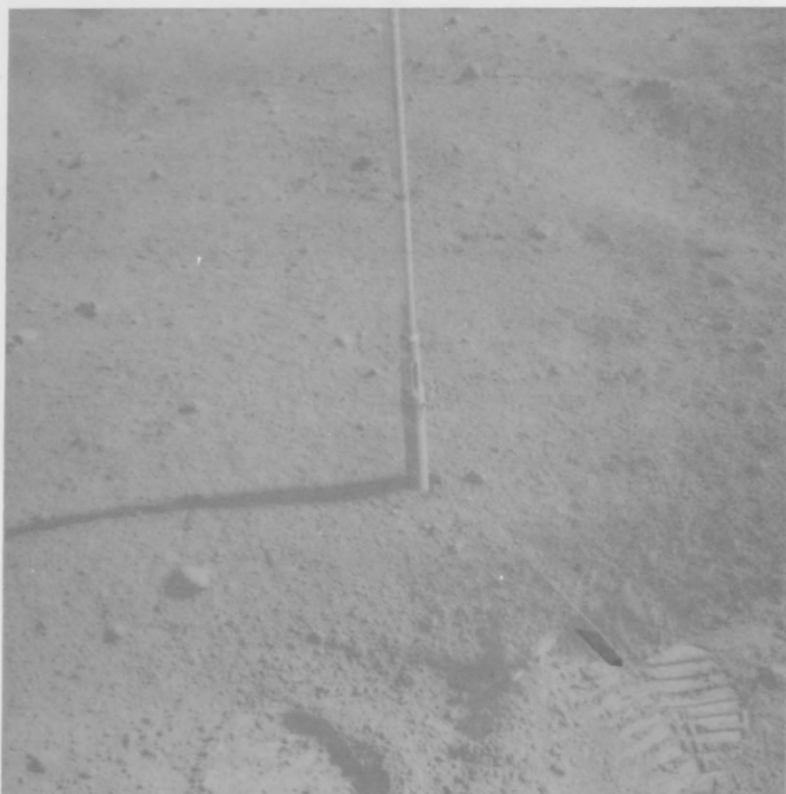


Figure 9-3

Bags 376, 377, and 378, and surface sample collected at station 9. Bags 376 and 377 are soil samples, bag 378 is a chip from top of boulder. Pre-sampling, oblique-to-sun photo AS16-107-17560.

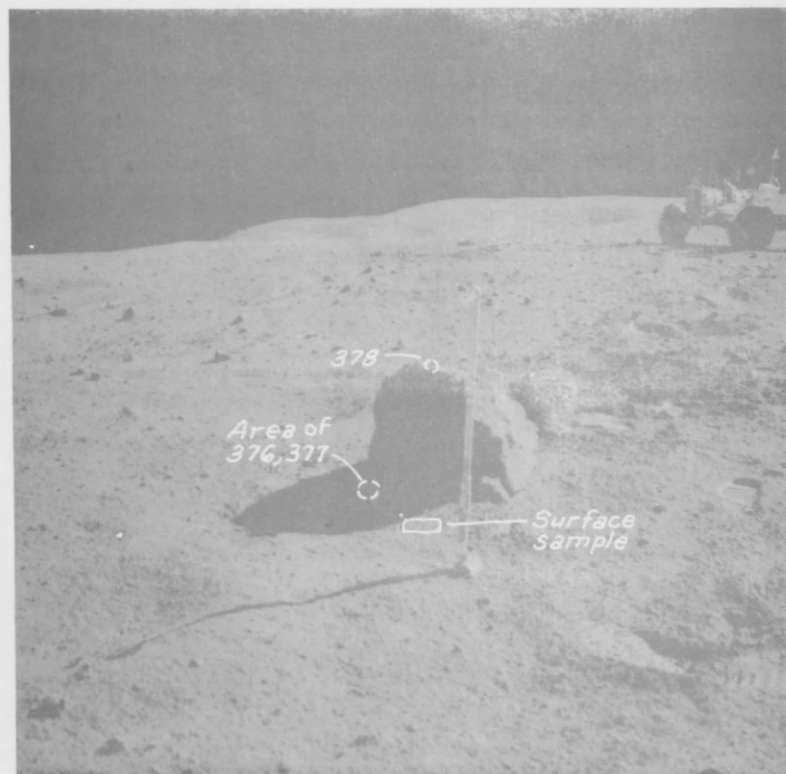


Figure 9-4

Bags 376, 377, and 378, and surface sample collected at station 9. Pre-sampling, oblique-to-sun photo AS16-107-17558.

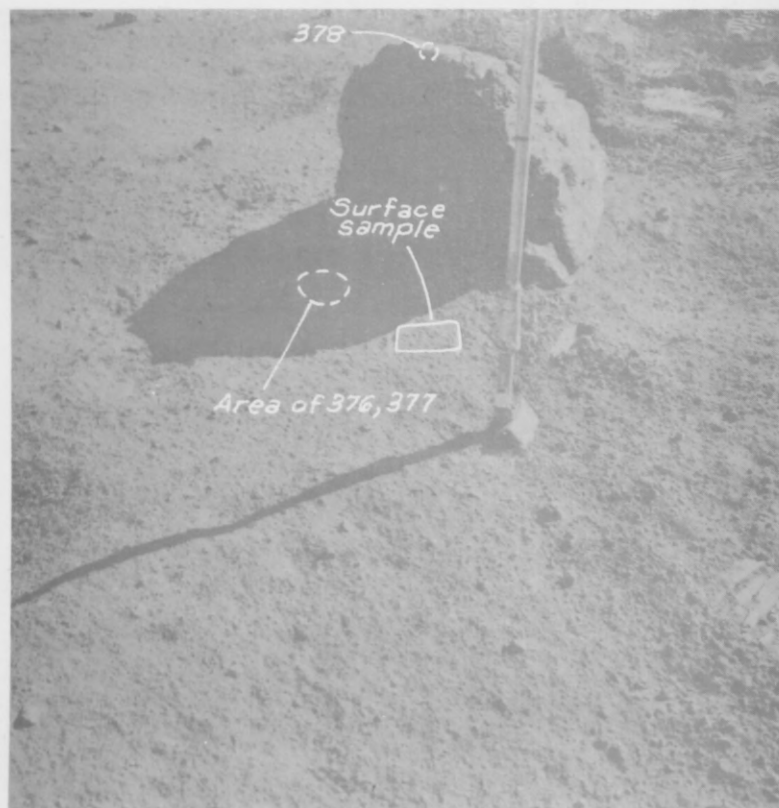


Figure 9-5

Bags 379 and 380 collected from
beneath boulder at station 9.
Pre-sampling and pre-rolling,
down-sun photo AS16-107-17575.



Figure 9-6

Bags 379 (soil) and 380 (chip)
from beneath boulder, station 9.
Pre-sampling, cross-sun photo
AS16-107-17574.



11-1

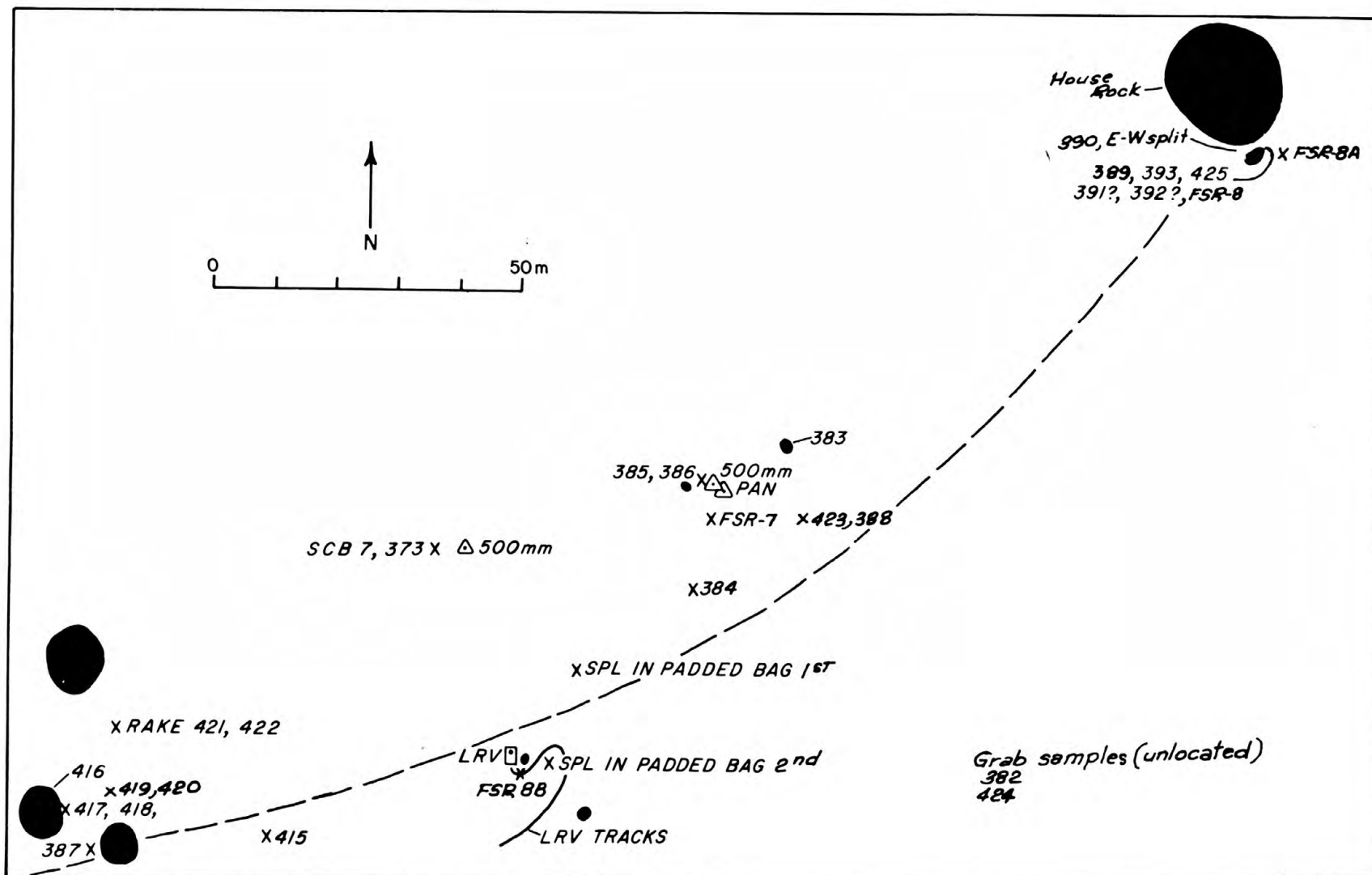


Figure 11-1. Planimetric sketch map of station 11.

Figure 11-2
Bag 383 collected at station 11
between the Rover and House Rock.
Pre-sampling, cross-sun photo
AS16-116-18617.



Figure 11-3
Bag 384 collected at station 11.
Pre-sampling, cross-sun photo
AS16-106-17318.



Figure 11-4
Bags 385 and 386 collected at
station 11. Pre-sampling,
cross-sun photo AS16-116-18626.

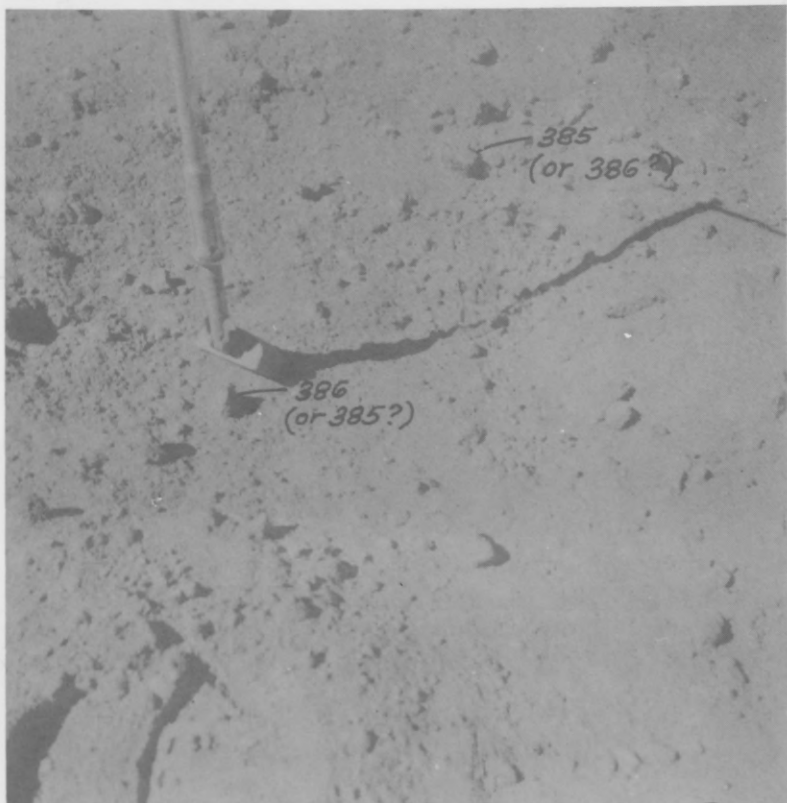


Figure 11-5

Bags 387, and 415 through 422--
white breccia boulders at sta-
tion 11 where bags 387 and 415
through 422 were collected.
Down-sun photos AS16-106-17323
and 17324.

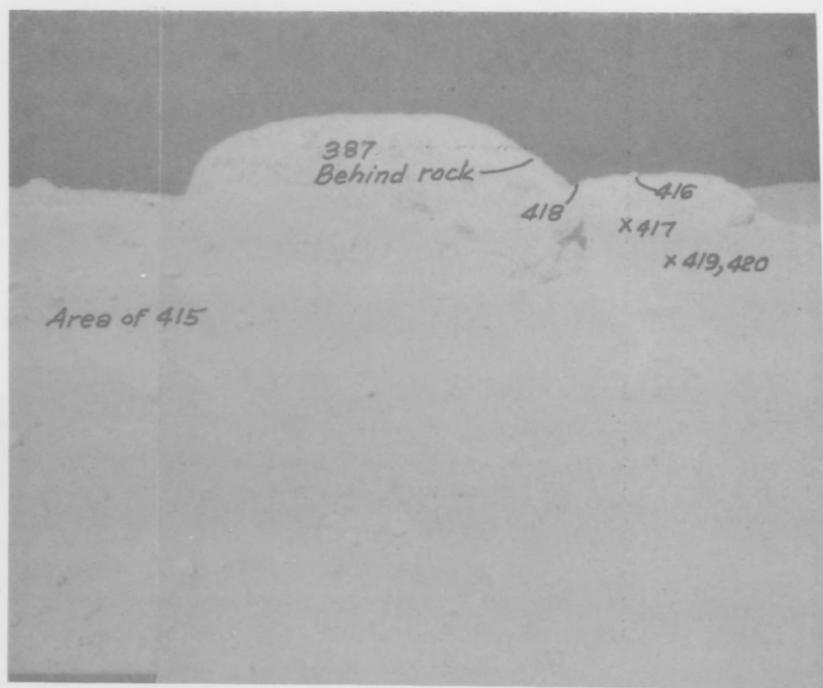


Figure 11-6

Bag 387 collected west of white
breccia boulder at station 11.
Pre-sampling, oblique-to-sun
photo AS16-116-18634.



Figure 11-7
Bags 388 (soil) and 423 (rake)
collected at station 11.
During-sampling, oblique-to-sun
photo AS16-106-17340.

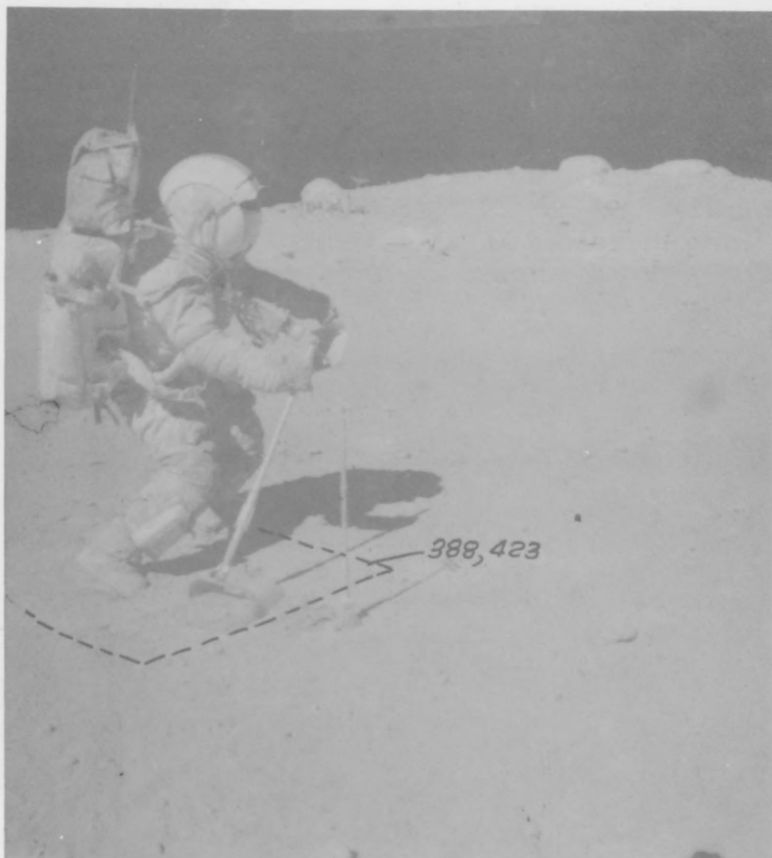


Figure 11-8
Bags 388 (soil) and 423 (rake)
collected at station 11. Pre-
sampling, oblique-to-sun
photo AS16-116-18644.

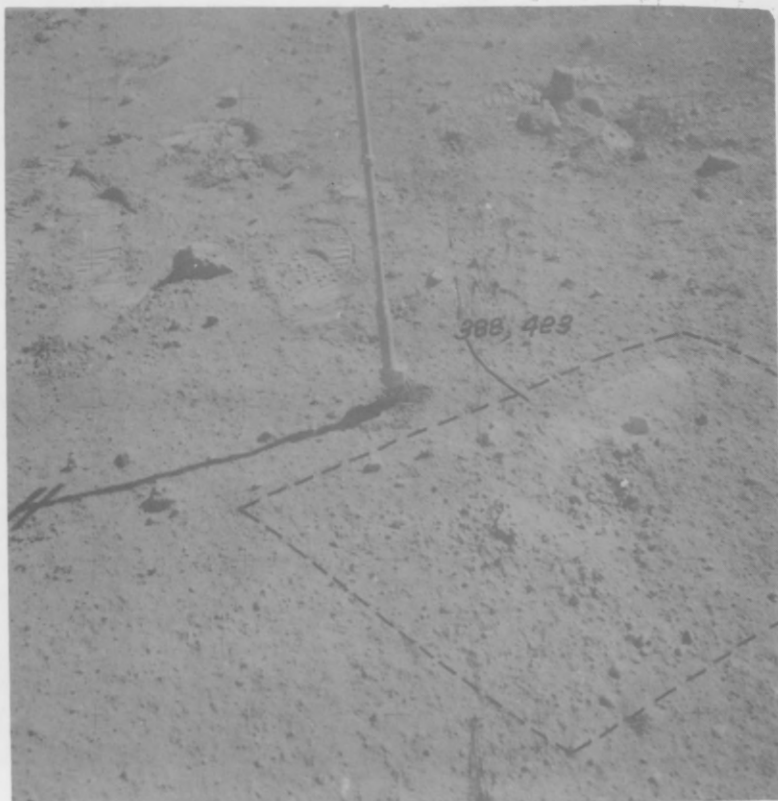


Figure 11-9

Bags 389, 425, and FSR-8 chipped from areas shown on east side of boulder south of House Rock at station 11. Bag 390 (soil) from east-west split, bag 391? (reference soil), 392 and 393 (fragments), were also collected in this area. During-sampling, down-sun photo AS16-116-18653.

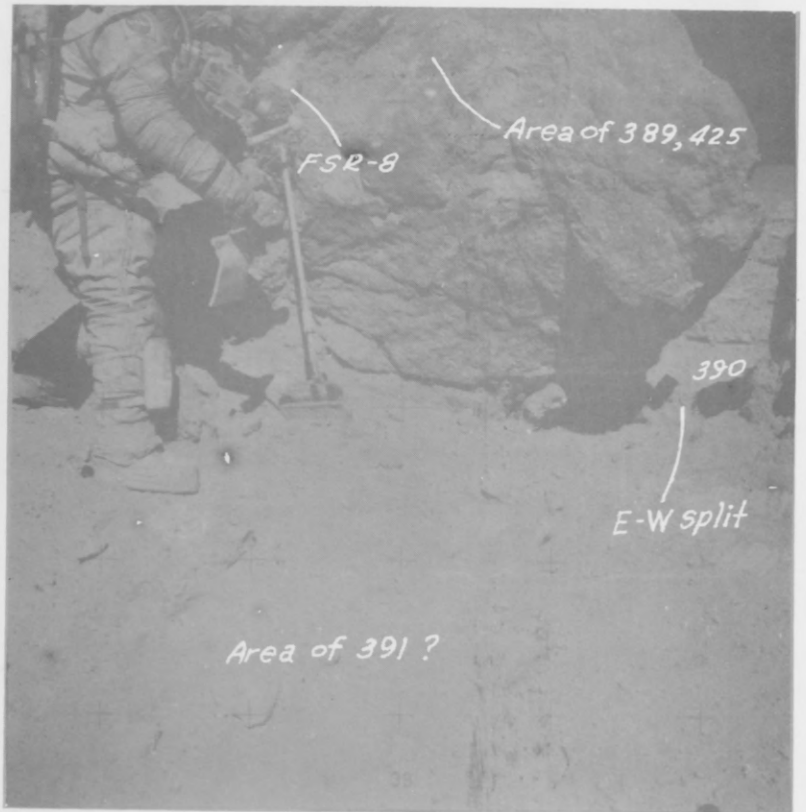


Figure 11-10

Bags 389 and 425 collected at station 11 from boulder south of House Rock. Pre-sampling, cross-sun photo AS16-106-17345.

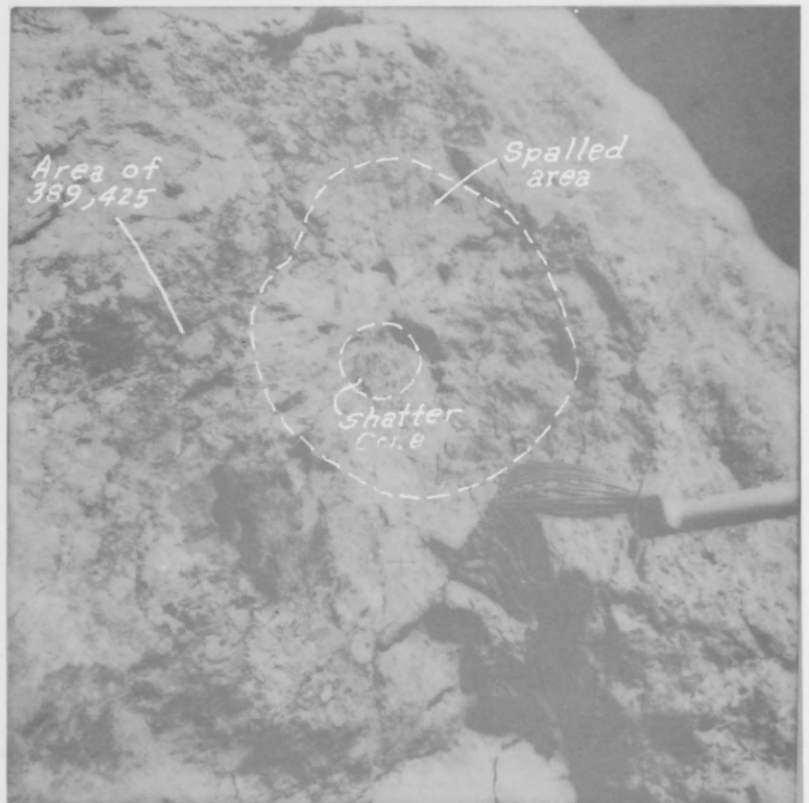
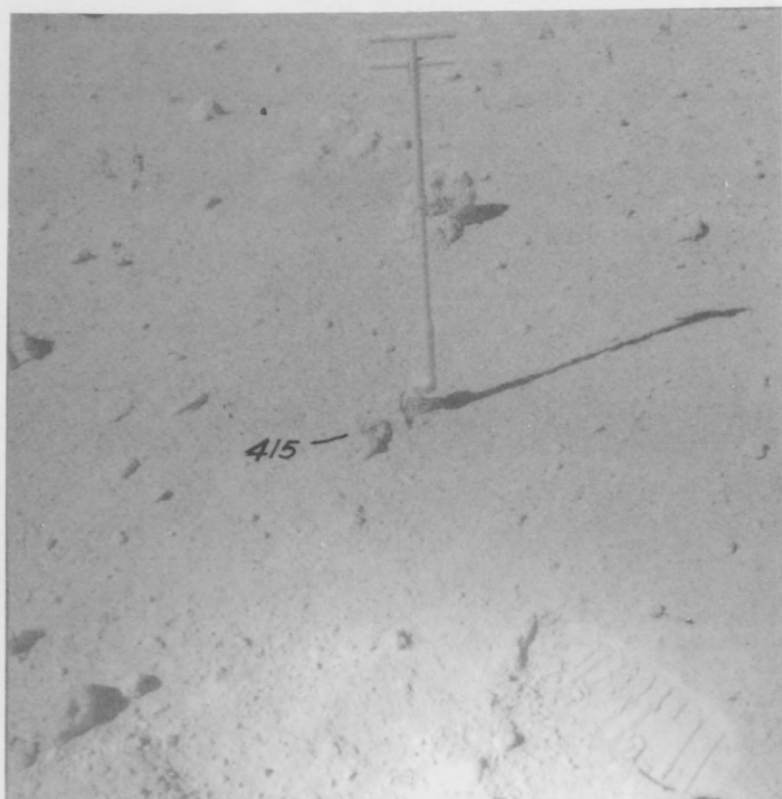


Figure 11-11
FSR-8 chipped off boulder south
of House Rock at station 11.
Post-sampling, oblique-to-sun
photo AS16-116-18652.



Figure 11-12
Bag 415 collected at station 11. Pre-sampling, cross-sun photo AS16-106-17320.



11-11-68
AS16-106-17331
Station 11
Breccia boulder

Figure 11-13

Bag 416 (exact location tentative) collected from top of the white breccia boulder at station 11. Pre-sampling, down-sun photo AS16-106-17331.



11-9

11-11

Figure 11-14

Bag 417 collected at the east base of white breccia boulder at station 11. Post-sampling, up-sun photo AS16-106-17336.

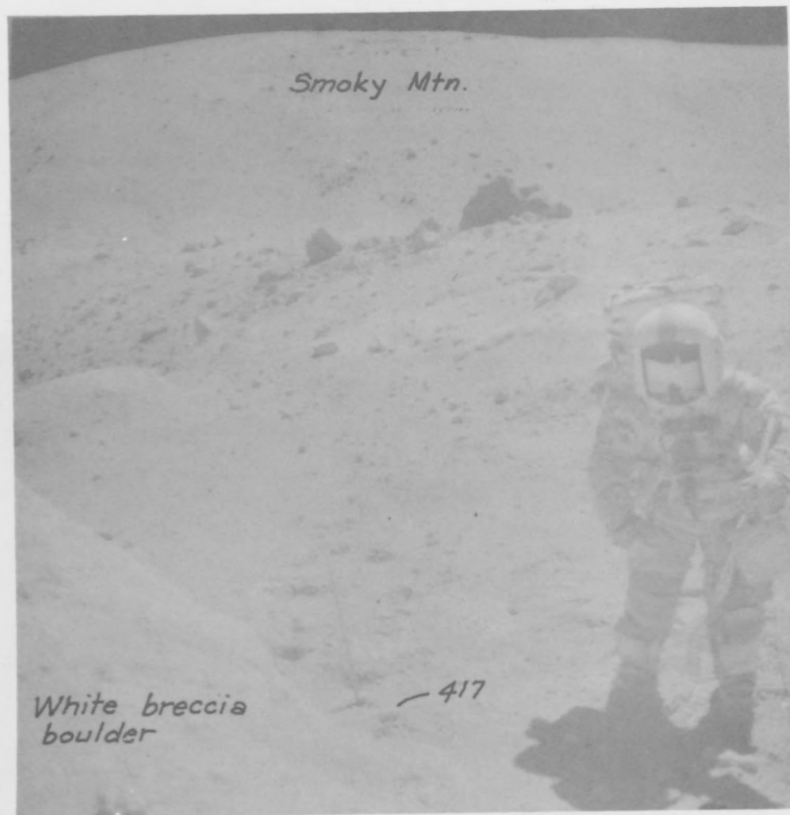


Figure 11-15

Bag 417 (fillet sample), collected at the east base of the white breccia boulder at station 11. Post-sampling, oblique-to-sun photo AS16-106-17335.

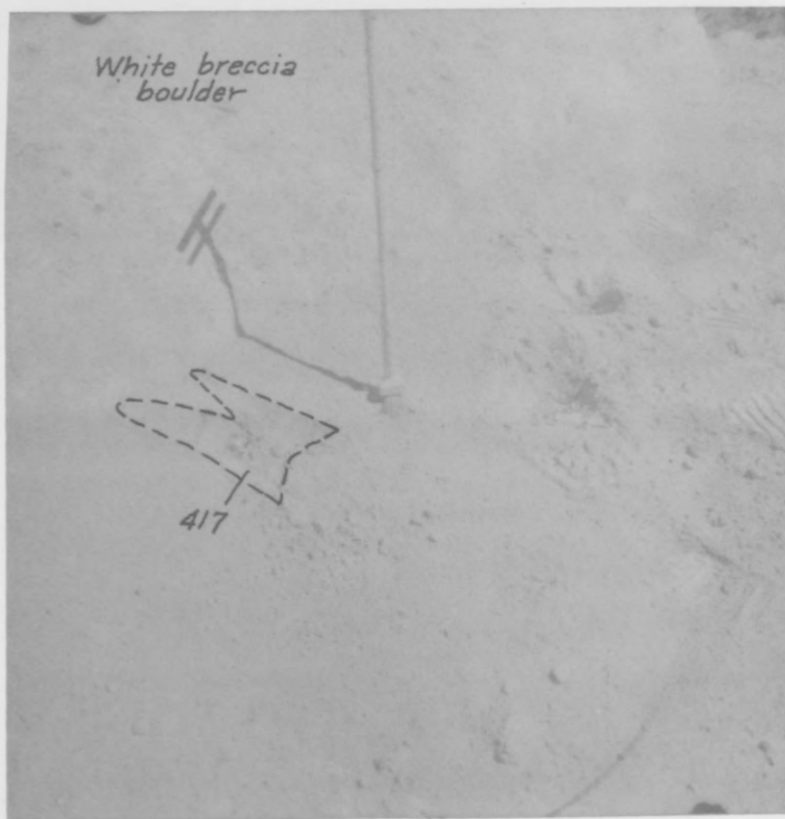


Figure 11-16
Bag 418 (black clast) chipped
out of the top of the white breccia
boulder at station 11. Post-
sampling, down-sun photo
AS16-106-17337.

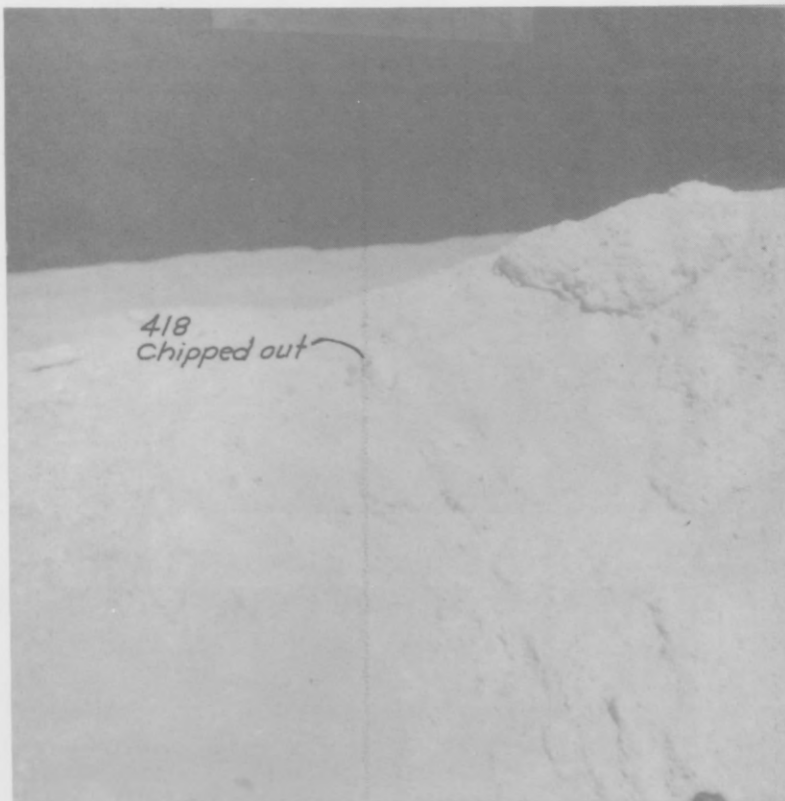


Figure 11-17
Bags 419 (soil, tentatively located)
and 420 (rake). Samples collected
at station 11. During-sampling,
cross-sun photo AS16-116-18639.

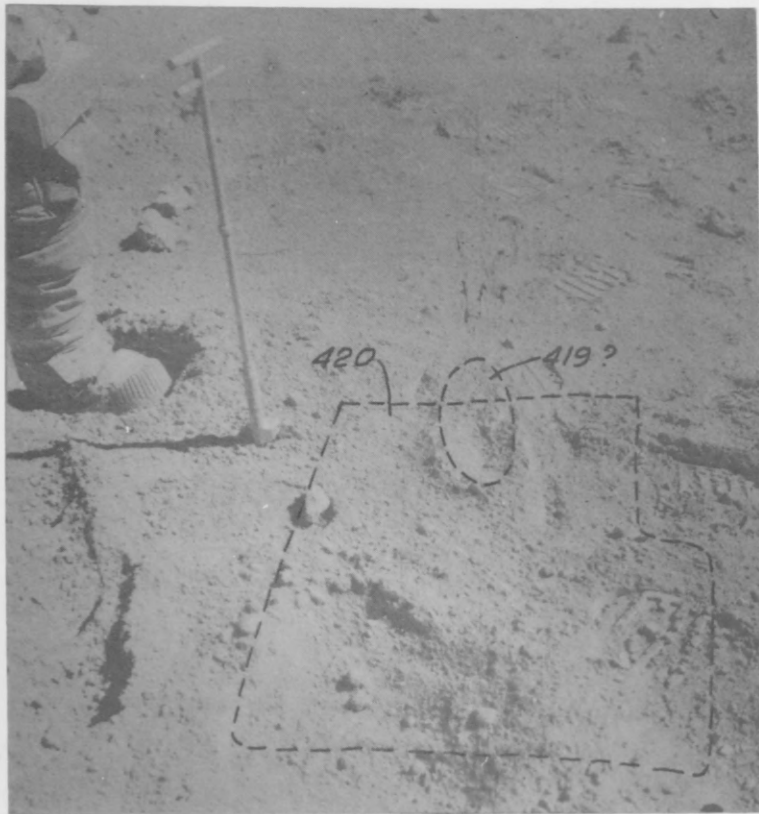


Figure 11-18

Bags 421, 422 rake and soil samples collected at station 11. Pre-sampling, cross-sun photo AS16-116-18642.



Figure 11-19

FSR-7 collected at station 11. Pre-sampling, cross-sun photo AS16-116-18621.



Figure 11-20
FSR-8a (tentatively identified)
collected south of House Rock
at station 11. Pre-sampling,
cross-sun photo AS16-106-17347.



Figure 11-21
FSR-8b collected at station 11.
Pre-sampling, cross-sun photo
AS16-116-18660.



Figure 11-22
FSR-8b collected at station 11.
Pre-sampling, up-sun photo
AS16-116-18659.



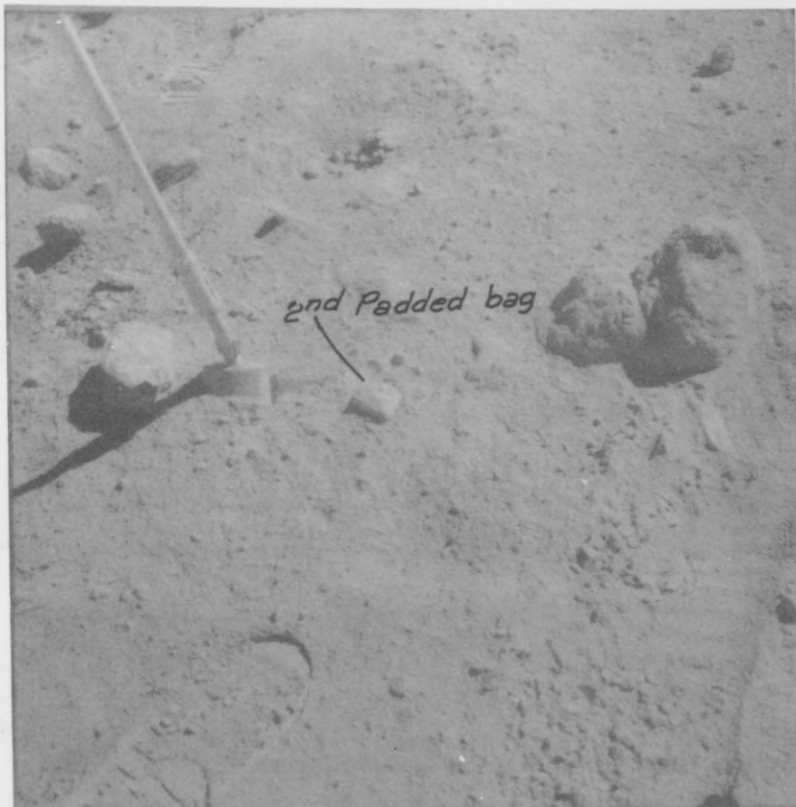
Figure 11-23
First padded bag sample collected at station 11. Pre-sampling, down-sun photo AS16-116-18656.



Figure 11-24
First padded bag sample collected at station 11. Pre-sampling, cross-sun photo AS16-116-18655.



Figure 11-25
Second padded bag sample
collected at station 11.
Pre-sampling cross-sun
photo AS16-106-17355.



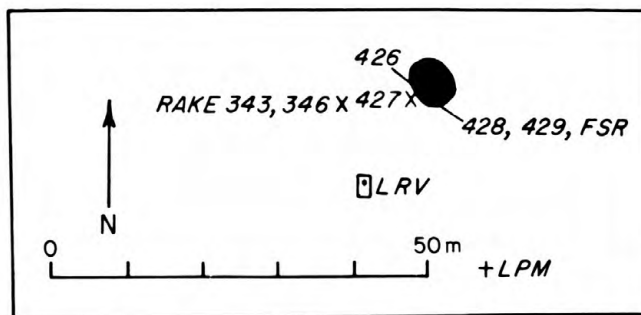


Figure 13-1. Planimetric sketch map of station 13.

Figure 13-2
Bags 345 (rake) and 346 (soil)
collected at station 13. Pre-
sampling, cross-sun photo
AS16-106-17409.

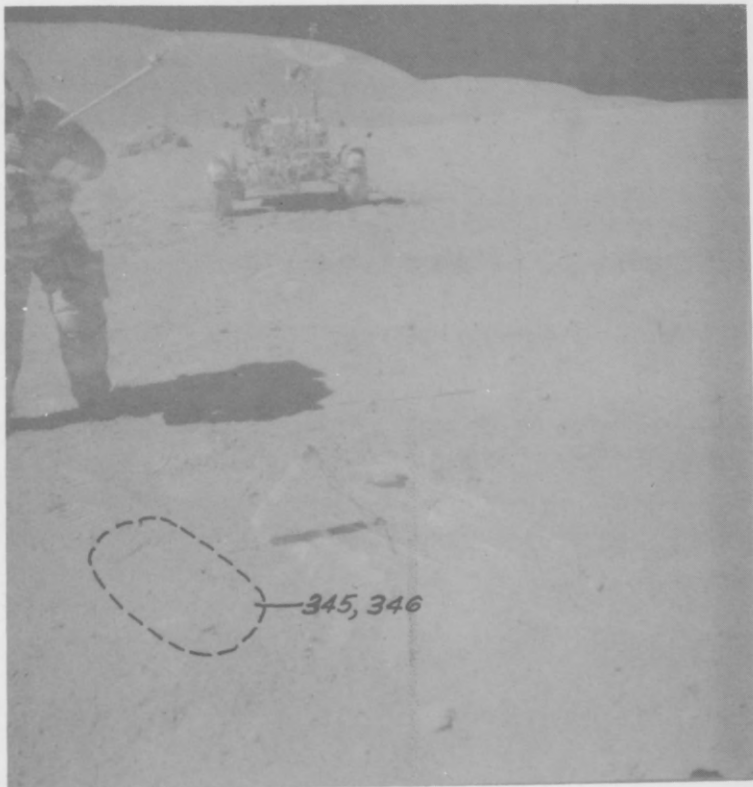


Figure 13-3
Bags 345 and 346 collected at
station 13 (photo taken after
two passes with the rake).
During-sampling, cross-sun
photo AS16-116-18667.



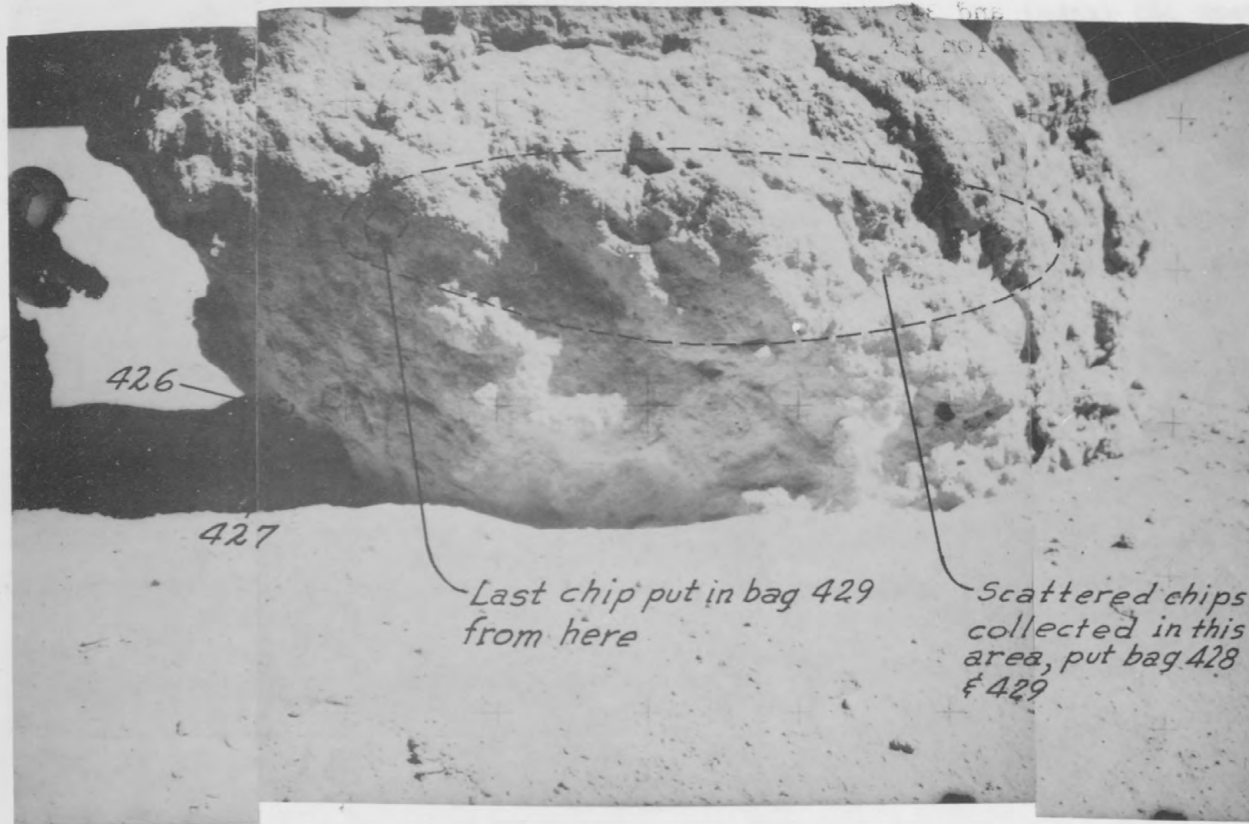
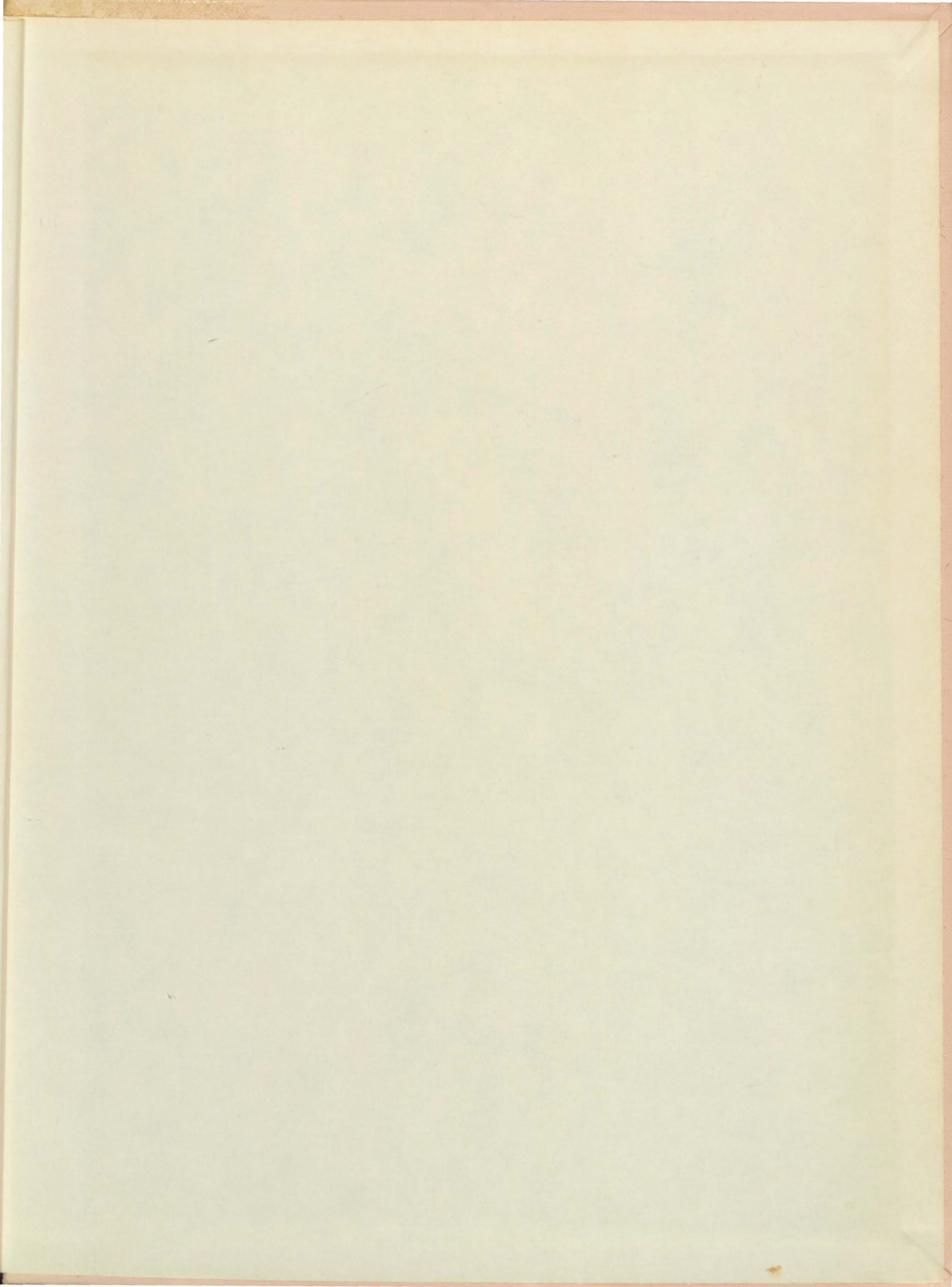


Figure 13-4

Bags 426 (chip), 427 (soil), 428 (chips), and 429 (chips) collected at station 1 from "Shadow Rock." Bags 426 and 427 contain material judged by the crew to be from "permanent shadow." Pre-sampling, cross-sun photos AS16-106-17413 to 17415.

13-3

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