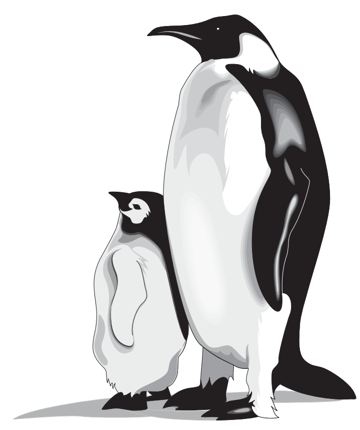
Antarctic Meteorite Newsletter

Volume 28, Number 1 February 2005

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

Edited by Cecilia Satterwhite and Kevin Righter, NASA Johnson Space Center, Houston, Texas 77058

Inside this Issue



Curator's Comments

Kevin Righter, NASA-JSC

New Meteorites

This newsletter contains classifications for 448 new meteorites from the 2002 and 2003 ANSMET collections. They include samples from the LaPaz Ice Field, MacAlpine Hills, Pecora Escarpment, Queen Alexandra Range, Dominion Range, Miller Range, Roberts Massif, and Sanford Cliffs. Petrographic descriptions are given for 30 of the new meteorites; 2 howardites, 2 diogenites, 1 brecciated eucrite, 1 ureilite, 3 CK and 10 CM chondrites, 6 type 3 ordinary chondrites, a metal-rich chondrite (similar to QUE 94411), an EL4, an R chondrite, and an ungrouped iron. Several of these new meteorites are paired with samples from previous newsletters (see Table 3). However, the three new CK chondrites bring the number of US Antarctic CK's to a total of 75 (20 unique meteorites with pairings). The large numbers and diversity of meteorites in the last several years (2002 = 924; 2003 = 1356; 2004 = 1230) is undoubtedly due to having two teams searching in separate areas for the ANSMET field season.

US Antarctic Meteorite Program

The US Antarctic Meteorite program (NSF-Smithsonian-NASA) is thriving and more active than ever. Last September, the Meteorite Working Group met in Arlington, Virginia to assess 107 individual requests for US Antarctic Meteorites. After MWG recommendations and Meteorite Steering Group (MSG) approval, the Meteorite Processing and Thin Section Laboratories allocated a total of 570 samples to 82 investigators. This is a new record for the US program, as previously the highest numbers of requests were 60 in Fall 1982 (following announcement of a new lunar meteorite ALHA81005) and 74 in Spring 1997 (after announcing the presence of possible fossil life in ALH 84001). The record number of requests this past Fall was due to the announcement of a new nakhlite and also the great diversity of new chondrites and achondrites announced in the Fall newsletter. The enormous number of approved requests increased the processing time to complete all the allocations, and we thank everyone for being patient during this record breaking time.

continued on p.2

Sample Request Deadline Mar. 03, 2005

MWG Meets March 19-20, 2005

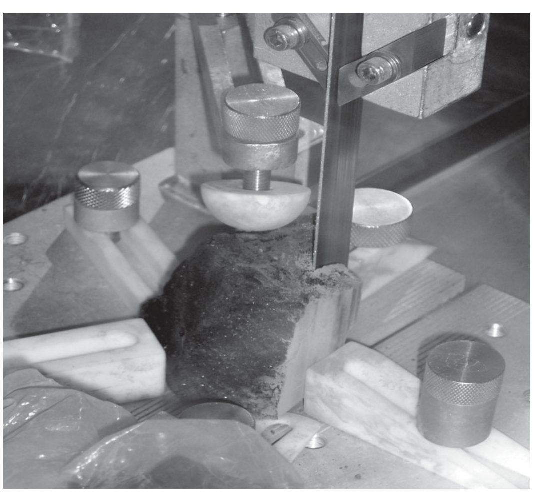
Lunar Meteorite Compendium

Work is continuing on a Lunar Meteorite Compendium. Draft chapters have been completed for the three largest and most extensively studied US Antarctic meteorites - ALHA81005 (the first recognized lunar meteorite), MAC 88105 and LAP 02205 (and their pairings). Processing sketches and genealogy charts have been prepared for these meteorites, and will soon be posted on our website. In addition, chapters are underway for the other lunar meteorites in our collections – QUE 93069/94269, QUE 94281, EET 87521/96008, MET 01210 and PCA 02007. Ultimately the compendium will include all 32 known lunar meteorites, but we have started with those in our collection. In the meantime if you have some lunar meteorite publications that you think may be relevant to such a project, please send them to *kevin.righter-1@nasa.gov*. A few of you have done this already, and it has been very beneficial - thank you!

Processing of the New Nakhlite - MIL 03346

In July 2004, we announced the availability of a new 715 gram nakhlite, MIL 03346 - the seventh nakhlite recognized in world collections, the third nakhlite returned from Antarctica, and the first nakhlite in the US Antarctic collection. We received 49 requests for material from scientists from 8 countries. MWG and MSG proposed that 47 requests be honored which included preparation and allocation of 90 individual sample splits. Due to the large number of individual samples requested, slabbing was considered the best way to preserve as much of the original mass as possible for future study and also to document the individual meteorite chips allocated. A 1 cm thick slab was made of MIL03346 (see photo) and all of the chips and potted butts for thin sections were obtained from the slab. The multitude of analytical techniques used today requires the use of many different kinds of sections – we prepared close to 40 thick and thin sections of various types. Finally, several investigators requested spatially documented samples that are critical to the scientific problems being addressed. All samples were supported with photo-documentation during preparation and processing of those splits.

Sawing of MIL 03346



Report on the 2004-2005 Field Season

Ralph Harvey, Principal Investigator
Antarctic Search for Meteorites (ANSMET) program

By the time you read this, the 2004-2005 ANSMET season, our 28th, will have been officially over for a couple of weeks now. I'm happy to report yet another successful trip, by all the important measures. To whit, we found a lot of interesting meteorites, explored a lot of blue ice, ate a lot of chocolate, froze a lot of fingers, scratched a lot of goggles, melted a lot of ice, exploded a lot of stoves, broke a lot of snowmobiles, got blown around by a lot of wind, waited for a lot for airplanes, and most important of all, nobody was seriously injured either physically or mentally - at least that they'll admit.

The systematic searching team was once again at the LaPaz icefields, where significant regions of promise remained unsearched. LaPaz is a really big place, where concentrations can vary many fold over a few kilometers, and this year we were in an area where density of finds was lower than last year, but still worth our time to systematically search. In spite of typical (read: windy) LaPaz weather, we managed to search all but the smallest corners of our targeted region, affectionately and informally known as "Pebble Beach". The total yield was 417 new meteorite specimens, including both interesting new finds and new larger pieces of cool stuff found during previous seasons.

2004-2005 Field Team
Front Row: Shaun Norman, Joe Boyce, Vera Fernandes, John Schutt, Keiko Nakamura, Jim Karner
Back Row: Cari Corrigan, Yulia Goreva, Ralph Harvey, Nancy Chabot, Stan Love, Julie Smith

The reconnaissance team had some significant ground to cover as well; their goal was to explore several previously unvisited icefields that lie along the Transantarctic Mountains between the Shackleton and Beardmore Glaciers. Given that their efforts are directed at discovery and exploration rather than systematic meteorite recovery, you might expect their totals to be lower on average. But this year was not average - the reconnaissance team recovered 813 specimens, probably amounting to 300 kg or more in mass. These finds represent a variety of discoveries; at least one icefield worth a significant future visit, and an end-of-season effort to finish recoveries at the MacAlpine Hills icefields. These finds are all the more amazing given the many aircraft and weather delays the recon team experienced - with good weather, who knows what they would have found.

In summary, the 2004-2005 seasons yielded 1230 meteorites from a variety of sites both new and old, with a total mass something like 400 kg. That's a big burden on the preliminary characterization and classification folks, so we're all waiting patiently to see what new meteoritic gems might be in the bag.

Finally, I'd like to inform you of a few other events of note:

1) Many of you have attended or participated in our ANSMET slide show held annually at the Lunar and Planetary Science Conference, when recently returned ANSMET volunteers show their best slides and spin a few stories about the previous season. <u>This year's slideshow will be held Wednesday night in the Amphitheater of the South Shore Harbour (time to be announced at the meeting)</u>. If you're an ANSMET veteran, it's a great way to relive the past; and if you're someone interested in joining us in the field someday, it's a great way to learn more about ANSMET so you can talk yourself out of it. Please join us!

2) For the last three and a half years Nancy Chabot has been ANSMET's second officer, helping to lead both field parties and ensure successful seasons. As of this spring, she's moving on to a great new position at the Applied Physics Laboratory at Johns Hopkins University. Please join me in wishing her all the possible luck in her new job and thanking her for the generous service she has given ANSMET, which includes, among many other things, living in a tent on the polar plateau for 200+ days.

And note, if the recon team does get resurrected (see below), I'll be in the market for someone to fill Nancy's bunny boots as a second science lead for ANSMET. If you know of anyone in the market for an, *ahem*, "invigorating" postdoctoral opportunity, don't hesitate to have them contact me.

3) Readers of this newsletter should be made aware of some uncertainty concerning the possible deployment of the reconnaissance team next season. NSF support for next year's systematic searching team is solid. However, with a little more than 8 months to go, funding and interagency agreements required for deployment of the NASA-supported recon team are not in place. The recon team has provided an amazing bounty of new discoveries, but it's always been difficult to support, and I want the community to have realistic expectations should the deployment not occur.

ANSMET Mountaineer John Schutt with new meteorite find (sporting a "Real Men Collect Meteorites" cap)

New Meteorites

2002-2003 Collection

Pages 5-23 contain preliminary descriptions and classifications of meteorites that were completed since publication of issue 27 (3), Aug. 2004. Specimens of special petrologic type (carbonaceous chondrite, unequilibrated ordinary chondrite, achondrite, etc.) are represented by separate descriptions unless they are paired with previously described meteorites. However, some specimens of non-special petrologic type are listed only as single line entries in Table 1. For convenience, new specimens of special petrological 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 inital 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:

Kathleen McBride, Cecilia Satterwhite
Antarctic Meteorite Laboratory
NASA Johnson Space Center
Houston, Texas

Tim McCoy, Linda Welzenbach,
Cari Corrigan, and Allison Gale
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
CRE — Mt. Crean
DAV — David Glacier
DEW — Mt. DeWitt
DOM — Dominion Range
DRP — Derrick Peak
EET — Elephant Moraine
FIN — Finger Ridge
GDR — Gardner Ridge
GEO — Geologists Range
GRA — Graves Nunataks
GRO — Grosvenor Mountains
HOW — Mt. Howe
ILD — Inland Forts
KLE — Klein Ice Field
LAP — LaPaz Ice Field
LEW — Lewis Cliff
LON — Lonewolf Nunataks
MAC — MacAlpine Hills
MBR — Mount Baldr
MCY — MacKay Glacier
MET — Meteorite Hills
MIL — Miller Range
ODE — Odell Glacier
OTT — Outpost Nunatak
PAT — Patuxent Range
PCA — Pecora Escarpment
PGP — Purgatory Peak
PRE — Mt. Prestrud
QUE — Queen Alexandra Range
RBT — Roberts Massif
RKP — Reckling Peak
SAN — Sandford Cliffs
SCO — Scott Glacier
STE — Stewart Hills
TEN — Tentacle Ridge
TIL — Thiel Mountains
TYR — Taylor Glacier
WIS — Wisconsin Range
WSG — Mt. Wisting

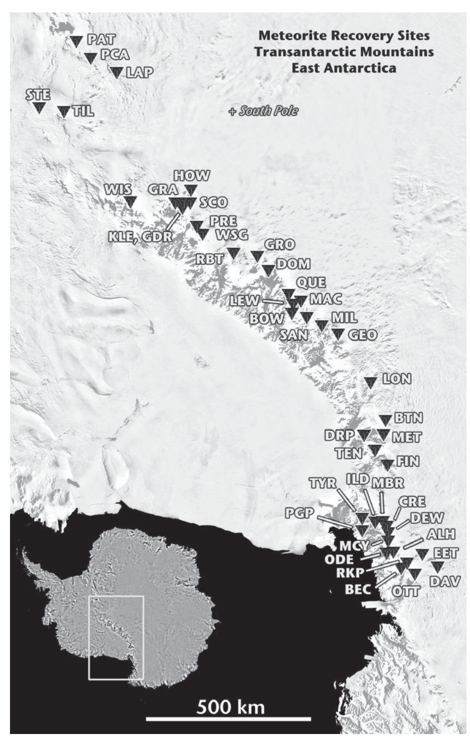


Table 1
List of Newly Classified Antarctic Meteorites **

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
LAP 02 200 ~	4013.1	LL5 CHONDRITE	A/B	A		
LAP 02 201 ~	4820.9	LL5 CHONDRITE	A/B	A		
LAP 02 202 ~	7277.3	LL5 CHONDRITE	A/B	A		
LAP 02 203 ~	958.1	LL5 CHONDRITE	A/B	A/B		
LAP 02 208 ~	1474.7	LL5 CHONDRITE	A/B	A		
LAP 02 211 ~	1651.9	LL5 CHONDRITE	A/B	A		
LAP 02 270 ~	14.7	LL6 CHONDRITE	A/B	A		
LAP 02 272	39.6	LL6 CHONDRITE	B/C	B	30	25
LAP 02 350 ~	32.3	LL5 CHONDRITE	A/B	A		
LAP 02 351 ~	25.2	LL5 CHONDRITE	A/B	A		
LAP 02 352 ~	56.3	LL6 CHONDRITE	A/B	B		
LAP 02 353 ~	35.4	L6 CHONDRITE	B	A/B		
LAP 02 354 ~	20.9	LL5 CHONDRITE	A/B	A		
LAP 02 355 ~	1.7	LL4 CHONDRITE	A/B	A		
LAP 02 356	11.3	L3 CHONDRITE	B	A	9-31	1-18
LAP 02 357 ~	39.8	H5 CHONDRITE	B/C	A/B		
LAP 02 358 ~	13.4	H5 CHONDRITE	B/C	A		
LAP 02 359 ~	32.0	H5 CHONDRITE	B/C	A		
LAP 02 360 ~	14.6	H5 CHONDRITE	B/C	A		
LAP 02 361 ~	6.0	H5 CHONDRITE	B/C	A		
LAP 02 362 ~	10.5	H5 CHONDRITE	B/C	A		
LAP 02 363 ~	31.1	LL5 CHONDRITE	A/B	A		
LAP 02 364 ~	24.1	LL6 CHONDRITE	A/B	A		
LAP 02 365 ~	10.3	LL5 CHONDRITE	A/B	A		
LAP 02 366 ~	19.4	L6 CHONDRITE	B/C	A		
LAP 02 367 ~	1.1	LL6 CHONDRITE	A/B	A/B		
LAP 02 368 ~	0.6	LL5 CHONDRITE	B	A		
LAP 02 369 ~	1.2	H6 CHONDRITE	CE	A		
MAC 02 450 ~	2493.7	H5 CHONDRITE	C	B/C		
MAC 02 451 ~	792.9	H5 CHONDRITE	C	A/B		
MAC 02 452 ~	653.5	LL5 CHONDRITE	A/B	A/B		
MAC 02 453	410.4	CK5 CHONDRITE	A	A	32	26
MAC 02 454 ~	1762.0	L4 CHONDRITE	B	A		
MAC 02 455 ~	730.9	H5 CHONDRITE	B/C	B		
MAC 02 456 ~	624.8	H5 CHONDRITE	B	A/B		
MAC 02 457 ~	739.5	L5 CHONDRITE	B/C	B		
MAC 02 458 ~	205.6	LL6 CHONDRITE	A/B	A/B		
MAC 02 459 ~	99.3	H6 CHONDRITE	C	A/B		
MAC 02 461 ~	97.4	L5 CHONDRITE	B/C	B		
MAC 02 462 ~	49.8	L5 CHONDRITE	B/C	B		
MAC 02 463 ~	33.3	H5 CHONDRITE	C	B		
MAC 02 464 ~	34.0	L5 CHONDRITE	B/C	B		
MAC 02 465 ~	29.6	H5 CHONDRITE	C	A/B		
MAC 02 466 ~	16.7	H6 CHONDRITE	C	B		
MAC 02 467	18.9	L3 CHONDRITE	C	A	4-24	
MAC 02 468 ~	8.7	H5 CHONDRITE	C	A/B		
MAC 02 490 ~	289.5	L5 CHONDRITE	B/C	A		
MAC 02 491 ~	347.9	H5 CHONDRITE	C	A/B		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MAC 02 492 ~	124.4	H5 CHONDRITE	B/C	A/B		
MAC 02 493 ~	188.8	H5 CHONDRITE	B/C	A/B		
MAC 02 494 ~	45.7	L4 CHONDRITE	B/C	A		
MAC 02 495 ~	56.5	L4 CHONDRITE	B	A		
MAC 02 496 ~	18.9	H4 CHONDRITE	B/C	A		
MAC 02 498 ~	19.8	LL5 CHONDRITE	A/B	A		
MAC 02 499 ~	26.0	L6 CHONDRITE	B/C	A		
MAC 02 500 ~	5.5	L6 CHONDRITE	B	A		
MAC 02 501	32.4	L3 CHONDRITE	B	A/B	1-25	6
MAC 02 502 ~	0.5	H4 CHONDRITE	B	A		
MAC 02 503 ~	7.7	L4 CHONDRITE	B	A		
MAC 02 504 ~	0.8	H6 CHONDRITE	B	A		
MAC 02 505 ~	32.2	L5 CHONDRITE	B	A/B		
MAC 02 506 ~	21.0	H5 CHONDRITE	B/C	A		
MAC 02 507 ~	12.0	H5 CHONDRITE	B/C	A		
MAC 02 508 ~	136.8	H5 CHONDRITE	B/C	A		
MAC 02 509	62.4	L3 CHONDRITE	B	A	0-25	1-20
MAC 02 510 ~	4.6	L5 CHONDRITE	B/C	B		
MAC 02 511 ~	1.9	L5 CHONDRITE	B/C	B		
MAC 02 513 ~	2.7	H5 CHONDRITE	C	A/B		
MAC 02 514 ~	4.5	L5 CHONDRITE	C	B		
MAC 02 515 ~	11.0	H5 CHONDRITE	C	A/B		
MAC 02 516 ~	2.7	H5 CHONDRITE	C	A/B		
MAC 02 517	3.6	L4 CHONDRITE	A/B	A/B	24	21
MAC 02 518 ~	17.7	H5 CHONDRITE	C	B		
MAC 02 519	9.6	H4 CHONDRITE	B	A/B	17	4-17
MAC 02 540 ~	98.0	LL6 CHONDRITE	A/B	A		
MAC 02 541 ~	75.6	H5 CHONDRITE	B/C	A		
MAC 02 542 ~	158.1	H5 CHONDRITE	B/CE	A/B		
MAC 02 543 ~	138.0	LL5 CHONDRITE	A/B	A/B		
MAC 02 544 ~	189.1	LL6 CHONDRITE	A/B	B		
MAC 02 545 ~	47.5	LL6 CHONDRITE	A/B	A		
MAC 02 546 ~	178.1	LL5 CHONDRITE	A/BE	A		
MAC 02 547 ~	377.7	H5 CHONDRITE	B/C	A/B		
MAC 02 548 ~	34.3	L6 CHONDRITE	B/C	A		
MAC 02 549 ~	87.2	LL5 CHONDRITE	A/B	A/B		
MAC 02 560 ~	3.9	H5 CHONDRITE	C	A/B		
MAC 02 561 ~	5.8	H5 CHONDRITE	C	A/B		
MAC 02 563 ~	20.4	H5 CHONDRITE	C	A/B		
MAC 02 564 ~	0.4	H5 CHONDRITE	B	A		
MAC 02 565 ~	0.7	H5 CHONDRITE	B	A		
MAC 02 566 ~	11.2	H5 CHONDRITE	C	C		
MAC 02 567 ~	8.0	L4 CHONDRITE	A/B	A/B		
MAC 02 568 ~	14.4	L5 CHONDRITE	A/B	A/B		
MAC 02 569 ~	92.1	H5 CHONDRITE	B	B		
MAC 02 570 ~	14.1	L4 CHONDRITE	B	A		
MAC 02 571 ~	10.0	H5 CHONDRITE	B/C	A		
MAC 02 572 ~	9.5	H5 CHONDRITE	B/C	A		
MAC 02 573 ~	5.9	L4 CHONDRITE	B	A		
MAC 02 574 ~	10.5	L5 CHONDRITE	A/B	A		
MAC 02 575 ~	2.8	L5 CHONDRITE	B/C	A		
MAC 02 576 ~	12.9	L5 CHONDRITE	B/CE	A		
MAC 02 577 ~	4.6	H5 CHONDRITE	B/C	A		
MAC 02 579 ~	18.8	H5 CHONDRITE	B/C	A/B		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MAC 02 580 ~	19.4	H5 CHONDRITE	C	A		
MAC 02 581 ~	0.4	L5 CHONDRITE	B	A		
MAC 02 582 ~	0.3	H6 CHONDRITE	B	A		
MAC 02 584 ~	15.6	L4 CHONDRITE	A/B	A		
MAC 02 585 ~	8.5	L4 CHONDRITE	C	A/B		
MAC 02 586 ~	2.5	H5 CHONDRITE	C	A/B		
MAC 02 587 ~	0.9	H6 CHONDRITE	B	A		
MAC 02 589 ~	0.7	LL5 CHONDRITE	B	A		
MAC 02 590 ~	58.3	LL6 CHONDRITE	B	B		
MAC 02 591 ~	35.2	LL6 CHONDRITE	B	B		
MAC 02 592	48.7	L4 CHONDRITE	A/B	B	25-28	2-22
MAC 02 593 ~	36.2	L5 CHONDRITE	B/C	B		
MAC 02 594 ~	64.0	L4 CHONDRITE	B	B		
MAC 02 595 ~	72.9	L5 CHONDRITE	B/C	B		
MAC 02 596 ~	35.0	H5 CHONDRITE	C	A		
MAC 02 597 ~	58.2	L5 CHONDRITE	A/B	A/B		
MAC 02 598 ~	0.6	H6 CHONDRITE	B	A		
MAC 02 599 ~	1.6	L5 CHONDRITE	C	C		
MAC 02 600 ~	281.0	H5 CHONDRITE	C	A/B		
MAC 02 601 ~	328.3	L4 CHONDRITE	A/B	A/B		
MAC 02 602 ~	691.7	H5 CHONDRITE	C	C		
MAC 02 620 ~	3.0	L5 CHONDRITE	C	A		
MAC 02 621 ~	44.8	H5 CHONDRITE	C	A		
MAC 02 622 ~	43.0	H5 CHONDRITE	C	C		
MAC 02 623 ~	30.5	L5 CHONDRITE	C	A/B		
MAC 02 624 ~	3.9	L4 CHONDRITE	C	B		
MAC 02 625 ~	10.0	H5 CHONDRITE	C	A		
MAC 02 626 ~	9.4	L4 CHONDRITE	C	A/B		
MAC 02 627 ~	10.3	L5 CHONDRITE	C	A/B		
MAC 02 628 ~	0.1	H5 CHONDRITE	B	A		
MAC 02 629 ~	4.6	L4 CHONDRITE	C	A/B		
MAC 02 660 ~	3.8	L5 CHONDRITE	B/C	A		
MAC 02 661 ~	2.7	LL6 CHONDRITE	A/B	A		
MAC 02 662 ~	5.4	L5 CHONDRITE	C	A/B		
MAC 02 663 ~	4.3	L5 CHONDRITE	B/C	A/B		
MAC 02 664 ~	3.0	L5 CHONDRITE	B/C	B		
MAC 02 665 ~	2.2	LL6 CHONDRITE	A/B	B		
MAC 02 668 ~	11.3	H5 CHONDRITE	C	B		
MAC 02 669 ~	1.4	LL5 CHONDRITE	A/B	A/B		
MAC 02 670 ~	71.6	H5 CHONDRITE	B/C	A		
MAC 02 671 ~	101.4	H5 CHONDRITE	B/C	A		
MAC 02 672 ~	53.7	H5 CHONDRITE	B/C	A/B		
MAC 02 673 ~	17.2	L5 CHONDRITE	A/B	A/B		
MAC 02 674 ~	20.7	L5 CHONDRITE	B/C	A		
MAC 02 675	22.9	METAL-RICH CHONDRITE	B	A		1-4
MAC 02 676	199.3	LL6 CHONDRITE	A/B	A/B	30	25
MAC 02 677	299.7	LL5 CHONDRITE	A/B	A/B	30	25
MAC 02 678 ~	55.7	H5 CHONDRITE	B/C	A		
MAC 02 679 ~	17.7	H5 CHONDRITE	B/C	A		
MAC 02 710 ~	0.4	H5 CHONDRITE	B	A		
MAC 02 711 ~	2.2	L5 CHONDRITE	C	A		
MAC 02 712 ~	1.1	L4 CHONDRITE	B	A		
MAC 02 713 ~	1.7	H6 CHONDRITE	C	A		
MAC 02 714 ~	0.3	H5 CHONDRITE	B	A		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MAC 02 715 ~	1.1	L5 CHONDRITE	C	B		
MAC 02 716 ~	4.5	H6 CHONDRITE	C	A		
MAC 02 717 ~	1.0	L5 CHONDRITE	B	A		
MAC 02 718 ~	1.2	L6 CHONDRITE	C	B		
MAC 02 719 ~	0.2	H6 CHONDRITE	B	A		
MAC 02 720 ~	0.1	H6 CHONDRITE	B	A		
MAC 02 721 ~	0.2	H5 CHONDRITE	B	A		
MAC 02 722 ~	1.4	L5 CHONDRITE	C	A/B		
MAC 02 723 ~	11.8	H5 CHONDRITE	C	B		
MAC 02 724 ~	5.5	H6 CHONDRITE	C	B		
MAC 02 725 ~	2.4	L5 CHONDRITE	C	A/B		
MAC 02 727 ~	1.3	L5 CHONDRITE	C	A/B		
MAC 02 728 ~	2.2	H6 CHONDRITE	C	A/B		
MAC 02 729	7.5	LL6 CHONDRITE	A/B	A/B	31	26
MAC 02 730 ~	10.1	L4 CHONDRITE	B/C	A		
MAC 02 731 ~	13.3	LL5 CHONDRITE	B	A/B		
MAC 02 732 ~	6.9	L5 CHONDRITE	C	A/B		
MAC 02 733 ~	2.9	H6 CHONDRITE	C	A/B		
MAC 02 734 ~	3.3	H4 CHONDRITE	B/C	A		
MAC 02 735 ~	10.8	LL6 CHONDRITE	A/B	A/B		
MAC 02 736 ~	25.9	L4 CHONDRITE	B	A/B		
MAC 02 737 ~	26.7	H5 CHONDRITE	C	B		
MAC 02 738 ~	41.4	L4 CHONDRITE	B	A/B		
MAC 02 739 ~	49.2	H5 CHONDRITE	C	B		
MAC 02 740 ~	281.4	L4 CHONDRITE	B/C	A		
MAC 02 741 ~	167.1	H5 CHONDRITE	B/C	A		
MAC 02 744 ~	6.1	H5 CHONDRITE	B/C	A		
MAC 02 745 ~	16.3	H6 CHONDRITE	B/C	A		
MAC 02 746 ~	189.4	LL5 CHONDRITE	A/B	A		
MAC 02 747	140.7	EL4 CHONDRITE	B/C	A/B		1-4
MAC 02 748 ~	18.5	LL5 CHONDRITE	A/B	A/B		
MAC 02 749 ~	12.8	L4 CHONDRITE	B/C	A		
MAC 02 755	3.5	CM2 CHONDRITE	B	B	1-40	
MAC 02 760 ~	0.2	H5 CHONDRITE	B	A		
MAC 02 761 ~	0.3	H5 CHONDRITE	B	A		
MAC 02 762 ~	0.1	H6 CHONDRITE	B	A		
MAC 02 763 ~	0.7	H6 CHONDRITE	B	A		
MAC 02 764 ~	1.0	H5 CHONDRITE	B	A		
MAC 02 765 ~	0.7	L5 CHONDRITE	B	A		
MAC 02 767 ~	0.8	L4 CHONDRITE	B	A		
MAC 02 768 ~	1.0	L5 CHONDRITE	B	A		
MAC 02 769 ~	0.1	H6 CHONDRITE	B	A		
MAC 02 770 ~	8.5	L4 CHONDRITE	C	A/B		
MAC 02 771 ~	1.4	L5 CHONDRITE	C	B		
MAC 02 772 ~	0.7	L5 CHONDRITE	B	A		
MAC 02 773 ~	6.7	L5 CHONDRITE	B	A		
MAC 02 774 ~	0.3	H5 CHONDRITE	B	A		
MAC 02 775 ~	0.6	L4 CHONDRITE	B	A		
MAC 02 776 ~	0.3	H6 CHONDRITE	B	A		
MAC 02 777 ~	0.2	H5 CHONDRITE	B	A		
MAC 02 778 ~	0.1	L6 CHONDRITE	B	A		
MAC 02 779	0.3	CM2 CHONDRITE	B	A	1-39	
MAC 02 780 ~	0.7	L6 CHONDRITE	B	A		
MAC 02 781 ~	0.2	H5 CHONDRITE	B	A		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MAC 02 782 ~	10.0	L4 CHONDRITE	B/C	A/B		
MAC 02 783 ~	0.3	L4 CHONDRITE	B	A		
MAC 02 784 ~	2.7	L4 CHONDRITE	B/C	B		
MAC 02 785 ~	1.3	L4 CHONDRITE	B/C	A/B		
MAC 02 786 ~	1.2	L4 CHONDRITE	B/C	B		
MAC 02 787 ~	0.7	H5 CHONDRITE	B	A		
MAC 02 789 ~	0.5	H6 CHONDRITE	B	A		
MAC 02 790 ~	1.8	LL5 CHONDRITE	B	B		
MAC 02 791 ~	6.8	LL5 CHONDRITE	B/C	B		
MAC 02 792 ~	6.6	LL5 CHONDRITE	B/C	B		
MAC 02 793 ~	12.4	H5 CHONDRITE	C	B/C		
MAC 02 794 ~	4.6	H5 CHONDRITE	C	B		
MAC 02 795 ~	3.6	H5 CHONDRITE	C	C		
MAC 02 796 ~	15.3	H5 CHONDRITE	C	A/B		
MAC 02 797 ~	0.9	H5 CHONDRITE	B	A		
MAC 02 798 ~	43.5	H5 CHONDRITE	C	A/B		
MAC 02 799 ~	21.5	H5 CHONDRITE	C	B/C		
MAC 02 801 ~	13.9	LL5 CHONDRITE	A/B	A/B		
MAC 02 802 ~	5.0	H5 CHONDRITE	C	B		
MAC 02 803 ~	0.1	H5 CHONDRITE	B	A		
MAC 02 804 ~	0.1	H5 CHONDRITE	B	A		
MAC 02 805 ~	0.3	H5 CHONDRITE	B	A		
MAC 02 806 ~	17.4	H5 CHONDRITE	C	A/B		
MAC 02 807 ~	7.6	L4 CHONDRITE	C	A/B		
MAC 02 808 ~	5.3	L5 CHONDRITE	B/C	B		
MAC 02 809 ~	0.6	LL5 CHONDRITE	B	A		
MAC 02 810 ~	23.8	H5 CHONDRITE	B/C	A/B		
MAC 02 811 ~	25.5	L5 CHONDRITE	A/B	A/B		
MAC 02 812 ~	46.0	H4 CHONDRITE	B	A		
MAC 02 813 ~	13.4	H5 CHONDRITE	B/C	A/B		
MAC 02 815 ~	4.9	L4 CHONDRITE	B/C	A		
MAC 02 816 ~	3.6	H4 CHONDRITE	B/C	A		
MAC 02 817 ~	23.0	LL5 CHONDRITE	A/B	A/B		
MAC 02 818 ~	3.8	L5 CHONDRITE	B/C	A		
MAC 02 819 ~	2.4	H4 CHONDRITE	B	A		
MAC 02 820	0.2	CM1-2 CHONDRITE	B	A	2	
MAC 02 821 ~	4.5	H5 CHONDRITE	C	A/B		
MAC 02 823 ~	0.0	H5 CHONDRITE	B	A		
MAC 02 824 ~	1.6	H5 CHONDRITE	C	A		
MAC 02 825 ~	4.6	H5 CHONDRITE	C	A		
MAC 02 826 ~	7.5	H5 CHONDRITE	C	A		
MAC 02 827 ~	0.2	H5 CHONDRITE	B	A		
MAC 02 828 ~	1.9	L5 CHONDRITE	B/C	B		
MAC 02 829 ~	55.1	H5 CHONDRITE	C	A/B		
MAC 02 840 ~	6.5	H5 CHONDRITE	B/C	A/B		
MAC 02 841 ~	8.1	H5 CHONDRITE	B/C	A		
MAC 02 842 ~	28.1	H5 CHONDRITE	B/C	A		
MAC 02 843 ~	7.5	H5 CHONDRITE	B/C	A		
MAC 02 844 ~	18.1	H5 CHONDRITE	B/C	A		
MAC 02 845 ~	4.2	LL5 CHONDRITE	A/B	A		
MAC 02 846 ~	10.1	H5 CHONDRITE	B/C	A/B		
MAC 02 847 ~	4.1	H5 CHONDRITE	B/C	A		
MAC 02 850 ~	2.9	L5 CHONDRITE	B	B		
MAC 02 851 ~	1.4	LL5 CHONDRITE	A	A		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MAC 02 852 ~	0.2	LL5 CHONDRITE	B	A		
MAC 02 853 ~	3.4	H6 CHONDRITE	C	A		
MAC 02 854	0.1	CM2 CHONDRITE	C	B	1-2	
MAC 02 855 ~	0.2	H5 CHONDRITE	B	A		
MAC 02 856 ~	0.2	H5 CHONDRITE	B	A		
MAC 02 857 ~	1.9	L5 CHONDRITE	C	B		
MAC 02 858 ~	2.6	H6 CHONDRITE	C	B/C		
MAC 02 859 ~	1.0	L4 CHONDRITE	B	B		
MAC 02 860 ~	0.2	L5 CHONDRITE	B	A		
MAC 02 861 ~	1.7	H6 CHONDRITE	B	A		
MAC 02 862 ~	4.7	H5 CHONDRITE	B/C	A/B		
MAC 02 863 ~	0.8	L4 CHONDRITE	B	A		
MAC 02 865 ~	0.1	L4 CHONDRITE	B	A		
MAC 02 866 ~	0.6	H6 CHONDRITE	B	A		
MAC 02 867 ~	2.8	H6 CHONDRITE	B	A		
MAC 02 869	0.4	CM1 CHONDRITE	B	A		
MAC 02 870 ~	17.0	H5 CHONDRITE	B/C	A		
MAC 02 871 ~	13.5	L5 CHONDRITE	A/B	A/B		
MAC 02 872 ~	12.6	L4 CHONDRITE	B	A		
MAC 02 873 ~	38.7	H6 CHONDRITE	B/C	A		
MAC 02 874 ~	96.8	L5 CHONDRITE	B	A/B		
MAC 02 875 ~	80.9	H5 CHONDRITE	B/C	A/B		
MAC 02 876 ~	30.3	H5 CHONDRITE	B	A		
MAC 02 877 ~	23.5	L5 CHONDRITE	B	A/B		
MAC 02 878 ~	19.5	H6 CHONDRITE	B/C	A		
MAC 02 879 ~	7.5	H5 CHONDRITE	B/C	A/B		
MAC 02 880 ~	0.6	H5 CHONDRITE	B	A		
MAC 02 881 ~	0.5	H6 CHONDRITE	B	A		
MAC 02 882 ~	1.7	L5 CHONDRITE	C	A/B		
MAC 02 883 ~	0.1	H5 CHONDRITE	B	A		
MAC 02 884 ~	1.5	L5 CHONDRITE	C	C		
MAC 02 885 ~	2.1	H5 CHONDRITE	C	C		
MAC 02 887 ~	3.3	L4 CHONDRITE	B	B		
MAC 02 888 ~	1.3	L4 CHONDRITE	C	C		
MAC 02 889 ~	3.5	L4 CHONDRITE	A	A/B		
MAC 02 890 ~	18.9	H5 CHONDRITE	B/C	A		
MAC 02 891 ~	14.2	H5 CHONDRITE	B/C	A		
MAC 02 892 ~	52.1	H5 CHONDRITE	B/C	A		
MAC 02 893 ~	21.4	L5 CHONDRITE	B/C	A		
MAC 02 894 ~	18.2	H5 CHONDRITE	B/C	A/B		
MAC 02 896 ~	1.8	H6 CHONDRITE	B	A		
MAC 02 897 ~	1.5	H5 CHONDRITE	B	A		
MAC 02 898 ~	5.2	LL5 CHONDRITE	B/C	A		
MAC 02 899 ~	74.7	H6 CHONDRITE	B/C	A		
MAC 02 900 ~	33.7	H5 CHONDRITE	B/C	A		
MAC 02 901 ~	28.6	H5 CHONDRITE	B/C	A		
MAC 02 902 ~	23.6	L5 CHONDRITE	B/C	A		
MAC 02 903 ~	32.0	H5 CHONDRITE	C	A/B		
MAC 02 904 ~	33.9	H5 CHONDRITE	B/C	A/B		
MAC 02 905 ~	9.8	L4 CHONDRITE	B/C	A		
MAC 02 906 ~	5.1	H5 CHONDRITE	B/C	A		
MAC 02 907 ~	18.7	L4 CHONDRITE	B	A		
MAC 02 908 ~	16.6	LL5 CHONDRITE	A/B	A		
MAC 02 909 ~	2.7	LL5 CHONDRITE	A/B	A		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MAC 02 910 ~	2.2	LL5 CHONDRITE	A/B	A		
MAC 02 911 ~	4.9	L4 CHONDRITE	B/C	A		
MAC 02 912 ~	2.7	L5 CHONDRITE	B/C	A		
MAC 02 913 ~	0.8	H6 CHONDRITE	B	A		
MAC 02 914 ~	0.3	H5 CHONDRITE	B	A		
MAC 02 915 ~	308.1	LL5 CHONDRITE	A/B	A		
MAC 02 916 ~	96.4	L5 CHONDRITE	B/C	B		
MAC 02 917	222.2	L3 CHONDRITE	B	A	9-27	2-24
MAC 02 918 ~	156.9	L4 CHONDRITE	B/C	A		
MAC 02 919 ~	265.1	L5 CHONDRITE	C	C		
MAC 02 920 ~	106.7	L4 CHONDRITE	B/C	A		
MAC 02 921 ~	177.2	L4 CHONDRITE	B/C	A		
MAC 02 922 ~	149.2	LL5 CHONDRITE	A/B	A		
MAC 02 923 ~	188.4	L5 CHONDRITE	B/C	A		
MAC 02 924 ~	195.0	H5 CHONDRITE	B/C	A		
MAC 02 925 ~	65.5	H5 CHONDRITE	B/C	A		
MAC 02 926 ~	72.4	H5 CHONDRITE	B/C	A		
MAC 02 928 ~	53.8	H5 CHONDRITE	B/C	A/B		
MAC 02 929 ~	65.1	L4 CHONDRITE	B	A		
MAC 02 930 ~	9.0	L4 CHONDRITE	B/C	A		
MAC 02 931 ~	29.3	H5 CHONDRITE	B/C	A		
MAC 02 932 ~	25.7	LL5 CHONDRITE	A/B	A		
MAC 02 933 ~	24.9	LL5 CHONDRITE	A/B	A		
MAC 02 934 ~	13.2	LL5 CHONDRITE	A/B	A/B		
MAC 02 935 ~	10.1	L5 CHONDRITE	B/C	A		
MAC 02 936 ~	8.0	H5 CHONDRITE	B/C	A		
MAC 02 937 ~	7.2	H5 CHONDRITE	B/C	A		
MAC 02 938 ~	9.8	LL5 CHONDRITE	A/B	A/B		
MAC 02 939 ~	8.2	H5 CHONDRITE	B/C	A		
MAC 02 940 ~	19.2	LL5 CHONDRITE	A/B	A		
MAC 02 942 ~	13.5	H5 CHONDRITE	B/C	A		
MAC 02 943 ~	2.1	L4 CHONDRITE	B	A		
MAC 02 944 ~	4.7	H4 CHONDRITE	B/C	A		
MAC 02 945 ~	7.4	H5 CHONDRITE	B/C	A		
MAC 02 946 ~	44.1	L5 CHONDRITE	B/C	A		
MAC 02 947 ~	16.0	L4 CHONDRITE	B	A/B		
MAC 02 948 ~	15.8	L4 CHONDRITE	B/C	A		
MAC 02 949 ~	18.0	L4 CHONDRITE	B/C	A		
MAC 02 950 ~	2.4	L5 CHONDRITE	C	C		
MAC 02 951 ~	6.3	L5 CHONDRITE	C	B		
MAC 02 953 ~	15.1	H6 CHONDRITE	C	B		
MAC 02 954 ~	13.2	L5 CHONDRITE	C	B		
MAC 02 955 ~	0.7	H5 CHONDRITE	C	B		
MAC 02 956 ~	15.1	H4 CHONDRITE	C	B		
MAC 02 957 ~	12.5	L4 CHONDRITE	B	A/B		
MAC 02 958 ~	1.4	H5 CHONDRITE	B	A		
MAC 02 959 ~	5.5	H5 CHONDRITE	B	A		
MAC 02 960 ~	3.7	LL5 CHONDRITE	B/C	B		
MAC 02 961 ~	0.3	LL6 CHONDRITE	B	A		
MAC 02 962 ~	13.2	H5 CHONDRITE	C	B		
MAC 02 964 ~	2.3	H6 CHONDRITE	C	B/C		
PCA 02 065	3.6	HOWARDITE	B	B/C		23-57
PCA 02 066	57.1	HOWARDITE	B/C	B/C		24-58

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
QUE 02 158	8.6	DIOGENITE	B	B		22
DOM 03 182	19.8	CM2 CHONDRITE	B	A/B	0-30	1-2
DOM 03 183	124.5	CM2 CHONDRITE	B	A	0-38	
DOM 03 184 ~	1.9	LL5 CHONDRITE	A/B	A		
DOM 03 260 ~	308.5	LL5 CHONDRITE	C	A/B		
DOM 03 261 ~	215.4	LL5 CHONDRITE	B	B		
DOM 03 262 ~	273.5	LL5 CHONDRITE	A/B	B		
DOM 03 270 ~	30.8	LL5 CHONDRITE	A/B	A/B		
DOM 03 271 ~	36.6	LL5 CHONDRITE	C	A/B		
DOM 03 272 ~	81.1	LL5 CHONDRITE	A	A/B		
DOM 03 273 ~	39.5	LL5 CHONDRITE	A	A/B		
DOM 03 274 ~	34.5	LL5 CHONDRITE	A	A/B		
DOM 03 275 ~	24.4	LL5 CHONDRITE	B	A/B		
DOM 03 276 ~	25.5	LL5 CHONDRITE	B	B		
DOM 03 277 ~	16.1	LL5 CHONDRITE	C	B		
DOM 03 278 ~	48.8	LL5 CHONDRITE	B	A/B		
DOM 03 279 ~	41.1	LL5 CHONDRITE	B/C	B		
DOM 03 280 ~	57.7	LL6 CHONDRITE	A/B	A/B		
DOM 03 281 ~	11.3	LL6 CHONDRITE	B	A		
DOM 03 282 ~	24.3	LL5 CHONDRITE	B	A/B		
DOM 03 283 ~	14.9	L6 CHONDRITE	B/C	B		
DOM 03 284 ~	6.8	L5 CHONDRITE	C	B		
DOM 03 285 ~	25.5	L6 CHONDRITE	C	B		
DOM 03 286 ~	25.2	H5 CHONDRITE	C	B		
DOM 03 287	20.2	L3 CHONDRITE	B	A/B	15-29	6-24
DOM 03 288 ~	36.0	L6 CHONDRITE	B	B		
DOM 03 289 ~	85.8	H5 CHONDRITE	C	A		
DOM 03 310 ~	13.8	LL5 CHONDRITE	B/C	A/B		
DOM 03 311 ~	27.1	LL5 CHONDRITE	B/C	A/B		
DOM 03 312	16.5	H5 CHONDRITE	C	B	20	17
DOM 03 313 ~	8.2	H5 CHONDRITE	C	B		
DOM 03 314 ~	8.0	L5 CHONDRITE	C	A/B		
DOM 03 315 ~	12.6	LL5 CHONDRITE	B/C	B		
DOM 03 317 ~	11.4	L5 CHONDRITE	B/C	A/B		
LAP 03 573 ~	670.4	LL5 CHONDRITE	B	A/B		
LAP 03 583 ~	226.7	LL5 CHONDRITE	A/B	A/B		
LAP 03 587	130.2	UREILITE	B	B/C	10-25	
LAP 03 624 ~	165.7	LL5 CHONDRITE	A	A		
LAP 03 637 ~	229.0	LL5 CHONDRITE	A/B	A/B		
LAP 03 645	127.6	R CHONDRITE	B	B	7-43	
LAP 03 677	44.8	H5 CHONDRITE	B/C	A	18	16
LAP 03 718	95.2	CM2 CHONDRITE	BE	A/B	1-48	1
LAP 03 784	50.9	CK5 CHONDRITE	B	A/B	33	
LAP 03 785	43.4	CM2 CHONDRITE	B	A/B	1-40	
LAP 031370	8.7	IRON (UNGROUPED)	B	A	24	21
MIL 03 368	80.9	DIOGENITE	B/C	B	29	27
RBT 03 522	282.4	CK5 CHONDRITE	B	A	27-30	28
RBT 03 523	6.7	CM2 CHONDRITE	B	A/B	1-57	
RBT 03 530 ~	23.1	H5 CHONDRITE	C	A/B		

~Classified by using refractive indices.

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
RBT 03 531 ~	72.4	H5 CHONDRITE	C	A/B		
RBT 03 532 ~	7.8	LL5 CHONDRITE	B	A/B		
RBT 03 533 ~	42.6	LL5 CHONDRITE	B	A/B		
RBT 03 534 ~	19.0	H5 CHONDRITE	B	A/B		
RBT 03 535 ~	9.9	H6 CHONDRITE	C	B		
RBT 03 536 ~	7.3	H6 CHONDRITE	B	A/B		
RBT 03 537 ~	6.8	L5 CHONDRITE	B/C	A/B		
RBT 03 538 ~	11.8	L6 CHONDRITE	B/C	B		
SAN 03 480 ~	121.5	H5 CHONDRITE	C	B/C		
SAN 03 481 ~	61.7	L5 CHONDRITE	C	C		
SAN 03 482 ~	160.2	LL5 CHONDRITE	B/C	B		
SAN 03 483 ~	137.9	LL5 CHONDRITE	B	B		
SAN 03 484 ~	183.7	LL5 CHONDRITE	B	B		
SAN 03 485 ~	76.1	LL5 CHONDRITE	B	A/B		
SAN 03 486 ~	79.4	H5 CHONDRITE	C	C		
SAN 03 487 ~	57.1	LL4 CHONDRITE	A/B	A/B		
SAN 03 488 ~	89.4	L5 CHONDRITE	C	A		
SAN 03 489	29.2	EUCRITE (BRECCIATED)	A/B	A/B		48-59
SAN 03 500 ~	17.3	H5 CHONDRITE	C	A		
SAN 03 501 ~	35.8	LL4 CHONDRITE	B/C	A/B		
SAN 03 502 ~	27.5	L5 CHONDRITE	C	A/B		
SAN 03 503 ~	43.7	LL5 CHONDRITE	B	A/B		
SAN 03 504 ~	7.3	L5 CHONDRITE	C	B		
SAN 03 505 ~	42.2	LL5 CHONDRITE	B	B		
SAN 03 506 ~	46.8	LL4 CHONDRITE	B	A/B		
SAN 03 507 ~	44.3	LL5 CHONDRITE	B	B		
SAN 03 508 ~	67.8	LL5 CHONDRITE	A/B	A/B		
SAN 03 509 ~	22.7	LL5 CHONDRITE	B	A/B		

Table 2
Newly Classified Specimens Listed By Type

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
		ACHONDRITES				
QUE 02 158	8.6	DIOGENITE	B	B		22
MIL 03 368	80.9	DIOGENITE	B/C	B	29	27
SAN 03 489	29.2	EUCRITE (BRECCIATED)	A/B	A/B		48-59
PCA 02 065	3.6	HOWARDITE	B	B/C		23-57
PCA 02 066	57.1	HOWARDITE	B/C	B/C		24-58
LAP 03 587	130.2	UREILITE	B	B/C	10-25	
		CARBONACEOUS CHONDRITES				
LAP 03 784	50.9	CK5 CHONDRITE	B	A/B	33	
MAC 02 453	410.4	CK5 CHONDRITE	A	A	32	26
RBT 03 522	282.4	CK5 CHONDRITE	B	A	27-30	28
MAC 02 869	0.4	CM1 CHONDRITE	B	A		
MAC 02 820	0.2	CM1-2 CHONDRITE	B	A	2	
MAC 02 755	3.5	CM2 CHONDRITE	B	B	1-40	
MAC 02 779	0.3	CM2 CHONDRITE	B	A	1-39	
MAC 02 854	0.1	CM2 CHONDRITE	C	B	1-2	
DOM 03 182	19.8	CM2 CHONDRITE	B	A/B	0-30	1-2
DOM 03 183	124.5	CM2 CHONDRITE	B	A	0-38	
LAP 03 718	95.2	CM2 CHONDRITE	BE	A/B	1-48	1
LAP 03 785	43.4	CM2 CHONDRITE	B	A/B	1-40	
RBT 03 523	6.7	CM2 CHONDRITE	B	A/B	1-57	
		CHONDRITES - TYPE 3				
LAP 02 356	11.3	L3 CHONDRITE	B	A	9-31	1-18
MAC 02 467	18.9	L3 CHONDRITE	C	A	4-24	
MAC 02 501	32.4	L3 CHONDRITE	B	A/B	1-25	6
MAC 02 509	62.4	L3 CHONDRITE	B	A	0-25	1-20
MAC 02 917	222.2	L3 CHONDRITE	B	A	9-27	2-24
DOM 03 287	20.2	L3 CHONDRITE	B	A/B	15-29	6-24

Sample Number | Weight (g) | Classification | Weathering | Fracturing | % Fa | % Fs

CHONDRITE - UNGROUPED

MAC 02 675	22.9	METAL-RICH CHONDRITE	B	A		1-4

E CHONDRITE

MAC 02 747	140.7	EL4 CHONDRITE	B/C	A/B		1-4

IRON - UNGROUPED

LAP 031370	8.7	IRON (UNGROUPED)	B	A	24	21

R CHONDRITE

LAP 03 645	127.6	R CHONDRITE	B	B		7-43

**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.

Table 3
Tentative Pairings for New Meteorites

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). Possible pairings were updated in *Meteoritical Bulletins* No. 76 (*Meteoritics* **29**, 100-143), No. 79 (*Meteoritics and Planetary Science* **31**, A161-174), No. 82 (*Meteoritics and Planetary Science* **33**, A221-A239), No. 83 (*Meteoritics and Planetary Science* **34**, A169-A186), No. 84 (*Meteoritics and Planetary Science* **35**, A199-A225), No. 85 (*Meteoritics and Planetary Science* **36**, A293-A322), No. 86 (*Meteoritics and Planetary Science* **37**, A157-A184), No. 87 (*Meteoritics and Planetary Science* **38,** A189-A248), No. 88 (*Meteoritics and Planetary Science* **39,** A215-272) and No. 89 (Meteoritics and Planetary Science 40, in press).

CM2 CHONDRITE

LAP 03785 with LAP 03718
MAC 02854 with MAC 02779

DIOGENITE

QUE 02158 with QUE 99050

HOWARDITE

PCA 02065 and PCA 02066 with PCA 02009

L3 CHONDRITE

MAC 02501 and MAC 02509 with MAC 02467

R CHONDRITE

LAP 03645 with LAP 02238

Petrographic Descriptions

Sample No.:	LAP 02272
Location:	LaPaz Ice Field
Field No.:	15449
Dimensions (cm):	3.5 x 3.25 x 2.25
Weight (g):	39.59
Meteorite Type:	LL6 Chondrite

Macroscopic Description: Kathleen McBride
90% of the exterior has thick, fractured black fusion crust. The interior is fine-grained crystalline, gray in color with a lot of rust.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy
The meteorite is an equilibrated LL chondrite (Fa_{30}, Fs_{25}) of petrologic type 6. The section is cross cut by a network of shock melt veins that reach 0.5 mm in diameter. No high pressure silicate polymorphs were noted.

Sample No.:	LAP 02356
Location:	LaPaz Ice Field
Field No.:	15512
Dimensions (cm):	2.7 x 1.8 x 1.3
Weight (g):	11.28
Meteorite Type:	L3 Chondrite

Macroscopic Description: Cecilia Satterwhite
Brown/black frothy fusion crust covers 80% of this ordinary chondrite's exterior surface. Flow lines are visible on the surface. The interior is dark gray with high oxidation. Within the matrix are numerous light gray, white and cream colored inclusions. Size ranges from 1-5 mm.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy
The section exhibits numerous large (up to 2 mm), well-defined chondrules in a black matrix of fine-grained silicates, metal and troilite. Weak shock effects are present. Polysynthetically twinned pyroxene is abundant. The meteorite is moderately weathered. Silicates are unequilibrated; olivines range from Fa_{9-31} and pyroxenes from Fs_{1-18}. The meteorite is an L3 chondrite (estimated subtype 3.8).

Sample No.:	MAC 02453
Location:	MacAlpine Hills
Field No.:	14227
Dimensions (cm):	8.0 x 6.0 x 3.5
Weight (g):	410.40
Meteorite Type:	CK5 Chondrite

Macroscopic Description: Kathleen McBride
The exterior has a no fusion crust and has a greenish tint. The gray crystalline interior has large gray crystals and small black and white inclusions. This carbonaceous chondrite was very hard.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy
The section consists of large (up to 2 mm) chondrules in a matrix of granoblastic silicates, sulfides and magnetite. Weathering is minor. Silicates are homogeneous. Olivine is Fa_{32} and orthopyroxene is Fs_{26}. The meteorite is a CK5 chondrite.

Sample No.:	MAC 02467; MAC 02501; MAC 02509
Location:	MacAlpine Hills
Field No.:	14020; 14044; 14072
Dimensions (cm):	3.0 x 2.5 x 2.0; 3.3 x 2.7 x 1.6; 4.0 x 3.2 x 3.2
Weight (g):	18.867; 32.375; 62.414
Meteorite Type:	L3 Chondrite

Macroscopic Description: Kathleen McBride, Cecilia Satterwhite
The exterior has brown/black fusion crust with oxidation haloes visible. The interior is dark gray to black with some rusty areas. Gray, white, and rusty millimeter sized inclusions are visible.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy
These meteorites are so similar that a single description suffices. The sections exhibit numerous large (up to 4 mm), well-defined chondrules in a black matrix of fine-grained silicates, metal and troilite. Weak shock effects are present. Polysynthetically twinned pyroxene is present. Weathering ranges from minor to moderate. Silicates are unequilibrated; olivines range from Fa_{0-25} and pyroxenes from Fs_{1-20}. The meteorites are L3 chondrites (estimated subtype 3.4).

Sample No.:	MAC 02675
Location:	MacAlpine Hills
Field No.:	14137
Dimensions (cm):	3.0 x 2.2 x 1.0
Weight (g):	22.851
Meteorite Type:	Metal-Rich Chondrite

Macroscopic Description: Cecilia Satterwhite

The brown exterior of this meteorite has some patches of black fusion crust. The interior consists of weathered black matrix with abundant mm sized light inclusions.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section consists of 70-80% round, elongate and irregular metal particles typically 100-200 microns in diameter but reaching 1 mm. These particles are separated by terrestrial hydrated iron oxides. Chondrules occupy 20-30% of the rock and occur in similar shapes and sizes as metal. They are fine-grained and dominated by barred, microporphyritic and cryptocrystalline texture. Silicates are iron-poor (Fs_{1-4}). The meteorite is a metal rich chondrite and is similar to QUE 94411.

Sample No.:	MAC 02747
Location:	MacAlpine Hills
Field No.:	14178
Dimensions (cm):	5.8 x 3.9 x 4.2
Weight (g):	140.712
Meteorite Type:	EL4 Chondrite

Macroscopic Description: Cecilia Satterwhite

The exterior is covered with black/brown fusion crust over 60% of its surface. It is heavily oxidized and fractures are visible. The interior is black with rusty brown areas and minor metal is visible. Inclusions are mm sized and range in color from white to gray.

Thin Section (,2) Description: Linda Welzenbach, Tim McCoy

The section shows an aggregate of distinct chondrules (up to 1 mm), chondrule fragments, and pyroxene grains in a matrix of metal, schreibersite, troilite, daubreelite and alabandite. Metal grains often contain euhedral pyroxene laths. Weathering is modest, with staining of some enstatite grains and minor alteration of metal and sulfides. Microprobe analyses show the pyroxene is Fs_{1-4} and metal contains very low concentrations of Si (~0.3 wt.%). The meteorite is an enstatite chondrite, probably an EL4.

Sample No.:	MAC 02755
Location:	MacAlpine Hills
Field No.:	14191
Dimensions (cm):	2.0 x 1.25 x 1.5
Weight (g):	3.52
Meteorite Type:	CM2 Chondrite

Macroscopic Description: Kathleen McBride

The exterior has smooth brown/black fusion crust on 75% of its surface. The interior has a black matrix with light colored chondrules.

Thin Section (,3) Description: Cari Corrigan, Tim McCoy

The section consists of numerous small chondrules (up to 1 mm), mineral grains and CAIs set in a black matrix; rare metal and sulfide grains are present. Chondrules exhibit significant alteration and shock flattening. Olivine compositions are Fa_{1-40}, with a peak at Fa_{0-2}. The matrix consists dominantly of an Fe-rich serpentine. The meteorite is a CM2 chondrite.

Sample No.:	MAC 02779; MAC 02854
Location:	MacAlpine Hills
Field No.:	14251; 14712
Dimensions (cm):	0.5 x 0.5 x 0.75; 0.75 x 0.5 x 0.5
Weight (g):	0.301; 0.140
Meteorite Type:	CM2 Chondrite

Macroscopic Description: Kathleen McBride

The exterior of these carbonaceous chondrites ranges from black to brown with rusty areas. Some metal is visible.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The sections of these very small meteorites consist of a few small chondrules (up to 1 mm), mineral grains and CAIs set in a black matrix; rare metal and sulfide grains are present. Olivine compositions are Fa_{1-39}, with a peak at Fa_{1-3}. The matrix consists dominantly of an Fe-rich serpentine. The meteorites are CM2 chondrites.

Sample No.: MAC 02820
Location: MacAlpine Hills
Field No.: 14428
Dimensions (cm): 0.75 x 0.5 x0.5
Weight (g): 0.212
Meteorite Type: CM1-2 Chondrite

Macroscopic Description: Kathleen McBride

25% of the exterior is covered with thick brown/black fusion crust. The interior is a gray matrix with rusty areas and gray chondrules.

Thin Section (, 2) Description: Cari Corrigan, Tim McCoy

The section consists of a single unaltered olivine in a groundmass of hydrated phyllosilicates, including those that replace chondrules. Olivine is Fa_2. The matrix consists dominantly of an Fe-rich serpentine. The meteorite is a CM chondrite intermediate between petrologic types 1 and 2.

Sample No.: MAC 02869
Location: MacAlpine Hills
Field No.: 14746
Dimensions (cm): 1.0 x 0.8 x 0.2
Weight (g): 0.357
Meteorite Type: CM1 Chondrite

Macroscopic Description: Cecilia Satterwhite

The exterior has frothy, black patches over 50% of its surface.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

This tiny section consists of a few small chondrules that have been completely replaced by phyllosilicate, set in an Fe-rich serpentine matrix. Unaltered olivine or pyroxene grains of sufficient size for microprobe analyses were not found. The meteorite is a highly altered CM chondrite probably of petrologic type 1.

Sample No.: MAC 02917
Location: MacAlpine Hills
Field No.: 14765
Dimensions (cm): 7.4 x 5.0 x 4.1
Weight (g): 222.161
Meteorite Type: L3 Chondrite

Macroscopic Description: Cecilia Satterwhite

Black fusion crust covers 90% of the exterior. The surface is pitted and has oxidation haloes. The interior is dark gray to black with areas of heavy oxidation. Some metal is visible and inclusions are abundant. Inclusions range in size from 1-5 mm and are white and cream in color.

Thin Section (,2) Description: Linda Welzenbach, Tim McCoy

The section exhibits numerous small, well-defined chondrules (up to 2 mm) in a black matrix of fine-grained silicates, metal and troilite. Weak shock effects are present. Polysynthetically twinned pyroxene is extremely abundant. The meteorite is moderately weathered. Silicates are unequilibrated; olivines range from Fa_{9-27} and pyroxenes from Fs_{2-24}. The meteorites are L3 chondrites (estimated subtype 3.7).

Sample No.: PCA 02065; PCA 02066
Location: Pecora Escarpment
Field No.: 13676; 13634
Dimensions (cm): 1.5 x 1.5 x 1.0; 5.5 x 3.5 x 2.0
Weight (g): 3.625; 57.065
Meteorite Type: Howardite

Macroscopic Description: Kathleen McBride

The fusion crust on these howardites range in color from brown to black and varies in thickness with some glassy spots. The interior matrix is light to medium gray in color with some rusty areas. The inclusions range from white to dark gray in color.

Thin Section (,3; ,4) Description: Cari Corrigan, Tim McCoy

These meteorites are almost certainly paired with each other and with the PCA 02009 howardite group, the original description for which is reprinted below:

These sections are similar enough that a single description will suffice. Each show a groundmass of comminuted pyroxene (up to 2 mm) and plagioclase with fine- to coarse-grained basaltic, impact-melt and diogentitic clasts ranging up to 3 mm. Minerals include abundant orthopyroxene with compositions ranging from $Fs_{17-60}Wo_{2-8}$ (Fe/Mn ~29), augite of $Fs_{\sim 40}$, plagioclase (An_{90-95}) and SiO_2. These meteorites are howardites. They are almost certainly paired with each other and with PCA 02009.

Sample No.:	QUE 02158	
Location:	Queen Alexandra Range	
Field No.:	14896	
Dimensions (cm):	2.0 x 1.75 x 1.5	
Weight (g):	8.591	
Meteorite Type:	Diogenite	

Macroscopic Description: Kathleen McBride

The exterior surface has patches of thin, dark brown fusion crust. The interior has a sandy textured cream colored matrix that is friable. Clasts and <mm sized black minerals are visible.

Thin Section (,3) Description: Cari Corrigan, Tim McCoy

The section shows a groundmass of essentially monominerallic, coarse (up to 1.5 mm) comminuted orthopyroxene of uniform composition ($Fs_{22}Wo_2$). The Fe/Mn ratio of the pyroxene is ~30. The meteorite is a diogenite and is possibly paired with QUE 99050.

Sample No.:	DOM 03182	
Location:	Dominion Range	
Field No.:	14988	
Dimensions (cm):	3.0 x 2.5 x 2.0	
Weight (g):	19.793	
Meteorite Type:	CM2 Chondrite	

Macroscopic Description: Kathleen McBride

The exterior has fractured, purplish fusion crust on ~40% of its surface. The surface is rough with polygonal fractures. The black matrix has <mm sized light inclusions.

Thin Section (, 2) Description: Linda Welzenbach, Tim McCoy

The section consists of abundant small chondrules (up to 1 mm), mineral grains and CAIs set in a black matrix; rare metal and sulfide grains are present. Olivine compositions are Fa_{0-30}, with many grains Fa_{0-2}; orthopyroxene is Fs_{1-2}. The matrix consists dominantly of an Fe-rich serpentine. The meteorite is a CM2 chondrite.

Sample No.:	DOM 03183	
Location:	Dominion Range	
Field No.:	14956	
Dimensions (cm):	8.5 x 3.5 x 4.0	
Weight (g):	124.519	
Meteorite Type:	CM2 Chondrite	

Macroscopic Description: Kathleen McBride

85% of the exterior is covered with purplish fusion crust with polygonal fractures. The interior has a black matrix with dark chondrules.

Thin Section (,2) Description: Linda Welzenbach, Tim McCoy

The section consists of a few small chondrules (up to 0.5 mm), mineral grains and CAIs set in a black matrix; rare metal and sulfide grains are present. Olivine compositions are Fa_{0-38}, with many grains Fa_{0-2}. The matrix consists dominantly of an Fe-rich serpentine. The meteorite is a CM2 chondrite.

Sample No.:	DOM 03287	
Location:	Dominion Range	
Field No.:	14324	
Dimensions (cm):	3.0 x 2.25 x 2.0	
Weight (g):	20.236	
Meteorite Type:	L3 Chondrite	

Macroscopic Description: Kathleen McBride

90% of the exterior has brown/black fusion crust with oxidation haloes and polygonal fractures. The interior is dark gray with high metal content and gray and rusty chondrules 1-2 mm sized.

Thin Section (,2) Description: Linda Welzenbach, Tim McCoy

The section exhibits numerous small, well-defined chondrules (up to 3 mm) in a black matrix of fine-grained silicates, metal and troilite. Weak shock effects are present. Polysynthetically twinned pyroxene is extremely abundant. The meteorite is highly weathered. Silicates are unequilibrated; olivines range from Fa_{15-29} and pyroxenes from Fs_{6-24}. The meteorites are L3 chondrites (estimated subtype 3.7).

Sample No.:	LAP 03587	
Location:	LaPaz Ice Field	
Field No.:	16871	
Dimensions (cm):	6.0 x 4.5 x 3.0	
Weight (g):	130.24	
Meteorite Type:	Ureilite	

Macroscopic Description: Kathleen McBride

40% of the exterior has thick brown/black fusion crust with polygonal fractures. The exposed interior is weathered brown and friable, appearing like rounded lumps. The interior reveals a dark gray matrix with angular, interlocking mineral grains with rounded lighter gray inclusions. Small rust haloes and fractures are visible.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section consists of an aggregate of large olivine and pyroxene grains up to 2 mm across. Individual olivine grains are rimmed by carbon-rich material containing traces of metal. Shock effects in olivine are minor; pyroxenes exhibit mosaicism. Olivine has cores of Fa_{25}, with rims reduced to Fa_{10}. Pigeonite is Fs_{14-20},Wo_{8-10}. The meteorite is a ureilite.

Sample No.:	LAP 03645	
Location:	LaPaz Ice Field	
Field No.:	16023	
Dimensions (cm):	7.5 x 3.0 x 2.5	
Weight (g):	127.562	
Meteorite Type:	R Chondrite	

Macroscopic Description: Kathleen McBride

Black fusion crust with polygonal fractures covers 60% of the exterior. The interior has a medium gray matrix with black and gray inclusions. This meteorite has a high metal content with rust and an oxidation rind.

Thin Section (,2) Description: Linda Welzenbach, Tim McCoy

This meteorite is similar to and almost certainly paired with LAP 02238, the original description of which is given below:

The section consists of relatively few chondrules (up to 1 mm) and chondrule fragments in a fine-grained brecciated matrix, with very abundant iron sulfide and pentlandite and lesser abundances of oxides and graphite. Mineral compositions are olivine of Fa_{27-46} (most Fa_{38-40}), orthopyroxene of $Fs_{18-36}Wo_{1-3}$ and augite $Fs_{9-15}Wo_{44-48}$. The olivine composition is similar to R chondrites, although graphite has not been previously reported in this group.

Sample No.:	LAP 03718; LAP 03785	
Location:	LaPaz Ice Field	
Field No.:	16841; 16284	
Dimensions (cm):	5.5 x 5.0 x 3.0; 5.0 x 4.0 x 2.0	
Weight (g):	95.209; 43.434	
Meteorite Type:	CM2 Chondrite	

Macroscopic Description: Kathleen McBride

The exterior has purplish black fusion crust with some fractures. The interior is black with a few mm sized light colored chondrules. 718 has an evaporate rim.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The sections consist of a few small chondrules (up to 0.5 mm), mineral grains and CAIs set in a black matrix; rare metal and sulfide grains are present. Olivine compositions are Fa_{1-48}, with a peak at Fa_{0-2}; orthopyroxene is Fs_1. The matrix consists dominantly of an Fe-rich serpentine. The meteorites are CM2 chondrites.

Sample No.:	LAP 03784	
Location:	LaPaz Ice Field	
Field No.:	16186	
Dimensions (cm):	5.5 x 4.0 x 2.75	
Weight (g):	50.922	
Meteorite Type:	CK5 Chondrite	

Macroscopic Description: Kathleen McBride

50% of the exterior has rough, black fusion crust with polygonal fractures. The interior is steel gray matrix with mm sized gray chondrules.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section consists of chondrules up to 2 mm in a matrix of finer-grained silicates, sulfides and magnetite. Weathering is minor. Silicates are homogeneous with olivine of Fa_{33}. The meteorite is a CK5 chondrite.

Sample No.:	LAP 031370
Location:	LaPaz Ice Field
Field No.:	16967
Dimensions (cm):	1.75 x 0.75 x 1.5
Weight (g):	8.669
Meteorite Type:	Iron (Ungrouped)

Macroscopic Description: Kathleen McBride

The exterior is dull and rusty with oxidation haloes. This iron is shaped like a fish.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

We examined this small meteorite in polished section from a central slice. The section consists of ~90% kamacite with abundant Neumann bands that vary in spacing from a few to a hundred microns. No heat altered zone or α_2 structure was observed. Included within the metal are polymineralllic silicate inclusions that reach a few mm in diameter with included metal, troilite, chromite and pentlandite and a kidney-shaped troilite inclusion 1.2 mm in length. The silicates are broadly chondritic and relict barred chondrules are present. Silicates are homogeneous with olivine of Fa_{24} and orthopyroxene of Fs_{21}. The meteorite is an ungrouped iron.

Sample No.:	MIL 03368
Location:	Miller Range
Field No.:	13943
Dimensions (cm):	3.5 x 3.5 x 5.0
Weight (g):	80.930
Meteorite Type:	Diogenite

Macroscopic Description: Kathleen McBride

50% of the exterior has chocolate brown fusion crust. The exposed interior is yellow brown in color with small, dark clasts. The interior is brecciated with numerous clasts (cm sized). Clasts vary in size and color with some being rusty and having crystalline rims. Fractures are visible.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section shows a groundmass of coarse (up to 5 mm) comminuted pyroxene, with minor olivine. Orthopyroxene has a composition of $Fs_{27}Wo_3$ and olivine is Fa_{29}. The Fe/Mn ratio of the pyroxene is ~30. The meteorite is a diogenite.

Sample No.:	RBT 03522
Location:	Robert Massif
Field No.:	15348
Dimensions (cm):	6.0 x 5.5 x 4.0
Weight (g):	282.4
Meteorite Type:	CK5 Chondrite

Macroscopic Description: Kathleen McBride

Small patches of brown/black fusion crust are visible on the exterior. The exposed interior is dark gray, with a rough texture and patches of white evaporites. The interior is steel gray matrix with mm sized gray chondrules. This carbonaceous chondrite is hard.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section consists of relict chondrules up to 2 mm in a matrix of finer-grained silicates, sulfides and magnetite. Weathering is minor, but shock-blackening is extensive. Silicates are homogeneous. Olivine is Fa_{27-30} and orthopyroxene is Fs_{28}. The meteorite is a CK5 chondrite.

Sample No.:	RBT 03523
Location:	Robert Massif
Field No.:	15331
Dimensions (cm):	2.0 x 1.5 x 1.5
Weight (g):	6.702
Meteorite Type:	CM2 Chondrite

Macroscopic Description: Kathleen McBride

The exterior has a dull, black fusion crust with polygonal fractures. The black interior matrix contains small light colored chondrules. This carbonaceous chondrite is soft.

Thin Section (,2) Description: Linda Welzenbach, Tim McCoy

The section consists of a few small chondrules (up to 0.5 mm), mineral grains and CAIs set in a black matrix; rare metal and sulfide grains are present. Olivine compositions are Fa_{1-57}. The matrix consists dominantly of an Fe-rich serpentine. The meteorite is a CM2 chondrite

Sample No.:	SAN 03489
Location:	Sandford Range
Field No.:	13921
Dimensions (cm):	3.5 x 2.0 x 3.0
Weight (g):	29.188
Meteorite Type:	Eucrite (Brecciated)

Macroscopic Description: Kathleen McBride

100% of the exterior has rough, black fusion crust with small glassy patches. The interior gray matrix has gray and white inclusions with thin hairline fractures.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

This section includes coarse- to fine-grained basaltic clasts up to 2 mm in a comminuted matrix of plagioclase and pyroxene. Pyroxene is dominantly pigeonite to subcalcic augite ($Fs_{48-59}Wo_{4-16}$) and plagioclase is An_{82-95}. The Fe/Mn ratio of the pyroxene is ~30. The meteorite is a brecciated eucrite.

Sample Request Guidelines

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 have a supervising scientist listed to confirm access to facilities for analysis. All sample requests will be reviewed in a timely manner. Sample requests that do not meet the curatorial allocation guidelines will be reviewed by the Meteorite Working Group (MWG). 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 an appropriate funding agency. As a matter of policy, U.S. Antarctic meteorites are the property of the National Science Foundation, and all allocations are subject to recall.

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 Contributions to the Earth Sciences*: Nos. 23, 24, 26, 28, and 30. Tables containing all classified meteorites (as of July 2003) have been published in the Meteoritical Bulletins 76, 79, and 82-89, available in the following volumes and pages of *Meteoritics* and *Meteoritics and Planetary Science*: 29, p. 100-143; 31, A161-A174; 33, A221-A240; 34, A169-A186; 35, A199-A225; 36, A293-A322; 37, A157-A184; 38, A189-A248; 39, A215-A272; 40 in press. They are also available online at:

http://www.meteoriticalsociety.org/simple_template.cfm?code=pub_bulletin

The most current listing is found online at:

http://curator.jsc.nasa.gov/curator/antmet/us_clctn.htm

All sample requests should be made electronically using the form at:

http://curator.jsc.nasa.gov/curator/antmet/samreq.htm

The purpose of the sample request form is to obtain all information MWG needs prior to their deliberations to make an informed decision on the request. Please use this form if possible.

The preferred method of request transmittal is via e-mail. Please send requests and attachments to:

cecilia.e.satterwhite1@jsc.nasa.gov

Type **MWG Request** in the e-mail subject line. Please note that the form has signature blocks. The signature blocks should only be used if the form is sent via Fax or mail.

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. Some meteorites are small, of rare type, or are considered special because of unusual properties. Therefore, it is very important that all requests specify both the optimum amount of material needed for the study and the minimum amount of material that can be used. Requests for thin sections that will be used in destructive procedures such as ion probe, laser ablation, etch, or repolishing must be stated explicity.

Consortium requests should list the members in the consortium. All necessary information should be typed on the electronic form, although informative attachments (reprints of publication that explain rationale, flow diagrams for analyses, etc.) are welcome.

The Meteorite Working Group (MWG), is 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. The deadline for submitting a request is 2 weeks prior to the scheduled meeting.

Requests that are received by the MWG secretary by **March 03, 2005** deadline will be reviewed at the MWG meeting **March 19-20, 2005** in Houston, TX. Requests that are received after the deadline may be delayed for review until MWG meets again in the Fall of 2005. **Please submit your requests on time.** Questions pertaining to sample requests can be directed to the MWG secretary by e-mail, fax or phone.

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Meteorites On-Line

Several meteorite web site are available to provide information on meteorites from Antarctica and elsewhere in the world. Some specialize in information on martian meteorites and on possible life on Mars. Here is a general listing of ones we have found. We have not included sites focused on selling meteorites even though some of them have general information. Please contribute information on other sites so we can update the list.

JSC Curator, Antarctic meteorites	http://www-curator.jsc.nasa.gov/curator/antmet/antmet.htm
JSC Curator, martian meteorites	http://www-curator.jsc.nasa.gov/curator/antmet/marsmets/contents.htm
JSC Curator, Mars Meteorite Compendium	http://www-curator.jsc.nasa.gov/curator/antmet/mmc/mmc.htm
Antarctic collection	http://geology.cwru.edu/~ansmet/
LPI martian meteorites	http://www.lpi.usra.edu
NIPR Antarctic meteorites	http://www.nipr.ac.jp/
BMNH general meteorites	http://www.nhm.ac.uk/mineralogy/collections/meteor.htm
UHI planetary science discoveries	http://www.psrd.hawaii.edu/index.html
Meteoritical Society	http://www.meteoriticalsociety.org/
Meteoritics and Planetary Science	http://meteoritics.org/
Meteorite! Magazine	http://www.meteor.co.nz
Geochemical Society	http://www.geochemsoc.org
Washington Univ. Lunar Meteorite	http://epsc.wustl.edu/admin/resources/moon_meteorites.html
Washington Univ. "meteor-wrong"	http://epsc.wustl.edu/admin/resources/meteorites/meteorwrongs/meteorwrongs.htm

Other Websites of Interest

Mars Exploration	http://mars.jpl.nasa.gov
Rovers	http://marsrovers.jpl.nasa.gov/home/index.html
Near Earth Asteroid Rendezvous	http://near.jhuapl.edu/
Stardust Mission	http://stardust.jpl.nasa.gov
Genesis Mission	http://genesismission.jpl.nasa.gov
ARES	http://ares.jsc.nasa.gov/