

# COSMIC DUST

C O U R T I E R

Number 9  
June 1991

Compiled and  
issued by:

Curator/  
Cosmic Dust  
Code SN2  
NASA/Johnson  
Space Center  
Houston, Texas  
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## IN THIS ISSUE

Note on Particle Classification Catalogs .....	1
Cosmic Dust Catalog 11 .....	1
Cluster-Particle Relationships for Collector L2005 .....	2
Cosmic Dust Catalog 12 .....	3
Cluster-Particle Relationships for Collector L2006 .....	3
Status of Cosmic Dust Collection Surfaces .....	3
Investigators Who Have Received Samples to Date .....	4
Renumbered Chondritic Cosmic Dust Particles .....	7
Guidelines for Preparing a Request .....	7
Itemized Listing of Available Samples .....	8

## Note on Particle Classification in Catalogs

In the Cosmic Dust Catalogs **TYPE** indicates a provisional first order identification of each particle based on its morphology (from SEM image), elemental composition (from EDS spectrum), and optical properties. We emphasize that, for catalog purposes, types are defined for their descriptive and curatorial utility, not as scientific classifications. These tentative categorizations, which reflect judgements based on the collective experience of the CDPET, should not be construed to be firm identifications and should not dissuade any investigator from requesting any given particle for detailed study and more complete identification. The precise identification of each particle in our inventory is beyond the scope and intent of our collection and curation program. Indeed, the reliable identification and scientific classification of cosmic dust is one of many important research tasks that we hope these catalogs will stimulate.

## Cosmic Dust Catalog 11

Catalog 11 summarizes preliminary observations on 166 particles retrieved from collection surface L2005. This surface was a flat plate Large Area Collector (with a 300 cm<sup>2</sup> surface area) which was coated with silicone oil (dimethyl siloxane) and then flown aboard a NASA ER-2 aircraft during a series of flights that were made within west-central North America during the fall of 1989. During successive periods of high altitude (20 km) cruise, the flag was exposed in the stratosphere by pilot command and then retracted into sealed storage containers prior to descent. In this manner, a total

of 40 hours of stratospheric exposure was accumulated for flag L2005. This catalog is the first to be produced from the new Large Area Cosmic Dust Collectors (LACs). These collectors have approximately one order of magnitude more collection surface area than the conventional collectors used for Cosmic Dust Catalogs 1-10. Accordingly, we wished to determine the particle type distribution being collected on these new large plates. We therefore embarked upon a survey of collector L2005, with the following results. There were a total of 5560 particles larger than 12 microns on the entire collection surface, of which approximately 33% were dark brown to black

*continued on page 2*

continued from page 1

(dark) particles. There were 50 large, black "cluster" particles. We picked samples of all cluster particles for preliminary characterization and inclusion in Cosmic Dust Catalog 11. The enclosed Table of Cluster-Particle Relationships for Collector L2005 explains the relationship of cataloged particles to specific parent clusters. We also performed a "random" sampling of the other large (>12 micron) particles for preliminary characterization, and these particles fill out the remainder of the catalog. These remaining particles were picked on the basis of dark color only, and therefore could be considered a "random" selection of the types of dark particles to be found on collector L2005. We resist carrying this comparison farther because of uncertainties in the preliminary particle classification process.

## Cluster Particle Relationships for Collector L2005

Cluster #	Particle #, L2005
1	A1
2	A2
3	A3
4	A4
5	A5
6	A6
7	B7
9	B9
10	B10
11	B11
12	B12, B13, B14, B15, B16
13	C1, C13, C25, C26, C31, C34
14	C2, C3, C14, C29, C30, C33, C36
15	C4, C15, C27, C28, C32, C35
16	C16
17	C17, C19, C20, C21
18	C5, C18, C22, C23, C24, C37
19	D1, D19, D25, D26, D27
20	D2, D3, D20, D28, D29, D31
21	D21
22	D22
23	D23
24	D24
25	D36, E1, E2, E3, E25, E31, E32
26	E4, E5, E26
28	E28, E34, E35
29	E29
30	E30
31	F1, F2, F3, F31, F37, F38, F39
32	F32
33	F4, F33
34	F34
36	F36
37	G37
38	G1, G38
39	G39
40	G40
42	G2, G3, G42
43	H43
44	H1, H44
45	H45
46	H46
47	H47
48	H48
49	I1, I2, I3
50	F50

## Cluster Particle Relationships for Collector L2006

Cluster #	Particle #, L2006
1	A1, A2
2	A3, A4
3	A5, A6, A7, A8, A9, A10
4	A11, A12, A13
5	A14
6	A15, A16
7	A17
8	A18
9	B1, B2, B3, B4
10	B5, B6, B7
11	B8, B9, B10, B11
12	B12, B13
13	B14
14	B15, B16, B17, B18

## Status of Cosmic Dust Collection Surfaces

FLAG #	LOCATION	COMMENTS
L2001	AT JSC	Particles on dimple glass slide (A)/picked
L2002	AT JSC	Particles on dimple glass slide (A)/picked
L2003	AT JSC	Particles on dimple glass slide (A)/picked
L2004	AT JSC	Particles on dimple glass slide (A)/picked
L2005	AT JSC	Picked
L2006	AT JSC	Picked
L2007	AT JSC	Picked
L2008	AT JSC	
U2001	AT JSC	Picked
U2002	AT JSC	Reserved
U2003	AT JSC	Volcanic ash
U2004	AT JSC	Volcanic ash/reserved
U2005	AT JSC	Ground contamination/in petri dish
U2006	AT JSC	Ground contamination/in petri dish
U2007	AT JSC	Volcanic ash/in petri dish
U2008	AT JSC	Volcanic ash/reserved
U2009	AT JSC	Ground contamination
U2010	AT JSC	Ground contamination
U2011	AT JSC	Picked
U20 12	BROWNLEE,DE	
U2013	AT JSC	Picked
U20 14	WALKER,RM	
U2015	AT JSC	Picked
U2016	AT JSC	Ground contamination?
U2017	AT JSC	Picked

*continued on page 4*

## Cosmic Dust Catalog 12

Catalog 12 summarizes preliminary observations on 345 particles retrieved from collection surfaces L2005 and L2006. Collector L2006 is another Large Area Collector flown aboard a NASA ER-2 aircraft during a series of flights that were made within west-central North America during the fall of 1989. In fact, L2006 and L2005 flew on the same collecting missions. A total of 40 hours of stratospheric exposure was accumulated for flag L2006. There were 14 large, black "cluster" particles on collector L2006. We picked samples of all cluster particles for preliminary characterization and inclusion in Cosmic Dust Catalog 12. The enclosed Table of Cluster Particle Relationships for collector L2006 explains the relationship of cataloged particles to specific parent clusters. We also performed a "random" sampling of the other large (>12 micron) particles for preliminary characterization, and these particles fill out the remainder of the catalog. These remaining particles were picked on the basis of dark color only, and therefore could be considered a "random" selection of the types of dark particles to be found on collector L2005. In addition, we also went back to collector L2005 and picked additional dark particles for inclusion in Catalog 12.

# Investigators Who Have Received Samples to Date

- G. Blanford  
University of Houston  
Houston, TX USA
  
- J. Bradley  
McCrone & Associates  
Westmont, IL USA
  
- D. E. Brownlee  
University of Washington  
Seattle, WA USA
  
- T. Bunch  
NASA/Ames Research Center  
Moffett Field, CA USA
  
- P.R. Buseck  
Arizona State University  
Tempe, AZ USA
  
- J. Darius  
London Science Museum  
UK
  
- T. Esat  
Australian National University  
Canberra, Australia
  
- C.Y. Fan  
University of Arizona  
Tucson, AZ USA
  
- G. Flynn  
SUNY  
Plattsburgh, NY USA
  
- E.K. Gibson, Jr.  
NASA/Johnson Space Center  
Houston, TX USA

*continued on page 5*

*continued from page 3*

U2018	AT JSC	Picked
U2019	AT JSC	Ground contamination
U2020	AT JSC	Ground contamination
U2021	AT JSC	Ground contamination
U2022	AT JSC	Picked
U2023	AT JSC	Volcanic aerosol?/reserved
U2024	MCKAY,DS	
U2025	AT JSC	Reserved
U2026	AT JSC	Contamination/broken helicoil/reserved
U2029	AT JSC	In plex coffin/reserved
U2033	WALKER,RM	In plex coffin
U2034	AT JSC	In plex coffin/picked
U2035	AT JSC	In plex coffin
U2036	AT JSC	In plex coffin
U2037	AT JSC	In plex coffin
U2038	AT JSC	In plex coffin
U2039	AT JSC	In plex coffin
U2040	AT JSC	In plex coffin
U2041	AT JSC	In plex coffin
U2042	AT JSC	In plex coffin
U2043	AT JSC	In plex coffin
U2044	WALKER,RM	
U2045	AT JSC	
U2046	AT JSC	
U2047	WALKER,RM	
U2048	AT JSC	
U2049	AT JSC	
W7001	AT JSC	Ground contamination/picked
W7002	AT JSC	Ground contamination/in petri dish
W7003	AT JSC	Ground contamination/in petri dish
W7004	AT JSC	Ground contamination/in petri dish
W7005	AT JSC	Ground contamination/in petri dish
W7006	AT JSC	Ground contamination/in petri dish
W7007	AT JSC	Ground contamination/in petri dish
W7008	AT JSC	Ground contamination/in petri dish
W7009	AT JSC	Ground contamination/in petri dish
W7010	AT JSC	Picked
W7011	AT JSC	Reserved
W70 12	BROWNLEE,DE	
W7013	AT JSC	Picked
W70 14	WALKER,RM	
W7015	AT JSC	
W7016	AT JSC	Reserved
W7017	AT JSC	Picked
W7018	WALKER,RM	
W7019	WALKER,RM	
W7020	AT JSC	Reserved
W7021	WALKER,RM	
W7022	WALKER,RM	
W7023	AT JSC	Reserved
W7024	WALKER,RM	
W7025	AT JSC	Reserved
W7026	AT JSC	Picked
W7027	AT JSC	Picked/perviously allocated to Brownlee
W7028	AT JSC	Picked

*continued on page 5*

*continued from page 4*

W7029	AT JSC	Picked
W7030	BROWNLEE,DE	
W7031	AT JSC	Picked/previously allocated to Brownlee
W7032	AT JSC	Picked
W7033	AT JSC	Volcanic ash/completely rinsed onto nucleopore filter
W7034	AT JSC	Volcanic ash/completely rinsed onto nucleopore filter
W7035	AT JSC	Volcanic ash/reserved
W7036	AT JSC	Volcanic ash/picked
W7037	ZOLLER,WH	Volcanic ash/completely rinsed onto nucleopore filter
W7038	AT JSC	volcanic ash/completely rinsed onto nucleopore filter
W7039	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7040	AT JSC	Volcanic ash/reserved
W7041	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7042	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7043	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7044	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7045	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7046	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7047	AT JSC	Volcanic ash/completely rinsed into Freon-113 bottle
W7048	AT JSC	Deployment failed/reserved
W7049	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7050	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7051	AT JSC	Volcanic ash/reserved
W7052	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7053	AT JSC	Volcanic ash/picked
W7054	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7055	AT JSC	Volcanic ash/completely rinsed into freon-113 bottle
W7056	AT JSC	Volcanic ash/collector inverted/reserved
W7057	AT JSC	Volcanic aerosol/broken flag/reserved
W7058	AT JSC	Volcanic aerosol
W7059	AT JSC	Volcanioc aerosol
W7060	AT JSC	Volcanic aerosol
W7061	AT JSC	Volcanic aerosol
W7062	AT JSC	Volcanic areosol
W7063	AT JSC	Volcanic aerosol
W7064	AT JSC	Volcanic aerosol
W7065	AT JSC	Volcanic aerosol
W7066	AT JSC	Picked

*continued on page 6*

*continued from page 4*

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*continued on page 6*



# Renumbered Chondritic Cosmic Dust Particles

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OLD PARTICLE NUMBER			NEW PARTICLE CLUSTER NUMBER		
U2011	A	2	U2011	*A	1
U2011	A	4	U2011	*A	2
U2011	A	5	U2011	*B	1
U2015	A	1	U2015	*A	1
U2015	A	2	U2015	*A	2
U2015	A	3	U2015	*A	3
U2015	A	8	U2015	*B	1
W7010	A	8	W7010	*A	1
W7010	C	1	W7010	*A	3
W7010	C	2	W7010	*A	4
W7010	C	4	W7010	*A	5
W7026	A	1	W7026	*A	1
W7028	A	4	W7028	*C	1
W7028	D	1	W7028	*C	2
W7029	B	13	W7029	*B	1
W7029	C	1	W7029	*A	1
W7029	K	1	W7029	*A	27
W7029	K	2	W7029	*B	8
W7031	A	1	W7031	*A	1
W7031	A	2	W7031	*B	1
W7031	A	5	W7031	*C	1
W7031	A	9	W7031	*D	1
W7031	E	1	W7031	*A	3
W7031	E	2	W7031	*C	2
W7031	E	3	W7031	*B	2
W7031	E	4	W7031	*B	3
W7066	A	1	W7066	*A	1
W7066	A	5	W7066	*A	2
W7066	B	1	W7066	*A	3
W7066	B	2	W7066	*A	4
W7069	A	1	W7069	*A	1
W7069	A	2	W7069	*B	2
W7069	B	1	W7069	*B	2
W7069	B	2	W7069	*A	2
W7069	B	3	W7069	*A	3
W7071	A	1	W7071	*A	2
W7071	A	2	W7071	*A	1

# Guidelines for Preparing a Sample Request

All sample requests should be made in writing to:

Curator/Cosmic Dust  
Code SN2  
Planetary Science Branch  
NASA/Johnson Space Center  
Houston, Texas 77058 USA

Information may be obtained by telephone via (713) 483-5128 [FTS 525-5128].

Each request should refer to specific samples by their official identification numbers and should contain enough information to permit evaluation of the proposed study and the adequacy of the requestor's facilities. All necessary information should probably be condensable into a one- or two-page letter, although informative attachments (e.g., copies of pages from related proposals, reprints of publications, flow diagrams for analyses) are welcome. In addition, a brief statement regarding the desired method of mounting or containerizing the samples for shipment to the requestor should be included (see article on "Sample Containers for Shipment of Allocated Dust Particles" on pages 14-21 of Cosmic Dust Courier No. 4). Each sample request will be reviewed by the Cosmic Dust Committee (CDC), and the Lunar and Planetary Sample Team (LAPST), committees of scientists that advises NASA on matters related to the curation and allocation of extraterrestrial samples. The

*continued on page 8*

continued from page 7

NASA/JSC Planetary Science Branch will arrange for all required CDC and LAPST reviews and will inform investigators of results as rapidly as possible. Prospective sample requestors may select samples from among those described in any issue of the Cosmic Dust Catalog or Cosmic Dust Courier series. However, reference should be made to the sample availability table of this newsletter to check the status of each sample before it is requested. In addition, we encourage investigators to contact us in advance of submitting their sample requests if further information is desired.

## Itemized Listing of Available Samples

MOUNT #	PARTICLES AVAILABLE FOR ALLOCATION
L2001 A	8
L2005 A	1, 4, 5, 6
L2005 B	7, 9, 13, 14, 15, 16
L2005 C	2, 3, 13, 15, 16
L2005 D	1, 2, 3, 21, 24
L2005 E	1, 2, 3, 25, 30
L2005 F	1, 2, 3, 4, 31, 32, 33, 34, 36
L2005 G	1, 2, 3, 38, 42
L2005 H	1, 43, 44, 45, 46, 48
L2005 I	4, 6, 7, 13, 15, 19, 24
L2005 J	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27
L2005 K	1, 3, 4, 5, 6
L2005 L	1, 3, 5, 6, 7, 8
L2005 M	2, 3
L2005 N	1, 2, 3, 4, 5, 6, 7
L2005 O	1, 2, 4, 5, 6, 7, 8, 9, 10
L2005 P	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
L2005 Q	1, 3, 4, 7, 8
L2005 R	1, 2, 3, 4, 5, 6, 7
L2005 S	8
L2005 T	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
L2005 U	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
L2005 V	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
L2005 W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
L2005 X	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
L2005 Y	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
L2006 A	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
L2006 B	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
L2006 C	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
L2006 D	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
L2006 E	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
L2006 F	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
L2006 G	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
L2006 H	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
L2006 I	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
L2006 J	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
L2006 K	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
L2006 L	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
L2006 M	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
L2006 N	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
L2006 O	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
L2006 P	1, 2, 3
U2001 A	1, 2, 4, 6, 10, 11, 13, 14, 15, 16, 18, 19, 20
U2001 B	7, 11, 12, 13, 16
U2001 C	2, 3, 5, 9, 12, 13, 14, 17
U2001 D	1, 2, 3, 5, 6, 9, 10, 13, 14, 18, 19

continued on page 9

continued from page 8

U2001	E	1, 4, 6, 7, 11, 12, 13, 14, 15, 17, 18, 19, 20
U2011	A	1, 3, 6, 7, 8, 9, 10, 11
U2011	C	1, 6, 8, 9
U2011 *	A	1, 2
U2013	A	1, 2
U2015	A	4, 5, 6, 7
U2015	B	1, 2, 4, 5, 6, 7, 10, 12, 13, 14, 15, 16, 17, 22
U2015	C	1, 2, 3, 5, 6, 7, 9, 10, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23
U2015	D	1, 2, 3, 4, 5, 7, 8, 9, 12, 13, 14, 15, 17, 18, 19, 20, 23, 24, 25
U2015	E	5, 6, 11, 12, 13, 15
U2015	F	4, 7, 8, 9, 10, 11, 13, 14, 17, 18, 19, 21, 22
U2015	G	2, 5, 6, 7
U2015 *	A	1, 2, 3
U2017	A	3, 6, 7, 12
U2018	A	1, 2, 3, 4, 5, 6
U2022	A	1, 2, 4, 5
U2022	B	3, 6, 7, 8, 9, 11, 20, 22, 23, 24, 25
U2022	C	3, 4, 5, 6, 10, 11, 12, 15, 16, 17, 21
U2022	D	5, 10, 13, 16, 17
U2022	E	8, 10, 13, 14, 18, 20, 21, 22, 23, 27, 28, 29, 30, 31
U2022	F	1, 2, 7, 8, 12, 14, 15, 16, 19
U2022	G	4, 5, 6, 11, 12, 15, 16, 18, 21, 22, 24
U2034	A	1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23
U2034	B	2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19
U2034	C	2, 3, 4, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19
U2034	D	3, 5, 6, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18
U2034	E	1, 4, 6, 7, 10, 11, 12, 13, 15, 18, 19, 20, 21
U2034	F	5, 7, 9, 11, 12, 14, 15, 16, 19, 20, 22, 23, 25, 26, 28, 29, 30
W7010	C	3, 5
W7010 *	A	3, 4, 5
W7013	A	4, 5, 6, 9, 12, 13, 14, 16, 17, 18, 19, 20, 21
W7013	B	2, 3, 4, 5, 8, 12, 16, 18, 19
W7013	C	1, 3, 4, 5, 7, 8, 9, 11, 13, 17
W7013	D	3, 5, 6, 10, 14, 15, 16, 17
W7013	E	1, 2, 5, 6, 7, 12, 18
W7013	F	1, 2, 3, 4, 7, 8, 10, 14, 15, 16, 17
W7013	G	4, 5, 7, 12, 13, 14, 15, 16
W7013	H	3, 6, 7, 8, 9, 10, 12, 13, 15, 19, 20, 21, 22, 23
W7017	B	15
W7017	C	1, 3, 4, 6, 7, 8, 9, 10, 11, 12, 16, 17
W7017	D	3, 5, 7, 8, 11, 12, 14
W7017	F	1, 2, 6, 7, 8, 9, 11, 12, 13, 14
W7017	G	2, 5, 7, 9, 11, 16
W7026	A	2, 3
W7026	B	1, 2
W7027	A	2, 3, 6, 7, 14, 18
W7027	B	11, 16
W7027	C	2, 6, 8, 9, 11, 13, 15, 16
W7027	D	1, 3, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17, 18
W7027	E	1, 2, 3, 4, 5, 13, 14, 15, 16
W7027	F	1, 2, 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20

continued on page 10

continued from page 9

W7027	G	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19 20, 21, 22, 23, 24, 25, 26, 27, 28
W7027	H	3, 4, 5, 6, 7, 8, 9, 12, 13, 16, 18, 19
W7027	I	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
W7028	A	1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13
W7028	D	2, 3, 4, 5, 6, 7
W7029	A	1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19
W7029	B	6, 7, 8, 10, 11, 15, 16, 17, 18
W7029	C	10
W7029	D	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 15, 16
W7029	E	1, 2, 6, 7, 9, 15
W7029	F	1, 2, 3, 5, 6, 8, 10, 16
W7029	G	1, 5, 6, 7, 8, 12, 13, 16
W7029	H	1, 2, 3, 5, 12, 14, 16, 17, 18
W7029	I	2, 3, 4, 5, 7, 9, 10, 11, 12, 15, 16, 17, 20
W7029	J	2, 5, 8, 11, 12, 13, 14, 15, 16, 18, 19, 20
W7029	K	3
W7029	* A	3, 4, 5, 6, 7, 9, 10, 11, 14, 18, 19, 20, 21
W7029	* B	1, 3, 8
W7031	A	3, 4, 6, 7, 8, 10, 11, 12, 13, 14
W7031	B	1
W7031	* A	1
W7031	* B	2, 3
W7031	* D	1
W7032	A	1, 2, 3, 4, 5, 6, 7
W7036	B	1, 2, 3, 4, 5, 6
W7066	A	2, 3, 4
W7066	B	3, 4
W7066	* A	1
W7068	A	1, 2, 3
W7069	* A	1, 2, 3
W7069	* B	2
W7071	B	1, 2, 3
W7071	* A	1, 2
W7073	A	1
W7074	A	1, 2, 3, 4, 8, 9, 10, 11, 12, 13, 15, 16, 18, 20, 21, 22, 24 25, 27
W7074	B	1, 2, 3, 4, 6, 7, 8, 9, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23 24
W7074	C	1, 4, 5, 6, 10, 11, 12, 13, 14, 16, 18, 19, 20, 21, 22, 23
W7074	D	2, 3, 5, 6, 8, 9, 12, 14, 19
W7074	E	1, 3, 4, 8, 9, 10, 12, 15, 16, 18
W7074	F	1, 2, 3, 4, 5, 7, 8, 10, 11, 14, 15, 16, 17
W7074	G	1, 2, 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 16, 17, 19
W7074	H	1, 2, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15
W7074	I	1, 2, 3, 4, 6, 7, 11, 12, 13, 14, 16

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