Antarctic Meteorite Newsletter
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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

Curator's Comments

Kevin Righter, NASA-JSC

This newsletter reports 278 new meteorites from the 2009 and 2011 ANSMET seasons from the Allan Hills (ALH) and Miller Range (MIL). The new samples include 69 new carbonaceous chondrites (56 CO, 6 CM, 2 CR, 2 CV, 2 CK, and 1 CH), 2 irons, 1 R chondrite (hornblende-bearing!), one each of L3.4 and L3.8 chondrites, and one each of H and LL chondrite impact melts. The new R chondrite is similar in its mineralogy to the unusual hornblende- and biotite-bearing R chondrites LAP 04840 (and pairs), but the texture is different, with chondrules not as easily discernable. The new CH chondrite is the first we've added since the announcement of the tiny (0.38g) EET 96238 in 1997.

Among the new achondrites are 1 lodranite, 1 ureilite, 1 metamorphosed mesosiderite clast, 10 HED meteorites, and 1 ungrouped achondrite. The ungrouped achondrite, MIL090405, is olivine-rich, and similar to 5 previously announced MIL samples that have been classified as "ungrouped achondrite" or "ureilite" (MIL 090340, 090356, 090206, 090805, 090963). They are all very similar, and may instead represent material that is related to brachinites (e.g., Warren and Rubin, 2012, LPSC abstract #2528; Goodrich et al., 2012, MetSoc abstract #5272). See reclassification note below.

The meteorite collection received 36 requests for the Spring 2012 MWG meeting; the sample chips have been prepared and sent out for most PIs (unless you had a very large number of samples approved for allocation, in which case you may still be waiting on several samples), and there are still thin sections being prepared.

Reclassification of several samples

Four previously announced MIL samples that have been classified as "ureilite" (MIL 090340, 090356, 090206, 090805), are being reclassified here to "ungrouped achondrite". They are all very similar to two additional samples – MIL 090963 and MIL 090405 - and may instead represent 6 meteorites that are related to brachinites, based on Ca and Cr content of the olivines, O-isotopes, and grain boundary mineralogy (e.g., Warren and Rubin, 2012, LPSC abstract #2528; Goodrich et al., 2012, MetSoc abstract #5272). Although these meteorites may be related to brachinites, they are not true brachinites and so the classification "ungrouped achondrite" will be used until a further change is necessary. We specifically want to call attention to the fact that they are not ureilites so that researchers will not mistakenly request them as such. Concomitantly, we feel that researchers who are

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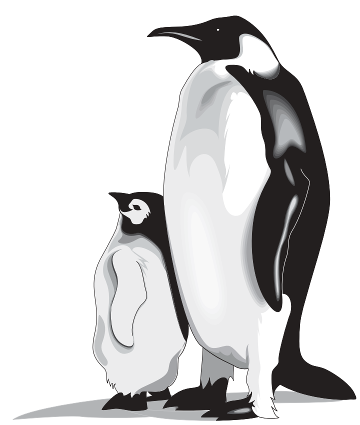


Sample Request Deadline Sept. 13, 2012

MWG Meets Sept. 27-28, 2012

interested in brachinites may find these samples of interest and may not have noticed them previously due to the ureilite classification.

New rules for PIs: loan agreements and annual inventories

In November of 2011 the Office of the Inspector General released an audit report for the JSC Astromaterials collections, with several recommendations relating to the Antarctic meteorite collection. One of the recommendations was to initiate loan agreements with scientists receiving samples from the collection. A second recommendation was to carry out an annual inventory with PIs who have borrowed samples from the collection. Starting in late 2012 or early 2013, we will be requiring all PIs to complete loan agreements and annual inventories. Lack of response to our inventory requests, or inability to account for samples may lead to a PI being denied loan of additional materials from the collection. Later this year we will send out information about how to establish loan agreements and annual inventories. This note is just a warning that these major changes will be starting soon.

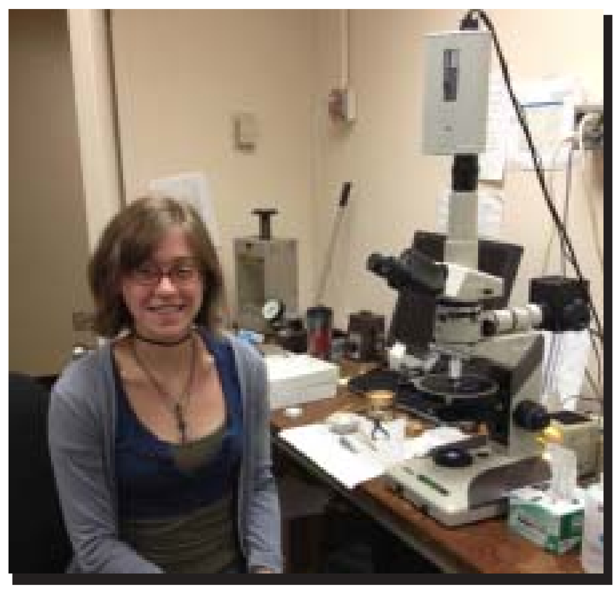
Classification of 2009-2010 ANSMET season meteorites completed

With this newsletter, JSC and the Smithsonian have completed the characterization of the 2009-2010 field season samples - 1005 meteorites from the Miller Range (MIL) and 11 meteorites from the Allan Hills (ALH). The great diversity of meteorites recovered from the Miller Range continues. Among the achondrites, this season included 4 lunar meteorites, 3 additional pieces of the MIL 03346 nakhlite, a lodranite, 3 ureilites, 20 HEDs, 3 pallasites, 2 IVA irons, a mesosiderite, and 6 ungrouped achondrites that appear to have an affinity to brachinites. Among the chondrites are one each of the rare CB and CH chondrites, 4 CKs, 16 CMs, a huge number of CO3 (110 different specimens), 3 CRs, 19 CVs, and a highly unusual hornblende-bearing R chondrite. In addition there were 5 enstatite chondrites, 2 enstatite chondrite impact melts, and 4 other ordinary chondrite impact melts. This great diversity of materials is helping to understand processes on the Moon and Mars as well as on asteroids and in primitive solar system materials, including some one-of-a-kind samples such as the ungrouped achondrites and R and CH chondrites.

Report from the Smithsonian

Cari Corrigan, Geologist (Dept. of Mineral Sci.)

This newsletter announces the classification of 278 meteorites from the Allan Hills (2009 season) and Miller Range (2009 and 2011 seasons) field areas. Since the last newsletter our thin section preparator, Tim Gooding has started and returned full force to making fantastic meteorite thin sections. We really appreciate having him back in the lab. Sadly, our contractor of the past two years, Nicole Lunning (MSc, UC Davis, 2009), is departing the Smithsonian for the University of Tennessee. She will begin a Ph.D. program working with Hap McSween on meteorites. While we will miss her and wish her very well, we know she'll be in good hands and since she was converted to the field of meteoritics, we don't have to say goodbye! Sheri Singerling, (MSc, U of Tennessee, 2012) has been hired to fill the slot left vacant by Nicole and they have been working hard together the past week to ensure a smooth transition.



Sheri Singerling

*CORRECTION OF CLASSIFICATIONS:

MIL 090937 is a metamorphosed mesosiderite. MIL 090936 is an LL5 (these were switched), classified by oil immersion. MIL 090937 was originally reported in the Spring 2012 (35,1) newsletter.

Report on the 2011-2012 ANSMET Field Season

Ralph Harvey, ANSMET

As we approach the 2012-2013 field season ANSMET has passed one milestone and is approaching another challenging season. As mentioned in the spring newsletter, our searches at the Miller Range last season brought the total number of specimens recovered by ANSMET to slightly over 20,000 (20,002 by my count). Ignoring all the many ways that number can be inaccurate (pairing, as-yet-examined terrestrial "meteowrongs", etc), it was a goal we've held for a long time. Yet it didn't actually occur to us to look specifically at the 20,000th specimen itself until a few weeks after we got back from the ice. The field notes identified the lucky specimen as field number 23259, presumed to be a carbonaceous chondrite, described in this newsletter and now forever known as MIL 11111 (a number chosen to commemorate its special status). The meteorite itself, however, doesn't seem to appreciate the honor; as the picture below shows, it expressed its opinion of our recovery efforts using a hand-gesture familiar to anyone who has driven on US roads.

I'm trying to have a little more patience and understanding than that meteorite displays, given that the field season ahead promises to test our patience and planning efforts. As we have done in many recent seasons we will deploy two field parties, but this time both will be visiting several icefields. The 8-person "systematic" field party, dedicated to recoveries from icefields known to harbor significant meteorite concentrations, will land near the Otway Massif. Following that the team will traverse to icefields at Larkman Nunatak and in the Grosvenor Mountains, where previous searches have yielded about 1200 specimens including many of unique composition. The 4-person "recon" field party, dedicated to the exploration of new or poorly understood icefields, will be visiting 6-8 different sites. First we'll explore a number of promising sites in the Robison Glacier region (not far from Graves Nunatak). After about 3 weeks the team will move north along the Transantarctics to the Amundsen Glacier region, visited briefly in 1995 and where other interesting icefield await. With both teams moving frequently, our results will be heavily dependent on the weather and availability of logistical support. And with a new polar support contractor, new funding paradigms on ANSMET's horizons and other issues, it's definitely rush hour around here. You can follow our progress through our daily weblog, available on the ANSMET website starting in late November.

MIL 11111

2009 and 2011 Collection

Pages 5-23 contain preliminary descriptions and classifications of meteorites that were completed since publication of issue 35(1), March 2012. 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 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:

Kathleen McBride, Roger Harrington and Cecilia Satterwhite
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NASA Johnson Space Center
Houston, Texas

Cari Corrigan, Nicole Lunning, Andrew Beck, Sheri Singerling, Tim McCoy, Linda Welzenbach and Glenn MacPherson
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
BUC — Buckley Island
CMS — Cumulus Hills
CRA — Mt.Cranfield Ice Field
CRE — Mt. Crean
DAV — David Glacier
DEW — Mt. DeWitt
DNG — D'Angelo Bluff
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
LAR — Larkman Nunatak
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
PRA — Mt. Pratt
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
ALH 09005 ~	122.3	L5 CHONDRITE	B/C	A/B		
ALH 09006 ~	104.3	H5 CHONDRITE	B/C	B		
ALH 09008 ~	31.3	H5 CHONDRITE	B/C	A/B		
ALH 09009 ~	24.8	L6 CHONDRITE	B/C	A/B		
ALH 09010	2.6	L3.4 CHONDRITE	B/C	A/B	4-37	1-18
ALH 09011 ~	14.2	LL6 CHONDRITE	A/B	A/B		
ALH 09012 ~	18.1	L6 CHONDRITE	A/B	A/B		
ALH 09013 ~	25.5	L6 CHONDRITE	B/C	A/B		
ALH 09014 ~	30.2	L5 CHONDRITE	A/B	A/B		
MIL 090003 ~	10310.0	L6 CHONDRITE	B	A		
MIL 090004 ~	4960.2	L5 CHONDRITE	A/B	A		
MIL 090006 ~	1386.2	LL6 CHONDRITE	A/B	A/B		
MIL 090007 ~	828.2	LL5 CHONDRITE	B	B/C		
MIL 090008 ~	1209.8	L5 CHONDRITE	B/C	A		
MIL 090010	2487.9	CO3 CHONDRITE	A/B	B	1-62	8
MIL 090011 ~	3434.2	LL5 CHONDRITE	A/B	A/B		
MIL 090012 ~	1967.5	LL6 CHONDRITE	B/Ce	A/B		
MIL 090014 ~	1742.2	L6 CHONDRITE	B/C	A		
MIL 090021 ~	936.0	L6 CHONDRITE	B/C	B/C		
MIL 090024~	744.7	L5 CHONDRITE	C	B/C		
MIL 090025	1014.0	CO3 CHONDRITE	B	A/B	1-36	2-3
MIL 090028 ~	458.7	LL5 CHONDRITE	B/C	A/B		
MIL 090031	500.1	UREILITE	B/C	A/B	20	17
MIL 090033 ~	807.6	LL5 CHONDRITE	A/B	A/B		
MIL 090035 ~	826.4	L5 CHONDRITE	C	B/C		
MIL 090037 ~	312.3	LL6 CHONDRITE	B/C	A/B		
MIL 090038	404.4	CO3 CHONDRITE	B	A	0-39	0-2
MIL 090039 ~	380.7	LL5 CHONDRITE	B/C	A/B		
MIL 090040 ~	325.8	L5 CHONDRITE	C	A/B		
MIL 090041 ~	300.7	L5 CHONDRITE	B/C	A/B		
MIL 090042 ~	242.6	L6 CHONDRITE	C	A/B		
MIL 090043 ~	164.7	L6 CHONDRITE	C	B		
MIL 090044 ~	451.8	LL6 CHONDRITE	A/B	A/B		
MIL 090045 ~	257.4	LL6 CHONDRITE	B	B		
MIL 090046 ~	331.7	LL6 CHONDRITE	B/C	B		
MIL 090047 ~	210.0	L6 CHONDRITE	C	C		
MIL 090048 ~	233.7	L5 CHONDRITE	C	C		
MIL 090049 ~	184.9	L6 CHONDRITE	C	C		
MIL 090050 ~	392.1	LL6 CHONDRITE	A/B	A		
MIL 090051 ~	209.2	L6 CHONDRITE	B/C	A/B		
MIL 090052 ~	126.0	H6 CHONDRITE	B/C	B		
MIL 090053 ~	259.5	L6 CHONDRITE	B/C	B		
MIL 090054 ~	134.2	L6 CHONDRITE	B/C	B		
MIL 090055 ~	415.8	LL5 CHONDRITE	B/C	A/B		
MIL 090056 ~	527.6	L6 CHONDRITE	B/C	A		
MIL 090057 ~	229.3	LL6 CHONDRITE	A/B	A		
MIL 090058 ~	190.4	L6 CHONDRITE	B/C	B		
MIL 090059 ~	240.5	L6 CHONDRITE	B/C	A		
MIL 090060 ~	614.0	L6 CHONDRITE	B	A		

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MIL 090061 ~	230.2	L5 CHONDRITE	B	A		
MIL 090062 ~	204.4	LL5 CHONDRITE	B	A/B		
MIL 090063 ~	330.7	LL5 CHONDRITE	B	A/B		
MIL 090064 ~	416.9	L5 CHONDRITE	B	B		
MIL 090065 ~	280.4	L5 CHONDRITE	B	B		
MIL 090066 ~	213.2	L6 CHONDRITE	C	C		
MIL 090067 ~	264.3	LL5 CHONDRITE	B/C	A/B		
MIL 090068 ~	525.0	L6 CHONDRITE	C	C		
MIL 090069 ~	798.8	LL6 CHONDRITE	A/B	A		
MIL 090071 ~	118.1	L6 CHONDRITE	C	A/B		
MIL 090077 ~	378.8	LL6 CHONDRITE	A/B	A/B		
MIL 090078 ~	96.6	LL5 CHONDRITE	A/B	A/B		
MIL 090079 ~	254.0	L5 CHONDRITE	A/B	A		
MIL 090080 ~	158.8	LL6 CHONDRITE	A/B	A/B		
MIL 090081 ~	300.8	LL5 CHONDRITE	B	A/B		
MIL 090082 ~	130.6	LL5 CHONDRITE	B	B		
MIL 090083 ~	203.4	L6 CHONDRITE	C	B/C		
MIL 090084 ~	166.1	L6 CHONDRITE	C	B/C		
MIL 090085 ~	314.8	L6 CHONDRITE	C	B/C		
MIL 090086 ~	421.5	L6 CHONDRITE	B/C	A		
MIL 090087 ~	374.4	L6 CHONDRITE	B/C	A/B		
MIL 090088 ~	195.8	L6 CHONDRITE	B/C	A/B		
MIL 090089 ~	202.8	LL6 CHONDRITE	A/B	A		
MIL 090090 ~	268.2	L6 CHONDRITE	B/C	B		
MIL 090091 ~	284.3	LL5 CHONDRITE	Be	A/B		
MIL 090092 ~	402.6	LL6 CHONDRITE	A/B	A/B		
MIL 090093 ~	226.9	L5 CHONDRITE	C	A/B		
MIL 090094 ~	329.3	L5 CHONDRITE	B	A		
MIL 090095 ~	338.7	L5 CHONDRITE	B	A		
MIL 090096 ~	411.4	L6 CHONDRITE	B/C	B		
MIL 090097 ~	272.0	LL6 CHONDRITE	A/B	A/B		
MIL 090098 ~	408.0	L5 CHONDRITE	B/C	A/B		
MIL 090099 ~	260.6	L5 CHONDRITE	A/B	A		
MIL 090100 ~	496.5	L6 CHONDRITE	B	B		
MIL 090101 ~	399.9	L6 CHONDRITE	C	B		
MIL 090102 ~	511.4	L6 CHONDRITE	C	C		
MIL 090110 ~	163.4	LL6 CHONDRITE	B	A		
MIL 090111 ~	263.6	LL6 CHONDRITE	A/B	A		
MIL 090112	73.6	DIOGENITE	B	A		30-34
MIL 090113 ~	399.2	L5 CHONDRITE	C	C		
MIL 090114 ~	441.1	L5 CHONDRITE	C	C		
MIL 090115 ~	494.1	LL6 CHONDRITE	B/C	C		
MIL 090116 ~	114.6	LL6 CHONDRITE	A/B	A		
MIL 090117	229.0	CO3 CHONDRITE	B	A	0-59	1-35
MIL 090118	286.9	CO3 CHONDRITE	B	A	0-76	
MIL 090119 ~	176.4	L6 CHONDRITE	B/C	A		
MIL 090120 ~	218.0	L6 CHONDRITE	C	C		
MIL 090121 ~	174.2	L6 CHONDRITE	B	A/B		
MIL 090122	497.8	CO3 CHONDRITE	B	A	0-70	10-11
MIL 090123 ~	248.4	L5 CHONDRITE	B	B		
MIL 090124 ~	301.1	L5 CHONDRITE	C	C		
MIL 090125 ~	287.0	LL6 CHONDRITE	B/C	B		
MIL 090126 ~	341.9	LL6 CHONDRITE	A	A		
MIL 090127 ~	228.9	LL6 CHONDRITE	B/C	B/C		
MIL 090128	160.3	CO3 CHONDRITE	A/B	A	1-69	3-9

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MIL 090129 ~	221.6	H6 CHONDRITE	C	C		
MIL 090130 ~	254.1	LL6 CHONDRITE	A/B	A/B		
MIL 090131 ~	218.4	L6 CHONDRITE	A/B	A/B		
MIL 090132	132.5	CO3 CHONDRITE	Be	A/B	0-52	
MIL 090133	133.1	CO3 CHONDRITE	B	A/B	1-56	
MIL 090134	161.6	CO3 CHONDRITE	B	A/B	0-55	6
MIL 090135 ~	199.1	LL6 CHONDRITE	B	A		
MIL 090137 ~	265.6	L5 CHONDRITE	C	A/B		
MIL 090138	49.4	CO3 CHONDRITE	A/B	A	0-33	6
MIL 090139	126.6	CO3 CHONDRITE	B	A/B	1-45	
MIL 090230	85.9	CO3 CHONDRITE	B	A/B	0-67	
MIL 090231	95.2	CO3 CHONDRITE	B	A	0-61	5
MIL 090233	104.9	CO3 CHONDRITE	B	A/B	0-47	1
MIL 090235	60.1	CO3 CHONDRITE	B	A	1-68	5
MIL 090236	67.5	CO3 CHONDRITE	B	A	1-53	
MIL 090280 ~	85.6	L6 CHONDRITE	C	B		
MIL 090281	19.8	CM2 CHONDRITE	B	B	0-1	
MIL 090283	6.4	CM2 CHONDRITE	Ce	B/C	0-36	
MIL 090284 ~	60.1	L5 CHONDRITE	C	B		
MIL 090285 ~	131.4	L5 CHONDRITE	C	C		
MIL 090286 ~	105.7	LL5 CHONDRITE	B	B		
MIL 090288	17.4	CM1/2 CHONDRITE	Be	B/C	0-2	
MIL 090289 ~	83.2	L5 CHONDRITE	C	B		
MIL 090291	94.2	DIOGENITE	A/B	A/B		18-33
MIL 090292	8.9	CR1 CHONDRITE	B	B	3	2-39
MIL 090293	7.1	CO3 CHONDRITE	B	B	0-41	
MIL 090294	10.0	CK5 CHONDRITE	A/B	A/B	33	
MIL 090405	58.8	ACHON. UNGROUPED	B	A	29-32	10
MIL 090410 ~	43.1	L6 CHONDRITE	B/C	A		
MIL 090411 ~	67.6	L6 CHONDRITE	B	A		
MIL 090412 ~	33.3	LL5 CHONDRITE	A/B	A		
MIL 090413 ~	55.0	LL6 CHONDRITE	B/C	A/B		
MIL 090414 ~	79.9	L6 CHONDRITE	B	A		
MIL 090415 ~	58.4	L6 CHONDRITE	B	A		
MIL 090416	35.9	L4 CHONDRITE	B	A	21-22	
MIL 090417 ~	8.6	L6 CHONDRITE	B/C	A/B		
MIL 090418 ~	6.0	L6 CHONDRITE	A/B	A/B		
MIL 090419 ~	29.4	L6 CHONDRITE	B/C	A		
MIL 090451	38.7	CO3 CHONDRITE	B/C	B	0-53	
MIL 090453	33.9	CO3 CHONDRITE	B	B	0-52	
MIL 090454	43.0	CO3 CHONDRITE	B/C	B	1-63	
MIL 090457	32.6	CO3 CHONDRITE	B	A/B	0-62	
MIL 090458	81.0	H5 CHONDRITE	B	B	16-17	
MIL 090459	30.6	CO3 CHONDRITE	B	B	0-40	
MIL 090461	14.0	CO3 CHONDRITE	B	A/B	0-59	
MIL 090462	9.1	CO3 CHONDRITE	B	A/B	0.5-50	
MIL 090463	26.7	CO3 CHONDRITE	B	A/B	1-37	
MIL 090464	25.6	CO3 CHONDRITE	B	B	0-74	
MIL 090465	8.8	CO3 CHONDRITE	B	B	0-48	
MIL 090466	14.3	CO3 CHONDRITE	B/C	B	0-48	
MIL 090467	10.1	CO3 CHONDRITE	B	B	1-61	
MIL 090468	13.6	CO3 CHONDRITE	B	A/B	1-63	
MIL 090469	7.3	CO3 CHONDRITE	B/C	A/B	1-53	
MIL 090470	21.3	CO3 CHONDRITE	B	A	0-71	
MIL 090473	31.4	CO3 CHONDRITE	B	A/B	0-29	

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MIL 090474	20.0	CO3 CHONDRITE	B	A	1-33	
MIL 090478	24.4	CO3 CHONDRITE	B	A/B	1-64	
MIL 090530 ~	3.1	L5 CHONDRITE	C	A/B		
MIL 090531 ~	61.2	L6 CHONDRITE	C	B/C		
MIL 090532	6.9	CM2 CHONDRITE	B	B	1-36	
MIL 090533 ~	1.2	L6 CHONDRITE	B	B		
MIL 090534 ~	0.9	LL5 CHONDRITE	B	B		
MIL 090535	2.3	CO3 CHONDRITE	B/Ce	B/C	1-27	2-5
MIL 090536 ~	6.3	L5 CHONDRITE	C	B		
MIL 090537 ~	95.4	L6 CHONDRITE	C	B/C		
MIL 090538 ~	2.2	L6 CHONDRITE	C	B/C		
MIL 090539	1.9	CO3 CHONDRITE	B/Ce	B/C	0-37	2
MIL 090554	0.5	CO3 CHONDRITE	B	B	0-31	
MIL 090558	0.3	CO3 CHONDRITE	B	B	0-38	
MIL 090560 ~	117.8	LL5 CHONDRITE	B	A/B		
MIL 090561 ~	64.5	LL5 CHONDRITE	B	A		
MIL 090562 ~	134.4	L5 CHONDRITE	B/C	A		
MIL 090563 ~	93.8	L6 CHONDRITE	B/C	A		
MIL 090564	257.7	IRON-IVA	A/B	A		
MIL 090565 ~	81.4	L6 CHONDRITE	B/C	A		
MIL 090566 ~	86.2	L6 CHONDRITE	C	A/B		
MIL 090567 ~	137.8	LL6 CHONDRITE	A/B	A		
MIL 090568 ~	58.8	L5 CHONDRITE	B/C	A		
MIL 090569 ~	26.4	L6 CHONDRITE	B/C	A		
MIL 090586	8.1	CH CHONDRITE	B	A	4-42	0-50
MIL 090588	6.6	CO3 CHONDRITE	B	A	0-41	
MIL 090589	16.8	LL6 CHONDRITE	A/B	A	32	26
MIL 090591	0.6	CO3 CHONDRITE	B	B	0-39	1-11
MIL 090593	1.4	CO3 CHONDRITE	A/B	A	32-39	
MIL 090594	2.2	CO3 CHONDRITE	B	C	1-38	
MIL 090596	2.1	CO3 CHONDRITE	B	C	1-39	1-4
MIL 090597	1.4	CO3 CHONDRITE	A/B	B	19-39	1-5
MIL 090598	0.4	CO3 CHONDRITE	B	B	12-38	2-6
MIL 090610 ~	71.6	L5 CHONDRITE	B/C	A		
MIL 090611 ~	75.4	L6 CHONDRITE	B/C	A/B		
MIL 090612 ~	41.7	L6 CHONDRITE	B/C	A		
MIL 090613 ~	120.2	LL6 CHONDRITE	A/B	A		
MIL 090614 ~	91.2	L6 CHONDRITE	B/C	A/B		
MIL 090615 ~	79.4	LL5 CHONDRITE	A/B	A		
MIL 090616 ~	118.4	LL5 CHONDRITE	B	A		
MIL 090617 ~	151.2	L6 CHONDRITE	B	A/B		
MIL 090618 ~	89.0	L5 CHONDRITE	B/C	A/B		
MIL 090619 ~	51.6	LL6 CHONDRITE	A/B	A/B		
MIL 090640	1.3	HOWARDITE	Be	A		23-60
MIL 090641	5.9	CO3 CHONDRITE	B	A	0-36	
MIL 090644	2.3	LL6 CHONDRITE	B	A	32	26
MIL 090645	2.1	LL6 CHONDRITE	B	A	32	26
MIL 090646	11.4	CV3 CHONDRITE	B/C	A	0-26	1
MIL 090648	32.7	H CHONDRITE (IMPT MELT)	B/C	A	18-19	13-17
MIL 090649	0.7	LL6 CHONDRITE	B	A	32	26
MIL 090650	92.9	L3.8 CHONDRITE	B	A	12-20	5-22
MIL 090657	133.1	CR2 CHONDRITE	Be	A	1-38	2
MIL 090683	3.2	CO3 CHONDRITE	A	A	1-65	1-2
MIL 090686	1.3	CO3 CHONDRITE	B/C	B	1-56	2
MIL 090687	0.8	EUCRITE	B	B	87-89	37-45

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MIL 090688 ~	16.9	LL6 CHONDRITE	C	C		
MIL 090691	73.9	L4 CHONDRITE	A/B	A/B	25-27	14
MIL 090692	179.9	CO3 CHONDRITE	B	A/B	0-53	1
MIL 090695 ~	24.4	L6 CHONDRITE	C	B		
MIL 090696	14.2	CO3 CHONDRITE	B	A	0-67	
MIL 090699	9.1	CO3 CHONDRITE	B	A	1-57	
MIL 090767 ~	39.0	H5 CHONDRITE	B/C	A/B		
MIL 090799	28.8	LL CHONDRITE (IMPT MELT)	C	C	32	26
MIL 090850 ~	135.6	L5 CHONDRITE	A/B	A/B		
MIL 090851 ~	117.1	LL5 CHONDRITE	A/Be	A		
MIL 090852 ~	76.1	L6 CHONDRITE	B/C	A		
MIL 090853 ~	111.3	L5 CHONDRITE	B/C	A		
MIL 090854 ~	91.7	L5 CHONDRITE	A/B	A/B		
MIL 090855 ~	90.1	L5 CHONDRITE	B/C	A/B		
MIL 090856 ~	124.9	LL5 CHONDRITE	B/C	A/B		
MIL 090857 ~	166.4	L5 CHONDRITE	C	A		
MIL 090858 ~	109.3	L5 CHONDRITE	A/B	A/B		
MIL 090859 ~	70.2	L5 CHONDRITE	A/Be	A/B		
MIL 090867	81.6	L6 CHONDRITE	B/C	A/B	25	22
MIL 090870 ~	32.8	LL6 CHONDRITE	A	A		
MIL 090871	63.5	L6 CHONDRITE	C	C	25	21
MIL 090872 ~	37.2	LL6 CHONDRITE	A/B	A		
MIL 090873 ~	47.0	L5 CHONDRITE	B	A/B		
MIL 090874 ~	19.9	L6 CHONDRITE	C	B		
MIL 090875 ~	14.6	LL6 CHONDRITE	A/B	A		
MIL 090876 ~	40.0	L5 CHONDRITE	C	B		
MIL 090877 ~	38.1	L6 CHONDRITE	C	C		
MIL 090878 ~	46.3	L5 CHONDRITE	A/B	A		
MIL 090879 ~	51.2	LL6 CHONDRITE	A/B	A		
MIL 090920 ~	99.4	L6 CHONDRITE	B/C	A/B		
MIL 090921 ~	61.0	LL6 CHONDRITE	A/B	A		
MIL 090922 ~	71.3	L6 CHONDRITE	B/C	A		
MIL 090923 ~	67.9	L6 CHONDRITE	B/C	A		
MIL 090924 ~	45.5	L6 CHONDRITE	B/C	A		
MIL 090925 ~	106.3	L6 CHONDRITE	A/B	A		
MIL 090926 ~	128.4	LL6 CHONDRITE	A/B	A		
MIL 090927 ~	139.5	LL5 CHONDRITE	A/B	A/B		
MIL 090928 ~	115.6	LL5 CHONDRITE	A/B	A		
MIL 090929 ~	170.7	L5 CHONDRITE	B/C	A		
MIL 090930	150.0	IRON-IVA	B	A		
MIL 090936 ~	23.7	LL5 CHONDRITE	B	B		
MIL 091000 ~	0.3	L5 CHONDRITE	A/B	A		
MIL 091001 ~	47.0	LL6 CHONDRITE	A/B	A		
MIL 091002 ~	46.9	LL6 CHONDRITE	A/B	A		
MIL 091003 ~	9.3	LL6 CHONDRITE	A/B	A		
MIL 091004	32.5	LODRANITE	B/C	A	12	10
MIL 091005 ~	31.4	LL6 CHONDRITE	A/B	A		
MIL 091006 ~	25.6	LL6 CHONDRITE	A/B	A		
MIL 091007	5.6	CK5 CHONDRITE	Be	A	29	
MIL 091008 ~	9.9	LL6 CHONDRITE	A/B	A		
MIL 091009 ~	35.0	LL6 CHONDRITE	A/B	A		
MIL 11040	6.8	CM2 CHONDRITE	Be	A/B	0-44	
MIL 11100	130.8	HOWARDITE	A	A		23-61
MIL 11101	2.8	CO3 CHONDRITE	B	A/B	1-62	5-6

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MIL 11109	60.8	CO3 CHONDRITE	BE	A/B	1-51	1
MIL 11111	41.9	CM1/2 CHONDRITE	Ce	C	1-2	
MIL 11198	29.8	DIOGENITE	B	A		11-30
MIL 11199	27.2	DIOGENITE	B	A		15-34
MIL 11202	21.5	DIOGENITE	A/Be	A/B		27-31
MIL 11203	10.4	CO3 CHONDRITE	B	A/B	0-44	5
MIL 11204	16.2	DIOGENITE	Be	A/B		13-35
MIL 11205	19.8	DIOGENITE	Be	A/B		13-33
MIL 11206	40.0	CV3 CHONDRITE	C	A/B	1-44	11
MIL 11207	247.3	R6 CHONDRITE	Ce	B	39-41	20

Table 2

Newly Classified Specimens Listed By Type

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
		Achondrite				
MIL 090405	58.8	ACHON. UNGROUPED	B	A	29-32	10
MIL 090112	73.6	DIOGENITE	B	A		30-34
MIL 090291	94.2	DIOGENITE	A/B	A/B		18-33
MIL 11198	29.8	DIOGENITE	B	A		11-30
MIL 11199	27.2	DIOGENITE	B	A		15-34
MIL 11202	21.5	DIOGENITE	A/Be	A/B		27-31
MIL 11204	16.2	DIOGENITE	Be	A/B		13-35
MIL 11205	19.8	DIOGENITE	Be	A/B		13-33
MIL 090687	0.8	EUCRITE	B	B	87-89	37-45
MIL 090640	1.3	HOWARDITE	Be	A		23-60
MIL 11100	130.8	HOWARDITE	A	A		23-61
MIL 091004	32.5	LODRANITE	B/C	A	12	10
MIL 090031	500.1	UREILITE	B/C	A/B	20	17
		Carbonaceous Chondrite				
MIL 090586	8.1	CH CHONDRITE	B	A	4-42	0-50
MIL 090294	10.0	CK5 CHONDRITE	A/B	A/B	33	
MIL 091007	5.6	CK5 CHONDRITE	Be	A	29	
MIL 090288	17.4	CM1/2 CHONDRITE	Be	B/C	1-2	
MIL 11111	41.9	CM1/2 CHONDRITE	Ce	C	1-2	
MIL 090281	19.8	CM2 CHONDRITE	B	B	0-1	
MIL 090283	6.4	CM2 CHONDRITE	Ce	B/C	0-36	
MIL 090532	6.9	CM2 CHONDRITE	B	B	1-36	
MIL 11040	6.8	CM2 CHONDRITE	Be	A/B	0-44	
MIL 090010	2487.9	CO3 CHONDRITE	A/B	B	1-62	8
MIL 090025	1014.0	CO3 CHONDRITE	B	A/B	1-36	2-3
MIL 090038	404.4	CO3 CHONDRITE	B	A	0-39	0-2
MIL 090117	229.0	CO3 CHONDRITE	B	A	0-59	1-35
MIL 090118	286.9	CO3 CHONDRITE	B	A	0-76	
MIL 090122	497.8	CO3 CHONDRITE	B	A	0-70	10-11
MIL 090128	160.3	CO3 CHONDRITE	A/B	A	1-69	3-9
MIL 090132	132.5	CO3 CHONDRITE	Be	A/B	0-52	
MIL 090133	133.1	CO3 CHONDRITE	B	A/B	1-56	
MIL 090134	161.6	CO3 CHONDRITE	B	A/B	0-55	6
MIL 090138	49.4	CO3 CHONDRITE	A/B	A	0-33	6
MIL 090139	126.6	CO3 CHONDRITE	B	A/B	1-45	
MIL 090230	85.9	CO3 CHONDRITE	B	A/B	0-67	
MIL 090231	95.2	CO3 CHONDRITE	B	A	0-61	5
MIL 090233	104.9	CO3 CHONDRITE	B	A/B	0-47	1
MIL 090235	60.1	CO3 CHONDRITE	B	A	1-68	5
MIL 090236	67.5	CO3 CHONDRITE	B	A	1-53	
MIL 090293	7.1	CO3 CHONDRITE	B	B	0-41	
MIL 090451	38.7	CO3 CHONDRITE	B/C	B	0-53	
MIL 090453	33.9	CO3 CHONDRITE	B	B	0-52	
MIL 090454	43.0	CO3 CHONDRITE	B/C	B	1-63	

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
MIL 090457	32.6	CO3 CHONDRITE	B	A/B	0-62	
MIL 090459	30.6	CO3 CHONDRITE	B	B	0-40	
MIL 090461	14.0	CO3 CHONDRITE	B	A/B	0-59	
MIL 090462	9.1	CO3 CHONDRITE	B	A/B	0.5-50	
MIL 090463	26.7	CO3 CHONDRITE	B	A/B	1-37	
MIL 090464	25.6	CO3 CHONDRITE	B	B	0-74	
MIL 090465	8.8	CO3 CHONDRITE	B	B	0-48	
MIL 090466	14.3	CO3 CHONDRITE	B/C	B	0-48	
MIL 090467	10.1	CO3 CHONDRITE	B	B	1-61	
MIL 090468	13.6	CO3 CHONDRITE	B	A/B	1-63	
MIL 090469	7.3	CO3 CHONDRITE	B/C	A/B	1-53	
MIL 090470	21.3	CO3 CHONDRITE	B	A	0-71	
MIL 090473	31.4	CO3 CHONDRITE	B	A/B	0-29	
MIL 090474	20.0	CO3 CHONDRITE	B	A	1-33	
MIL 090478	24.4	CO3 CHONDRITE	B	A/B	1-64	
MIL 090535	2.3	CO3 CHONDRITE	B/Ce	B/C	1-27	2-5
MIL 090539	1.9	CO3 CHONDRITE	B/Ce	B/C	0-37	2
MIL 090554	0.5	CO3 CHONDRITE	B	B	0-31	
MIL 090558	0.3	CO3 CHONDRITE	B	B	0-38	
MIL 090588	6.6	CO3 CHONDRITE	B	A	0-41	
MIL 090591	0.6	CO3 CHONDRITE	B	B	0-39	1-11
MIL 090593	1.4	CO3 CHONDRITE	A/B	A	32-39	
MIL 090594	2.2	CO3 CHONDRITE	B	C	1-38	
MIL 090596	2.1	CO3 CHONDRITE	B	C	1-39	1-4
MIL 090597	1.4	CO3 CHONDRITE	A/B	B	19-39	1-5
MIL 090598	0.4	CO3 CHONDRITE	B	B	12-38	2-6
MIL 090641	5.9	CO3 CHONDRITE	B	A	0-36	
MIL 090683	3.2	CO3 CHONDRITE	A	A	1-65	1-2
MIL 090686	1.3	CO3 CHONDRITE	B/C	B	1-56	2
MIL 090692	179.9	CO3 CHONDRITE	B	A/B	0-53	1
MIL 090696	14.2	CO3 CHONDRITE	B	A	0-67	
MIL 090699	9.1	CO3 CHONDRITE	B	A	1-57	
MIL 11101	2.8	CO3 CHONDRITE	B	A/B	1-62	5-6
MIL 11109	60.8	CO3 CHONDRITE	BE	A/B	1-51	1
MIL 11203	10.4	CO3 CHONDRITE	B	A/B	0-44	5
MIL 090292	8.9	CR1 CHONDRITE	B	B	3	2-39
MIL 090657	133.1	CR2 CHONDRITE	Be	A	1-38	2
MIL 090646	11.4	CV3 CHONDRITE	B/C	A	0-26	1
MIL 11206	40.0	CV3 CHONDRITE	C	A/B	1-44	11

Chondrite -Type 3

ALH 09010	2.6	L3.4 CHONDRITE	B/C	A/B	4-37	1-18
MIL 090650	92.9	L3.8 CHONDRITE	B	A	12-20	5-22

H Chondrite

MIL 090648	32.7	H CHONDRITE (IMPT MELT)	B/C	A	18-19	13-17

Iron

MIL 090564	257.7	IRON-IVA	A/B	A		
MIL 090930	150.0	IRON-IVA	B	A		

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
LL Chondrite (Impact Melt)						
MIL 090799	28.8	LL CHONDRITE (IMPT MELT)	C	C	32	26
R Chondrite						
MIL 11207	247.3	R6 CHONDRITE	Ce	B	39-41	20

**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.

The ~ indicates classification by optical methods. This can include macroscopic assignment to one of several well-characterized, large pairing groups (e.g., the QUE LL5 chondrites), as well as classification based on oil immersion of several olivine grains to determine the approximate index of refraction for grouping into H, L or LL chondrites. Petrologic types in this method are determined by the distinctiveness of chondrules boundaries on broken surfaces of a 1-3 g chip. While this technique is suitable for general characterization and delineation of equilibrated ordinary chondrites, those undertaking detailed study of any meteorite classified by optical methods alone should use caution. It is recommended that a polished thin section be requested to accompany any chip and appropriate steps for a more detailed characterization should be undertaken by the user. (Tim McCoy, Smithsonian Institution)

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 the Antarctic Meteorite Newsletter vol. 9 (no. 2) (June 1986). Possible pairings were updated in Meteoritical Bulletins 76, 79, 82 through 101, which are available online from the Meteoritical Society webpage:

http://www.lpi.usra.edu/meteor/metbull.php

ACHON. UNGROUPED

MIL 090963 with MIL 090405

CM1/2 CHONDRITE

MIL 11111 with MIL 090288

CM2 CHONDRITE

MIL 090283, 090532 and 11040 with MIL 090281

CO3 CHONDRITE

MIL 090010, 090025, 090038, 090117, 090118, 090122, 090128, 090132, 090133, 090134, 090138, 090139, 090230, 090231, 090233, 090235, 090236, 090293, 090451, 090453, 090454, 090457, 090459, 090461, 090462, 090463, 090464, 090465, 090466, 090467, 090468, 090469, 090470, 090473, 090474, 090478, 090535, 090539, 090554, 090558, 090588, 090591, 090593, 090594, 090596, 090597, 090598, 090641, 090683, 090686, 090692, 090696, 090699, 11101, 11109 and 11203 with MIL 07099

DIOGENITE

MIL 090291, 11198, 11199, 11202, 11204, 11205 with 090112

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
ALH 09010	Allan Hills	18403	2.0 x 1.0 x 0.5	2.56	L3.4 Chondrite

Macroscopic Description: Cecilia Satterwhite
This ordinary chondrite has a rusty exterior with brown patches of fusion crust. The interior is dark gray to black with rusty areas and some metal.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy and Nicole Lunning
The section shows numerous chondrules (up to 0.9 mm across), chondrule fragments, and mineral grains in a dark brown to black matrix which contains minor amounts of FeNi metal and troilite. Brown limonitic staining pervades the section. Microprobe analyses show a range of olivine and pyroxene compositions: olivine, Fa_{4-37}; pyroxene, Fs_{1-18}. This meteorite is an L3 chondrite, estimated to be of subtype 3.4.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090010	Miller Range	20309	15.0 x 11.5 x 9.0	2487.90	CO3 Chondrite
MIL 090025		20797	8.0 x 8.0 x 6.0	1014.40	
MIL 090038		20313	6.8 x 7.5 x 5.2	404.40	
MIL 090117		20785	5.2 x 4.8 x 3.0	229.00	
MIL 090118		20796	6.5 x 4.8 x 4.5	286.90	
MIL 090122		20752	7.5 x 5.5 x 4.5	497.81	
MIL 090128		20752	5.5 x 4.5 x 4.0	160.28	
MIL 090132		20769	7.0 x 3.0 x 2.5	132.53	
MIL 090133		20793	5.3 x 4.4 x 3.3	133.08	
MIL 090134		20769	6.5 x 4.6 x 4.0	161.63	
MIL 090138		20333	3.5 x 2.25 x 2.5	49.41	
MIL 090139		20331	6.5 x 7.0 x 2.5	126.55	
MIL 090230		20758	4.1 x 3.7 x 3.0	85.88	
MIL 090231		20782	4.5 x 3.5 x 3.0	95.24	
MIL 090233		20765	5.0 x 3.2 x 2.6	104.86	
MIL 090235		20792	4.1 x 3.5 x 2.7	60.09	
MIL 090236		20767	3.4 x 3.0 x 2.5	67.53	
MIL 090293		20511	3.0 x 1.25 x 1.25	7.08	
MIL 090451		20075	3.0 x 3.0 x 2.5	38.69	
MIL 090453		20099	3.5 x 2.5 x 2.0	33.93	
MIL 090454		20074	3.5 x 3.5 x 1.5	43.00	
MIL 090457		20070	3.5 x 2.0 x 2.5	32.58	
MIL 090459		20050	4.0 x 3.5 x 2.0	30.60	
MIL 090461		20055	2.5 x 2.0 x 1.75	14.00	
MIL 090462		20058	2.25 x 1.25 x 1.5	9.14	
MIL 090463		20065	3.0 x 3.0 x 1.5	26.70	
MIL 090464		20089	2.5 x 2.0 x 2.25	25.60	
MIL 090465		20084	2.75 x 2.0 x 1.75	8.81	
MIL 090466		20081	3.0 x 2.0 x 1.5	14.26	
MIL 090467		20056	3.0 x 2.0 x 1.5	10.10	
MIL 090468		20053	2.0 x 2.5 x 1.5	13.56	
MIL 090469		20064	2.0 x 1.0 x 1.25	7.34	
MIL 090470		20066	2.5 x 2.5 x 2.25	21.33	
MIL 090473		20067	3.0 x 2.5 x 2.25	31.44	
MIL 090474		20082	2.25 x 2.25 x 1.5	19.90	
MIL 090478		20095	3.0 x 2.0 x 2.25	24.40	
MIL 090535		20718	1.5 x 1.5 x 1.0	2.32	
MIL 090539		20734	1.5 x 1.25 x 1.0	1.91	
MIL 090554		18817	1.0 x 0.75 x 0.25	0.51	

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090558	Miller Range	18808	0.75 x 0.50 x 0.50	0.34	CO3 Chondrite
MIL 090588		20037	2.0 x 1.8 x 1.2	6.62	
MIL 090591		20046	1.0 x 0.75 x 0.5	0.64	
MIL 090593		20041	1.0 x 1.0 x 0.75	1.40	
MIL 090594		20035	1.75 x 0.75 x 1.0	2.18	
MIL 090596		20019	multiple pieces	2.12	
MIL 090597		20026	1.75 x 1.0 x 0.75	1.40	
MIL 090598		20042	1.0 x 0.5 x 0.5	0.43	
MIL 090641		20455	1.6 x 1.3 x 1.0	5.85	
MIL 090683		20429	1.5 x 1.5 x 1.0	3.23	
MIL 090686		20251	1.25 x 1.0 x 0.5	1.30	
MIL 090692		20254	7.0 x 3.5 x 3.0	179.89	
MIL 090696		20279	3.0 x 2.4 x 2.0	14.17	
MIL 090699		20262	2.0 x 1.5 x 1.5	9.07	
MIL 11101		23819	1.8 x 1.2 x 1.0	2.80	
MIL 11109		22577	4.25 x 3.5 x 3.5	60.76	
MIL 11203		21489	3.0 x 2.0 x 1.3	10.35	

Macroscopic Description: Roger Harrington, Kathleen McBride and Cecilia Satterwhite

These carbonaceous chondrites have black/brown fusion crust; some have evaporites. Areas without fusion crust range from dark gray to black with some rusty brown matrix. The interiors are fine grained black matrix with minor oxidation and contain some tiny white inclusions.

Thin Section (,2) Description: Cari Corrigan and Nicole Lunning

These meteorites are so similar that a single description suffices. The sections consist of abundant small (up to 1.3 mm) chondrules, chondrule fragments and mineral grains in a dark matrix. Metal and sulfide occur within and rimming the chondrules. Glass within chondrules appears to be very clear/fresh. CAIs are abundant in many sections (mostly Type A), and range in size up to 1 mm, many containing blue hibonite grains. At least one compound CAI was found. AOAs up to 1 mm are present, as are dark inclusions (specifically in MIL 090470). Olivine ranges in composition from Fa_{0-76}. Pyroxene analyses range from $Fs_{1-15}Wo_{0-5}$ with one Fs_{35}. These meteorites vary with respect to terrestrial alteration. These meteorites are CO3 chondrites (likely type 3.0-3.2) and are probably members of the MIL 07531 pairing group.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090031	Miller Range	20441	9.2 x 4.8 x 4.7	500.1	Ureilite

Macroscopic Description: Cecilia Satterwhite

Black fusion crust covers 60% of the exterior with oxidation haloes. Areas without fusion crust are rusty brown and fractures penetrate the surface. The interior matrix is dark gray to black with discontinuous oxidation rind and rusty areas. Some crystalline faces are visible in the coarse grained texture.

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

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. The olivines have been mosaicized by shock. Olivines have cores of Fa_{20}, with rims reduced to Fa_{15}. Pigeonite (Fs_{17},Wo_8) exhibits a blotchy appearance. The meteorite is a ureilite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090112	Miller Range	20360	4.3 x 3.2 x 3.0	73.59	Diogenite
MIL 090291		20574	5.0 x 3.0 x 3.0	94.2	
MIL 11198		21493	3.9 x 2.6 x 1.3	29.82	
MIL 11199		21480	3.6 x 2.5 x 1.5	27.19	
MIL 11202		21561	3.2 x 2.4 x 1.5	21.518	
MIL 11204		21578	3.5 x 2.5 x 1.4	16.24	
MIL 11205		21569	3.0 x 2.5 x 1.3	19.78	

Macroscopic Description: Kathleen McBride and Cecilia Satterwhite

The exteriors have brown/black fusion crust with polygonal fractures. The interiors of these diogenites have tan matrices with dark gray to black "marbled" areas; some have light and dark inclusions. Some exhibit minor oxidation and rust.

Thin Section (,3) Description: Cari Corrigan, Andrew Beck, and Nicole Lunning

These meteorites are similar enough that one description suffices. The sections show a groundmass of coarse (up to 1.5 mm) comminuted pyroxene, with minor plagioclase and chromite. MIL 11202 contains a large (1.5 mm) chromite grain, and MIL 11204 contains a large (2.0 mm) plagioclase grain. Pyroxene compositions are $Fs_{11-35}Wo_{4-44}$ and plagioclase is $An_{78-87}Or_{0-1}$. The Fe/Mn ratio of the pyroxene is ~29. The meteorites exhibit numerous shock features and are brecciated diogenites.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090281	Miller Range	20609	3.5 x 2.5 x 2.0	19.83	CM2 Chondrite
MIL 090283		20629	1.25 x 3.0 x 1.5	6.35	
MIL 090532		20732	2.0 x 2.5 x 1.5	6.85	
MIL 11040		23877	1.8 x 2.0 x 1.5	6.76	

Macroscopic Description: Kathleen McBride and Cecilia Satterwhite

The exteriors of these carbonaceous chondrites have rough black fusion crust with some polygonal fractures and evaporites. The interior matrices are dark gray to black in color with light colored, tiny inclusions, as well as some evaporites and minor oxidation.

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

These meteorites are similar enough that one description suffices. 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. Olivines are unequilibrated with compositions of Fa_{0-44}. Pyroxene compositions are $Fs_{5-12,}$ though adequate pyroxene grains were not found in every sample. Aqueous alteration of the matrix is substantial, but the chondrules are only modestly altered. The meteorites are CM2 chondrites.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090288	Miller Range	20602	4.0 x 2.0 x 1.5	17.38	CM1/2 Chondrite
MIL 11111		23259	5.0 x 3.5 x 2.75	41.90	

Macroscopic Description: Kathleen McBride

The exteriors are covered with a purplish black fusion crust with polygonal fractures and some evaporites. The exposed interior is black. The interiors are a black matrix with evaporites along fractures.

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

These sections are similar enough that one description is sufficient. 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_{0-2}, no pyroxene grains were analyzed. Aqueous alteration of the matrix is substantial. These meteorites are CM1/2 chondrites, possibly paired with the MIL 090986 series reported in the Spring 2012 (35,1) newsletter.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090292	Miller Range	20597	2.5 x 2.0 x 1.5	8.94	CR1 Chondrite

Macroscopic Description: Kathleen McBride

90% of the exterior has brown/black fusion crust with polygonal fractures. The interior matrix is black with an oxidation rind and some white inclusions

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

The section is comprised of large (1 mm) chondrules that are almost completely replaced by aqueous alteration products. Opaques include sulfides and metal (?) that have been extensively altered. Rare magnesian mafic silicates of Fa_3, Fs_{2-39} are found mostly within chondrules. The meteorite appears to be a type 1 carbonaceous chondrite, likely a CR, although a relationship to CV chondrites is possible.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090294	Miller Range	20537	3.0 x 2.0 x 1.25	10.00	CK5 Chondrite

Macroscopic Description: Kathleen McBride

The exterior has 30% brown/black fusion crust with polygonal fractures. The interior matrix is soft, medium gray in color with gray chondrules.

Thin Section (,2) Description: Cari Corrigan and Nicole Lunning

This section consists of large (up to 1.5 mm), well-defined chondrules in a matrix of finer-grained silicates, sulfides and abundant magnetite grains. Silicates are homogeneous. Olivine is Fa_{33} and pyroxene is Fs_8. The meteorite is a CK5 chondrite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090405	Miller Range	20964	3.0 x 3.0 x 2.8	58.84	Achon. Ungrouped

Macroscopic Description: Cecilia Satterwhite

Brown/black fusion crust covers 70% of the surface with some oxidation. The interior matrix is dark gray to black in color with a crystalline texture and some oxidation and metal.

Thin Section (,2) Description: Cari Corrigan, Andrew Beck, and Nicole Lunning

This section consists of an aggregate of equigranular (up to 1 mm) olivine grains. Individual olivine grains are rimmed by dark material containing finely dispersed grains of metal, sulfide, and chromite. Olivine has compositions of Fa_{29}. Pyroxene analyses are $Fs_{11}Wo_{44}$. This meteorite looks superficially like a ureilite, but given the recent abstract by Warren and Rubin (2012, LPSC 43, #2528), we will classify it as an ungrouped achondrite. This meteorite is likely paired with MIL 090963.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090564	Miller Range	20014	5.0 x 3.0 x 4.0	257.71	Iron-IVA

Macroscopic Description: Tim McCoy and Linda Welzenbach

This egg-shaped iron exhibits a mildly pitted surface with oxidation halos and infrequent elongated indentations reaching 7 mm in length. A flattened surface exhibits a copper color and metallic sheen.

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

The section samples a portion of an interior slice, including the surface of the sample. No fusion crust remains on the meteorite, although phosphides in the thick (~3-4 mm) heat-altered zone often exhibit spherical voids suggestive of micromelting and volatilization. The heat altered zone is dominated by an irregular plessitic structure, while the interior exhibits a more regular plessitic to micro-Widmanstätten pattern with rare platelets of kamacite and abundant rhabdite phosphides. The entire meteorite appears to have formed from a single austenite crystal. A microprobe traverse finds kamacite, zoned taenite with rim compositions up to 30 wt.% Ni, and rare Ni-rich (45 wt.%) phosphides. The bulk composition is approximately 9.9 wt.% Ni, 0.7 wt.% Co and 0.2 wt.% P. The meteorite is a Ni-rich ataxite and chemically and structurally similar to some high-Ni IVA irons.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090586	Miller Range	20032	2.5 x 1.7 x 1.0	8.14	CH3 Chondrite

Macroscopic Description: Cecilia Satterwhite
The exterior has a small black patch of fusion crust that is iridescent. The interior is a dull black matrix.

Thin Section (,2) Description: Cari Corrigan and Tim McCoy
The section consists of an aggregate of very small chondrules (less than 0.2 mm), mineral fragments, and abundant metal. Olivine grains are Fa_{4-42}, and pyroxenes are $Fs_{0-50}Wo_{0-2}$. Carbonaceous clasts are present. The meteorite is a CH3 chondrite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090640	Miller Range	20427	1.5 x 1.0 x 0.5	1.27	Howardite

Macroscopic Description: Cecilia Satterwhite
The exterior has a shiny black patch of fusion crust. The interior is a gray matrix with some light and dark inclusions. Some oxidation and minor evaporites are visible.

Thin Section (,2) Description: Cari Corrigan, Andrew Beck, and Nicole Lunning
The section shows a groundmass of comminuted pyroxene and plagioclase (up to 0.5 mm) with diogenite and cumulate eucrite clasts ranging up to 3 mm. Most of the pyroxene is orthopyroxene with compositions ranging from $Fs_{23-60}Wo_{2-41}$ (most Wo_{2-10}). This meteorite is a howardite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090646	Miller Range	20404	2.5 x 2.0 x 1.5	11.4	CV3 Chondrite

Macroscopic Description: Cecilia Satterwhite
The exterior is pitted, and has brown/black patches of fusion crust. The interior is dark gray to black matrix with oxidation and rusty areas. Some small weathered inclusions/chondrules are visible.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy and Sheri Singerling
The section exhibits large chondrules (up to 2 mm) and CAIs in a dark matrix. The section is moderately weathered. Olivines range from Fa_{0-26}, and pyroxenes from Fs_1. The meteorite is an unequilibrated carbonaceous chondrite, probably a CV3.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090648	Miller Range	20467	3.5 x 2.6 x 2.0	32.68	H Chondrite (Impact Melt)

Macroscopic Description: Cecilia Satterwhite
The exterior surface is brown/black. The interior is a fine grained gray matrix with some rusty areas.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy and Nicole Lunning
This meteorite is comprised of metal-sulfide blebs up to 1 mm across. They are rounded and elongated, set in a fine-grained matrix that includes chondrule and mineral grain fragments. Olivine compositions are Fa_{15-19} and pyroxenes are $Fs_{14-17}Wo_{1-2}$. This meteorite is an H chondrite impact melt rock.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090650	Miller Range	20492	6.2 x 3.5 x 2.0	92.94	L3.8 Chondrite

Macroscopic Description: Cecilia Satterwhite
90% of the exterior has brown/black fusion crust with oxidation haloes. The interior is a dark gray to black matrix with abundant chondrules/inclusions. Oxidation is scattered throughout and minor metal is visible.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy and Nicole Lunning
The section shows a close-packed aggregate of chondrules and chondrule fragments (up to 2.25 mm across) in a dark matrix containing a small amount of nickel-iron and troilite. The meteorite is moderately weathered, with brown limonitic staining throughout the section. Microprobe analyses show olivine and pyroxene of variable composition: olivine, Fa_{12-20}; pyroxene, Fs_{5-22} The meteorite is classified as an L3 chondrite estimated to be of subtype 3.8.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090657	Miller Range	20428	4.5 x 4.0 x 3.5	133.14	CR2 Chondrite

Macroscopic Description: Cecilia Satterwhite
The exterior has black fractured fusion crust with oxidation haloes. The interior is black with abundant inclusions and chondrules. Some oxidation and minor evaporites are visible.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy, Sheri Singerling
The section exhibits small (100-300 microns), well-defined, metal-rich chondrules and CAIs in a dark matrix of FeO-rich phyllosilicate. Some chondrules have been replaced by phyllosilicates indicating preterrestrial alteration. The section is also moderately weathered. Silicates are unequilibrated; olivines range from $Fa_{1-38,}$ with most Fa_{0-2}, and pyroxenes from Fs_2Wo_1. The meteorite is probably a CR2 chondrite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090687	Miller Range	20293	1.0 x 1.0 x 0.5	0.77	Eucrite

Macroscopic Description: Kathleen McBride
The exterior is brown/black with some oxidation haloes.

Thin Section Description: Cari Corrigan, Andrew Beck and Nicole Lunning
This meteorite is dominated by coarse-grained (~500 micron average grain size) laths of feldspar, some of which are fractured and recrystallized. Olivine grains, not common in eucrites, are found in this meteorite. Both olivine and pyroxene grains are much smaller (~50 microns). Mineral compositions are homogeneous with pyroxenes of $Fs_{38-45}Wo_{37-42}$), olivine (Fa_{87-89}), and plagioclase ($An_{90}Or_{0.2}$). The Fe/Mn ratio of the pyroxene is ~30. The meteorite is a eucrite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090799	Miller Range	20696	3.5 x 3.0 x 1.5	28.76	LL Chondrite (Impact Melt)

Macroscopic Description: Kathleen McBride
Thin brown/black fractured fusion crust covers the surface. The interior is rusty and brittle with high metal content.

Thin Section (,2) Description: Cari Corrigan, and Nicole Lunning
The section consists dominantly of a fine-grained melt-textured matrix of olivine and pyroxene (1-10 microns) with irregular blebs of metal and sulfide and fragments of mineral grains (200-300 micron grain size). The mineral compositions are homogenous; olivine is Fa_{32} and orthopyroxene is Fs_{26}. The meteorite is an impact melt of an LL chondrite precursor, and possibly just a clast within an LL chondrite breccia, as one end of the section shows usual LL chondrite textures

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090930	Miller Range	20169	6.0 x 3.0 x 2.0	150.04	Iron-IVA

Macroscopic Description: Tim McCoy and Linda Welzenbach
This irregularly-shaped iron exhibits one flattened side, with the other side having two concave surfaces meeting at a ridge and tapering to one end of the meteorite. Rust halos are present, with extensive rusting, including flaking of the surface.

Thin Section (,2) Description: Tim McCoy and Linda Welzenbach
The section samples a portion of an interior slice, including the surface of the sample. No fusion crust remains on the meteorite; although a thin (1.5 mm) discolored heat-altered zone is present. This small meteorite is comprised of 5-6 primary austenite crystals, with boundaries between crystals now defined by 100 micrometer thick irregular ribbons of kamacite. The bulk of the meteorite exhibits a plessitic to regular micro-Widmanstätten structure with occasional kamacite platelets and abundant rhabdite phosphides. A microprobe traverse finds kamacite, zoned taenite with rim compositions up to 30 wt.% Ni, and rare Ni-rich (45 wt.%) phosphides. The bulk composition is approximately 9.7 wt.% Ni, 0.6 wt.% Co and 0.2 wt.% P. The meteorite is a Ni-rich ataxite and chemically and structurally similar to some high-Ni IVA irons. Given the compositional similarity to MIL 090564, pairing should be considered, although differences in structure argue against this.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 090937	Miller Range	20109	4.5 x 2.0 x 1.5	29.22	Mesosiderite

***Classification Correction of MIL 090937**

MIL 090937 is a metamorphosed mesosiderite. MIL 090936 is an LL5 (these were switched), classified by oil immersion. MIL 090937 was originally reported in the Spring 2012 (35,1) newsletter.

Macroscopic Description: Kathleen McBride
The exterior has brown fusion crust with polygonal fractures and oxidation haloes. The interior is a rusty crystalline matrix which is moderately friable. This mesosiderite has a B/C fracturing and a C weathering.

Thin Section (,2) Description: Tim McCoy, Cari Corrigan, and Nicole Lunning
This meteorite is dominated by orthopyroxene and plagioclase grains with grain size approaching 2 mm. Most grains are equant with ~0.5 mm rounded to elongate metal phosphide particles, with less abundant and heavily weathered troilite. Pyroxene compositions are $Fs_{36}Wo_3$, feldspars are $An_{95}Or_{0.1}$. This meteorite may be a metamorphosed clast from a mesosiderite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 091004	Miller Range	20696	3.0 x 2.3 x 2.0	32.53	Lodranite

Macroscopic Description: Cecilia Satterwhite
The exterior has 95% black/brown fusion crust with rusty areas. The interior is a rusty brown with metal and has a crystalline texture.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy and Linda Welzenbach
The meteorite is an equigranular aggregate (1 mm grain size) of olivine and pyroxene and very rare plagioclase in a metal-rich matrix. Stringers of metal and rare sulfide occupy grain boundaries between mafic silicates. Olivine (Fa_{12}), low-Ca pyroxene ($Fs_{10}Wo_5$), high-Ca pyroxene (Fs_6Wo_{37}). The meteorite is a lodranite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 091007	Miller Range	18854	2.0 x 1.7 x 1.1	5.64	CK5 Chondrite

Macroscopic Description: Cecilia Satterwhite

40% of the exterior has frothy black fusion crust. The interior is a dark gray to black matrix with fine grained texture, some inclusions/chondrules are present.

Thin Section (,2) Description: Cari Corrigan and Nicole Lunning

This section consists of large (up to 1.5 mm), well-defined chondrules in a matrix of finer-grained silicates, sulfides and abundant magnetite grains. Silicates are homogeneous. Olivine is Fa_{29}. The meteorite is a CK5 chondrite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 11100	Miller Range	22573	7.5 x 4.5 x 2.5	130.75	Howardite

Macroscopic Description: Kathleen McBride

Dark brown/black fusion crust with small glassy patches cover 95% of the exterior surface. The interior matrix is gray with white angular clasts <2mm in size.

Thin Section (,2) Description: Cari Corrigan and Andrew Beck

The section shows a groundmass of comminuted pyroxene and plagioclase (up to 0.5 mm) with diogenite and eucrite clasts. There is one 2.5 mm basaltic eucrite clast. Most of the pyroxene compositions range from $Fs_{23-61}Wo_{2-41}$ (most Wo_{2-10}). This meteorite is a howardite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 11206	Miller Range	21483	4.5 x 3.5 x 2.75	40.03	CV3 Chondrite

Macroscopic Description: Kathleen McBride

30% of the exterior has very weathered fusion crust. The crust is vesicular and rough and has small fragments spawling off. The interior matrix is brown with small light colored inclusions.

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

The section exhibits large chondrules (up to 2 mm) and CAIs in a dark matrix. The section is moderately weathered. Olivines range from Fa_{1-31}, with most Fa_{1-5}, and pyroxenes from Fs_{11}. The meteorite is an unequilibrated carbonaceous chondrite, probably a CV3.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
MIL 11207	Miller Range	21579	7.0 x 6.5 x 2.5	247.34	R6 Chondrite

Macroscopic Description: Kathleen McBride

Dark brown/black fusion crust with polygonal fractures and evaporites covers the exterior surface. The evaporites are a light blue-green to light lime green color. The interior is brownish gray in color with lighter white circular splotches shaped within a fine grained crystalline texture.

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

The section is comprised of coarse grained (100-200 micron), equigranular olivine, sometimes poikilitically enclosed in mm-sized low-Ca pyroxene with sulfides, oxides and hornblende. Olivine compositions are Fa_{40}, pyroxenes are $Fs_{20}Wo_{27}$. The meteorite is an R6 chondrite with pronounced shock effects. It is petrologically distinct from the LAP 04840 pairing group, although it shares the common feature of being a hydrous phase bearing R chondrite.

Sample Request Guidelines

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 **Sept. 13, 2012 deadline** will be reviewed at the MWG meeting **Sept. 27-28, 2012 in Washington, D.C.**. Requests that are received after the deadline may be delayed for review until MWG meets again in the Spring of 2013. Please submit your requests on time. Questions pertaining to sample requests can be directed to the MWG secretary by e-mail, fax or phone.

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 August 2006 have been published in the Meteoritical Bulletins and *Meteoritics* and *Meteoritics and Planetary Science* (these are listed in Table 3 of this newsletter. 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/antmet/statistics.cfm

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

http://curator.jsc.nasa.gov/antmet/requests.cfm

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:

JSC-ARES-MeteoriteRequest@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 explicitly.

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.

Antarctic Meteorite Laboratory Contact Numbers

Please submit request to**: JSC-ARES-MeteoriteRequest@nasa.gov**

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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://curator.jsc.nasa.gov/antmet/
JSC Curator, HED Compendium	http://curator.jsc.nasa.gov/antmet/hed/
JSC Curator, Lunar Meteorite Compendium	http://curator.jsc.nasa.gov/antmet/lmc/
JSC Curator, Mars Meteorite Compendium	http://curator.jsc.nasa.gov/antmet/mmc/
ANSMET	http://geology.cwru.edu/~ansmet/
Smithsonian Institution	http://mineralsciences.si.edu/
Lunar Planetary Institute	http://www.lpi.usra.edu
NIPR Antarctic meteorites	http://www.nipr.ac.jp/
Meteoritical Bulletin online Database	http://tin.er.usgs.gov/meteor/metbull.php
Museo Nazionale dell'Antartide	http://www.mna.it/english/Collections/collezioni_set.htm
BMNH general meteorites	http://www.nhm.ac.uk/research-curation/departments/mineralogy/research-groups/meteoritics/index.html
Chinese Antarctic meteorite collection	http://birds.chinare.org.cn/en/yunshiku/
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.meteoritemag.org/
Geochemical Society	http://www.geochemsoc.org
Washington Univ. Lunar Meteorite	http://meteorites.wustl.edu/lunar/moon_meteorites.htm
Washington Univ. "meteor-wrong"	http://meteorites.wustl.edu/meteorwrongs/meteorwrongs.htm

Other Websites of Interest

OSIRIS-REx	http://osiris-rex.lpl.arizona.edu/
Mars Exploration	http://mars.jpl.nasa.gov
Rovers	http://marsrovers.jpl.nasa.gov/home/
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/
Astromaterials Curation	http://curator.jsc.nasa.gov/