

EARLY PROCESSING HISTORY

The Documented Sample ALSRC was transferred from the Crew Reception Area to the Sample Laboratory on July 25 and introduced into the atmospheric decontamination cabinetry system. The sealed document sample box, entered the F-201 vacuum system July 26, with the F-201 chamber pressure at approximately 7×10^{-6} torr. The box was opened after an unsuccessful attempt was made to analyze the atmosphere in the box by mass spectrometry through a probe inserted in the box end. The Lunar Sample Preliminary Examination Team made their initial inspection of the box contents after the Teflon bag containing the samples had been cut and peeled back. (Fig. 3) A few hours later, the first rock, sample 10003, was selected for gamma counting in the Radiation Counting Laboratory (RCL). See Table 2 for a description of the contents of the Documented Sample ALSRC.

The two core tubes and selected fines were next transferred to the Biological Preparation Laboratory. Later, one of the core tube samples, sample 10004, was opened and inspected and found to have a missing cap and the follower improperly inserted, but the sample was intact. More detailed information concerning the core samples may be found in the Lunar Core Catalogue (Duke and Nagle, 1974).

The Gas Reaction Cell (GRC) was intended to be used to determine whether violent reactions occurred when lunar material was exposed to various atmospheric gases. The cell was transferred to PCTL, but inspection of the cell in the PCTL indicated that the port cover had been broken during handling, exposing the sample to nitrogen. The remaining portion of the gas reaction tests (exposure to oxygen, carbon dioxide and water vapor) was performed, and there was no apparent change in the sample.

During subsequent sample description and splitting operations in F-201, a leak developed rapidly in one of the gloves, and the interstitial glove pressure went to atmospheric, but the pressure in F-201 is believed not to have risen above approximately 2 centimeters of mercury. Samples in F-201 at that time were 10017, 10018, 10019, and 10020. Some other samples, not yet numbered were in a vacuum beaker that had two bolts loose, and other samples were safely inside vacuum-sealed beakers that were properly sealed. It was necessary to sterilize the entire system with dry heat in order to replace the damaged gloves without violating the biological containment. After the gloves were replaced, the system was pumped down to operating pressures and processing of the samples from the documented box was continued. Sample 10020 was removed from the vacuum system after sterilization, placed in a glass vacuum jar, and placed where it could be viewed by the Lunar Sample Analysis Planning Team and visitors.

The Bulk Sample, ALSRC (#1003), contained most of the rocks and fines returned from the Apollo 11 mission. (See Table 2) This sample box was transferred into the first vacuum lock of the F-201 vacuum system, but after the glove accident (See p.15) it was decided to use the nitrogen cabinets in the Biological Preparation Laboratory for the opening and processing of the samples from the bulk box.

The bulk box was transferred into the nitrogen atmosphere cabinets in the Biological Preparation Laboratory on August 2. The bulk box samples were examined, described, photographed, and chipped in the Biological Preparation Laboratory, and chips were transferred to the PCTL for more detailed description. Most of the samples from the bulk box were maintained in the nitrogen cabinetry in the Biological Preparation Laboratory until the end of sample quarantine.

The contingency sample was transferred from the Crew Reception Area to the PCTL on July 27, where it was placed inside the nitrogen atmosphere cabinetry. The contingency sample was opened, and an initial inspection of the sample was made. The largest rock from the contingency sample, sample 10021, was transferred to the RCL. All rocks and fragments greater than 1 centimeter in size were removed from the contingency sample, and given sample numbers (See Table 2). Most of the contingency sample remained within the nitrogen atmosphere of the PCTL cabinetry until the end of sample quarantine. However, the contingency sample container was exposed to cabin atmosphere during storage and transportation back to earth. It was not opened, however.

TABLE I - Apollo 11
Generic Sample Listings with Original Weights

<u>Sample #</u>	<u>Original Wt.</u>	<u>Description</u>	<u>Returned Container</u>
10001	181.900	Fines	ALSRC 1004
10002	5,629.000	Rocks & Fines	ALSRC 1003
10003	213.000	Basalt	ALSRC 1004
10004	44.800	Core	ALSRC 1004
10005	53.400	Core	ALSRC 1004
10008	89.000	Fines	ALSRC 1004
10009	112.000	Breccia	ALSRC 1004
10010	491.000	Fines	Cont. Bag
10011	82.600	Fines	ALSRC 1004
10014	50.000	Fines	ALSRC 1004
10015	0.396	Gas Reaction Cell	ALSRC 1004
10017	973.000	Basalt	ALSRC 1004
10018	213.000	Breccia	ALSRC 1004
10019	297.000	Breccia	ALSRC 1004
10020	425.000	Basalt	ALSRC 1004
10021	250.000	Breccia	Cont. Bag
10022	95.590	Basalt	Cont. Bag
10023	66.000	Breccia	Cont. Bag
10024	68.120	Basalt	Cont. Bag
10025	8.590	Breccia	Cont. Bag
10026	9.300	Breccia	Cont. Bag
10027	8.870	Breccia	Cont. Bag
10028	3.530	Breccia	Cont. Bag
10029	5.530	Basalt	Cont. Bag
10030	1.810	Breccia	Cont. Bag
10031	2.700	Basalt	Cont. Bag
10032	3.130	Basalt	Cont. Bag
10033	1.120	Fines	Cont. Bag
10044	247.500	Basalt	ALSRC 1003
10045	185.500	Basalt	ALSRC 1003
10046	663.000	Breccia	ALSRC 1003
10047	138.000	Basalt	ALSRC 1003
10048	579.000	Breccia	ALSRC 1003
10049	193.000	Basalt	ALSRC 1003
10050	114.500	Basalt	ALSRC 1003
10054	202.100	Fines	ALSRC 1003
10056	186.000	Breccia	ALSRC 1003
10057	919.000	Basalt	ALSRC 1003
10058	282.000	Basalt	ALSRC 1003
10059	188.000	Breccia	ALSRC 1003
10060	722.000	Breccia	ALSRC 1004

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(TABLE 1 - cont'd)

<u>Sample #</u>	<u>Original Wt.</u>	<u>Description</u>	<u>Returned Container</u>
10061	346.000	Breccia	ALSRC 1004
10062	78.500	Basalt	ALSRC 1004
10063	148.000	Breccia	ALSRC 1004
10064	65.000	Breccia	ALSRC 1004
10065	347.000	Breccia	ALSRC 1004
10066	40.000	Breccia	ALSRC 1004
10067	69.300	Breccia	ALSRC 1004
10068	218.000	Breccia	ALSRC 1004
10069	119.500	Basalt	ALSRC 1004
10070	64.000	Breccia	ALSRC 1004
10071	189.500	Basalt	ALSRC 1004
10072	447.000	Gabbro	ALSRC 1004
10073	124.500	Breccia	ALSRC 1004
10074	55.500	Breccia	ALSRC 1004
10075	53.000	Breccia	ALSRC 1004
10082	50.500	Breccia	ALSRC 1004
10084	3,830.000	Fines	ALSRC 1003
10085	569.000	Fines	ALSRC 1003
10086	823.000	Fines	ALSRC 1003
10087	17.400	Chips and Fines	ALSRC 1003
10089	50.000	Fines	ALSRC 1003
10090	12.000	Fines	ALSRC 1003
10091	23.900	Breccia	ALSRC 1003
10092	46.000	Basalt	ALSRC 1003
10093	26.000	Breccia	ALSRC 1004
10094	25.000	Breccia	ALSRC 1004

TOTALS

1) Contingency Sample.....	1015.29 gm
2) ALSRC 1003.....	14897.4 gm
3) ALSRC 1004.....	5824.8 gm
4) ALSRC 1004.....	<u>98,596 gm</u>
TOTAL AP-11 SAMPLE RETURNED.....	21836.086 gm

TABLE 2 - Apollo 11
Contents of Sample Collection and Return Containers

<u>ALSRC 1004</u>	<u>Net Sample Wt. (gms)</u>	<u>Sample Numbers</u>
Core Tube #2	44.800	10004
Core Tube #1	53.400	10005
Gas Reaction Cell	0.396	10015
<u>Loose Fines</u>	403.500	10001
	(Combined)	10008
		10011
		10014
<u>Loose Rocks</u>		
Basalt, coherent	213.0	10003
Breccia, friable	112.0	10009
Basalt, coherent	973.0	10017
Breccia, tough	213.0	10018
Breccia, tough	297.0	10019
Basalt, coherent	425.0	10020
Breccia, tough	722.0	10060
Breccia, friable	346.0	10061
Gabbro, coherent	78.5	10062
Breccia, tough	148.0	10063
Breccia, mod.coherent	65.0	10064
Breccia, tough	347.0	10065
Breccia, mod.friable	40.0	10066
Breccia, tough	69.3	10067
Breccia, tough	218.0	10068
Basalt, friable	119.5	10069
Breccia, mod.friable	64.0	10070
Basalt, friable	189.5	10071
Gabbro, friable	447.0	10072
Breccia, friable	124.5	10073
Breccia, tough	55.5	10074
Breccia, tough	53.0	10075
Breccia, mod.coherent	50.5	10082
Breccia, coherent	26.0	10093
Breccia, coherent	<u>25.0</u>	10094
TOTAL ALSRC 1004	5923.396 gms	

(TABLE 2 - cont'd)

<u>ALSRC 1003</u>	<u>Net Sample Wt. (gms)</u>	<u>Sample Numbers</u>
<u>Loose Fines</u>	5,629.000	10002
	202.100	10054
	3,830.000	10084
	569.000	10085
	823.000	10086
	17.400	10087
	50.000	10089
	12.000	10090
	23.900	10091
 <u>Loose Rocks</u>		
Basalt, friable	247.5	10044
Basalt, coherent	185.5	10045
Breccia, mod.friable	663.0	10046
Basalt, mod.friable	138.0	10047
Breccia, coherent	579.0	10048
Basalt, friable	193.0	10049
Basalt, mod.coherent	114.5	10050
Breccia, tough	186.0	10056
Basalt, coherent	919.0	10057
Basalt, friable	282.0	10058
Breccia, friable	188.0	10059
Basalt, tough	<u>46.0</u>	10092
 TOTAL ALSRC 1003	14,897.4	
 <u>Contingency Sample Bag</u>		
Loose Fines	492.12	10010
	(Combined)	10033
 <u>Loose Rocks</u>		
Breccia, tough	250.00	10021
Basalt, coherent	95.59	10022
Breccia, tough	66.00	10023
Basalt, friable	68.12	10024
Breccia, slightly friable	8.59	10025
Breccia, tough	9.30	10026
Breccia, tough	8.87	10027
Breccia, mod.tough	3.53	10028
Basalt, coherent	5.53	10029

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(TABLE 2 - cont'd)

	<u>Net Sample Wt. (gms)</u>	<u>Sample Numbers</u>
(Loose Rocks, cont'd)		
Breccia, tough	1.81	10030
Basalt, coherent	2.70	10031
Basalt, coherent	<u>3.13</u>	10032
TOTAL CONTINGENCY SAMPLE	1,015.29	
TOTAL MISSION SAMPLE	21,836.086	