Antarctic Meteorite NEWSLETTER

Volume 16
Number 2

August 1993

A periodical issued by the Meteorite Working Group to inform scientists of the basic characteristics of specimens recovered in the Antarctic.

Edited by Roberta Score and Marilyn Lindstrom
Code SN2, NASA
Johnson Space Center,
Houston, Texas
77058

INSIDE THIS ISSUE:

SAMPLE REQUEST DEADLINE:
September 20, 1993

MWG MEETS October 15-16, 1993

SAMPLE REQUEST GUIDELINES

All sample requests should be made in writing to:

Secretary, MWG
SN2/Planetary Science Branch
NASA/Johnson Space Center
Houston, TX 77058 USA.

Requests that are received by the MWG Secretary before Sept. 20, 1993, will be reviewed at the MWG meeting on Oct. 15-16, 1993, to be held in Washington, D.C. Requests that are received after the Sept. 20 deadline may possibly be delayed for review until the MWG meets again in the Spring of 1994. **PLEASE SUBMIT YOUR REQUESTS ON TIME.** Questions pertaining to sample requests can be directed in writing to the above address or can be directed to the curator at (713) 483-5135 or the secretary at (713) 483-5125.

Requests for samples are welcomed from research scientists of all countries, regardless of their current state of funding for meteorite studies. Graduate student requests should be initialed or countersigned by a supervising scientist to confirm access to facilities for analysis. All sample requests will be reviewed in a timely manner. Those requests that do not meet the JSC Curatorial Guidelines (published in this issue), will be reviewed by the Meteoritie Working Group (MWG), a peer-review committee which meets twice a year to guide the collection, curation, allocation, and distribution of the U.S. collection of Antarctic meteorites. Issuance of samples does not imply a commitment by any agency to fund the proposed research. Requests for financial support must be submitted separately to the appropriate funding agencies. As a matter of policy, U.S. Antarctic meteorites are the property of the National Science Foundation and all allocations are subject to recall.

Each request should accurately refer to meteorite samples by their respective identification numbers and should provide detailed scientific justification for proposed research. Specific requirements for samples, such as sizes or weights, particular locations (if applicable) within individual specimens, or special handling or shipping procedures should be explained in each request. Requests for thin sections which will be used in destructive procedures such as ion probe, etch or even repolishing, must be stated explicitly. Consortium requests should be initialed or countersigned by a member of each group in the consortium. All necessary information should probably be condensable into a one- or two-page letter, although informative attachments (reprints of publication that explain rationale, flow diagrams for analyses, etc.) are welcome.

Samples can be requested from any meteorite that has been made available through announcement in any issue of the Antarctic Meteorite Newsletter (beginning with 1 (1) in June, 1978). Many of the meteorites have also been described in five Smithsonian Contr. Earth Sci.: Nos. 23, 24, 26, 28, and 30.

II. ANTARCTIC METEORITE WORKING GROUP GUIDELINES FOR ALLOCATIONS BY THE JOHNSON SPACE CENTER CURATOR

1. General Statement

The following guidelines represent an updated version of Appendix 6 (p. 58-59) of the minutes of the September 26-28, 1985 meeting of the Meteorite Working Group (MWG). These points set forth the conditions under which the Curator of Antarctic Meteorites at NASA/Johnson Space Center (JSC) can allocate samples without review and approval by the full membership of MWG.

Curatorial allocations may be made only if: (a) Availability of the meteorite has been announced in a published issue of the Antarctic Meteorite Newsletter or catalog; (b) MWG has already met at least once following announcement of the meteorite; and (c) the request does not require use of material (including thin sections) from the Special List in Section II.4.

If the curator has any doubt about the allocation of any particular sample, the request should be referred to MWG.

2. Allocation of Polished Thin Sections/ Probe Mounts

Any request for a polished thin section/probe mount (PTS/PM) that is made in writing and that does not constitute an open-ended "standing" request, can be approved and filled by the Curator without consulting other members of the MWG subject to the following conditions listed as 2.1 through 2.4.

2.1

If possible, PTS/PM allocations will utilize existing non-library[a] sections. For small meteorites (original[b] mass <30g), the curator should attempt to recall any existing non-library sections for the purpose of filling the new request before considering whether to loan out a library section or prepare a new section under the guidelines set out below in 2.2 and 2.3, respectively.

2.2

If a JSC library section[a] of any meteorite is loaned, the term should be for no more than 3 months. MWG does not in general advocate the loan of Smithsonian Institution (SI) library sections, in order to maintain one relatively complete library. However, in special cases, the SI library section may be loaned for a brief period (up to 2 weeks) by the SI curator with the consent of one other member of MWG.

2.3

If new thin sections must be prepared, existing potted butts or chips of returned[c] samples should be used if possible. However, new sections should not be prepared if the original[b] mass of the meteorite is below 30 g, and either the mass of pristine[c] material is <50% of the original mass or <5 g of pristine materiam exists (types 4-6 ordinary chondrites are excluded from this rule). Preparation of new sections requires MWG approval if the potted butts are on the Special List.

A chip of pristine material may be used for the preparation of a new PTS/PM only if the available pristine mass of the meteorite at JSC is >50 grams and the new chip weighs <5% of the available pristine mass.

2.4

The curator can allocate a non-library thin section for destructive[d] analysis provided that the section is not on the Special List, and either (a) at least one additional non-library section exists that has not been subjected to destructive analysis, or (b) a new section could be prepared by the curator according to II.2.3. Other requests for destructive analysis of PTS/PM require MWG approval.

3. Allocation of Samples in a Form Other Than PTS/PM

Any request that is made in writing for a sample in a physical form other than a PTS/PM and that meets conditions 3.1 and 3.2 or, for prepared powders, 3.3, can be approved and filled by the Curator if the request does not constitute an open-ended "standing" request.

3.1

The total available pristine mass of the meteorite at JSC is >20 grams for types 4-6 ordinary chondrites or > 50 grams for all other meteorites, and the pristine mass of the meteorite after allocation would be at least 50% of the original mass.

3.2

If the request is for returned sample material, allocations of up to 5 grams or 5 weight % of the original mass of the meteorite (whichever is less) can be made by the curator. However, if pristine sample material is involved, the allocation should represent <5 grams or <1 weight percent of the original mass of the meteorite (whichever is less).

3.3

Some meteorites have had portions prepared into homogenized powders by E. Jarosewich of SI, where the powders reside. Requests for these powders should also be made through the JSC curator and may be curatorially allocated provided the request meets the following criteria: (a) more than 3 g of powder remains; and (b) the request is for no more than 10% of the available powder;

4. Special Meteorites

Any meteorite or portion of it may be designated by MWG as Special because of its unusual properties or rarity, and a list of such samples will be maintained. The purpose of this classification is to assure that samples of important meteorites that could otherwise be allocated by the JSC curator under Sections II.2 and II.3, are not allocated without review and approval by the full MWG. This restriction takes precedence over the normal Guidelines for Curatorial Allocations set out in Sections II.2 and II.3 above. Allocation of Special meteorites by MWG generally will be governed by the Rare and Small Sample guidelines set out in Section III-3 below.

The Special List should be used to identify thin sections that the MWG does not wish the curator to allocate under Sections II.2.1, II.2.2 and II.2.4, potted butts and returned chips that are too valuable to use for thin-section preparation under Section II.2.3, rare types of meteorites with original masses >50 g for which MWG wishes greater control over allocations, and subsamples of large meteorites that could otherwise be allocated by the curator under Sections II.2.3 and II.3.1-II.3.3.

Concern for sample protection must be balanced against the importance of making samples readily available to qualified investigators. Therefore, the Special List should be used sparingly.

Examples of Special samples might include (but are not restricted to) entire meteorites that are of rare type (*e.g.* angrites, SNCs), portions of large meteorites that are breccias in which small individual clasts are of great interest (*e.g.* a lunar meteorite with large mare basalt clasts), and some or all of the thin sections of meteorites that are so small that the thin sections are difficult or impossible to replace (*e.g.* sections of the 0.5-g angrite LEW87051).

The MWG is responsible for making additions to the Special List. Each addition to or deletion from the list should be accompanied by a clear statement from MWG of the rationale for that action. The JSC curator is responsible for maintaining and updating the list and making it available.

---

[a] *Library* thin sections are two reference collections of Antarctic meteorite thin sections maintained at JSC and SI. They are available for on-site use by scientists visiting either of those institutions but are not, in general, loaned out.

[b] If the meteorite was divided with Japan (as part of the agreement that existed for the 1976-1978 collection), the "*Original Mass*" is defined as the mass retained by the US.

[c] *Pristine* is defined as that portion of a specimen which has never been allocated. The exception is that any samples that have been allocated for non-destructive analysis, whose containers have not been opened by the Investigators (*e.g.*, radiation counting), remain pristine. Any other form of sample that is returned by an Investigator is defined as a *Returned* sample.

[d] *Destructive* analysis of PTS/PM is defined as any procedure that can cause significant irreversible alteration. Such procedures include, but are not limited to, acid etching, removal of material for separate analysis, additional thinning of the section, and ion probe analysis. Nondestructive procedures specifically include application of carbon coating, light microscopy, electron microprobe and SEM analysis. Removal (by repolishing) of carbon coating is destructive but may be necessary and is permitted.

LIST OF SPECIAL METEORITES AS OF APRIL 30, 1993

			RESTRICTED MATERIAL (Superseding Sections II.2 and II.3)						Other Information			
			Lib-TS		Other	Potted	Bulk Samples		Wt (g)			
Name	Type	Portion+	SI	JSC	TS	butts	Pris.	Not Pris.	Orig.	Pris.	#TS	#PB
EETA79001	Shergottite	Lith B only	n/a	n/a	yes	yes	yes	yes	227	?	12	4
EETA79001	Shergottite	Lith C only	n/a	n/a	yes	yes	yes	yes	25	?	8	6
LEW88516	Shergottite		yes	no	no	n/a	*	*	13.2	8.0	11	0
MAC88105	Lunar	Clasts only	n/a	n/a	yes	yes	yes	yes	663@	?	?	?
MAC88104	Lunar	Clasts only	n/a	n/a	yes	yes	yes	yes	61@	?	?	?
ALHA81005	Lunar		yes	yes	no	yes	*	*	31.4	24.6	23	1
EET87521	Lunar		yes	yes	no	yes	*	*	30.7	21.5	21	11
LEW86010	Angrite		yes	yes	no	*	*	*	6.9	3.0	4	1
LEW87051	Angrite		yes	yes	n/a	n/a	*	*	0.61	0.32	2	0
ALHA77081	Acapulco-like		yes	no	no	n/a	*	*	4.28#	2.69	7	0
ALHA81261	Acapulco-like		yes	no	no	n/a	*	*	11.8	7.87	3	0
ALHA81315	Acapulco-like		yes	no	n/a	n/a	*	*	2.46	1.94	2	0
LEW88663	Uniq. Achon.		yes	no	n/a	no	*	*	14.5	13.1	2	1
MAC88177	Lodran-like		yes	no	no	no	*	*	35.3	25.0	9	3
LEW88280	Lodran-like		yes	no	no	*	*	*	5.97	4.15	4	1
ALH84025	Brachina-like		yes	no	no	*	*	*	4.58	2.87	7	2
LEW88763	Brachina-like		yes	no	no	*	*	*	4.12	2.75	4	1
LEW88774	Ureilite		yes	yes	yes	*	*	*	3.1	2.1	3	0
PAT91546	Chond. Ungr.		yes	yes	no	no	*	*	17.9	15.5	2	1
ALH85085	Chond. Ungr.		yes	yes	no	yes	*	*	11.9	7.3	5	2
ALH85151	Chond. Ungr.		yes	yes	no	no	*	*	13.9	9.7	8	3

Abbreviations: n/a=not applicable; TS=thin section; Lib-TS=library thin section; PB=potted butt; Pris=pristine; ?=information not available.

* This material is protected under the normal guidelines given in Section II and thus is not explicitly listed here.

+ Entries under restricted material apply only to those portions listed in this column; if no entry is made, then restrictions apply to material from all parts of the meteorite.

@ Masses of the whole meteorites, not just the clasts.

US weight, original weight 8.59 g.

New Meteorites

This newsletter presents classifications of 378 meteorites from the 1988-1992 ANSMET collections. Included are the first classications from the 1992-1993 field season. The new meteorites include 3 eucrites, 1 mesosiderite, 6 carbonaceous chondrites, 9 enstatite chondrites, 2 unequilibrated ordinary chondrites and 3 ungrouped chondrites similar to ALH85085.

Publication of ANSMET meteorites

The curator's office, Meteorite Working, Group, and the Meteoritical Society Nomenclature Committee are preparing a special issue of the Meteoritical Bulletin which will consist of a complete listing of ANSMET meteorites. The bulletin should appear in the January 1994 issue of Meteoritics. In the process of preparing the list we are reviewing meteorite classifications and are updating them based on new information available since the initial classification. The list of reclassified meteorites will be published in the February 1994 newsletter.

Availability of new AMLAMP maps

LPI announces the availability of two new AMLAMP maps of meteorite locations. They are the Elephant Moraine - Northern Ice Patch and the Reckling Peak - Reckling Moraine Icefield maps. Information on these maps and how to order location maps is included at the end of this newsletter. Also watch for the publication of the new AMLAMP Users' Guide.

Information on the U.S. Collection of Antarctic Meteorites:

Number of meteorites:	6192
Number of meteorites classified:	5537

*****NOTES TO TABLES 1 AND 2:***

"Weathering" categories:

A: Minor rustiness; rust haloes on metal particles and rust stains along fractures are minor.
B: Moderate rustiness; large rust haloes occur on metal particles and rust stains on internal fractures are extensive.
C: Severe rustiness; metal particles have been mostly stained by rust throughout.
e: Evaporite minerals visible to the naked eye.

"Fracturing" categories:

A: Minor cracks; few or no cracks are conspicuous to the naked eye and no cracks penetrate the entire specimen.
B: Moderate cracks; several cracks extend across exterior surfaces and the specimen can be readily broken along the cracks.
C: Severe cracks; specimen readily crumbles along cracks that are both extensive and abundant.

From 1988-1992 Collections

Pages 8-20 contain preliminary descriptions and classifications of meteorites that were completed since publication of issue 16(1) (March 1993). All specimens of special petrologic type (carbonaceous chondrite, unequilibrated ordinary chondrite, achondrite, etc.) are represented by separate descriptions. However, some specimens of non-special petrologic type are listed only as single line entries in Table 1. For convenience, new specimens of special petrologic type are also recast in Table 2.

Macroscopic descriptions of stony meteorites were performed at NASA/JSC. These descriptions summarize hand-specimen features observed during initial examination. Classification is based on microscopic petrography and reconnaissance-level electron microprobe analyses using polished sections prepared from a small chip of each meteorite. For each stony meteorite the sample number assigned to the preliminary examination section is included. In some cases, however, a single microscopic description was based on thin sections of several specimens believed to be members of a single fall.

Meteorite descriptions contained in this issue were contributed by the following individuals:

Robbie Marlow, Cecilia Satterwhite, and Roberta Score
Antarctic Meteorite Laboratory
NASA/Johnson Space Center
Houston, Texas

Brian H. Mason
Department of Mineral Sciences
U.S. National Museum of Natural History
Smithsonian Institution
Washington, D.C.

Antarctic Meteorite Locations

ALH — Allan Hills
BEC — Beckett Nunatak
BOW — Bowden Neve
BTN — Bates Nunataks
DAV — David Glacier
DOM — Dominion Range
DRP — Derrick Peak
EET — Elephant Moraine
GEO — Geologists Range
GRO — Grosvenor Mountains
HOW — Mt. Howe
ILD — Inland Forts
LAP — LaPaz Ice Field
LEW — Lewis Cliff
MAC — MacAlpine Hills
MBR — Mount Baldr
MCY — MacKay Glacier
MET — Meteorite Hills
MIL — Miller Range
OTT — Outpost Nunatak
QUE — Queen Alexandra Range
PAT — Patuxent Range
PCA — Pecora Escarpment
PGP — Purgatory Peak
RKP — Reckling Peak
STE — Stewart Hills
TIL — Thiel Mountains
TYR — Taylor Glacier
WIS — Wisconsin Range

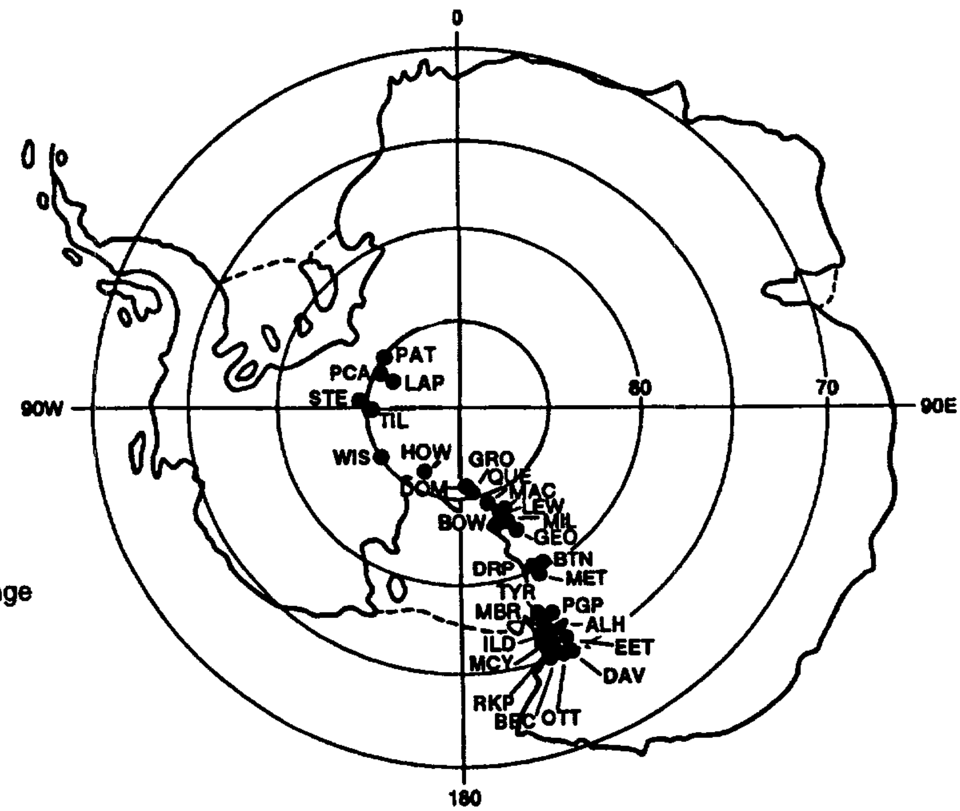

TABLE 1

List of Newly Classified Antarctic Meteorites **

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
LEW 88299	27.0	H-5 CHONDRITE	B/Ce	A/B	18	16
LEW 88634	7.7	L-3 CHONDRITE	B/C	A	1-33	6-18
EET 90670~	43.4	L-6 CHONDRITE	B	A		
EET 90671~	35.2	L-5 CHONDRITE	A/Be	A		
EET 90672~	72.1	L-6 CHONDRITE	B	A		
EET 90673~	70.1	L-6 CHONDRITE	B/C	A		
EET 90674~	33.2	L-6 CHONDRITE	B/C	A		
EET 90675~	49.9	L-6 CHONDRITE	B/C	A		
EET 90676~	14.7	L-6 CHONDRITE	B/C	A		
EET 90677~	22.8	L-6 CHONDRITE	B/C	A		
EET 90678~	20.9	L-6 CHONDRITE	B/C	A		
EET 90679~	70.7	L-6 CHONDRITE	B/C	A		
EET 90680~	19.3	L-6 CHONDRITE	B	A		
EET 90681~	40.0	L-6 CHONDRITE	A/B	A		
EET 90682~	25.2	L-6 CHONDRITE	B	A		
EET 90683~	23.1	L-6 CHONDRITE	B	A		
EET 90684~	16.6	L-6 CHONDRITE	B	A		
EET 90685~	18.2	L-6 CHONDRITE	B/C	A		
EET 90686~	11.6	L-6 CHONDRITE	B/C	A		
EET 90687~	10.6	L-6 CHONDRITE	B/C	A		
EET 90688~	17.6	L-6 CHONDRITE	C	A		
EET 90689~	37.0	L-6 CHONDRITE	B	A		
EET 90690~	24.9	L-6 CHONDRITE	B/C	A		
EET 90691~	26.1	L-6 CHONDRITE	B/C	A		
EET 90692~	13.6	L-6 CHONDRITE	B/C	A		
EET 90693~	10.9	L-6 CHONDRITE	B/C	A		
EET 90694~	22.9	L-6 CHONDRITE	B/C	A		
EET 90695~	30.6	L-6 CHONDRITE	A/B	A/B		
EET 90696~	15.6	L-6 CHONDRITE	B	A		
EET 90697~	17.7	L-6 CHONDRITE	B/C	A		
EET 90698~	16.3	L-6 CHONDRITE	B/C	A		
EET 90699~	19.1	L-6 CHONDRITE	B/C	A		
EET 90700~	36.7	L-6 CHONDRITE	A/B	A		
EET 90701~	4.4	L-6 CHONDRITE	A/B	A		
EET 90702~	27.6	L-6 CHONDRITE	Be	A		
EET 90703~	9.1	L-6 CHONDRITE	B	A		
EET 90704~	8.7	L-6 CHONDRITE	B	A		
EET 90705~	34.7	L-6 CHONDRITE	B	A		
EET 90706~	10.6	L-6 CHONDRITE	A/B	A		
EET 90707	35.5	H-5 CHONDRITE	B/C	A	19	17
EET 90708~	13.8	L-6 CHONDRITE	B/C	A/B		
EET 90709~	5.6	L-6 CHONDRITE	B/C	A		
EET 90710~	10.2	L-6 CHONDRITE	A/B	A		
EET 90711~	10.2	L-6 CHONDRITE	A/B	A		
EET 90712~	24.8	L-6 CHONDRITE	B/C	A		
EET 90713~	33.5	L-6 CHONDRITE	B/C	A		
EET 90714~	2.4	L-6 CHONDRITE	B	A		
EET 90715~	2.2	L-6 CHONDRITE	B/C	A		
EET 90716~	1.6	L-6 CHONDRITE	B/C	A		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
EET 90717~	8.1	L-6 CHONDRITE	B/C	A		
EET 90718	2.8	H-5 CHONDRITE	C	A	18	16
EET 90719~	30.1	L-6 CHONDRITE	B/C	A		
EET 90720~	21.6	L-6 CHONDRITE	A/B	A		
EET 90721	19.9	H-5 CHONDRITE	B/C	A	19	17
EET 90722	5.2	L-5 CHONDRITE	B/C	A	24	20
EET 90723~	22.1	L-6 CHONDRITE	B	A		
EET 90724~	45.1	L-6 CHONDRITE	B/C	A		
EET 90725~	18.5	L-6 CHONDRITE	B/C	A		
EET 90726~	13.5	L-6 CHONDRITE	B/C	A		
EET 90727~	117.2	L-6 CHONDRITE	B/C	A		
EET 90728~	12.3	L-6 CHONDRITE	B/C	A		
EET 90729~	16.0	L-6 CHONDRITE	B/C	A		
EET 90730~	21.9	L-6 CHONDRITE	A/B	A		
EET 90731~	34.3	L-6 CHONDRITE	A/B	A/B		
EET 90732	7.9	H-5 CHONDRITE	B	A	19	17
EET 90733~	21.1	L-6 CHONDRITE	B/C	A		
EET 90734~	13.6	L-6 CHONDRITE	B/C	A		
EET 90735~	12.6	L-6 CHONDRITE	A/B	A		
EET 90736~	20.3	L-6 CHONDRITE	A/B	A		
EET 90737~	15.9	L-6 CHONDRITE	A/B	A		
EET 90738~	69.0	L-6 CHONDRITE	B/C	A/B		
EET 90739~	22.8	L-6 CHONDRITE	A/B	A		
EET 90740~	11.6	L-6 CHONDRITE	A/B	A		
EET 90741~	12.6	L-6 CHONDRITE	B	A		
EET 90742~	5.3	L-6 CHONDRITE	B/C	A		
EET 90743~	21.7	L-6 CHONDRITE	A/B	A		
EET 90744~	4.1	L-6 CHONDRITE	A/B	A		
EET 90746~	28.7	L-6 CHONDRITE	A/B	A		
EET 90747~	12.1	L-6 CHONDRITE	B/C	A		
EET 90748~	17.8	L-6 CHONDRITE	B	A		
EET 90749~	10.0	L-6 CHONDRITE	B	A		
EET 90750~	14.7	L-6 CHONDRITE	B/C	A		
EET 90751~	8.6	L-6 CHONDRITE	B/C	A		
EET 90752~	17.2	L-6 CHONDRITE	B/C	A		
EET 90753~	30.2	L-6 CHONDRITE	B	A		
EET 90754~	13.6	L-6 CHONDRITE	C	A		
EET 90755	21.4	H-5 CHONDRITE	C	A	18	16
EET 90756~	11.8	L-6 CHONDRITE	B/C	A		
EET 90758~	44.2	L-6 CHONDRITE	B/C	A		
EET 90759~	8.3	L-6 CHONDRITE	B	A		
EET 90760~	5.4	L-6 CHONDRITE	B	A		
EET 90761~	12.2	L-6 CHONDRITE	B/C	A/B		
EET 90762~	6.0	L-6 CHONDRITE	A/B	A		
EET 90763~	4.9	L-6 CHONDRITE	B	A		
EET 90764~	27.3	L-6 CHONDRITE	B	A		
EET 90765~	29.1	L-6 CHONDRITE	B/C	A		
EET 90766~	3.2	L-6 CHONDRITE	B/C	A		
EET 90767~	14.7	L-6 CHONDRITE	B/C	A		
EET 90768~	5.8	L-6 CHONDRITE	B/C	A		
EET 90769~	12.5	L-6 CHONDRITE	B/C	A		
EET 90770~	5.5	L-6 CHONDRITE	B	A		
EET 90771~	4.8	L-6 CHONDRITE	B/C	A		
EET 90772~	52.3	L-6 CHONDRITE	B/C	A		
EET 90773~	25.2	L-6 CHONDRITE	B/C	B		
EET 90774~	41.1	L-6 CHONDRITE	B/C	A		
EET 90775~	10.0	L-6 CHONDRITE	B	A		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
EET 90776~	5.0	L-6 CHONDRITE	B/C	A		
EET 90777~	13.3	L-6 CHONDRITE	B/C	A		
EET 90778	4.8	L-5 CHONDRITE	B	A	24	20
EET 90779~	14.8	L-6 CHONDRITE	B/C	A		
EET 90780~	45.2	L-6 CHONDRITE	B	A		
EET 90781~	5.8	L-6 CHONDRITE	B	A		
EET 90782~	3.6	L-6 CHONDRITE	B	A		
EET 90783~	23.8	L-6 CHONDRITE	A/B	A		
EET 90784~	5.7	L-6 CHONDRITE	B/C	A		
EET 90785~	7.2	L-6 CHONDRITE	B	A		
EET 90786~	11.8	L-6 CHONDRITE	B/C	A		
EET 90787~	7.7	L-6 CHONDRITE	B	A		
EET 90788~	4.1	L-6 CHONDRITE	B/C	A		
EET 90789~	3.2	L-6 CHONDRITE	B/C	A		
EET 90791~	14.4	L-6 CHONDRITE	B	A		
EET 90792~	38.9	L-6 CHONDRITE	B	A		
EET 90793~	17.5	L-6 CHONDRITE	B	A		
EET 90794~	13.1	L-6 CHONDRITE	A/B	A		
EET 90795~	4.9	L-6 CHONDRITE	B/C	A		
EET 90796~	39.7	L-6 CHONDRITE	B	A		
EET 90797~	27.0	L-6 CHONDRITE	A/B	A		
EET 90798~	20.9	L-6 CHONDRITE	B	A		
EET 90799~	8.5	L-6 CHONDRITE	B	A		
EET 90800~	10.2	L-6 CHONDRITE	B/C	A		
EET 90801~	6.1	L-6 CHONDRITE	B	A		
EET 90802~	14.7	L-6 CHONDRITE	B	A		
EET 90803~	1.4	L-6 CHONDRITE	C	A		
EET 90804~	8.6	L-6 CHONDRITE	B/C	A		
EET 90805~	11.9	L-6 CHONDRITE	B	A		
EET 90806~	14.6	L-6 CHONDRITE	B	A		
EET 90808~	5.2	L-6 CHONDRITE	B	A		
EET 90809~	5.0	L-6 CHONDRITE	B	A		
EET 90810~	19.5	L-6 CHONDRITE	B	A		
EET 90811~	6.1	L-6 CHONDRITE	B	A		
EET 90812~	3.5	L-6 CHONDRITE	C	A		
EET 90813~	2.6	L-6 CHONDRITE	C	A		
EET 90814~	6.3	L-6 CHONDRITE	B/C	A		
EET 90815~	43.2	L-6 CHONDRITE	A/B	A		
EET 90816~	11.0	L-6 CHONDRITE	C	A		
EET 90817~	3.3	L-6 CHONDRITE	C	A		
EET 90818~	13.2	L-6 CHONDRITE	C	A		
EET 90819~	23.9	L-6 CHONDRITE	B/C	A		
EET 90820~	0.9	L-6 CHONDRITE	B	A		
EET 90821~	5.5	L-6 CHONDRITE	B	A		
EET 90822~	8.5	L-6 CHONDRITE	B/C	A		
EET 90823~	1.8	L-6 CHONDRITE	B/C	A		
EET 90824~	2.1	L-6 CHONDRITE	C	A		
EET 90825~	7.2	L-6 CHONDRITE	B/C	A		
EET 90826~	25.7	L-6 CHONDRITE	C	A		
EET 90827~	4.0	L-6 CHONDRITE	B/C	A		
EET 90828~	15.1	L-6 CHONDRITE	B/C	A		
EET 90829~	7.6	L-6 CHONDRITE	B/C	A		
PCA 91024~	616.9	L-6 CHONDRITE	B	A		
PCA 91122	1.9	H-5 CHONDRITE	B/C	A	18	16
PCA 91123	20.9	H-5 CHONDRITE	C	A	19	17
PCA 91129	4.3	EL-3 CHONDRITE	B/C	A		.2-2.0

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
PCA 91130	2.1	H-6 CHONDRITE	B/C	A	19	17
PCA 91131	13.0	H-5 CHONDRITE	B/C	A	19	17
PCA 91133	43.1	H-5 CHONDRITE	B/Ce	A/B	19	17
PCA 91134	167.0	H-6 CHONDRITE	B/C	A/B	19	17
PCA 91136	9.4	H-5 CHONDRITE	B	A	19	16
PCA 91137	7.7	H-5 CHONDRITE	B	A	19	16
PCA 91138	8.4	H-5 CHONDRITE	B/C	A	18	16
PCA 91140	20.3	H-6 CHONDRITE	B/C	A	18	16
PCA 91141	16.1	H-6 CHONDRITE	B/C	A	19	17
PCA 91245	17.8	EUCRITE	B	A		25-58
PCA 91273	2.6	H-5 CHONDRITE	B/C	A	18	16
PCA 91275	19.5	L-5 CHONDRITE	B/C	A	23	20
PCA 91278	17.3	L-6 CHONDRITE	C	A	24	20
PCA 91279	11.6	H-5 CHONDRITE	B/C	A	18	16
PCA 91281	20.1	H-5 CHONDRITE	B/C	A	19	17
PCA 91282	71.0	H-5 CHONDRITE	B	A	18	16
PCA 91283	12.0	H-5 CHONDRITE	B/C	A	18	16
PCA 91285	6.5	L-5 CHONDRITE	B/C	A	23	20
PCA 91286	41.1	L-5 CHONDRITE	B	A	25	21
PCA 91288	12.5	L-6 CHONDRITE	C	A	24	20
PCA 91290	8.2	H-6 CHONDRITE	B/C	A	19	17
PCA 91291	9.2	H-5 CHONDRITE	B/C	A	17	15
PCA 91292	16.0	H-5 CHONDRITE	B/C	A	17	15
PCA 91294	23.2	H-4 CHONDRITE	B	A	17	14-17
PCA 91297	18.5	H-4 CHONDRITE	B	A	17	14-17
PCA 91299	13.3	H-5 CHONDRITE	B/C	A	18	16
PCA 91306	31.2	H-5 CHONDRITE	C	B	18	16
PCA 91307	133.9	L-5 CHONDRITE	B	A	25	21
PCA 91308	65.9	H-5 CHONDRITE	B/C	A	19	17
PCA 91310	134.7	L-5 CHONDRITE	Be	A	25	21
PCA 91311	9.8	H-5 CHONDRITE	B	A	19	17
PCA 91313	16.7	L-5 CHONDRITE	B	A	24	20
PCA 91314	20.7	H-5 CHONDRITE	B/C	A	18	16
PCA 91315	9.3	H-5 CHONDRITE	C	A	17	15
PCA 91316	15.9	H-5 CHONDRITE	B	A	18	16
PCA 91318	111.5	L-5 CHONDRITE	B	A	23	19
PCA 91320	48.4	L-5 CHONDRITE	C	A	23	19
PCA 91321~	23.6	H-6 CHONDRITE	C	B/C		
PCA 91322	7.7	H-5 CHONDRITE	C	A	18	16
PCA 91323	31.8	H-5 CHONDRITE	B/C	A/B	19	16
PCA 91324~	26.8	L-6 CHONDRITE	C	A		
PCA 91325~	2.8	H-6 CHONDRITE	C	A		
PCA 91326	7.8	H-5 CHONDRITE	C	A	18	16
PCA 91327	5.2	CARBONACEOUS C2	A	A/B	1-42	.5-1.1
PCA 91328	11.0	CHONDRITE (UNGR)	C	C		1-16
PCA 91329	8.5	H-5 CHONDRITE	C	A	18	16
PCA 91330	13.2	L-5 CHONDRITE	B	A	25	21
PCA 91331	13.5	L-4 CHONDRITE	B	A	25	14-21
PCA 91332~	7.1	H-6 CHONDRITE	C	A		
PCA 91333	8.2	H-6 CHONDRITE	C	B/C	18	16
PCA 91334~	5.9	L-6 CHONDRITE	B/C	A		
PCA 91335~	2.0	H-6 CHONDRITE	A/B	A		
PCA 91336	4.1	H-5 CHONDRITE	A/B	A	18	16
PCA 91337	24.7	H-5 CHONDRITE	C	A/B	18	16
PCA 91338	26.5	L-4 CHONDRITE	B/C	A/B	23	19
PCA 91339	26.8	L-5 CHONDRITE	B	A	23	19
PCA 91340	4.9	L-5 CHONDRITE	B/C	A	24	20

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
PCA 91341	11.4	H-5 CHONDRITE	C	A	19	16
PCA 91342	13.0	H-5 CHONDRITE	C	A	19	16
PCA 91343~	1.9	H-6 CHONDRITE	C	A		
PCA 91344	3.4	H-4 CHONDRITE	C	A	18	15-18
PCA 91345	7.7	H-5 CHONDRITE	C	A	18	16
PCA 91346	38.6	H-5 CHONDRITE	C	A	18	16
PCA 91347	23.1	L-5 CHONDRITE	C	A	24	21
PCA 91348	6.3	H-5 CHONDRITE	C	A	19	17
PCA 91349	6.9	H-5 CHONDRITE	C	A	18	16
PCA 91350~	50.2	L-6 CHONDRITE	B/C	A		
PCA 91351	3.0	H-5 CHONDRITE	C	A	18	16
PCA 91352	1.6	H-5 CHONDRITE	C	A	18	16
PCA 91353~	1.2	L-6 CHONDRITE	Ce	A		
PCA 91354~	3.8	L-6 CHONDRITE	B	A		
PCA 91355	3.2	LL-3 CHONDRITE	C	A	1-34	5-17
PCA 91356	2.0	H-5 CHONDRITE	Ce	A	18	16
PCA 91357~	0.1	L-6 CHONDRITE	C	A		
PCA 91358~	4.1	H-6 CHONDRITE	C	A		
PCA 91359	2.3	H-5 CHONDRITE	C	A	18	16
PCA 91360~	8.7	L-6 CHONDRITE	A	A		
PCA 91361~	20.8	L-6 CHONDRITE	A	A		
PCA 91362	19.3	H-6 CHONDRITE	C	A	19	16
PCA 91363	25.8	H-5 CHONDRITE	B/C	A	18	16
PCA 91364~	133.1	L-6 CHONDRITE	B	A		
PCA 91365~	15.0	L-6 CHONDRITE	B/C	A		
PCA 91366~	153.6	L-6 CHONDRITE	B/C	A		
PCA 91367~	31.3	L-6 CHONDRITE	B/C	A		
PCA 91368~	74.6	L-6 CHONDRITE	B/C	A		
PCA 91369~	22.0	H-6 CHONDRITE	C	A		
PCA 91370~	33.0	L-6 CHONDRITE	A/B	A		
PCA 91371	17.0	H-5 CHONDRITE	B	A	18	16
PCA 91372~	136.6	L-6 CHONDRITE	B/C	A		
PCA 91373~	12.1	L-6 CHONDRITE	B	A		
PCA 91374~	20.5	L-6 CHONDRITE	B	A		
PCA 91375~	18.5	H-6 CHONDRITE	C	A		
PCA 91376	16.6	H-5 CHONDRITE	B/C	A	19	17
PCA 91377~	1.6	H-6 CHONDRITE	B/C	A		
PCA 91378	54.8	H-5 CHONDRITE	C	A	18	16
PCA 91379~	69.3	H-6 CHONDRITE	C	A		
PCA 91380	10.4	H-5 CHONDRITE	C	A	19	17
PCA 91381	11.2	H-5 CHONDRITE	B/C	A	18	16
PCA 91382~	112.1	L-6 CHONDRITE	B	A		
PCA 91383	48.9	EL-3 CHONDRITE	B	A		0.3-12
PCA 91384	13.4	L-4 CHONDRITE	B	B/C	24	15-23
PCA 91385	3.8	H-5 CHONDRITE	B/C	A	18	16
PCA 91386~	32.3	L-6 CHONDRITE	B	A		
PCA 91387~	0.4	H-6 CHONDRITE	B/C	A		
PCA 91389~	101.0	LL-6 CHONDRITE	A	A		
PCA 91390~	132.3	L-6 CHONDRITE	B	A		
PCA 91391~	137.5	L-6 CHONDRITE	B	A		
PCA 91392	12.2	H-4 CHONDRITE	B	A	19	8-16
PCA 91393	37.6	H-5 CHONDRITE	C	A	18	16
PCA 91394~	15.5	L-6 CHONDRITE	B	A		
PCA 91395	39.7	H-5 CHONDRITE	B/C	A	18	16
PCA 91396~	57.6	L-6 CHONDRITE	B	A		
PCA 91397~	3.1	H-6 CHONDRITE	Ce	A		
PCA 91398	2.6	EL-3 CHONDRITE	C	A		0.1-4

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
PCA 91399~	4.8	L-6 CHONDRITE	B/C	A		
PCA 91400	48.8	L-6 CHONDRITE	B/C	A	24	20
PCA 91401	118.8	L-5 CHONDRITE	A/B	A	25	21
PCA 91402	68.1	L-5 CHONDRITE	A/B	A	24	20
PCA 91403	73.2	H-4 CHONDRITE	B/Ce	A	19	13-16
PCA 91404	12.0	H-5 CHONDRITE	B/C	A	18	16
PCA 91405	7.5	H-5 CHONDRITE	C	A/B	18	16
PCA 91406	6.4	H-5 CHONDRITE	B/C	A	17	15
PCA 91407~	5.0	L-6 CHONDRITE	A/B	A		
PCA 91408	6.0	H-5 CHONDRITE	B/C	A	18	16
PCA 91409~	2.7	L-6 CHONDRITE	B/C	A		
PCA 91410	104.4	H-6 CHONDRITE	B/C	B/C	18	16
PCA 91411~	103.5	L-6 CHONDRITE	A/B	A		
PCA 91412~	96.2	L-6 CHONDRITE	A/B	A		
PCA 91413	50.1	H-5 CHONDRITE	B	A	18	16
PCA 91414	138.0	H-4 CHONDRITE	B/C	A	17	14-16
PCA 91415	36.3	H-5 CHONDRITE	C	B/C	19	17
PCA 91416~	165.0	LL-6 CHONDRITE	A	A		
PCA 91417~	74.2	LL-6 CHONDRITE	A/B	A		
PCA 91418	14.0	H-6 CHONDRITE	C	B	18	16
PCA 91419~	28.7	L-6 CHONDRITE	B/C	A		
PCA 91420~	36.7	L-6 CHONDRITE	B	A		
PCA 91421~	16.4	H-6 CHONDRITE	B	A		
PCA 91422~	54.4	L-6 CHONDRITE	B	A		
PCA 91423	9.5	H-5 CHONDRITE	B/C	A	18	16
PCA 91424	31.3	L-5 CHONDRITE	C	A	24	20
PCA 91425	18.1	H-5 CHONDRITE	C	A	18	16
PCA 91426	7.8	H-5 CHONDRITE	C	A	19	17
PCA 91427	8.0	H-5 CHONDRITE	C	A	18	16
PCA 91428~	19.6	L-6 CHONDRITE	B	A		
PCA 91429~	3.1	L-6 CHONDRITE	B	A		
PCA 91430~	8.9	L-6 CHONDRITE	B	A		
PCA 91431	8.9	H-5 CHONDRITE	B/C	A	19	17
PCA 91432~	23.3	L-6 CHONDRITE	B	A		
PCA 91433	5.6	H-5 CHONDRITE	B	A	19	17
PCA 91434~	3.4	L-6 CHONDRITE	B/C	A		
PCA 91435	8.4	H-6 CHONDRITE	B/C	A/B	18	16
PCA 91436~	8.4	L-6 CHONDRITE	B/C	A		
PCA 91437	156.2	H-6 CHONDRITE	B/C	A	19	17
PCA 91438~	120.3	L-6 CHONDRITE	B/C	A		
PCA 91439~	194.5	LL-6 CHONDRITE	B	A		
PCA 91440	8.0	H-5 CHONDRITE	B/C	A	18	16
PCA 91441~	2.4	L-6 CHONDRITE	B/C	A		
PCA 91442~	10.5	L-6 CHONDRITE	B/C	A		
PCA 91443	3.6	H-5 CHONDRITE	B	A	18	16
PCA 91444	2.6	EL-3 CHONDRITE	Be	A		0.2-2
PCA 91445	4.8	L-5 CHONDRITE	B	A	24	20
PCA 91446	22.7	L-6 CHONDRITE	B	A	25	21
PCA 91447	8.3	H-5 CHONDRITE	B	A	18	16
PCA 91448	92.7	LL-6 CHONDRITE	B	A	30	24
PCA 91449	8.2	H-5 CHONDRITE	B	A	18	16
PCA 91450~	19.3	L-6 CHONDRITE	B/C	B		
PCA 91451	17.7	EL-3 CHONDRITE	B	A		0.3
PCA 91452	7.2	CHONDRITE (UNGR)	B	A		1-5
PCA 91453	91.8	LL-6 CHONDRITE	B/C	A	30	24
PCA 91454	125.7	L-5 CHONDRITE	B/C	A	24	20
PCA 91455~	7.1	L-6 CHONDRITE	B	A		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
PCA 91456	3.6	H-5 CHONDRITE	B	A	17	15
PCA 91457	6.1	H-5 CHONDRITE	B	A	18	16
PCA 91458	6.7	L-4 CHONDRITE	B/C	A	24	20
PCA 91459~	49.3	L-6 CHONDRITE	B/C	A		
PCA 91460	10.7	H-5 CHONDRITE	B	A	18	16
PCA 91461~	27.5	EL-3 CHONDRITE	A/B	A		
PCA 91462	18.2	H-5 CHONDRITE	B	A/B	18	16
PCA 91463	20.3	H-5 CHONDRITE	B/C	A	18	16
PCA 91464	133.9	H-5 CHONDRITE	B/Ce	A	19	17
PCA 91465	10.6	H-5 CHONDRITE	B	A	18	16
PCA 91466~	15.9	L-6 CHONDRITE	B	A		
PCA 91467	46.9	CHONDRITE (UNGR)	B/C	B/C		1-5
PCA 91468~	6.6	L-6 CHONDRITE	B/C	A		
PCA 91469	6.6	H-5 CHONDRITE	B	A	18	16
PCA 91470	33.5	CARBONACEOUS CK4	A/B	A	33	
PCA 91471	10.2	H-5 CHONDRITE	B/C	A	18	16
PCA 91472	72.5	H-5 CHONDRITE	B	A/B	18	16
PCA 91473	21.3	H-5 CHONDRITE	B/C	A	19	17
PCA 91474	77.2	H-5 CHONDRITE	B/C	A	19	17
PCA 91475~	29.9	EL-3 CHONDRITE	B	A		
PCA 91476	75.7	H-5 CHONDRITE	B/C	A	18	16
PCA 91477~	16.3	EL-3 CHONDRITE	B	A		
PCA 91478~	14.8	L-6 CHONDRITE	C	B/C		
PCA 91479	37.1	LL-5 CHONDRITE	B/C	A	27	22
PCA 91480	28.5	H-5 CHONDRITE	B/C	A	19	17
PCA 91481~	0.6	EL-3 CHONDRITE	B/C	A		
PCA 91482	17.1	L-6 CHONDRITE	C	A	23	19
PCA 91483	5.5	H-5 CHONDRITE	B/C	A	18	16
PCA 91484	24.9	H-5 CHONDRITE	B/C	A	19	16
PCA 91485	7.4	H-5 CHONDRITE	B/C	A	18	16
PCA 91486	11.0	H-6 CHONDRITE	B	A	18	16
PCA 91487	15.4	H-5 CHONDRITE	B/C	A	19	17
PCA 91488	9.9	H-5 CHONDRITE	B/C	A	19	17
PCA 91489	19.0	H-5 CHONDRITE	B/C	A	18	16
PCA 91490	6.7	H-5 CHONDRITE	B/C	A	18	16
TIL 91715	156.8	L-4 CHONDRITE	B/C	A	23	19
BEC 92600	5.8	L-6 CHONDRITE	B	A	25	21
BEC 92601	104.0	L-6 CHONDRITE	A/B	A	24	20
DAV 92300	26.7	CARBONACEOUS CK4	A/B	A	32	26
EET 92001	4015.6	MESOSIDERITE	B	A/B		28-30
EET 92002	1041.0	CARBONACEOUS CK4	A/Be	A/B	32	
EET 92003	66.4	EUCRITE	A/Be	A		46-52
EET 92004	34.7	EUCRITE	A/B	A		43-58
MCY 92500	23.4	CARBONACEOUS C2	A	B	0-42	1-5
RKP 92400	7.8	CARBONACEOUS C2	A/Be	A	0-10	1-3

~Classified by using refractive indices.

Newly Classified Specimens Listed By Type **

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
Achondrites						
PCA 91245	17.8	EUCRITE	B	A		25-58
EET 92003	66.4	EUCRITE	A/Be	A		46-52
EET 92004	34.7	EUCRITE	A/B	A		43-58
Carbonaceous Chondrites						
PCA 91327	5.2	CARBONACEOUS C2	A	A/B	1-42	.5-1.1
MCY 92500	23.4	CARBONACEOUS C2	A	B	0-42	1-5
RKP 92400	7.8	CARBONACEOUS C2	A/Be	A	0-10	1-3
PCA 91470	33.5	CARBONACEOUS CK4	A/B	A	33	
DAV 92300	26.7	CARBONACEOUS CK4	A/B	A	32	26
EET 92002	1041.0	CARBONACEOUS CK4	A/Be	A/B	32	
Chondrites - Type 3						
LEW 88634	7.7	L-3 CHONDRITE	B/C	A	1-33	6-18
PCA 91355	3.2	LL-3 CHONDRITE	C	A	1-34	5-17
E Chondrites						
PCA 91129	4.3	EL-3 CHONDRITE	B/C	A		.2-2.0
PCA 91383	48.9	EL-3 CHONDRITE	B	A		0.3-12
PCA 91398	2.6	EL-3 CHONDRITE	C	A		0.1-4
PCA 91444	2.6	EL-3 CHONDRITE	Be	A		0.2-2
PCA 91451	17.7	EL-3 CHONDRITE	B	A		0.3
PCA 91461~	27.5	EL-3 CHONDRITE	A/B	A		
PCA 91475~	29.9	EL-3 CHONDRITE	B	A		
PCA 91477~	16.3	EL-3 CHONDRITE	B	A		
PCA 91481~	0.6	EL-3 CHONDRITE	B/C	A		
Chondrites (ungrouped/unique)						
PCA 91328	11.0	CHONDRITE (UNGR)	C	C		1-16
PCA 91452	7.2	CHONDRITE (UNGR)	B	A		1-5
PCA 91467	46.9	CHONDRITE (UNGR)	B/C	B/C		1-5
Stony-Irons						
EET 92001	4015.6	MESOSIDERITE	B	A/B		28-30

~Classified by using refractive indices.

TABLE 3

Tentative Pairings for New Specimens

Table 3 summarizes possible pairings of the new specimens with each other and with previously classified specimens, based on descriptive data in this newsletter issue. Readers who desire a more comprehensive review of the meteorite pairings in the U.S. Antarctic collection should refer to the compilation provided by Dr. E.R.D. Scott, as published in issue 9(2) (June 1986).

MESOSIDERITE:

EET 92001 with EET 87500.

EUCRITE:

PCA 91245 with PCA 91078.

CARBONACEOUS CK4:

EET 92002 with EET 87507.

CHONDRITE (UNGROUPED):

PCA 91328, 91452, 91467.

EL3 CHONDRITE:

PCA 91129, 91383, 91398, 91444, 91451, 91461, 91475, 91477, 91481 with PCA 82518

L6 CHONDRITE:

EET 90670, 90672, 90673, 90674, 90675, 90676, 90677, 90678, 90679, 90680, 90681, 90682, 90683, 90684, 90685, 90686, 90687, 90688, 90689, 90690, 90691, 90692, 90693, 90694, 90695, 90696, 90697, 90698, 90699, 90700, 90701, 90702, 90703, 90704, 90705, 90706, 90708, 90709, 90710, 90711, 90712, 90713, 90714, 90715, 90716, 90717, 90719, 90720, 90723, 90724, 90725, 90726, 90727, 90728, 90729, 90730, 90731, 90733, 90734, 90735, 90736, 90737, 90738, 90739, 90740, 90741, 90742, 90743, 90744, 90746, 90747, 90748, 90749, 90750, 90751, 90752, 90753, 90754, 90756, 90758, 90759, 90760, 90761, 90762, 90763, 90764, 90765, 90766, 90767, 90768, 90769, 90770, 90771, 90772, 90773, 90774, 90775, 90776, 90777, 90779, 90780, 90781, 90782, 90783, 90784, 90785, 90786, 90787, 90788, 90789, 90791, 90792, 90793, 90794, 90795, 90796, 90797, 90798, 90799, 90800, 90801, 90802, 90803, 90804, 90805, 90806, 90808, 90809, 90810, 90811, 90812, 90813, 90814, 90815, 90816, 90817, 90818, 90819, 90820, 90821, 90822, 90823, 90824, 90825, 90826, 90827, 90828, 90829 with EET 90053.

Sample No.: LEW88634
Location: Lewis Cliff
Dimensions (cm): 2.5 x 1.9 x 1.0
Weight (g): 7.7
Meteorite Type: L3 chondrite

Macroscopic Description: Cecilia Satterwhite
Fifty percent of this meteorite is covered with fusion crust and oxidation haloes are present. The dark-brown interior consists of abundant gray inclusions that range in size from 1 to 3 mm.

Thin Section (.5) Description: Brian Mason
The section shows numerous chondrules and chondrule fragments, up to 3.6 mm across, in a black matrix containing small amounts of nickel-iron and troilite. The chondrules are mainly granular and porphyritic olivine and olivine-pyroxene, with a few cryptocrystalline pyroxene. Microprobe analyses show olivine and pyroxene of variable composition: olivine, Fa_{1-33}, mean Fa_{16} (CV FeO is 50); pyroxene, Fs_{6-18}. The variability of olivine and pyroxene compositions indicate type 3, and the amount of nickel-iron L group, hence the meteorite is classified as an L3 chondrite (estimated L3.4).

Sample No.: PCA91129; 91383; 91398; 91444; 91451; 91461; 91475; 91477; 91481
Location: Pecora Escarpment
Dimensions (cm): 2.2 x 1.7 x 0.5; 3.5 x 3.2 x 2.7; 2.6 x 1.1x 0.3; 1.5 x 1.5 x 0.7; 2.6 x 2.2 x 1.5; 4.0 x 1.7 x 2.0; 2.8 x 3.0 x 2.1; 2.5 x 2.0 x 1.4; 1.0 x 0.9 x 0.4
Weight (g): 4.3; 48.9; 2.6; 2.6; 17.7; 27.5; 29.9; 16.3; 0.6
Meteorite Type: EL3 chondrite

Macroscopic Description: Robbie Marlow
Five of these chondrites are mostly covered with brown, oxidation-haloed fusion crust. The interior of all the stones is dark brown. Abundant chondrules are present, several were noted protruding from the exterior surfaces. Evaporite deposit was noted on 91444.

Thin Section (PCA91129,2; 91383,2; 91398,2; 91451,2) Description: Brian Mason
These sections are so similar that a single description suffices. Chondrules are abundant, ranging up to 1.2 mm across; they consist of prismatic or fine-grained pyroxene. The groundmass consists largely of granular pyroxene, with lesser amounts of nickel-iron and sulfides, and a little feldspar and an SiO_2 phase, probably cristobalite. Microprobe analyses show that the pyroxene is almost pure $MgSiO_3$, with a few grains showing minor iron content, up to 8% FeO. The feldspar is almost pure albite. The nickel-iron contains 2.7-2.9% Si. The meteorites are classified as EL3 chondrites and are paired with PCA82518 group.

Sample No.: PCA91245
Location: Pecora Escarpment
Dimensions (cm): 3.0 x 1.5 x 1.2
Weight (g): 17.8
Meteorite Type: Unbrecciated Eucrite

Macroscopic Description: Cecilia Satterwhite
Seventy percent of the exterior of PCA91245 is covered with shiny, black fusion crust. The interior is composed of coarse-grained laths of pyroxene and plagioclase. No inclusions were noted. Oxidation is minor.

Thin Section (.3) Description: Brian Mason
The meteorite is a coarse-grained intergrowth of plagioclase and pyroxene with a gabbroic texture; individual grains are up to 3 mm in maximum dimension. Microprobe analyses show pyroxene compositions ranging from Wo_4Fs_{58} to $Wo_{42}Fs_{25}$, the range in En content being quite limited. Plagioclase composition is An_{87-93}. The meteorite is an unbrecciated eucrite. It is very similar to PCA91078, with which it is probably paired.

Sample No.: PCA91327
Location: Pecora Escarpment
Dimensions (cm): 2.0 x 1.5 x 1.3
Weight (g): 5.2
Meteorite Type: C2 chondrite

Macroscopic Description: Robbie Marlow
PCA91327 has dull, black, frothy fusion crust covering 40% of the exterior surface. The interior matrix is black, fine-grained, and friable. Abundant white inclusions are scattered throughout.

Thin Section (.2) Description: Brian Mason
The section shows chondrules, up to 0.9 mm across, irregular aggregates, and small mineral grains in a black matrix. The minerals are mainly olivine, with minor pyroxene. Olivine compositions are mostly near $MgSiO_4$, but occasional iron-rich grains were analyzed, up to Fa_{42}. Pyroxene compositions range from $Fs_{0.2}$ to $Fs_{1.1}$. The matrix appears to be largely iron-rich serpentine. The meteorite is a C2 chondrite.

Sample No.: PCA91328; 91452; 91467
Location: Pecora Escarpment
Dimensions (cm): 2.2 x 2.1 x 1.0; 2.7 x 2.0 x 0.9; 2.6 x 3.4 x 3.0
Weight (g): 11.0; 7.2; 46.9
Meteorite Type: Chondrite (ungrouped)

Macroscopic Description: Robbie Marlow and Cecilia Satterwhite
Smooth, brown fusion crust covers 50% of each of these three meteorite fragments. Numerous fractures penetrate the interior of PCA91328. The exposed interiors are dark brown to black and fine-grained. A few very small inclusions were noted in PCA91452 and 91467. Weathering is extensive.

Thin Section (PCA91328,2; 91452,2; 91467,2) Description: Brian Mason
The sections show a few chondrules, up to 0.3 mm across, abundant pyroxene grains (0.02-0.08 mm), and a considerable amount of nickel-iron. The meteorite is severely weathered, with limonitic staining throughout the sections. Most of the pyroxene is close to $MgSiO_3$ in composition, but ranges up to Fs_{16}. The metal contains less than 0.1% Si. The meteorite is classified as an ungrouped chondrite; it is essentially identical with PAT 91546 and ALH 85085 (Earth Planet. Sci. Letters, v. 91, p.1-54, 1988).

Sample No.: PCA91355
Location: Pecora Escarpment
Dimensions (cm): 1.5 x 1.2 x 0.8
Weight (g): 3.2
Meteorite Type: LL3 chondrite

Macroscopic Description: Cecilia Satterwhite
The exterior is almost completely covered with dull, black, frothy fusion crust. A few light colored inclusions are still visible in the extremely rusted interior.

Thin Section (.2) Description: Brian Mason
The section shows numerous chondrules and chondrule fragments, up to 1.2 mm across, in a finely granular matrix of olivine and pyroxene with accessory nickel-iron and sulfide. Brown limonitic staining pervades the section. Olivine compositions range from Fa_1 to Fa_{34}, with a marked peak at Fa_{31}; pyroxene compositions range from Fs_5 to Fs_{17}. The meteorite is classified as an LL3 chondrite (estimated LL3.5).

Sample No.: PCA91470
Location: Pecora Escarpment
Dimensions (cm): 3.0 x 3.0 x 1.8
Weight (g): 33.5
Meteorite Type: CK4 chondrite

Macroscopic Description: Robbie Marlow
Ninty percent of the exterior of this carbonaceous chondrite is covered with smooth, dull, black fusion crust. The interior is light in color and has a fine-grained matrix. Several dark millimeter sized inclusions are visible. The meteorite is friable.

Thin Section (.2) Description: Brian Mason
The section shows an aggregate of small (0.02-0.07 mm) olivine grains and minor opaque material, with a few chondrules up to 1.8 mm across. The opaque material consists of magnetite and pentlandite. One grain of green spinel (hercynite) was noted. Olivine composition is Fa_{33}; a few grains of plagioclase, An_{50-60}, were analyzed. Hercynite composition is $Al_{1.5}Fe_{1.2}Mg_{0.3}O_4$. The meteorite is a C4 chondrite of the Karoonda subtype.

Sample No.: DAV92300
Location: David Glacier
Dimensions (cm): 4.0 x 2.7 x 2.0
Weight (g): 26.7
Meteorite Type: CK4 chondrite

Macroscopic Description: Robbie Marlow
Dull, black fusion crust covers 40% of the exterior of this carbonaceous chondrite. Numerous chondrules of assorted sizes can be seen protruding from the exterior surfaces. Cleaving DAV92300 revealed a medium-gray interior that is friable and fine-grained.

Thin Section (,3) Description: Brian Mason
The section shows an aggregate of small (0.01-0.05 mm) olivine grains and minor opaque material, with a few chondrules up to 0.9 mm across. Olivine composition is Fa_{32}; a little pyroxene, Fs_{26}, and plagioclase, An_{50}, were analyzed. The opaque material is largely magnetite. The meteorite is a C4 chondrite of the Karoonda subtype.

Sample No.: EET92001
Location: Elephant Moraine
Dimensions (cm): 20.5 x 11.0 x 9.0
Weight (g): 4015.6
Meteorite Type: Mesosiderite

Macroscopic Description: Cecilia Satterwhite
The largest inclusion visible on the exterior of this brown-colored mesosiderite is 4 x 2.8 centimeters. Regmaglypts and flow lines are visible on the few patches of fusion crust that have not weathered away. Minor fractures were noted on the exterior but do not penetrate through the interior of the meteorite. The interior is reddish-brown and fine-grained with abundant metal and silicate inclusions. The inclusions vary in size, shape, and color.

Thin Section (,7) Description: Brian Mason
The section shows a granular aggregate of approximately 40% nickel-iron, 40% pyroxene, and 20% plagioclase, with accessory merrillite and an SiO_2 polymorph, probably tridymite. The grain size is relatively coarse, with individual pyroxenes and plagioclases up to 1 mm across. Many pyroxenes are partly or completely converted to a mosaic of small granules. Pyroxene compositions are somewhat variable, from Wo_2Fs_{30} to $Wo_{11}Fs_{28}$. Plagioclase composition is An_{90-92}. The meteorite is a mesosiderite; it can be confidently paired with EET87500 and EET87501.

Sample No.: EET92002
Location: Elephant Moraine
Dimensions (cm): 13.6 x 11.2 x 4.7
Weight (g): 1041.0
Meteorite Type: CK4 chondrite

Macroscopic Description: Robbie Marlow
EET92002 is a heart-shaped carbonaceous chondrite that is covered with dull, black fusion crust. The fusion crust is considerably thicker on the bottom surface. Abundant light-green evaporite deposit is present on three surfaces. Numerous chondrules are protruding from the exterior surfaces. The interior matrix is dark gray and has a massive texture.

Thin Section (,7) Description: Brian Mason
The section shows an aggregate of small (0.01-0.05 mm) olivine grains and minor opaque material, with occasional chondrules up to 1.5 mm across. Olivine composition is Fa_{32}; a little diopside, $Wo_{44}Fs_6$, and plagioclase, An_{52}, were analyzed. The opaque material is largely magnetite. The meteorite is a C4 chondrite of the Karoonda subtype; it may be paired with the EET87507 group.

Sample No.: EET92003
Location: Elephant Moraine
Dimensions (cm): 5.8 x 3.6 x 2.4
Weight (g): 66.4
Meteorite Type: Monomict Eucrite

Macroscopic Description: Cecilia Satterwhite
Two exterior surfaces of this achondrite are covered by shiny, black fusion crust. Areas devoid of fusion crust are cream-colored and have a rough texture. Evaporite deposit is present. The interior matrix is light to medium gray. Inclusions, as large as 1 cm, are present.

Thin Section (,7) Description: Brian Mason
The section shows a fine-grained (average grain size 0.1 mm) aggregate of pyroxene and plagioclase with a brecciated structure, and a few coarser-grained clasts. The pyroxene is fairly uniform in composition, clustering around $Wo_{13}Fs_{49}$; plagioclase composition is An_{86-91}. Tridymite is present in small amounts. The meteorite is a monomict eucrite.

Sample No.: EET92004
Location: Elephant Moraine
Dimensions (cm): 3.5 x 2.5 x 3.1
Weight (g): 34.7
Meteorite Type: Unbrecciated Eucrite

Macroscopic Description: Cecilia Satterwhite
Eight percent of the exterior of this achondrite is covered with shiny, black fusion crust. Some areas have flow lines present. Areas without fusion crust show a gray matrix with abundant white minerals. Minor weathering is visible. Chipping EET92004 revealed an interior that contains rounded blebs of dark green to black pyroxene and white plagioclase with fine-grained interstitial gray material. Oxidation is heavy in one area. A black glassy vein runs through the interior.

Thin Section (.7) Description: Brian Mason
The section shows an aggregate of subequal amounts of plagioclase and pyroxene, with a trace of opaque material; it has a gabbroic texture, with subhedral to anhedral grains averaging about 0.6 mm across. Moderate shock is indicated by granulation of the pyroxene crystals and undulose extinction of the plagioclase. Pyroxene compositions cluster around Wo_2Fs_{57}, with a few more calcic grains ranging up to $Wo_{18}Fs_{43}$; plagioclase composition is An_{90-94}. The meteorite is an unbrecciated eucrite.

Sample No.: MCY92500
Location: MacKay Glacier
Dimensions (cm): 2.9 x 2.6 x 2.3
Weight (g): 23.4
Meteorite Type: C2 chondrite

Macroscopic Description: Cecilia Satterwhite
Fractured, black fusion crust covers 25% of this carbonaceous chondrite. The interior matrix is fine-grained, medium to dark gray, with abundant small white and gray inclusions. A few chondrules are visible. Oxidation is minor.

Thin Section (.5) Description: Brian Mason
The section shows chondrules up to 1.2 mm across, irregular aggregates, and small mineral grains in a black matrix. The minerals are mainly olivine, with minor pyroxene. Olivine compositions are mostly near Mg_2SiO_4, but occasional iron-rich grains were analyzed, up to Fs_{40}. Pyroxene compositions range from Fs_1 to Fs_4. The matrix appears to be largely iron-rich serpentine. The meteorite is a C2 Chondrite.

Sample No.: RKP92400
Location: Reckling Peak
Dimensions (cm): 2.5 x 1.9 x 1.8
Weight (g): 7.8
Meteorite Type: C2 chondrite

Macroscopic Description: Robbie Marlow
Polygonally-fractured fusion crust cover 75% of the exterior of RKP92400. A small amount of evaporite deposit was noted. The interior matrix of this friable carbonaceous chondrite is dark gray with numerous small white inclusions.

Thin Section (.3) Description: Brian Mason
The section shows a few chondrules, up to 0.9 mm across, irregular aggregates, and small mineral grains in a black matrix. The minerals are mainly olivine, with minor pyroxene. Olivine compositions are mostly near Mg_2SiO_4, with a few more iron-rich grains, up to Fa_{10}. Pyroxene compositions range from Fs_1 to Fs_3. The matrix appears to be mainly iron-rich serpentine. The meteorite is a C2 chondrite.

Natural Thermoluminescence (NTL) Data for Antarctic Meteorites

Paul Benoit, Joyce Roth, Hazel Sears, and Derek Sears
Cosmochemistry Group
Dept. of Chemistry and Biochemistry
University of Arkansas
Fayetteville, AR 72701

The measurement and data reduction methods were described by Hasan et al. (1987, Proc. 17th LPSC E703-E709; 1989, LPSC XX, 383-384). For meteorites whose NTL lies between 5 and 100 krad, the natural TL is related primarily to terrestrial age and orbital history. Samples with NTL <5 krad have TL below that which can reasonably be ascribed to long terrestrial ages. Such meteorites have had their TL lowered by heating within the past million years or so (by close solar passage or shock heating), exacerbated, in the case of certain achondrite classes, by "anomalous fading". We suggest that meteorites with NTL > 100 krad are candidates for an unusual history involving high radiation doses and/or low temperatures and also have very short terrestrial ages. (July, 1993 dataset).

Sample	Class	NTL [krad at 250 deg. C]
LAP91900	DIO	6 +- 1
PCA91007	EUC	5 +- 1
PCA91025	H5	42 +- 2
PCA91040	H5	77.5 +- 0.2
PCA91041	H5	63.2 +- 0.1
WIS91622	H5	61.6 +- 0.5
PCA91026	H6	20.7 +- 0.2
TIL91724	H6	77.7 +- 0.1
PCA91001	L4	112 +- 5
TIL91702	L4	17.4 +- 0.1
TIL91704	L4	17.2 +- 0.1
TIL91705	L4	50 +- 1
TIL91708	L4	58.8 +- 0.2
TIL91711	L4	10.7 +- 0.1
TIL91718	L4	21.2 +- 0.1
TIL91721	L4	53.5 +- 0.2
WIS91603	L4	153 +- 1
WIS91605	L4	171 +- 5
WIS91625	L4	48.3 +- 0.2
PAT91500	L5	0.1 +- 0.1
PAT91508	L5	10.5 +- 0.1
PCA91011	L5	83.1 +- 0.3
PCA91012	L5	60.2 +- 0.7
PCA91013	L5	62.9 +- 0.4
PCA91014	L5	57.8 +- 0.2
PCA91015	L5	54.2 +- 0.3
PCA91019	L5	69.0 +- 0.3
PCA91027	L5	1.3 +- 0.1
PCA91028	L5	6.9 +- 0.1
PCA91030	L5	2.4 +- 0.8
PCA91053	L5	6 +- 1
PCA91059	L5	6.6 +- 0.1
PCA91060	L5	7.7 +- 0.9
PCA91066	L5	8.5 +- 0.1
PCA91067	L5	0.9 +- 0.1
PCA91069	L5	7.4 +- 0.1
PCA91073	L5	7.7 +- 0.1
TIL91710	L5	20.5 +- 0.1
PAT91506	L6	10.1 +- 0.1
PAT91511	L6	14.5 +- 0.1
PCA91009	L6	0.4 +- 0.1
PCA91010	L6	2.5 +- 0.4
PCA91016	L6	1.3 +- 0.5
PCA91017	L6	1.1 +- 0.2
PCA91018	L6	0.8 +- 0.1
PCA91021	L6	1 +- 0.1
PCA91022	L6	0.8 +- 0.1
PCA91039	L6	13 +- 2
PCA91052	L6	9.9 +- 0.1
PCA91054	L6	20.5 +- 0.1
PCA91062	L6	4.3 +- 0.1
PCA91065	L6	10.1 +- 0.1
PCA91076	L6	18 +- 4
WIS91612	L6	7.6 +- 0.1
WIS91623	L6	45.8 +- 0.1
WIS91626	L6	68.5 +- 0.3
WIS91628	L6	60.7 +- 0.1
PAT91501	L7	20.4 +- 0.1

Sample	Class	NTL [krad at 250 deg. C]	Sample	Class	NTL [krad at 250 deg. C]
PCA91038	LL4	30.4 +- 0.3	PCA91023	LL6	1.1 +- 0.4
WIS91618	LL4	53.5 +- 0.1			
			PCA91002	UNGR	28.1 +- 0.2
WIS91601	LL5	110 +- 1			

The quoted uncertainties are the standard deviations shown by replicate measurements of a single aliquot.

COMMENTS: The following comments are based on natural TL data, TL sensitivity, the shape of the induced TL curve, classifications, and JSC and Arkansas group sample descriptions.

The PCA91028 and PCA91039 groups and PCA91067 appear to have been shocked.

1. Pairings: (Confirmations of pairings suggested in AMN15:2 and 15:3)

   L4: TIL91702, TIL91704, and TIL91718.

   L4: TIL91705, TIL91708, and TIL91721.

   L5: PCA91012 and PCA91013.

   L6: PCA91009, PCA91016, PCA91018, PCA91021 and possibly PCA91010.

2. TL data do not confirm pairings suggested in the Newsletter:

   L4: TIL91705 group with TIL91702 group (AMN 15:3).

   L5: PCA91011 with PCA91012 group (AMN 15:2).

3. Additional pairings suggested by TL data:

   L4: WIS91603 and WIS91605.

   L5: PCA91028, PCA91053, PCA91059, PCA91060, PCA91066, PCA91069, and PCA91073.

   L5: PCA91014 and PCA91015 with PCA91012.

   L6: PCA91039 and PCA91076.

   L6: WIS91626 and WIS 91628

^{26}Al ACTIVITY DATA FOR ANTARCTIC METEORITES

John F. Wacker
Battelle, Pacific Northwest Laboratories
P.O. Box 999, Mailstop P7-07
Richland, Washington 99352

SPECIMEN NUMBER	CLASS	^{26}Al Activity (dpm/kg)	SPECIMEN NUMBER	CLASS	^{26}Al Activity (dpm/kg)
ALHA 77257	URE	38.7 ±1.5	ALHA 84144	H5	61.9 ±5.2
ALHA 83103	H6	56.6 ±5.1	ALHA 84148	H5	58.2 ±3.9
ALHA 84055	H5	53.4 ±4.0	ALHA 84154	LL6	50.2 ±3.5
ALHA 84104	L6	45.3 ±3.2	ALHA 84155	H5	92.9 ±4.0
ALHA 84105	H6	55.2 ±3.1	ALHA 84158	H5	54.8 ±4.8
ALHA 84106	L6	61.2 ±4.4	ALHA 84159	H6	39.7 ±2.0
ALHA 84108	H6	47.8 ±3.2	ALHA 84160	L6	33.3 ±2.5
ALHA 84109	H6	59.4 ±3.7	ALHA 84161	H5	59.6 ±4.0
ALHA 84110	H6	62.3 ±4.0	ALHA 84163	H5	60.4 ±3.8
ALHA 84112	L6	58.2 ±3.1	ALHA 84164	L6	33.5 ±3.2
ALHA 84113	H6	44.6 ±3.4	ALHA 84169	L6	22.0 ±1.7
ALHA 84114	H6	49.6 ±2.9	ALHA 84202	H5	60.5 ±2.3
ALHA 84115	H6	43.4 ±3.0	ALHA 85002	C4	38.5 ±1.5
ALHA 84118	H6	52.5 ±4.0	ALHA 85007	C2	6.7 ±1.4
ALHA 84120	L3	69.1 ±5.6	ALHA 85013	C2	34.2 ±3.4
ALHA 84121	H5	64.1 ±3.9	ALHA 85016	L6	42.6 ±4.7
ALHA 84122	LL6	54.4 ±3.2	ALHA 85019	LL6	68.8 ±5.1
ALHA 84123	LL6	86.9 ±5.5	ALHA 85020	H6	49.5 ±5.6
ALHA 84124	H5	63.2 ±4.0	ALHA 85022	L6	46.9 ±3.8
ALHA 84125	LL6	54.8 ±5.8	ALHA 85027	L6	64.0 ±3.9
ALHA 84127	L6	48.8 ±5.6	ALHA 85028	H6	57.1 ±3.5
ALHA 84132	L6	61.7 ±3.8	ALHA 85029	L6	56.3 ±3.3
ALHA 84133	H5	55.6 ±4.3	ALHA 85037	H6	56.2 ±2.6
ALHA 84134	L6	79.7 ±3.6	ALHA 85038	H5	49.2 ±3.8
ALHA 84140	L6	45.1 ±3.4	ALHA 85039	L6	51.8 ±3.9
ALHA 84141	L6	41.0 ±3.4	ALHA 85040	L6	48.6 ±2.8
ALHA 84142	L6	54.1 ±3.9	ALHA 85129	LL6	52.1 ±3.5
ALHA 84143	L6	56.3 ±4.1	ALHA 86603	H5	45.4 ±2.7

Uncertainties are calculated from counting statistics. All data have been corrected for background effects and counting geometry, and preliminary corrections have been made for sample geometry effects. For more information or to request a copy of the complete Battelle ^{26}Al dataset, please contact John Wacker:
telephone: (509) 376-1076; FAX: (509) 376-5021; e-mail: jf_wacker@pnl.gov.

ANTARCTIC METEORITE LOCATION AND MAPPING PROJECT (AMLAMP) NEWS

AMLAMP announces the availability of two new meteorite location maps. The Elephant Moraine - Northern Ice Patch Meteorite Location Map (1993 edition) shows the locations of meteorites recovered from the icefield in the 1987-88 and the 1992-93 field seasons. A total of 226 meteorites have been recovered from this area. The Reckling Peak - Reckling Moraine Icefield Meteorite Location Map (1993 edition) shows the locations of most of the 145 meteorites recovered during the 1978-79, 1979-80, 1980-81, 1987-88, and 1992-93 field seasons. Reduced examples of these maps are given. The Allan Hills Main Icefield Meteorite Location Map, North and South sections (1993 edition), has been updated. Copies of these maps along with previously available maps can be ordered from The Lunar and Planeary Institute Order Department (713)486-2172.

A new *AMLAMP Explanatory Text and User's Guide* has been prepared and is currently going through the editing process. This report will replace the Lunar and Planetary Institute Technical Report 89-02. It is hoped that this will be available by October.

The AMLAMP databases and explanatory text files for the available maps have been updated and can be accessed via INTERNET ftp in the AMLAMP directory of the ANONYMOUS account at the LPI. The IP address is **lpi.jsc.nasa.gov** or **192.101.147.11**. The README.1ST file contains important information and should be perused.

For more information on acquiring maps or accessing the AMLAMP data call Brian Fessler (713-486-2184) or Amanda Kubala (713-486-2154) at the LPI.