

Annex D
(normative)

RDs associated with physical objects

D.1 Introduction

This annex presents the specification of RDs whose parameters are determined as a result of measurements of a physical object. Parameter values are specified by value or by reference. Parameters specified by reference use the terminology of the cited references. Those terms are enclosed in brackets ({ }). Referenced values in length units other than metres are converted to metres to specify the corresponding RD parameter. The zero value of flattening for a sphere RD is a precise value.

Abbreviations used in labels in this annex are defined in [Annex F](#).

D.2 RDs

The elements of a physical object RD specification are defined in [Table 7.9](#). [Table D.1](#) is a directory of RDs associated with physical objects and is organized by the type of RD surface. The RD entries in each table are grouped by physical object type and then ordered alphabetically by their label. [Table D.1](#) includes RDs specified in this annex and deprecated RDs specified in [Annex J](#).

Table D.1 — RD specification directory

RD specification table	Tables
Oblate ellipsoid RD specifications	Table D.2 and Table J.2
Sphere RD specifications	Table D.3 and Table J.3
Prolate ellipsoid RD specifications	Table D.4 and Table J.4
Tri-axial ellipsoid RD specifications	Table D.5 and Table J.5

Table D.2 — Oblate ellipsoid RD specifications

RD label	RD code	Description	Parameters			Date	References
			Major semi-axis, a	Flattening, f	Error estimate		
Object type: Earth							
AIRY_1830	17	Airy	6 377 563,396	1/299,324 964 6	Assumed precise	1830	[NGA36 , App. C-1, "AA"]
APL_4r5_1968	20	APL 4.5	6 378 144	1/298,23	Unknown	1968	[DIGEST , Table 6.1, "AP"]
AUSTRALIAN_NATIONAL_1966	23	Australian National	6 378 160	1/298,25	Assumed precise	1966	[ISOGR , Identifier 29]
AVERAGE_TERRESTRIAL_1977	24	Average Terrestrial System	6 378 135	1/298,257	Unknown	1977	[ISOGR , Identifier 26]
BESSEL_1841_ETHIOPIA	26	Bessel (Ethiopia, Indonesia, Japan, and Korea)	6 377 397,155	1/299,152 812 8	Assumed precise	1841	[NGA36 , App. C-1, "BR"]
BESSEL_1841_NAMIBIA	27	Bessel (Namibia)	6 377 483,865	1/299,152 812 8	Assumed precise	1841	[NGA36 , App. C-1, "BN"]
BESSEL_MODIFIED	156	Bessel (Modified)	6 377 492,018	1/299,152 812 8	Unknown	1841	[DIGEST , Table 6.1, "BM"]
CLARKE_1858	33	Clarke	6 378 235,6	1/294,260 676 8	Unknown	1858	[DIGEST , Table 6.1, "CA"]
CLARKE_1858_MODIFIED	34	Clarke - Modified	6 378 293,645	1/294,26	Unknown	1858	[DIGEST , Table 6.1, "CB"]
CLARKE_1866	35	Clarke	6 378 206,4	1/294,978 698 2	Assumed precise	1866	[NGA36 , App. C-1, "CC"]
CLARKE_1880	36	Clarke	6 378 249,145	1/293,465	Assumed precise	1880	[NGA36 , App. C-1, "CD"]
CLARKE_1880_CAPE	37	Clarke - Cape	6 378 249,145	1/293,466 307 7	Unknown	1880	[DIGEST , Table 6.1, "CE"]

RD label	RD code	Description	Parameters			Date	References
			Major semi-axis, a	Flattening, f	Error estimate		
CLARKE_1880_FIJI	38	Clarke - Fiji	6 378 301	1/293,465	Unknown	1880	[DIGEST, Table 6.1, "CJ"]
CLARKE_1880_IGN	39	Clarke - IGN	6 378 249,2	1/293,466 020 8	Assumed precise	1880	[NGA36, App C-1, "CG"]
CLARKE_1880_PALESTINE	40	Clarke - Palestine	6 378 300,782	1/293,466 307 7	Unknown	1880	[DIGEST, Table 6.1, "CF"]
CLARKE_1880_SYRIA	41	Clarke - Syria	6 378 247,842	1/293,466 351 7	Unknown	1880	[DIGEST, Table 6.1, "CI"]
DANISH_1876	45	Danish - Andrae	6 377 104,430	1/300	Unknown	1876	[DIGEST, Table 6.1, "DA"]
DELAMBRE_1810	47	Delambre	6 376 985,228	1/308,64	Unknown	1810	[DIGEST, Table 6.1, "DB"]
EVEREST_1948	57	Everest 1948 definition (West Malaysia and Singapore)	6 377 304,063	1/300,801 7	Assumed precise	1948	[NGA36, App. C-1, "EE"]
EVEREST_1956	58	Everest 1956 definition (India)	6 377 301,243	1/300,801 7	Assumed precise	1956	[NGA36, App. C-1, "EC"]
EVEREST_1969	60	Everest 1969 definition (West Malaysia)	6 377 295,664	1/300,801 7	Assumed precise	1969	[NGA36, App. C-1, "ED"]
EVEREST_ADJ_1937	56	Everest 1830 - Adjusted (India)	6 377 276,345	1/300,801 7	Assumed precise	1937	[NGA36, App. C-1, "EA"]
EVEREST_BRUNEI_1967	61	Everest 1830 - 1967 definition (Brunei and East Malaysia - Sabah and Sarawak)	6 377 298,556	1/300,801 7	Assumed precise	1967	[NGA36, App. C-1, "EB"]
EVEREST_REVISIED_1962	59	Everest 1830 - Revised definition (Pakistan)	6 377 309,613	1/300,801 7	Assumed precise	1962	[NGA36, App. C-1, "EF"]

RD label	RD code	Description	Parameters			Date	References
			Major semi-axis, a	Flattening, f	Error estimate		
FISCHER_1960	62	Fischer - Mercury	6 378 166	1/298,3	Unknown	1960	[DIGEST, Table 6.1, "FM"]
FISCHER_1968	63	Fischer	6 378 150	1/298,3	Unknown	1968	[DIGEST, Table 6.1, "FC"]
GRS_1967	67	GRS	6 378 160	1/298,247 167 4	Unknown	1967	[DIGEST, Table 6.1, "RE"]
GRS_1980	68	GRS	6 378 137	1/298,257 222 101	Assumed precise	1980	[NGA36, App. C-1, "RF"]
HELMERT_1906	70	Helmert	6 378 200	1/298,3	Assumed precise	1906	[NGA36, App. C-1, "HE"]
HOUGH_1960	72	Hough	6 378 270	1/297	Assumed precise	1960	[NGA36, App. C-1, "HO"]
IAG_1975	74	IAG Best Estimate	6 378 140	1/298,257	Unknown	1975	[DIGEST, Table 6.1, "IA"]
INDONESIAN_1974	77	Indonesian	6 378 160	1/298,247	Assumed precise	1974	[NGA36, App. C-1, "ID"]
INTERNATIONAL_1924	78	International	6 378 388	1/297	Assumed precise	1924	[NGA36, App. C-1, "IN"]
KRASSOVSKY_1940	84	Krassovsky	6 378 245	1/298,3	Assumed precise	1940	[NGA36, App. C-1, "KA"]
KRAYENHOFF_1827	85	Krayenhoff	6 376 950,4	1/309,65	Unknown	1827	[DIGEST, Table 6.1, "KB"]
MODIFIED_AIRY_1849	97	Modified Airy	6 377 340,189	1/299,324 964 6	Assumed precise	1849	[NGA36, App. C-1, "AM"]
MODIFIED_FISCHER_1960	98	Modified Fischer	6 378 155	1/298,3	Assumed precise	1960	[NGA36, App. C-1, "FA"]
PLESSIS_MODIFIED_1817	115	Plessis - Modified	6 376 523	1/308,64	Unknown	1817	[DIGEST, Table 6.1, "PM"]

RD label	RD code	Description	Parameters			Date	References
			Major semi-axis, a	Flattening, f	Error estimate		
SOUTH_AMERICAN_1969	125	South American	6 378 160	1/298,25	Assumed precise	1969	[NGA36, App. C-1, "SA"]
SOVIET_GEODETTIC_1985	126	Soviet Geodetic System	6 378 136	1/298,257	Unknown	1985	[DIGEST, Table 6.1, "SG"]
SOVIET_GEODETTIC_1990	127	Soviet Geodetic System	6 378 136	1/298,257 839 3	Unknown	1990	[DIGEST, Table 6.1, "SN"]
STRUVE_1860	128	Struve	6 378 298,3	1/294,73	Unknown	1860	[DIGEST, Table 6.1, "ST"]
WALBECK_AMS_1963	140	Walbeck 1819 - AMS	6 376 896	1/302,78	Unknown	1963	[DIGEST, Table 6.1, "WB"]
WALBECK_PLANHEFT_1942	141	Walbeck 1819 - Planheft	6 376 895	1/302,782 156 5	Unknown	1942	[DIGEST, Table 6.1, "WA"]
WAR_OFFICE_1924	142	War Office - McCaw	6 378 300,58	1/296	Assumed precise	1924	[NGA36, App. C-1, "WO"]
WGS_1972	146	World Geodetic System	6 378 135	1/298,26	Assumed precise	1972	[NGA36, App. C-1, "WD"]
WGS_1984	145	World Geodetic System	6 378 137	1/298,257 223 563	Assumed precise	1984	[NGA36, App. C-1, "WE"]
Object type: Planet (non-Earth)							
JUPITER_1988	82	Jupiter	71 492 000	1/15,414	As specified accompanying the parameter value	1988	[RIIC15, Table 4, "Jupiter"]
MARS_2000	89	Mars	3 396 190	1/169,894	As specified accompanying the parameter value	2000	[RIIC15, Table 4, "Mars"]

RD label	RD code	Description	Parameters			Date	References
			Major semi-axis, a	Flattening, f	Error estimate		
MERCURY_2015	171	Mercury	2 439 400	1/571,553	As specified accompanying the parameter value	2015	[RIIC15, Table 4, "Mercury"]
NEPTUNE_1991	105	Neptune	24 764 000	1/58,544	As specified accompanying the parameter value	1991	[RIIC15, Table 4, "Neptune"]
SATURN_1988	123	Saturn	60 268 000	1/10,208	As specified accompanying the parameter value	1988	[RIIC15, Table 4, "Saturn"]
URANUS_1988	138	Uranus	25 559 000	1/43,616	As specified accompanying the parameter value	1988	[RIIC15, Table 4, "Uranus"]
Object type: Satellite							
LARISSA_1991	86	Larissa (satellite of Neptune)	104 000	1/6,93	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Larissa"]
Object type: Sun							

Table D.3 — Sphere RD specifications

RD label	RD code	Description	Parameters		Date	References
			Radius, r	Error estimate		
Object type: Earth						
COAMPS_1998	42	COAMPS ™	6 371 229	Precise	1998	[ERNWM] , Table 1, "COAMPS"]
MASS_1999	91	MASS	6 371 221,3	Precise	1999	[ERNWM] , Table 1, "MASS"]

RD label	RD code	Description	Parameters		Date	References
			Radius, r	Error estimate		
MM5_1997	96	MM5 (AFWA)	6 370 000	Precise	1997	[ERNWM , Table 1, "MM5 (AFWA)"]
MODTRAN_MIDLATITUDE_1989	99	MODTRAN (midlatitude regions)	6 371 230	Precise	1989	[ERNWM , Table 1, "MODTRAN, Midlatitude"]
MODTRAN_SUBARCTIC_1989	100	MODTRAN (subarctic regions)	6 356 910	Precise	1989	[ERNWM , Table 1, "MODTRAN, Subarctic"]
MODTRAN_TROPICAL_1989	101	MODTRAN (tropical regions)	6 378 390	Precise	1989	[ERNWM , Table 1, "MODTRAN, Tropical"]
MULTIGEN_FLAT_EARTH_1989	103	Multigen Flat Earth	6 366 707,02	Precise	1989	[MFCG]
NOGAPS_1988	107	NOGAPS	6 371 000	Precise	1988	[ERNWM , Table 1, "NOGAPS"]
Object type: Planet (non-Earth)						
MARS_SPHERE_2000	90	Mars	3 389 500	As specified accompanying the parameter value	2000	[RIIC15 , Table 4, "Mars"]
MERCURY_2000	92	Mercury	2 439 700	As specified accompanying the parameter value	2000	[RIIC09 , Table 4, "Mercury"]
MERCURY_SPHERE_2015	172	Mercury	2 439 400	As specified accompanying the parameter value	2015	[RIIC15 , Table 4, "Mercury"]
PLUTO_2017	178	Pluto (minor planet 134340, a dwarf planet)	1 188 300	As specified accompanying the parameter value	2017	[RIIC15 , Table 6, "(134340) Pluto"]
VENUS_1991	139	Venus	6 051 800	As specified accompanying the parameter value	1991	[RIIC15 , Table 4, "Venus"]

RD label	RD code	Description	Parameters		Date	References
			Radius, r	Error estimate		
Object type: Satellite						
ANANKE_1988	19	Ananke (satellite of Jupiter)	10 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Ananke"]
ANTHE_2013	158	Anthe (satellite of Saturn)	0 500	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Anthe"]
BELINDA_1988	25	Belinda (satellite of Uranus)	33 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Belinda"]
BIANCA_1988	28	Bianca (satellite of Uranus)	21 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Bianca"]
CARME_1988	31	Carme (satellite of Jupiter)	15 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Carme"]
CHARON_2017	147	Charon (satellite of minor planet 134340 Pluto)	606 000	As specified accompanying the parameter value	2017	[RIIC15, Table 6, "(134340) Pluto: I Charon"]
CORDELIA_1988	43	Cordelia (satellite of Uranus)	13 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Cordelia"]
CRESSIDA_1988	44	Cressida (satellite of Uranus)	31 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Cressida"]
DESDEMONA_1988	48	Desdemona (satellite of Uranus)	27 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Desdemona"]
DESPINA_1991	49	Despina (satellite of Neptune)	74 000	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Despina"]
ELARA_1988	51	Elara (satellite of Jupiter)	40 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Elara"]
GALATEA_1991	64	Galatea (satellite of Neptune)	79 000	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Galatea"]

RD label	RD code	Description	Parameters		Date	References
			Radius, r	Error estimate		
HELENE_1992	69	Helene (satellite of Saturn)	17 500	As specified accompanying the parameter value	1992	[RIIC06, Table 5, "Helene"]
HIMALIA_1988	71	Himalia (satellite of Jupiter)	85 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Himalia"]
JULIET_1988	81	Juliet (satellite of Uranus)	42 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Juliet"]
LEDA_1988	87	Leda (satellite of Jupiter)	5 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Leda"]
LYSITHEA_1988	88	Lysithea (satellite of Jupiter)	12 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Lysithea"]
MOON_1991	102	Moon (satellite of Earth)	1 737 400	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Moon"]
NAIAD_1991	104	Naiad (satellite of Neptune)	29 000	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Naiad"]
NEREID_1991	106	Nereid (satellite of Neptune)	170 000	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Nereid"]
OBERON_1988	108	Oberon (satellite of Uranus)	761 400	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Oberon"]
OPHELIA_1988	109	Ophelia (satellite of Uranus)	15 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Ophelia"]
PASIPHAЕ_1988	112	Pasiphae (satellite of Jupiter)	18 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Pasiphae"]
PORTIA_1988	117	Portia (satellite of Uranus)	54 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Portia"]
PUCK_1988	120	Puck (satellite of Uranus)	77 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Puck"]

RD label	RD code	Description	Parameters		Date	References
			Radius, r	Error estimate		
ROSALIND_1988	122	Rosalind (satellite of Uranus)	27 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Rosalind"]
SINOPE_1988	124	Sinope (satellite of Jupiter)	14 000	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Sinope"]
THALASSA_1991	132	Thalassa (satellite of Neptune)	40 000	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Thalassa"]
TITANIA_1988	135	Titania (satellite of Uranus)	788 900	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Titania"]
TRITON_1991	136	Triton (satellite of Neptune)	1 352 600	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Triton"]
UMBRIEL_1988	137	Umbriel (satellite of Uranus)	584 700	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Umbriel"]
Object type: Sun						
SUN_2008	181	Sun	695 700 000	As specified accompanying the parameter value	2008	[RIIC15, Table 4, "Sun"]

Table D.4 — Prolate ellipsoid RD specifications

RD label	RD code	Description	Parameters			Date	References
			Minor semi-axis, a	Flattening, f	Error estimate		
Object type: Earth							
Object type: Planet (non-Earth)							
Object type: Satellite							
Object type: Sun							

Table D.5 — Tri-axial ellipsoid RD specifications³⁴

RD label	RD code	Description	Parameters				Date	References
			Semi-axis, a	Semi-axis, b	Semi-axis, c	Error estimate		
Object type: Earth								
Object type: Planet (non-Earth)								
EROS_2002	150	Eros (minor planet 433, an asteroid)	17 000	5 500	5 500	As specified accompanying the parameter value	2002	[RIIC15, Table 6, "(433) Eros"]
GASPRA_1991	66	Gaspra (minor planet 951, an asteroid)	9 100	5 200	4 400	As specified accompanying the parameter value	1991	[RIIC15, Table 6, "(951) Gaspra"]
IDA_1991	76	Ida (minor planet 243, an asteroid)	26 800	12 000	7 600	As specified accompanying the parameter value	1991	[RIIC15, Table 6, "(243) Ida"]
Object type: Satellite								
ADRASTEIA_2000	16	Adrastea (satellite of Jupiter)	10 000	8 000	7 000	As specified accompanying the parameter value	2000	[RIIC15, Table 5, "Adrastea"]
AEGAEON_2013	157	Aegaeon (satellite of Saturn)	0 700	0 250	0 200	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Aegaeon"]
AMALTHEA_2000	18	Amalthea (satellite of Jupiter)	125 000	73 000	64 000	As specified accompanying the parameter value	2000	[RIIC15, Table 5, "Amalthea"]

³⁴ Because the hydrostatic shape of a body in synchronous rotation about a larger body is approximately a tri-axial ellipsoid, the a , b , and c semi-axes of RDs for satellites are respectively the equatorial subplanetary, equatorial along orbit, and polar semi-axes. For asteroids, the semi-axes are ordered by descending size. Asteroids may be extremely irregular in shape and their fit by a tri-axial ellipsoid may be poor. However, a tri-axial ellipsoid is a common reference shape for photometric analysis of such bodies.

RD label	RD code	Description	Parameters				Date	References
			Semi-axis, <i>a</i>	Semi-axis, <i>b</i>	Semi-axis, <i>c</i>	Error estimate		
ARIEL_1988	21	Ariel (satellite of Uranus)	581 100	577 900	577 700	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Ariel"]
ATLAS_2013	159	Atlas (satellite of Saturn)	20 500	17 800	9 400	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Atlas"]
CALLISTO_2001	160	Callisto (satellite of Jupiter)	2 410 300	2 410 300	2 410 300	As specified accompanying the parameter value	2001	[RIIC15, Table 5, "Callisto"]
CALYPSO_2013	161	Calypso (satellite of Saturn)	15 300	9 300	6 300	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Calypso"]
DAPHNIS_2013	162	Daphnis (satellite of Saturn)	4 600	4 500	2 800	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Daphnis"]
DEIMOS_1993	163	Deimos (satellite of Mars)	7 800	6 000	5 100	As specified accompanying the parameter value	1993	[RIIC15, Table 5, "Deimos"]
DIONE_2010	148	Dione (satellite of Saturn)	563 400	561 300	559 600	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Dione"]
ENCELADUS_2006	149	Enceladus (satellite of Saturn)	256 600	251 400	248 300	As specified accompanying the parameter value	2006	[RIIC15, Table 5, "Enceladus"]
EPIMETHEUS_1988	53	Epimetheus (satellite of Saturn)	69 000	55 000	55 000	As specified accompanying the parameter value	1988	[RIIC06, Table 5, "Epimetheus"]
EPIMETHEUS_2013	164	Epimetheus (satellite of Saturn)	64 900	57 300	53 000	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Epimetheus"]

RD label	RD code	Description	Parameters				Date	References
			Semi-axis, a	Semi-axis, b	Semi-axis, c	Error estimate		
EUROPA_2007	165	Europa (satellite of Jupiter)	1 562 600	1 560 300	1 559 500	As specified accompanying the parameter value	2007	[RIIC15, Table 5, "Europa"]
GANYMEDE_2007	166	Ganymede (satellite of Jupiter)	2 631 200	2 631 200	2 631 200	As specified accompanying the parameter value	2007	[RIIC15, Table 5, "Ganymede"]
HELENE_2013	167	Helene (satellite of Saturn)	22 500	19 600	13 300	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Helene"]
HYPERION_2010	168	Hyperion (satellite of Saturn)	180 100	133 000	102 700	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Hyperion"]
IAPETUS_2010	151	Iapetus (satellite of Saturn)	745 700	745 700	712 100	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Iapetus"]
IO_1998	169	Io (satellite of Jupiter)	1 829 400	1 819 400	1 815 700	As specified accompanying the parameter value	1998	[RIIC15, Table 5, "Io"]
JANUS_2013	170	Janus (satellite of Saturn)	101 700	93 000	76 300	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Janus"]
METIS_2000	93	Metis (satellite of Jupiter)	30 000	20 000	17 000	As specified accompanying the parameter value	2000	[RIIC15, Table 5, "Metis"]
METHONE_2013	173	Methone (satellite of Saturn)	1 940	1 290	1 210	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Methone"]
MIMAS_2010	152	Mimas (satellite of Saturn)	207 800	196 700	190 600	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Mimas"]

RD label	RD code	Description	Parameters				Date	References
			Semi-axis, <i>a</i>	Semi-axis, <i>b</i>	Semi-axis, <i>c</i>	Error estimate		
MIRANDA_1988	95	Miranda (satellite of Uranus)	240 400	234 200	232 900	As specified accompanying the parameter value	1988	[RIIC15, Table 5, "Miranda"]
PALLENE_2013	174	Pallene (satellite of Saturn)	2 880	2 080	1 800	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Pallene"]
PAN_2013	175	Pan (satellite of Saturn)	17 200	15 400	10 400	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Pan"]
PANDORA_2013	176	Pandora (satellite of Saturn)	52 200	40 800	31 500	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Pandora"]
PHOBOS_2010	177	Phobos (satellite of Mars)	13 000	11 400	9 100	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Phobos"]
PHOEBE_2010	153	Phoebe (satellite of Saturn)	109 400	108 500	101 800	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Phoebe"]
POLYDEUCES_2010	179	Polydeuces (satellite of Saturn)	1 500	1 200	1 000	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Polydeuces"]
PROMETHEUS_2013	180	Prometheus (satellite of Saturn)	68 200	41 600	28 200	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Prometheus"]
PROTEUS_1991	119	Proteus (satellite of Neptune)	218 000	208 000	201 000	As specified accompanying the parameter value	1991	[RIIC15, Table 5, "Proteus"]
RHEA_2010	154	Rhea (satellite of Saturn)	765 000	763 100	762 400	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Rhea"]

RD label	RD code	Description	Parameters				Date	References
			Semi-axis, a	Semi-axis, b	Semi-axis, c	Error estimate		
TELESTO_2013	182	Telesto (satellite of Saturn)	16 300	11 800	9 800	As specified accompanying the parameter value	2013	[RIIC15, Table 5, "Telesto"]
TETHYS_2010	155	Tethys (satellite of Saturn)	538 400	528 300	526 300	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Tethys"]
THEBE_2000	133	Thebe (satellite of Jupiter)	58 000	49 000	42 000	As specified accompanying the parameter value	2000	[RIIC15, Table 5, "Thebe"]
TITAN_2010	183	Titan (satellite of Saturn)	2 575 150	2 574 780	2 574 470	As specified accompanying the parameter value	2010	[RIIC15, Table 5, "Titan"]
Object type: Sun								

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