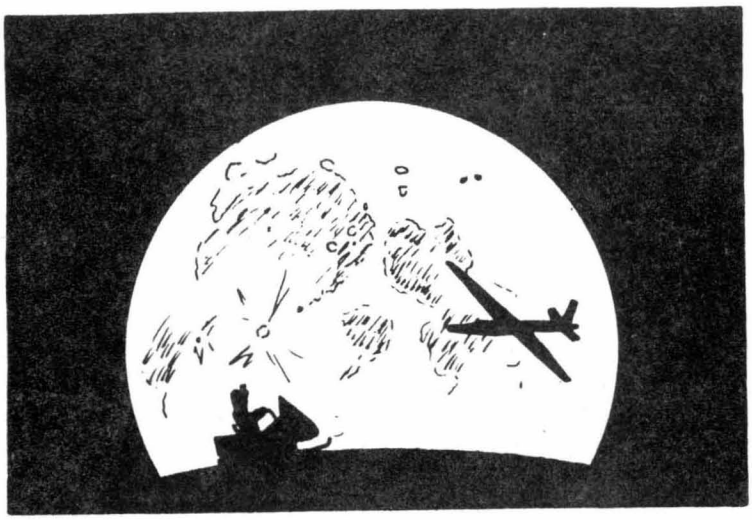

CURATORIAL NEWSLETTER

Number 34

January 22, 1982

Douglas P. Blanchard, Lunar Sample Curator
Curatorial Branch, SN2, NASA/JSC
Houston, Texas 77058, 713-483-3274

Next LAPST Meeting is February 25-28, 1982

The Lunar and Planetary Sample Team (LAPST) met November 19-22, 1981, at the Lunar and Planetary Institute. LAPST reviewed 13 requests for lunar samples from 12 Principal Investigators and recommended allocation of 87 samples weighing approximately 53.3 grams. LAPST reviewed five requests for cosmic dust samples and recommended allocation of samples to the five investigators.

Three of the lunar sample requests support studies related to the Highlands Initiative. Another is for a sample from a clast in an Apollo 14 breccia that had been identified in a thin section. The sample will provide chemical data to support the petrographic study. One request for gray glass discovered in core 64001 during the week prior to the meeting was tabled; allocations from 64001 will be considered at the next LAPST meeting. The core synopsis for 64001 is appended to this newsletter.

The next LAPST meeting is scheduled for February 25-28, 1982. Please submit requests for lunar samples and cosmic dust to this office no later than February 10, 1982. Requests received after that date will be processed if possible but may not receive adequate attention at the February meeting. The current list of LAPST members and their advocate and committee assignments are included in this news letter for your information.

New Curatorial Policies Facilitate Access to Samples

The addition of Cosmic Dust to the types of extraterrestrial materials available from the Curatorial Facility has brought a reexamination of curatorial policies regarding formal Principal Investigator status for scientists needing planetary material for research. Policies that worked well for the days of 100% NASA funded research are working less well as the sample community becomes much more diverse and secures its funding from a variety of sources. The net effect of suggested changes are:

1. Thin sections of lunar material will be made available to any researcher with a scientific need for them on a simple short term loan agreement analogous to that used for educational thin section packages. Microprobe analysis will be legitimate under such an agreement.

2. Any request for extraterrestrial materials for scientific research will be evaluated on its merit regardless of funding source.

The exact mechanisms have yet to be arranged, however, anyone interested in working on samples under these new arrangements should request more information from the Curator.

Curatorial Budget

The budget for curatorial operations at JSC has been reduced by 20% for FY 1982 and faces very serious threats in the FY 1983 proposed budget now in work. Appended to this newsletter is a copy of our report to Jesse Moore, Director of Earth and Planetary Exploration Division. It sums up the outlook for the remainder of 1982.

The level of funding in FY 1983 for the Curatorial Branch and its impact on curation and associated extraterrestrial sample science are still unknown. Frankly, the outlook appears to be somewhere between bleak and grim. We can probably expect a total budget that is between a fourth and a half of our 1982 reduced budget.

A major change of this type is always subject to NASA or Congressional review and reinstatement, but with the prevailing administrative disposition toward planetary science, a significant reprieve is unlikely.

We are taking every opportunity to restate the importance and significance extraterrestrial sample investigations and the curatorial functions which facilitate them.

In the meantime we are working hard to define the changes that these drastic cuts will force. We will keep you informed from time to time as the FY 1983 picture becomes clearer.

The last Curatorial Newsletter announced the availability from the LPI of the Apollo 16 Workshop Report. We failed to add that it is available for $3.00 in the USA, $4.00 for surface and $7.50 for airmail to foreign investigators.

Workshop on "Lunar Breccias and Soils and Their Meteoritic Analogs"

This workshop was held November 9-11, 1981. The 66 registrants included experts on terrestrial, lunar and meteorite breccias, geochronology, remote sensing, cratering phenomena, asteroid dynamics, and regolith modeling. The first day was devoted to analytical data on lunar and meteorite samples (petrology, chemistry, chronology) and to a discussion of data obtained from asteroids by a variety of remote sensing techniques. Discussions during the second day focussed on cratering dynamics and regolith modeling, and also included some discussion of whether one can identify in meteorites features due to accretion. The third day was devoted to presentation of summaries of the previous two days proceedings and to further discussion. The discussions were lively and informative.

The workshop resulted in several points of general agreement. One of the most valuable aspects of the workshop was the use of a common vocabulary to describe all breccias. The use of a wide diversity of terms has led to considerable confusion in the past. Another point of consensus was that large impacts could cause asteroids to break up but then reassemble. There was also general agreement that spalling caused by the interaction of shock waves with free surfaces might be an important process on small (few hundred km) bodies.

Several areas for future research were identified. Although it was clear that many types of meteorite breccias have not been studied in sufficient detail, it was also apparent that lunar regolith breccias require further study, especially with regard to demonstrating the degree to which they correspond to samples of unconsolidated lunar regolith. This is important because a great deal of meteorite research is geared to determining the nature of asteroidal regoliths; we have samples of meteorite regolith breccias, but not of unconsolidated regolith. Research is clearly needed in the effects of impacts into unconsolidated regoliths.

A report of the workshop will be available in a few months.

Workshop on "Igneous Rocks of the Lunar Highlands"

Previous workshops as part of the Highlands Initiative have touched on several aspects of the nature and origin of igneous rocks in the lunar highlands. However, none have covered this topic in exhaustive detail. The time is ripe for a workshop that would concentrate exclusively on igneous highland rocks. Graham Ryder and John Longhi have agreed to convene this workshop. The steering committee will meet in conjunction with the next LAPST meeting (February 1982) to draw up plans for the workshop. The workshop has been scheduled tentatively for September or October 1982.

"New" Mission to the Lunar Highlands -- Apollo 11

The first lunar anorthosites were discovered in Apollo 11 soils. Petrologic studies of Apollo 11 nonmare samples have been made, but few trace-elements data are available and there has not been a systematic investigation of a large suite of samples. This collection represents a sample of a highlands locality not sampled by other missions, so a coordinated effort on Apollo 11 nonmare lithic fragments would be roughly akin to a new sample-return mission.

A suite of these nonmare lithic fragments from Apollo 11 soil 10085 (1-4mm) will be hand picked during the next several months. LAPST will consider requests for these fragments. Consortia are especially encouraged.

COSMIC DUST PROGRAM

First Catalog

The first catalog of cosmic dust particles is in the printers' shop and will be mailed to a very wide distribution before the end of January. We are pleased with the quality of the catalog; it represents an impressive effort by everyone associated with it to overcome the technical intricacies of handling and examining the particles.

Future Catalogs

We are open to offers from any laboratory to do PET work. The preliminary examination of the collection will be done in batches of 125 - 150 particles representing a reasonably thorough sampling of one collection surface. The catalog you will be receiving soon will demonstrate the type and quality of information needed. The JSC-SEM lab has done an excellent job on the first catalog. If your laboratory is interested please call the Curator for more details.

Collection Program

The collection activities at JSC have moved to the NASA-DOE WB57F. We expect about 100 hours of collection time in 1982 with the aircraft. Additionally, two collectors will be flown part-time in the Ames Aerosol Particulate Sampler on board the ER-2. This aircraft is scheduled to fly about 600 hours in 1982.

Lockheed has proposed a pylon design to fly the large area (240 to perhaps 400 sq. cm. each) "pie-pans" on the ER-2 and U-2. These pylons and collectors are yet to be fabricated. We are optimistic for the prospects of continued collections and with the larger area collectors the number of particles available for study should increase significantly.

ANTARCTIC METEORITES

As of January 7, 1982, the U.S. party had recovered more than 220 meteorite specimens. They are due to leave the field January 22, 1982.

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ADVOCATE LIST FOR 1982 PI's

MINERALOGY AND PETROLOGY

D. WALKER	G. RYDER	J. TAYLOR	G. LUGMAIR
Lofgren	Keil	James	Tatsumoto
Meyer	Englehardt	Hays	Tilton
Rutherford	Basu	McKay	Wasserburg
Smith	Stoffler	Phinney	De Paolo
Lindsley	Maurette	Roedder	Nyquist
Albee	McDonald	Weiblen	Clayton
Sato	Ringwood	El Goresy	Epstein
Wood	Takeda	Hafner	Geiss
Weill	Taylor, L.	Nord	Pillinger
Huebner	Papike	Uhlmann	
Kerridge	Horz		
Rhodes			

ISOTOPES AND CHEMISTRY

D. BROWNLEE	W. BOYNTON	D. LEIGH	
Walker, RM	Wasson	Hohenberg	Lal
Buseck	Schmitt	Marti	Thode
Gibson	Anders	Signer	Arnold
	von Gunten	Tombrello	Perkins
	Laul	Reynolds	
	Haskin	Kirsten	
	Morgan	Pepin	
	Wanke	Bhandari	
	Taylor, SR	Fireman	
	Philpotts		
	Hubbard		

PHYSICAL PROPERTIES

R. MORRIS

Adams
Ahrens
Strangway
Dollfus
Fuller
Housley
Runcorn
Klein
Turner

LAPST SUBCOMMITTEES

CORE	RESTRICTED ACCESS COLLECTION AND CUTTING PLANS	PUBLIC DISPLAYS AND EDUCATION	FLOWER/SOCIAL
Morris - Chair	Taylor - Chair	Walker - Chair	Boynton - Chair
Taylor	James	Leich	James
Leich	Ryder	James	Walker
		Taylor	Lugmair

PROCEDURES AND LABORATORY	COSMIC DUST	HIGHLANDS INITIATIVE
Boynton - Chair	Brownlee - Chair	Taylor - Chair
Lugmair	Morris	Walker
Brownlee	Leich	James
	Boynton	Lugmair
		Ryder

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas
77058

NASA

JAN 13 1982

Reply to Attn of: SN2-81-341

TO: NASA Headquarters
Attn: EL-4/Director, Earth & Planetary Exploration Division

FROM: SA/Director of Space & Life Sciences

SUBJECT: Status of Curatorial Branch, Planetary & Earth Sciences Division

This is a status report of the Curatorial Branch of Planetary and Earth Sciences Division following adjustments to a reduced budget for FY82. As you know the Curatorial Branch is responsible for three areas of extraterrestrial materials science:

1. Lunar Sample Curation
2. Antarctic Meteorite Curation
3. Cosmic Dust Collection

The branch is funded entirely by extraterrestrial materials funds.

In response to the overall reduction in the ETM Program, we have reduced the operating budget of the Curatorial Branch by 20%. Because this change comes late in the first quarter, it has necessitated a 25% reduction in the Northrop contract for support of the branch. The Northrop reduction will be effective January 1, 1982.

Obviously there will be changes. However, several important things will remain unchanged. We continue to operate with the same constant high regard for the safety and integrity of the lunar collection. We continue to keep close account of all samples both those in our custody and those in research facilities around the world. We continue to fully support our responsibilities in the curation of Antarctic meteorites as defined in the three agency agreement with National Science Foundation and the Smithsonian. We are pressing on with the exciting new program in cosmic dust collection and curation. It has high priority among our tasks and is progressing very well.

We have had to make some programmatic and procedural changes to our operations. We will discontinue opening new lunar core sections after we have completed those now in work. We have opened cores from 16 of the 24 lunar locations where they were taken. For the past several years the lunar core effort has progressed at rapid rate which allowed good characterization work by scientists but left little time to explore in detail some of the implications of the core discoveries. A moratorium in opening new cores at this point will not terminate core studies, but allow core sample scientists a chance to synthesize their understanding and resharpen the focus on outstanding problems to which core samples can make unique contributions.

We have suspended the annual inventory of lunar samples after physically locating every sample but before weighing the representative 1% of the samples as required by procedure. The location inventory demonstrated that the collection is in excellent order. The weight verification is intended to establish the accuracy of our records of sample masses. We have conducted the weight inventories for a number of years and know the accuracy of our records rather well. The situation is stable, new procedures ensure highly accurate records, old records remain unchanged, no information is being lost. We are working out a more efficient plan for accomplishing the goals of the inventory.

We are seeking new efficiencies that do not compromise the samples. The Northrop contract group will be reorganized to be more flexible to respond to peak loads in each of the three areas of extraterrestrial materials work. We are also making increased use of the civil servant expertise in the other branches of the division. They will assume greater responsibilities in researching P.I. sample requests and in compiling new catalogs of lunar samples based on the latest scientific information available. These catalogs, as exemplified by the three volume Apollo 16 catalog, have demonstrably catalyzed and facilitated sophisticated second generation scientific research.

Our reduced contractor support will inevitably cause a slower response to requests for samples and a slower pace on our ongoing scientific synthesis work. We are making every effort to minimize the adverse impact to the programs.

We feel we have made difficult but sound decisions in response to changes in our funding. We will continue to adequately support programs of active research in extraterrestrial materials.

Sincerely,

W. E. Rice
Director of Space & Life Sciences

CORE SYNOPSIS - FIRST DISSECTION 64001

Field Relationships: Core 64001/2 was collected at Station 4, the highest station on Stone Mountain. The surface slope is about 16° on a 100 m scale. The local slope for 64001/2 was influenced by the core being taken, on the downslope side, 7-8 m from the rim of a subdued, shallow crater of 15 m diameter. The regolith was gray in color. In the crater, white soil was observed at 1 cm depth, and none was found in a trench in the bottom of the crater.

64001 Stratigraphic Summary: This core is the lower half of 64002/1. A synopsis of 64002 is given in Curatorial Newsletter No. 28. Core 64001 is much more uniform in appearance than 64002. The upper most unit described below extends upward into core 64002 to the 20.0 cm depth.

Unit depth	Samples in Unit (64001)	Stratigraphic summary based on the first dissection and x-radiographs of the unopened soil column
26.4 - 35.0 cm	,8 through ,41 and ,149	This unit contains some large rock fragments, is marbled at top, contains distinctive rounded breccia fragments at the base, contains moderate abundances of all rock types. The top of this unit is in 64002.
35.0 - 43.0 cm	,42 through ,78 and ,58 ,71 ,72 ,75 and ,78	This unit is moderately fine-grained, massive soil with a basal concentration of distinctive clasts that contain many dark droplets, in association with subophitic basalts that are rich in dark opaque minerals.
43.0 - 50.0 cm	,79 through ,106	This unit is coarser-grained, with concentration of soil breccia that decreases in abundance and cohesiveness downward.
50.0 - 58.0 cm	,107 through ,138	This unit is fine-grained, with abundant vesicular glass and dark-matrix breccia.
58.0 - base of core (60.5 cm)	,139 through ,148	This unit is cohesive and fine-grained with abundant vesicular glass and dark-matrix breccia.

A penetrometer was pushed into the regolith 1 from the core (NASA SP 315 p. 8-5 through 8-11). There was increased resistance at 20, 50, and 58 cm. Soil in the core was more cohesive at these same depths.

DRIVE TUBE 64001: LOCATION OF SAMPLES, FIRST DISSECTION

Unit Boundaries	Columnar Section	Depth (Cm. Below Lunar Surface)	Fine (<1mm) Fraction Sample No.	Fine (<1mm) Fraction Sample Wt.	Coarse (>1mm) Fraction Sample No.	Coarse (>1mm) Fraction Sample Wt.	Special Samples Sample No.	Special Samples Sample Wt.	Special Samples Sample Type
		26.4							
		27.0	,3	2.071	,9	0.133			
		27.5	,10	2.025	,11	0.089			
		28.0	,12	1.919	,13	0.240			
		28.5	,14	1.982	,15	0.221			
		29.0	,16	2.190	,17	0.135			
		29.5	,18	2.059	,19	0.073			
		30.0	,20	2.096	,21	0.166			
		30.5	,22	1.971	,23	0.136			
		31.0	,24	2.002	,25	0.104			
		31.5	,26	1.731	,27	0.349			
		32.0	,28	2.280	,29	0.162			
		32.5	,30	2.186	,31	0.151			
		33.0	,32	2.023	,33	0.158			
		33.5	,34	2.166	,35	0.206			
		34.0	,36	1.981	,37	0.102			
		34.5	,38	1.618	,39	0.767	,149	0.291	clast of mixed SoBx-GyXt
		35.0	,40	1.947	,41	0.184			
		35.5	,42	2.034	,43	0.076			
		36.0	,44	1.797	,45	0.107			
		36.5	,46	1.970	,47	0.112			
		37.0	,48	2.133	,49	0.097			
		37.5	,50	1.891	,51	0.141			
		38.0	,52	2.275	,53	0.117			
		38.5	,54	2.037	,55	0.079			
		39.0	,56	1.947	,57	0.086	,58	0.075	clast with dark droplets
		39.5	,59	2.154	,60	0.097			
		40.0	,61	2.022	,62	0.068			
		40.5	,63	2.033	,64	0.046			
		41.0	,65	2.061	,66	0.095			
		41.5	,67	1.659	,68	0.221	,71	0.190	rind, clast with dk. droplets
		42.0	,69	1.621	,70	0.095	,72	0.112	center, clast with dk. droplets
		42.5	,73	1.791	,74	0.197	,75	0.137	clast with dark droplets
		43.0	,76	1.770	,77	0.322	,78	0.106	clast with dark droplets
		43.5	,79	2.144	,80	0.506			
		44.0	,81	1.903	,82	0.330			
		44.5	,83	1.550	,84	0.184			
		45.0	,85	1.993	,86	0.316			
		45.5	,87	1.816	,88	0.348			
		46.0	,89	1.491	,90	0.053			
		46.5	,91	1.522	,92	0.137			
		47.0	,93	2.590	,94	1.087			
		47.5	,95	1.990	,96	0.049			
		48.0	,97	2.370	,98	0.141			
		48.5	,99	2.047	,100	0.053			
		49.0	,101	1.987	,102	0.093			
		49.5	,103	1.787	,104	0.139			
		50.0	,105	2.095	,106	0.233			
		50.5	,107	1.795	,108	0.053			
		51.0	,109	2.101	,110	0.069			
		51.5	,111	2.111	,112	0.116			
		52.0	,113	2.003	,114	0.045			
		52.5	,115	1.579	,116	0.089			
		53.0	,117	2.496	,118	0.085			
		53.5	,119	1.962	,120	0.087			
		54.0	,121	2.074	,122	0.089			
		54.5	,123	2.192	,124	0.130			
		55.0	,125	2.175	,126	0.134			
		55.5	,127	1.993	,128	0.030			
		56.0	,129	2.100	,130	0.081			
		56.5	,131	1.947	,132	0.123			
		57.0	,133	2.128	,134	0.235			
		57.5	,135	2.160	,136	0.047			
		58.0	,137	1.846	,138	0.080			
		58.5	,139	2.085	,140	0.075			
		59.0	,141	2.049	,142	0.141			
		59.5	,143	1.936	,144	0.066			
		60.0	,145	1.959	,146	0.112			
		60.5	,147	2.273	,148	0.081			

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