NASA-TM-109231

92 p

SATELLITE SITUATION REPORT
VOLUME 30 NO. 3
A/O 2400Z ON SEPTEMBER 30, 1990

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(NASA-TM-109231-Vol-30) SATELLITE SITUATION REPORT, VOLUME 30, NUMBER 3 (NASA) 92 p

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96 p

SPACE OBJECTS BOX SCORE

	OBJECTS IN ORBIT			DECAYED OBJECTS		
	PAYLOAD	DEBRIS	TOTAL	PAYLOAD	DEBRIS	TOTAL
ARGENTINA	1	0	1	0	0	0
AUSTRALIA	4	0	4	1	0	1
BRAZIL	3	0	3	0	0	0
CANADA	14	0	14	0	0	0
CZECH	0	0	0	1	0	1
ESA	19	161	180	3	395	398
ESRO	0	0	0	7	3	10
FRANCE	15	20	35	7	54	61
FRANCE/FRG	2	0	2	0	0	0
FRG	10	1	11	4	5	9
INDIA	8	0	8	4	7	11
INDONESIA	5	0	5	1	1	2
INTERNATIONAL TELECOM-MUNICATIONS SATELLITE ORGANIZATION (ITSO)	39	0	39	1	0	1
ISRAEL	0	0	0	2	2	4
ITALY	1	0	1	5	0	5
JAPAN	44	49	93	7	58	65
LUXEMBOURG	1	0	1	0	0	0
MEXICO	2	0	2	0	0	0
NATO	6	0	6	0	0	0
NETHERLANDS	0	0	0	1	3	4
PAKISTAN	1	0	1	0	0	0
PRC	11	12	23	18	51	69
SAUDI ARABIA	2	0	2	0	0	0
SPAIN	1	0	1	0	0	0
SWEDEN	2	0	2	0	0	0
UK	15	2	17	8	3	11
US	566	2478	3044	597	2585	3182
USSR	1162	2024	3186	1469	8853	10329
COLUMN	1934	4747	6681	2143	12020	14163
SUM TOTAL						20844

OBJECTS IN ORBIT

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1958 LAUNCHES										
BETA 1		16	US	17 MAR	137.8	34.3	4267	653		
BETA 2	VANGUARD 1	5	US	17 MAR	133.3	34.2	3879	653		
BETA 3		1576	US	17 MAR	127.7	34.2	3405	640		
1959 LAUNCHES										
ALPHA 1	VANGUARD 2	11	US	17 FEB	123.3	32.9	3091	560		
ALPHA 2		12	US	17 FEB	127.5	32.9	3470	558		
ETA 1	VANGUARD 3	20	US	18 SEP	127.0	33.3	3462	516		
ICTA 1	EXPLORER 7	22	US	13 OCT	99.1	50.3	901	530		
MU 1	LUNA 1	112	USSR	2 JAN	HELIOCENTRIC ORBIT					
NU 1	PIONEER 4	113	US	3 MAR	HELIOCENTRIC ORBIT					
1960 LAUNCHES										
ALPHA 1	PIONEER 5	27	US	11 MAR	HELIOCENTRIC ORBIT					
BETA 1		28	US	1 APR	94.6	48.4	504	494		
BETA 2	TIROS 1	29	US	1 APR	98.5	48.4	705	664		
BETA 4		115	US	1 APR	98.7	48.2	737	657		
ETA 1	TRANSIT 2A	45	US	22 JUN	100.9	66.7	1008	598		
ETA 2	GREB	46	US	22 JUN	100.4	66.7	964	592		
ETA 3		47	US	22 JUN	100.5	66.7	974	594		
ETA 4		840	US	22 JUN	98.8	66.7	830	569		
ETA 5		841	US	22 JUN	98.6	66.7	818	568		
ICTA 2		50	US	12 AUG	118.1	47.2	1684	1503		
ICTA 3		51	US	12 AUG	118.3	47.2	1683	1520		
ICTA 4		52	US	12 AUG	CURRENT ELEMENTS NOT MAINTAINED					
ICTA 5		53	US	12 AUG	118.4	47.3	1686	1530		
NU 1	COURIER 1B	58	US	4 OCT	107.1	28.3	1214	967		
NU 2		59	US	4 OCT	106.6	28.3	1209	926		
XI 1	EXPLORER 8	60	US	3 NOV	104.1	49.9	1508	400		
PI 1	TIROS 2	53	US	23 NOV	96.8	48.5	640	566		
PI 5		5922	US	23 NOV	105.2	47.0	1036	975		
1961 LAUNCHES										
APSI 5		19436	US	18 SEP	95.3	58.3	537	523		
GAMMA 1	VENERA 1	80	USSR	12 FEB	HELIOCENTRIC ORBIT					
DELTA 2		82	US	16 FEB	117.9	38.9	2536	635		
DELTA 3		85	US	16 FEB	109.7	38.8	1838	584		
DELTA 6		3927	US	16 FEB	111.8	38.9	2000	613		
DELTA 7		4026	US	16 FEB	112.1	38.8	2040	605		
NU 1	EXPLORER 11	107	US	27 APR	105.1	28.8	1514	481		
NU 2		3739	US	27 APR	90.6	28.8	334	273		
OMICRON 1	TRANSIT 4A	116	US	29 JUN	103.6	66.8	982	873		
OMICRON 2	INJUN-GR-3	117	US	29 JUN	103.7	66.8	987	876		
OMICRON 3 - 297			US	29 JUN	SEE NOTE		1*			1*

OBJECTS IN ORBIT

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1961 LAUNCHES (CONT.)										
OMICRON 23		138	US	29 JUN	103.4	67.1	948	894		
OMICRON 39		154	US	29 JUN	103.0	66.7	970	828		
RHO 1	TIROS 3	162	US	12 JUL	100.1	47.9	795	726		
RHO 2		165	US	12 JUL	98.6	47.9	717	670		
RHO 3		166	US	12 JUL	95.1	47.9	555	495		
RHO 4		167	US	12 JUL	101.6	47.9	907	760		
SIGMA 1	MIDAS 3	163	US	12 JUL	161.4	91.2	3540	3342		
SIGMA 3		188	US	12 JUL	161.1	91.2	3535	3320		
SIGMA 4		196	US	12 JUL	161.8	91.2	3569	3346		
A DELTA 1	MIDAS 4	192	US	21 OCT	165.9	95.9	3764	3482		
A DELTA 3		194	US	21 OCT	165.5	95.8	3843	3369		
A DELTA 4		195	US	21 OCT	166.3	95.9	3880	3397		
A DELTA 5		2009	US	21 OCT	165.7	95.8	3733	3493		
A DELTA 6		2371	US	21 OCT	165.3	95.9	4701	2493		
A ETA 1	TRANSIT 4B	202	US	15 NOV	105.8	32.4	1105	954		
A ETA 2	TRAAC	235	US	15 NOV	105.8	32.4	1108	956		
A ETA 3		204	US	15 NOV	105.6	32.4	1099	949		
A ETA 4		10796	US	15 NOV	105.8	32.4	1107	955		
1962 LAUNCHES										
ALPHA 1	RANGER 3	221	US	26 JAN	HELIOCENTRIC ORBIT					
ALPHA 2		222	US	26 JAN	HELIOCENTRIC ORBIT					
BETA 1	TIROS 4	226	US	8 FEB	100.0	48.3	817	696		
BETA 2		227	US	8 FEB	100.7	48.2	898	686		
BETA 3		228	US	8 FEB	98.2	48.4	693	651		
BETA 4		229	US	8 FEB	98.2	48.3	710	634		
KAPPA 1		271	US	9 APR	152.9	86.7	3408	2780		
KAPPA 3		273	US	9 APR	152.5	86.7	3375	2782		
KAPPA 4		274	US	9 APR	153.3	86.6	3449	2767		
MU 2		232	US	23 APR	HELIOCENTRIC ORBIT					
A ALPHA 1	TIROS 5	309	US	19 JUN	99.6	58.1	900	579		
A ALPHA 2		311	US	19 JUN	90.7	58.0	313	299		
A ALPHA 3		312	US	19 JUN	100.4	58.3	968	582		
A ALPHA 4		313	US	19 JUN	94.9	58.0	565	462		
A EPSILON 1	TELSTAR 1	340	US	10 JUL	157.8	44.8	5639	950		
A EPSILON 2		341	US	10 JUL	157.6	44.8	5627	945		
A OMICRON 2		369	US	23 AUG	98.4	98.4	773	586		
A OMICRON 3		378	US	23 AUG	96.4	98.5	655	519		
A OMICRON 4		388	US	23 AUG	96.6	98.5	656	537		
A RHO 1	MARINER 2	374	US	27 AUG	HELIOCENTRIC ORBIT					
A RHO 2		375	US	27 AUG	HELIOCENTRIC ORBIT					
A PSI 1	TIROS 6	397	US	18 SEP	97.8	58.3	665	643		
A PSI 3		399	US	18 SEP	97.8	58.4	678	632		
B ALPHA 1	ALOUETTE 1	424	CANADA	29 SEP	105.2	80.5	1022	989		
B ALPHA 2		426	US	29 SEP	105.3	80.5	1019	993		
B ALPHA 3		510	US	29 SEP	105.2	80.5	1013	991		
B ALPHA 4		511	US	29 SEP	105.3	80.4	1030	984		
C ETA 1	RANGER 4	439	US	13 OCT	HELIOCENTRIC ORBIT					
C ETA 2		44[illegible]	US	13 OCT	HELIOCENTRIC ORBIT					

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OBJECTS IN ORBIT

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1962 LAUNCHES (CONT.)										
1962 MU 1	ANNA 1B	446	US	31 OCT	107.9	50.1	1181	1076		
1962 MU 2		447	US	31 OCT	107.6	50.1	1165	1065		
1962 NU 3		450	USSR	1 NOV	HELIOCENTRIC ORBIT					
1962 UPSILON 1	RELAY 1	503	US	13 DEC	185.1	47.5	7434	1325		
1962 UPSILON 2		515	US	13 DEC	184.8	47.5	7417	1324		
1962 CHI 1	EXPLORER 16	506	US	16 DEC	104.1	52.0	1162	745		
1963 LAUNCHES										
1963 004A	SYNCOM 1	553	US	14 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1963 008B	LUNA 4	566	USSR	2 APR	BARYCENTRIC ORBIT					
1963 013A	TELSTAR 2	573	US	7 MAY	225.3	42.8	10804	970		
1963 13B		575	US	7 MAY	225.0	42.8	10786	967		
1963 14A		574	US	9 MAY	166.4	87.3	3680	3603		
1963 014B	ERS 5	579	US	9 MAY	165.2	87.4	4829	2363		
1963 014C	ERS 5	608	US	9 MAY	166.4	87.3	3733	3550		
1963 014D - 014FE			US	9 MAY	SEE NOTE 2*					2*
1963 014FA		20933	US	9 MAY	163.3	85.4	5959	1073		
1963 022B		603	US	16 JUN	97.2	89.8	632	614		
1963 022C		610	US	16 JUN	96.7	90.0	624	576		
1963 024A	TIROS 7	604	US	19 JUN	94.8	58.2	513	501		
1963 025B		614	US	27 JUN	117.0	82.1	2765	327		
1963 030A	ERS 10	622	US	18 JUL	167.8	88.4	3722	3675		
1963 030B	ERS 9	635	US	18 JUL	167.8	88.4	3720	3677		
1963 030C		630	US	18 JUL	167.4	88.4	3747	3621		
1963 030E		631	US	18 JUL	168.2	88.4	3767	3663		
1963 030F		3121	US	18 JUL	167.8	88.4	3731	3666		
1963 030G		3132	US	18 JUL	167.8	88.5	3750	3649		
1963 030H		20153	US	18 JUL	163.3	88.5	5757	1281		
1963 031A	SYNCOM 2	634	US	26 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1963 038A		669	US	28 SEP	107.0	89.9	1106	1066		
1963 038B		670	US	28 SEP	107.2	89.9	1126	1064		
1963 038C	SN 39	671	US	28 SEP	107.1	89.9	1124	1063		
1963 038D		672	US	28 SEP	106.3	89.9	1082	1031		
1963 038E		745	US	28 SEP	106.6	89.9	1084	1054		
1963 038F		2097	US	28 SEP	106.4	89.9	1087	1032		
1963 038G		3166	US	28 SEP	107.2	89.9	1126	1063		
1963 038K		12943	US	28 SEP	104.7	89.9	1078	880		
1963 038K		20470	US	28 SEP	106.7	89.9	1098	1049		
1963 039A		674	US	17 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1963 039C		692	US	17 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1963 047A	CENTAUR 2	694	US	27 NOV	105.1	30.4	1528	471		
1963 047B - 047U			US	27 NOV	SEE NOTE 3*					3*
1963 049A		703	US	5 DEC	106.7	90.1	1085	1059		
1963 049B		704	US	5 DEC	106.9	90.1	1112	1058		
1963 049C		705	US	5 DEC	106.9	90.1	1110	1057		
1963 049D		706	US	5 DEC	106.6	90.1	1091	1043		
1963 049E		715	US	5 DEC	106.0	90.0	1057	1020		
1963 049F		753	US	5 DEC	106.7	90.1	1098	1044		
1963 049G		2432	US	5 DEC	106.9	90.1	1110	1055		

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INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1963 LAUNCHES (CONT.)										
1963 049H		2620	US	5 DEC	106.3	90.1	1066	1045		
1963 053B		721	US	19 DEC	115.3	78.6	2336	598		
1963 053C		722	US	19 DEC	111.2	78.6	1908	653		
1963 053E		724	US	19 DEC	110.3	78.6	1868	615		
1963 053G		726	US	19 DEC	107.7	78.5	1648	592		
1963 053H		732	US	19 DEC	111.0	78.7	1908	639		
1963 053J		3750	US	19 DEC	109.6	78.6	1793	621		
1963 053K		17665	US	19 DEC	111.5	78.7	1930	660		
1963 054A	TIROS 8	716	US	21 DEC	98.7	58.5	716	673		
1963 054B		717	US	21 DEC	89.6	58.5	258	249		
1963 054C		720	US	21 DEC	100.3	58.5	869	672		
1963 054E		19396	US	21 DEC	98.4	58.5	715	648		
1964 LAUNCHES										
1964 001A		727	US	11 JAN	103.3	69.9	923	903		
1964 001B	GRAVITY GRADIENT 1	728	US	11 JAN	103.2	69.9	918	900		
1964 001C	SECOR (EGRS) 1	729	US	11 JAN	103.3	69.9	924	903		
1964 001D	SOLRAD 7A	730	US	11 JAN	103.3	69.9	922	902		
1964 001E	GREB	731	US	11 JAN	103.3	69.9	921	902		
1964 002A		733	US	19 JAN	100.8	99.1	822	771		
1964 002B		734	US	19 JAN	100.9	99.1	813	792		
1964 002C		735	US	19 JAN	101.0	99.2	818	792		
1964 003A	RELAY 2	737	US	21 JAN	194.7	46.4	7529	1972		
1964 003B		738	US	21 JAN	194.8	46.4	7534	1973		
1964 004B		741	US	25 JAN	108.8	81.5	1300	1040		
1964 004C		742	US	25 JAN	108.7	81.5	1296	1031		
1964 004D		743	US	25 JAN	108.6	81.5	1297	1028		
1964 006A	ELEKTRON 1	746	USSR	30 JAN	163.6	60.8	6649	412		
1964 006B	ELEKTRON 2	748	USSR	30 JAN	1356.4	63.0	58977	9445		
1964 006C - 006AD			USSR	30 JAN	SEE NOTE	4*				4*
1964 016D	ZOND 1	785	USSR	2 APR	HELIOCENTRIC ORBIT					
1964 026A		801	US	4 JUN	102.3	90.5	908	830		
1964 026B		805	US	4 JUN	102.4	89.9	901	841		
1964 026C		806	US	4 JUN	99.8	90.8	798	699		
1964 026D		809	US	4 JUN	102.6	90.5	924	837		
1964 026E		2986	US	4 JUN	102.7	90.5	929	840		
1964 031A		812	US	18 JUN	101.3	99.8	823	814		
1964 031B		813	US	18 JUN	101.3	99.8	824	816		
1964 031C		815	US	18 JUN	101.1	99.9	821	802		
1964 038A	ELEKTRON 3	829	USSR	10 JUL	162.0	60.8	6524	407		
1964 038C		831	USSR	10 JUL	142.0	60.8	4890	389		
1964 040A		836	US	17 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1964 040B		837	US	17 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1964 041B		843	US	28 JUL	BARYCENTRIC ORBIT					
1964 047A	SYNCOM 3	858	US	19 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1964 047B		862	US	19 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1964 049D	COSMOS 41	869	USSR	22 AUG	714.6	71.2	38100	2098		
1964 049E		898	USSR	22 AUG	716.5	71.3	38192	2096		
1964 049F		13091	USSR	22 AUG	714.4	71.1	37879	2307		

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OBJECTS IN ORBIT

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1964 LAUNCHES (CONT.)										
1964 051A	EXPLORER 20	870	US	25 AUG	103.6	79.9	1003	857		
1964 051B		871	US	25 AUG	103.3	79.9	983	845		
1964 053A	COSMOS 44	876	USSR	28 AUG	98.8	65.1	820	583		
1964 053B		877	USSR	28 AUG	99.1	65.1	775	653		
1964 054A	OGO 1	879	US	5 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1964 063A	NNSS 30010	893	US	6 OCT	106.2	90.1	1070	1028		
1964 063B		897	US	6 OCT	106.4	90.1	1074	1047		
1964 063C		900	US	6 OCT	105.6	90.0	1040	1007		
1964 063D		901	US	6 OCT	106.4	90.0	1071	1046		
1964 063E		902	US	6 OCT	106.5	90.0	1074	1050		
1964 063F		903	US	6 OCT	105.6	90.0	1034	1005		
1964 064A	EXPLORER 22	899	US	10 OCT	104.4	79.7	1058	873		
1964 064B		907	US	10 OCT	104.5	79.7	1061	876		
1964 064C		976	US	10 OCT	103.2	79.3	1007	811		
1964 064D		977	US	10 OCT	104.9	80.0	1091	889		
1964 073A	MARINER 3	923	US	5 NOV	HELIOCENTRIC ORBIT					
1964 076B	EXPLORER 25	932	US	21 NOV	114.8	81.4	2372	524		
1964 076C		933	US	21 NOV	114.2	81.3	2312	525		
1964 077A	MARINER 4	938	US	28 NOV	HELIOCENTRIC ORBIT					
1964 077B		942	US	28 NOV	HELIOCENTRIC ORBIT					
1964 078C	ZOND 2	945	USSR	30 NOV	HELIOCENTRIC ORBIT					
1964 083A	NNSS 30021	953	US	13 DEC	106.0	89.8	1066	1015		
1964 083B		956	US	13 DEC	105.8	89.8	1059	1001		
1964 083C		959	US	13 DEC	105.9	89.8	1069	1007		
1964 083D		965	US	13 DEC	106.2	89.8	1080	1016		
1964 083F		967	US	13 DEC	105.8	89.8	1059	1001		
1964 083G		1099	US	13 DEC	105.9	89.8	1068	1007		
1964 083J		1608	US	13 DEC	105.2	89.8	1031	980		
1964 086A	EXPLORER 26	963	US	21 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1965 LAUNCHES										
1965 004A	TIROS 9	978	US	22 JAN	119.0	96.4	2566	701		
1965 004B		979	US	22 JAN	118.8	96.4	2553	701		
1965 004C		1312	US	22 JAN	117.6	96.3	2470	671		
1965 004D		1313	US	22 JAN	120.1	96.4	2639	728		
1965 008A		1001	US	11 FEB	145.4	32.1	2796	2767		
1965 008B		1003	US	11 FEB	145.7	32.1	2803	2783		
1965 008C		1002	US	11 FEB	145.8	32.1	2811	2781		
1965 010B		1287	US	17 FEB	BARYCENTRIC ORBIT					
1965 016A	GREB	1271	US	9 MAR	103.2	70.1	929	895		
1965 016B	GRAVITY GRADIENT 2	1244	US	9 MAR	103.3	70.1	931	896		
1965 016C	GRAVITY GRADIENT 3	1292	US	9 MAR	103.1	70.1	921	888		
1965 016D	SOLRAD 7B	1291	US	9 MAR	103.3	70.1	933	898		
1965 016E	SECOR (EGRS) 3	1298	US	9 MAR	103.3	70.1	930	896		
1965 016F	OSCAR 3	1293	US	9 MAR	102.9	70.1	908	880		
1965 016H	SURCAL	1272	US	9 MAR	103.3	70.1	934	898		
1965 016J		1245	US	9 MAR	103.2	70.1	928	892		
1965 016K		12099	US	9 MAR	103.1	70.1	920	886		
1965 020E		1336	USSR	15 MAR	107.0	56.1	1581	593		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1965 LAUNCHES (CONT.)										
1965 020S		1347	USSR	15 MAR	103.6	56.0	1313	546		
1965 020AC		1370	USSR	15 MAR	103.9	56.1	1350	535		
1965 020AH		1392	USSR	15 MAR	105.5	55.9	1514	523		
1965 020BB		1477	USSR	15 MAR	112.1	55.5	1815	829		
1965 020BC		1478	USSR	15 MAR	110.2	56.1	1831	636		
1965 020BD		1479	USSR	15 MAR	114.9	56.0	2096	806		
1965 020BE		1480	USSR	15 MAR	114.7	56.1	2136	750		
1965 020BV		1495	USSR	15 MAR	104.6	55.6	1328	622		
1965 020CV		1549	USSR	15 MAR	114.5	56.2	2094	772		
1965 020ED		1634	USSR	15 MAR	115.8	56.2	2175	810		
1965 020EH		2334	USSR	15 MAR	110.8	55.7	1745	785		
1965 020EM		2934	USSR	15 MAR	115.4	55.6	1751	1197		
1965 020EN		3038	USSR	15 MAR	108.7	56.3	1738	590		
1965 020ER		3708	USSR	15 MAR	104.2	56.3	1300	611		
1965 020ES		3743	USSR	15 MAR	118.1	56.7	1809	1383		
1965 020ET		3745	USSR	15 MAR	115.3	56.0	1590	1347		
1965 020EU		3749	USSR	15 MAR	107.9	56.1	1640	620		
1965 020EV		3931	USSR	15 MAR	116.6	56.1	1696	1360		
1965 020EW		3963	USSR	15 MAR	97.1	55.9	782	461		
1965 020EY		3965	USSR	15 MAR	117.8	56.3	1800	1364		
1965 020FD		6252	USSR	15 MAR	117.1	56.0	1695	1407		
1965 020FF		13517	USSR	15 MAR	109.6	55.6	1702	717		
1965 023B		1298	US	21 MAR	HELIOCENTRIC ORBIT					
1968 025A	EARLY BIRD	1317	ITSO	6 APR	1435.3	14.1	35802	35737		
1965 027A		1314	US	3 APR	111.4	90.3	1316	1268		
1965 027B	SECOR (EGRS) 4	1315	US	3 APR	111.4	90.3	1312	1265		
1965 027B - 027BD			US	3 APR	SEE NOTE 5*					5*
1965 027BB		20031	US	3 APR	111.4	90.3	1311	1269		
1965 028B		1318	US	6 APR	CURRENT ELEMENTS NOT MAINTAINED					
1965 032A	EXPLORER 27	1328	US	29 APR	107.7	41.2	1318	926		
1965 032B		1358	US	29 APR	107.8	41.2	1318	928		
1965 032D		2011	US	29 APR	108.4	41.2	1230	1076		
1965 034A		1359	US	6 MAY	157.1	32.1	3738	2792		
1965 034B		1360	US	6 MAY	309.9	32.2	14806	2774		
1965 034C		1361	US	6 MAY	145.6	32.1	2796	2785		
1965 034D		2529	US	6 MAY	309.9	32.2	14804	2775		
1965 038A		1377	US	20 MAY	97.7	98.2	781	515		
1965 038B		1378	US	20 MAY	96.1	98.0	665	481		
1965 044A	LUNA 6	1393	USSR	8 JUN	HELIOCENTRIC ORBIT					
1965 048A	NNSS 30040	1420	US	24 JUN	106.7	90.1	1125	1017		
1965 048B		1428	US	24 JUN	106.5	90.1	1106	1018		
1965 048C		1425	US	24 JUN	106.8	90.1	1129	1022		
1965 048D		1435	US	24 JUN	105.9	90.1	1093	983		
1965 048E		2701	US	24 JUN	106.1	90.1	1086	1000		
1965 048F		3592	US	24 JUN	106.1	90.1	1090	1001		
1965 048L		19062	US	24 JUN	101.9	89.9	892	806		
1965 051A	TIROS 10	1430	US	2 JUL	100.2	98.8	811	725		
1965 051B		1433	US	2 JUL	99.7	98.6	784	707		
1965 051C		1440	US	2 JUL	96.1	98.6	621	520		
1965 051D		1529	US	2 JUL	101.5	99.1	858	801		

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INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1965 LAUNCHES (CONT.)										
1965 056A	ZOND 3	1454	USSR	18 JUL	HELIOCENTRIC ORBIT					
1965 058A		1458	US	20 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1965 058B		1459	US	20 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1965 063A	SECOR (EGRS) 5	1506	US	10 AUG	122.2	69.2	2420	1133		
1965 063B		1502	US	10 AUG	122.2	69.2	2419	1135		
1965 064A	CENTAUR 6	1503	US	11 AUG	BARYCENTRIC ORBIT					
1965 065A	NNSS 30050	1504	US	13 AUG	107.7	90.0	1168	1074		
1965 065B		1508	US	13 AUG	107.6	89.9	1143	1084		
1965 065C		1510	US	13 AUG	106.0	90.0	1081	996		
1965 065D		1511	US	13 AUG	108.0	90.0	1184	1079		
1965 065E		1512	US	13 AUG	108.0	90.0	1187	1079		
1965 065F		1514	US	13 AUG	107.9	90.0	1183	1077		
1965 065G		1515	US	13 AUG	107.3	90.0	1149	1054		
1965 065H		1520	US	13 AUG	107.9	90.0	1182	1075		
1965 065J		1521	US	13 AUG	108.0	90.0	1187	1080		
1965 065K		1577	US	13 AUG	107.9	90.0	1181	1075		
1965 065L		1522	US	13 AUG	108.0	90.0	1188	1078		
1965 065P		3810	US	13 AUG	107.3	90.0	1150	1054		
1965 065Q		5265	US	13 AUG	107.8	89.9	1153	1093		
1965 070A	COSMOS 80	1570	USSR	3 SEP	115.0	56.1	1539	1367		
1965 070B	COSMOS 81	1571	USSR	3 SEP	115.3	56.1	1543	1395		
1965 070C	COSMOS 82	1572	USSR	3 SEP	115.7	56.1	1552	1418		
1965 070D	COSMOS 83	1573	USSR	3 SEP	116.0	56.1	1563	1442		
1965 070E	COSMOS 84	1574	USSR	3 SEP	116.4	56.1	1571	1467		
1965 070F		1575	USSR	3 SEP	114.6	56.1	1517	1354		
1965 070G		3045	USSR	3 SEP	115.9	55.5	1730	1261		
1965 072A		1580	US	10 SEP	101.3	98.6	1001	638		
1965 072D		1583	US	10 SEP	100.4	98.6	936	622		
1965 072E		1931	US	10 SEP	102.0	98.9	1074	629		
1965 072F		1932	US	10 SEP	98.5	98.3	777	595		
1965 073A	COSMOS 86	1584	USSR	18 SEP	115.0	56.1	1625	1289		
1965 073B	COSMOS 87	1585	USSR	18 SEP	115.4	56.1	1636	1314		
1965 073C	COSMOS 88	1586	USSR	18 SEP	115.8	56.1	1649	1336		
1965 073D	COSMOS 89	1587	USSR	18 SEP	116.2	56.1	1659	1362		
1965 073E	COSMOS 90	1588	USSR	18 SEP	116.6	56.1	1668	1391		
1965 073F		1589	USSR	18 SEP	116.8	56.1	1678	1394		
1965 073G		1590	USSR	18 SEP	116.0	56.1	1635	1361		
1965 073H		1591	USSR	18 SEP	116.3	56.1	1660	1367		
1965 073J		1617	USSR	18 SEP	117.1	56.1	1740	1358		
1965 073K		1618	USSR	18 SEP	117.4	56.2	1744	1381		
1965 073L		2547	USSR	18 SEP	116.0	56.1	1650	1349		
1965 078A		1613	US	5 OCT	118.9	144.2	2851	408		
1965 078B		1616	US	5 OCT	117.7	144.2	2742	410		
1965 082B - 082D			US	15 OCT	SEE NOTE 7*					7*
1965 089A	EXPLORER 29	1725	US	6 NOV	120.3	59.4	2271	1116		
1965 089B		1729	US	6 NOV	120.3	59.4	2268	1117		
1965 089C		2793	US	6 NOV	119.1	59.6	2221	1063		
1965 089D		2888	US	6 NOV	121.3	59.2	2323	1153		
1965 091A	VENERA 2	1730	USSR	12 NOV	HELIOCENTRIC ORBIT					
1965 092B		1735	USSR	16 NOV	HELIOCENTRIC ORBIT					

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1965 LAUNCHES (CONT.)										
1965 093A	EXPLORER 30	1738	US	19 NOV	100.3	59.7	881	666		
1965 093B		1739	US	19 NOV	100.0	59.7	836	678		
1965 093C		2013	US	19 NOV	98.4	59.7	728	636		
1965 093D		2088	US	19 NOV	100.3	59.7	845	695		
1965 096A	A-1	1778	FRANCE	26 NOV	107.8	34.3	1716	528		
1965 096B		1805	FRANCE	26 NOV	106.5	34.3	1608	524		
1965 096D		1996	FRANCE	26 NOV	102.5	34.2	1249	509		
1965 098A	ALOUETTE 2	1804	CANADA	29 NOV	118.6	79.8	2735	501		
1965 098B	EXPLORER 31	1806	US	29 NOV	120.2	79.8	2880	501		
1965 098C		1807	US	29 NOV	119.1	79.8	2781	502		
1965 098D		1808	US	29 NOV	108.4	79.8	1822	484		
1965 098E		1944	US	29 NOV	107.5	79.8	1737	481		
1965 098F		1948	US	29 NOV	114.3	79.9	2350	499		
1965 098G		1951	US	29 NOV	114.7	79.7	2390	491		
1965 098H		2092	US	29 NOV	118.9	79.9	2756	504		
1965 098J		2153	US	29 NOV	118.6	79.7	2735	501		
1965 101A	FR-1	1814	FRANCE	6 DEC	99.0	75.9	716	706		
1965 101B		1815	US	6 DEC	98.8	75.9	708	697		
1965 105A	PIONEER 6	1841	US	16 DEC	HELIOCENTRIC ORBIT					
1965 106A	COSMOS 100	1843	USSR	17 DEC	95.8	65.0	618	492		
1965 106B		1844	USSR	17 DEC	95.4	65.0	550	521		
1965 109A	NNSS 3006J	1864	US	22 DEC	104.7	89.1	1061	895		
1965 109B		1865	US	22 DEC	104.7	89.1	1066	899		
1965 109C		2086	US	22 DEC	101.1	89.1	830	786		
1965 109D		2226	US	22 DEC	106.8	89.1	1271	889		
1965 109E		2353	US	22 DEC	105.0	89.4	1112	874		
1965 112Q		1937	USSR	28 DEC	94.9	55.9	537	493		
1966 LAUNC										
1966 005A	NNSS 3007J	1952	US	28 JAN	105.5	89.8	1187	851		
1966 005B		1953	US	28 JAN	105.6	89.8	1194	854		
1966 005C		2140	US	28 JAN	107.3	90.1	1349	849		
1966 005D		2141	US	28 JAN	103.5	89.8	1028	818		
1966 005E		2889	US	28 JAN	109.4	89.5	1326	1071		
1966 005F		2989	US	28 JAN	103.7	89.9	1025	838		
1966 005J		11991	US	28 JAN	105.2	89.8	1164	843		
1966 006D		2091	USSR	31 JAN	BARYCENTRIC ORBIT					
1966 008A	ESSA 1	1982	US	3 FEB	99.8	97.9	812	685		
1966 008B		1983	US	3 FEB	99.5	97.8	800	667		
1966 008C		2085	US	3 FEB	97.2	97.7	642	605		
1966 008D		2113	US	3 FEB	100.5	98.0	893	669		
1966 008E		2164	US	3 FEB	99.3	97.7	774	679		
1966 013A	D-1A	2016	FRANCE	17 FEB	116.3	34.1	2522	503		
1966 013B		2017	FRANCE	17 FEB	115.3	34.1	2433	503		
1966 013F		2023	FRANCE	17 FEB	98.5	34.0	943	427		
1966 013G		2151	FRANCE	17 FEB	109.6	34.1	1913	505		
1966 016A	ESSA 2	2091	US	28 FEB	113.4	100.9	1412	1352		
1966 016B		2096	US	28 FEB	113.4	101.0	1413	1350		
1966 016C		2223	US	28 FEB	111.8	101.1	1382	1238		

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1966 LAUNCHES (CONT.)										
1966 016D		2224	US	28 FEB	115.0	101.1	1562	1346		
1966 016E		6214	US	28 FEB	114.2	101.6	1514	1326		
1966 024A	NNSS 3008	2119	US	26 MAR	104.9	89.8	1100	883		
1966 024B		2120	US	26 MAR	105.0	89.8	1108	885		
1966 025A	OV1-4	2121	US	30 MAR	104.0	144.5	1009	885		
1966 025B	OV1-5	2122	US	30 MAR	105.6	144.6	1057	986		
1966 025C		2123	US	30 MAR	105.6	144.6	1057	987		
1966 025D		2124	US	30 MAR	104.0	144.5	1007	886		
1966 025E		3611	US	30 MAR	102.9	144.6	949	841		
1966 025G		5361	US	30 MAR	103.9	144.6	979	908		
1966 025H		5599	US	30 MAR	102.9	144.6	945	849		
1966 026A		2125	US	31 MAR	99.6	98.4	869	607		
1966 026B		2129	US	31 MAR	97.9	98.2	750	569		
1966 026D		2177	US	31 MAR	100.5	98.9	961	599		
1966 026F		2179	US	31 MAR	96.5	98.1	651	533		
1966 027A	LUNA 10	2126	USSR	31 MAR	SELENOCENTRIC ORBIT					
1966 027D		2130	USSR	31 MAR	HELIOCENTRIC ORBIT					
1966 027E		2131	USSR	31 MAR	BARYCENTRIC ORBIT					
1966 027F		2132	USSR	31 MAR	BARYCENTRIC ORBIT					
1966 031A	OAO 1	2142	US	8 APR	100.7	35.0	796	785		
1966 031B		2144	US	8 APR	100.4	35.0	782	768		
1966 034A	OV3-1	2150	US	22 APR	135.3	82.4	4360	342		
1966 034B		2167	US	22 APR	117.5	82.4	2804	330		
1966 040A	NIMBUS 2	2173	US	15 MAY	108.0	100.5	1175	1091		
1966 040B		2174	US	15 MAY	107.8	100.6	1166	1081		
1966 041A	NNSS 3009	2176	US	19 MAY	102.9	90.0	956	837		
1966 041B		2180	US	19 MAY	103.0	90.0	964	841		
1966 041C		2225	US	19 MAY	99.3	89.9	750	696		
1966 041D		2644	US	19 MAY	105.1	90.0	1160	832		
1966 041E		3591	US	19 MAY	102.9	90.0	956	837		
1966 041F		4555	US	19 MAY	102.0	90.0	903	800		
1966 045B		2187	US	30 MAY	BARYCENTRIC ORBIT					
1966 049A	OGO 3	2195	US	7 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 052A		2201	US	10 JUN	142.9	40.9	4711	640		
1966 052B		2206	US	10 JUN	142.6	40.9	4683	641		
1966 052C		2498	US	10 JUN	138.9	40.6	4426	582		
1966 052D		2516	US	10 JUN	144.6	41.0	4796	701		
1966 053A		2207	US	16 JUN	1334.0	4.2	33858	33663		
1966 053B		2215	US	16 JUN	1334.5	11.5	33878	33669		
1966 053C		2216	US	16 JUN	1335.3	4.9	33923	33657		
1966 053D		2217	US	16 JUN	1336.5	9.0	33989	33637		
1966 053E		2218	US	16 JUN	1338.6	8.0	34017	33694		
1966 053F		2219	US	16 JUN	1340.9	8.9	34093	33712		
1966 053G		2220	US	16 JUN	1344.0	8.9	34230	33695		
1966 053H		2221	US	16 JUN	1347.6	5.0	34359	33711		
1966 053J		2222	US	16 JUN	1349.4	12.0	34736	33406		
1966 056A	PAGEOS 1	2253	US	24 JUN	177.9	85.6	5189	3010		
1966 056B		2255	US	24 JUN	181.1	86.9	4279	4173		
1966 056C		2256	US	24 JUN	181.3	86.9	4276	4191		
1966 056D		2511	US	24 JUN	181.5	87.0	4257	4221		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1966 LAUNCHES (CONT.)										
1966 056G		8066	US	24 JUN	160.7	81.9	6372	450		
1966 056H		8074	US	24 JUN	173.6	83.9	7024	836		
1966 056AH		9468	US	24 JUN	179.7	84.7	5566	2777		
1966 058A	EXPLORER 33	2238	US	1 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1966 058C		2260	US	1 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1966 063B		2327	US	14 JUL	104.2	144.2	970	940		
1966 063C		2328	US	14 JUL	105.2	144.2	1013	998		
1966 063D		2329	US	14 JUL	104.6	144.2	985	969		
1966 063E		2337	US	14 JUL	105.2	144.2	1007	999		
1966 070A	OV3-3	2389	US	4 AUG	123.8	81.4	3347	351		
1966 070B		2394	US	4 AUG	101.4	81.4	1329	315		
1966 070D		2800	US	4 AUG	128.1	81.5	3667	412		
1966 073B		2395	US	10 AUG	BARYCENTRIC ORBIT					
1966 075A	PIONEER 7	2398	US	17 AUG	HELIOCENTRIC ORBIT					
1966 075C		2402	US	17 AUG	HELIOCENTRIC ORBIT					
1966 076A	NNSS 3010	2401	US	18 AUG	106.5	88.9	1089	1040		
1966 076B		2413	US	18 AUG	106.6	88.9	1092	1045		
1966 076C		2580	US	18 AUG	104.9	89.2	1061	915		
1966 076D		2732	US	18 AUG	108.0	88.6	1201	1066		
1966 077A		2403	US	19 AUG	167.4	89.7	3708	3659		
1966 077B	SECOR (EGRS) 7	2411	US	19 AUG	167.5	89.7	3698	3672		
1966 077C	SRS 15	2412	US	19 AUG	167.6	89.7	3700	3680		
1966 078A	LUNA 11	2406	USSR	24 AUG	SELENOCENTRIC ORBIT					
1966 082A		2418	US	16 SEP	100.3	98.5	863	678		
1966 082B		2422	US	16 SEP	100.2	98.4	857	676		
1966 084A		2426	US	20 SEP	BARYCENTRIC ORBIT					
1966 087A	OSO 3	2435	US	2 OCT	114.5	101.0	1483	1384		
1966 087B		2436	US	2 OCT	114.5	101.0	1482	1381		
1966 087C		2518	US	2 OCT	115.9	100.8	1557	1430		
1966 087D		2775	US	2 OCT	113.2	101.0	1470	1277		
1966 087E		6213	US	2 OCT	113.0	101.8	1398	1328		
1966 087F		8771	US	2 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1966 089A		2481	US	5 OCT	167.5	90.1	3720	3657		
1966 089B	SECOR (EGRS) 8	2520	US	5 OCT	167.6	90.1	3706	3676		
1966 094A	LUNA 12	2518	USSR	22 OCT	SELENOCENTRIC ORBIT					
1966 095A		2513	US	25 OCT	BARYCENTRIC ORBIT					
1966 096A	INTELSAT I F-1	2514	ITSO	26 OCT	717.7	18.5	37096	3256		
1966 096C		11772	US	26 OCT	475.5	17.9	27177	428		
1966 110A	ATS 1	2518	US	7 DEC	1435.5	13.7	35793	35757		
1966 111A	OV1-9	2511	US	11 DEC	140.3	99.1	4657	473		
1966 111B	OV1-10	2511	US	11 DEC	96.9	93.4	648	570		
1966 111C		2521	US	11 DEC	98.0	93.4	714	610		
1966 111D		2522	US	11 DEC	139.6	99.1	4601	472		
1967 LAUNCHES										
1967 001A	INTELSAT I F-2	2539	ITSO	11 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 001D		2543	US	11 JAN	435.1	26.6	24942	341		
1967 001E		5987	US	11 JAN	517.5	26.5	29463	483		
1967 001T		5988	US	11 JAN	531.8	26.5	30127	603		

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INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1967 LAUNCHES (CONT.)										
1967 001V		5[illegible]	US	11 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 001W		5[illegible]	US	11 JAN	387.2	29.8	22158	282		
1967 001X		6777	US	11 JAN	656.6	27.9	36622	670		
1967 001AM		14755	US	11 JAN	375.3	26.6	21423	289		
1967 001AN		19518	US	11 JAN	513.6	26.2	29219	512		
1967 001AX		201[illegible]2	US	11 JAN	530.7	27.1	30091	576		
1967 003A		2545	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003B		2549	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003C		2550	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003D		2551	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003E		2552	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003F		2553	US	18 JAN	896.7	6.5	30446	18403		
1967 003G		2554	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003H		2555	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003J		2556	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 006A	ESSA 4	2657	US	26 JAN	113.4	102.1	1437	1323		
1967 006B		2661	US	26 JAN	113.5	102.0	1439	1339		
1967 006C		2726	US	26 JAN	114.2	102.1	1446	1390		
1967 006D		2737	US	26 JAN	112.5	101.9	1458	1228		
1967 006E		5971	US	26 JAN	113.1	102.0	1454	1280		
1967 010A		2669	US	8 FEB	101.1	99.1	850	773		
1967 010B		2741	US	8 FEB	101.1	99.0	852	769		
1967 011A	DIADEME 1	2674	FRANCE	8 FEB	101.7	40.0	1132	550		
1967 011B		2671	FRANCE	8 FEB	102.6	40.0	1202	556		
1967 014A	DIADEME 2	2680	FRANCE	15 FEB	108.9	39.5	1764	588		
1967 014B		2682	FRANCE	15 FEB	109.4	39.5	1807	587		
1967 014C		2684	FRANCE	15 FEB	107.0	40.0	1597	576		
1967 014F		2685	FRANCE	15 FEB	106.3	39.0	1544	566		
1967 014J		14515	FRANCE	15 FEB	107.4	38.8	1629	585		
1967 014K		14633	FRANCE	15 FEB	98.7	39.4	886	511		
1967 014L		15531	FRANCE	15 FEB	98.5	39.4	864	509		
1967 014M		18911	FRANCE	15 FEB	110.6	38.9	1931	580		
1967 014N		18928	FRANCE	15 FEB	98.8	39.4	886	512		
1967 014P		18929	FRANCE	15 FEB	99.4	39.4	938	518		
1967 026A	INTELSAT 2 F-3	2717	ITSO	23 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1967 027A	COSMOS 151	2720	USSR	24 MAR	92.7	56.0	409	400		
1967 034A	NNSS 30120	2754	US	14 APR	106.2	90.1	1066	1038		
1967 034B		2755	US	14 APR	106.4	90.1	1074	1043		
1967 034C		2777	US	14 APR	103.4	90.3	1022	815		
1967 034D		2778	US	14 APR	108.2	90.2	1242	1048		
1967 034E		4843	US	14 APR	106.6	90.4	1094	1047		
1967 035B		2764	US	17 APR	BARYCENTRIC ORBIT					
1967 036A	ESSA 5	2757	US	20 APR	113.5	101.9	1419	1352		
1967 036B		2758	US	20 APR	113.5	102.0	1417	1354		
1967 036C		2976	US	20 APR	112.3	102.2	1408	1256		
1967 036D		2977	US	20 APR	114.6	101.3	1482	1387		
1967 039B		2763	USSR	27 APR	93.3	81.2	457	410		
1967 040A		2765	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 040B		2766	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 040C	ERS 18	2767	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1967 LAUNCHES (CONT.)										
1967 045D	OGO 2D	2768	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 045E	OGO 2E	2769	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 045F		2771	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 045G		2780	US	9 MAY	95.0	84.9	569	464		
1967 045A	COSMOS 158	2341	USSR	15 MAY	100.3	74.0	813	729		
1967 045B		2342	USSR	15 MAY	100.1	74.0	816	712		
1967 045C		2323	USSR	15 MAY	96.5	74.0	607	576		
1967 048A	NNSS 3013	28 7	US	18 MAY	106.7	89.6	1092	1059		
1967 048B		2311	US	18 MAY	106.8	89.6	1092	1062		
1967 048C		17723	US	18 MAY	103.4	89.6	945	896		
1967 048D		19222	US	18 MAY	104.3	89.6	1008	914		
1967 053A		2326	US	31 MAY	101.9	70.0	855	838		
1967 053B		2325	US	31 MAY	103.2	70.0	914	904		
1967 053C	GRAVITY GRADIENT 4	2828	US	31 MAY	103.2	70.0	914	903		
1967 053D	GRAVITY GRADIENT 5	2334	US	31 MAY	103.2	70.0	916	905		
1967 053E		2347	US	31 MAY	103.0	70.0	904	897		
1967 053F		2372	US	31 MAY	103.1	70.0	910	902		
1967 053G		2373	US	31 MAY	103.2	70.0	914	902		
1967 053H		2374	US	31 MAY	103.2	70.0	916	905		
1967 053J		2300	US	31 MAY	101.6	70.0	840	831		
1967 053K		19245	US	31 MAY	102.9	70.0	898	891		
1967 065A	MARINER 5	2345	US	14 JUN	HELIOCENTRIC ORBIT					
1967 065B		2346	US	14 JUN	HELIOCENTRIC ORBIT					
1967 065A	SECOR (GEOS) 3	2351	US	29 JUN	172.1	90.0	3947	3791		
1967 065B	AURORA 1	2376	US	29 JUN	172.1	90.1	3948	3791		
1967 065C		2377	US	29 JUN	172.1	90.0	3952	3787		
1967 066A	TITAN 3 C-14	2352	US	1 JUL	1309.7	1.2	33540	33010		
1967 066B		2353	US	1 JUL	1310.4	1.2	33549	33030		
1967 066C		2354	US	1 JUL	1311.7	9.8	33546	33083		
1967 066D		2355	US	1 JUL	1313.6	9.9	33569	33139		
1967 066E		2356	US	1 JUL	1316.1	9.9	33606	33200		
1967 066F	DODGE	2357	US	1 JUL	1318.9	5.2	33659	33270		
1967 066G		2358	US	1 JUL	1319.1	9.9	33657	33272		
1967 066H		2333	US	14 JUL	BARYCENTRIC ORBIT					
1967 071A	EXPLORER 35	2334	US	19 JUL	SELENOCENTRIC ORBIT					
1967 075A		2373	US	1 AUG	BARYCENTRIC ORBIT					
1967 081A		2321	US	23 AUG	101.9	99.1	876	820		
1967 081B		2344	US	23 AUG	101.8	99.0	873	817		
1967 084A		2916	US	8 SEP	BARYCENTRIC ORBIT					
1967 092A	NNSS 3014	2355	US	25 SEP	106.5	89.2	1099	1032		
1967 092B		2357	US	25 SEP	106.6	89.2	1101	1033		
1967 092C		2374	US	25 SEP	103.8	89.4	1010	865		
1967 092D		3120	US	25 SEP	108.9	89.1	1320	1029		
1967 092E		17175	US	25 SEP	102.8	89.2	902	880		
1967 092H		20239	US	25 SEP	102.7	89.2	902	873		
1967 092J		20352	US	25 SEP	102.7	89.2	902	874		
1967 094A	INTELSAT [illegible]	2353	ITSO	29 SEP	1436.2	13.6	35817	35760		
1967 094C		2371	US	29 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1967 096A		2355	US	11 OCT	99.3	99.2	808	643		
1967 096B		2356	US	11 OCT	99.2	99.1	798	641		

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INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1967 LAUNCHES (CONT.)										
1967 102B		3011	USSR	24 OCT	93.5	81.2	487	407		
1967 104B		3019	USSR	27 OCT	96.2	64.1	670	479		
1967 111A	ATS 3	3029	US	5 NOV	1436.1	13.4	35859	35715		
1967 112B		3034	US	7 NOV	BARYCENTRIC ORBIT					
1967 114A	ESSA 6	3035	US	10 NOV	114.8	102.2	1483	1407		
1967 114B		3036	US	10 NOV	114.8	102.2	1483	1408		
1967 114C		3051	US	10 NOV	114.1	101.4	1482	1343		
1967 114D		3123	US	10 NOV	115.4	102.5	1494	1448		
1967 114E		5443	US	10 NOV	114.6	101.6	1483	1386		
1967 116A	COSMOS 192	3047	USSR	23 NOV	99.3	74.0	730	721		
1967 116B		3048	USSR	23 NOV	99.2	74.0	725	715		
1967 123A	PIONEER 8	3066	US	13 DEC	HELIOCENTRIC ORBIT					
1967 127A	COSMOS 196	3081	USSR	27 DEC	103.4	65.1	936	899		
1968 LAUNCHES										
1968 001B		3092	US	7 JAN	BARYCENTRIC ORBIT					
1968 002A	EXPLORER 39	3093	US	11 JAN	112.2	105.8	1571	1080		
1968 002B		3094	US	11 JAN	112.1	105.8	1564	1078		
1968 002C		3126	US	11 JAN	112.3	106.1	1581	1082		
1968 002D		3127	US	11 JAN	112.1	105.3	1570	1074		
1968 011A	COSMOS 203	3129	USSR	20 FEB	109.2	74.1	1199	1181		
1968 011B		3131	USSR	20 FEB	109.2	74.1	1203	1179		
1968 012A	NNSS 3018E	3133	US	2 MAR	106.7	90.0	1131	1016		
1968 012B		3137	US	2 MAR	106.8	90.0	1135	1017		
1968 012C		3213	US	2 MAR	104.7	90.0	1087	874		
1968 012D		3214	US	2 MAR	108.6	90.1	1307	1017		
1968 012E		18594	US	2 MAR	101.5	90.0	886	772		
1968 013A	ZOND 4	3134	USSR	2 MAR	HELIOCENTRIC ORBIT					
1968 014A	OGO 5	3138	US	4 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1968 014B		3145	US	4 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1968 017A	EXPLORER 37	3141	US	5 MAR	89.8	59.3	280	250		
1968 017D		3328	US	5 MAR	95.6	59.6	591	502		
1968 019B		3151	USSR	14 MAR	94.2	81.2	515	445		
1968 023A	COSMOS 209	3158	USSR	22 MAR	103.1	65.3	925	879		
1968 026A	OV1-13	3173	US	6 APR	198.8	99.9	9234	578		
1968 026B	OV1-14	3174	US	6 APR	207.2	100.0	9853	589		
1968 026C		3177	US	6 APR	207.1	100.0	9849	587		
1968 026D		3212	US	6 APR	198.4	99.9	9195	586		
1968 027A	LUNA 14	3178	USSR	7 APR	SELENOCENTRIC ORBIT					
1968 040A	COSMOS 220	3229	USSR	7 MAY	98.3	74.0	711	645		
1968 040B		3230	USSR	7 MAY	98.1	74.0	700	633		
1968 042A		3266	US	23 MAY	101.9	99.0	885	807		
1968 042B		3271	US	23 MAY	101.8	98.9	883	805		
1968 049B		3283	USSR	12 JUN	91.1	81.2	340	317		
1968 050A		3234	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050B		3235	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050C		3236	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050D		3237	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050E		3238	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					

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INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1968 LAUNCHES (CONT.)										
1968 050F		3289	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050G		3290	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050H		3291	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050J		3292	US	13 JUN	1363.7	12.2	35034	33681		
1968 055A	EXPLORER 38	3307	US	4 JUL	224.2	120.8	5864	5830		
1968 055B		3315	US	4 JUL	155.8	120.6	5746	675		
1968 055C		3848	US	4 JUL	224.1	120.8	5868	5819		
1968 055D		4841	US	4 JUL	155.4	120.8	5764	625		
1968 063A		3334	US	6 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1968 066B	EXPLORER 4[illegible]	3338	US	8 AUG	117.9	80.7	2497	678		
1968 066C		3341	US	8 AUG	117.8	80.7	2485	680		
1968 066D		3342	US	8 AUG	109.8	80.6	1785	647		
1968 066E		3343	US	8 AUG	106.7	80.6	1539	611		
1968 066F		3390	US	8 AUG	110.3	80.6	1827	656		
1968 066G		3391	US	8 AUG	109.4	80.7	1770	629		
1968 066H		3392	US	8 AUG	112.4	80.7	2000	674		
1968 066J		3393	US	8 AUG	110.9	80.6	1881	655		
1968 069A	ESSA 7	3345	US	16 AUG	114.9	101.4	1471	1428		
1968 069B		3346	US	16 AUG	114.8	101.3	1463	1426		
1968 069C		3416	US	16 AUG	113.6	101.9	1485	1300		
1968 069D		3417	US	16 AUG	116.1	102.3	1568	1454		
1968 069E		3974	US	16 AUG	114.9	102.0	1477	1422		
1968 069F		3975	US	16 AUG	114.9	101.6	1482	1414		
1968 069G		4499	US	16 AUG	115.1	101.4	1481	1435		
1968 081A	OV2-5	3428	US	26 SEP	1417.9	11.2	35776	35083		
1968 081C	ERS 21	3430	US	26 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1968 081D	LES 5	3431	US	26 SEP	1437.0	11.6	35835	35774		
1968 081E		3432	US	26 SEP	1419.3	11.3	35820	35093		
1968 091A	COSMOS 249	3504	USSR	23 OCT	111.6	62.4	2071	524		
1968 091B - 091D*			USSR	23 OCT	SEE NOTE 8*					8*
1968 092A		3510	US	23 OCT	101.1	98.5	832	786		
1968 092B		3522	US	23 OCT	101.0	98.7	828	782		
1968 097A	COSMOS 252	3530	USSR	1 NOV	112.1	62.3	2083	562		
1968 097B - 097D*			USSR	1 NOV	SEE NOTE 10*					10*
1968 100A	PIONEER [illegible]	3533	US	3 NOV	HELIOCENTRIC ORBIT					
1968 106A	COSMOS 255	3576	USSR	30 NOV	109.3	74.0	1221	1169		
1968 106B		3577	USSR	30 NOV	109.2	74.1	1216	1161		
1968 110A	OAO-2	3597	US	7 DEC	100.0	35.0	762	754		
1968 110B		3598	US	7 DEC	99.7	35.0	785	703		
1968 112B		3615	US	12 DEC	114.3	80.4	1464	1381		
1968 112C		3617	US	12 DEC	114.0	80.2	1445	1372		
1968 112D		3618	US	12 DEC	114.7	80.5	1506	1374		
1968 112E		3619	US	12 DEC	114.4	80.6	1455	1402		
1968 114A	ESSA 9	3615	US	15 DEC	114.6	101.6	1461	1411		
1968 114B		3616	US	15 DEC	115.0	101.7	1467	1446		
1968 114C		3811	US	15 DEC	112.8	102.0	1463	1248		
1968 114D		3812	US	15 DEC	116.3	102.5	1571	1458		
1968 119A	INTELSAT 3 F-2	3623	ITSO	19 DEC	1475.2	13.7	37128	35966		
1968 119B		3627	US	21 DEC	HELIOCENTRIC ORBIT					
1969 LAUNCHES										

OBJECTS IN ORBIT

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1969 009A	ISIS 1	3669	CANADA	30 JAN	127.8	88.4	3478	574		
1969 009B		3670	US	30 JAN	126.9	88.4	3401	573		
1969 010B		3673	US	5 FEB	114.0	80.4	1429	1392		
1969 010C		3341	US	5 FEB	113.7	80.2	1421	1368		
1969 011A	INTELSAT 3 F-3	3674	ITSO	6 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1969 011B		5977	US	6 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1969 013A		3691	US	9 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1969 013B		3692	US	9 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1969 014A	MARINER 5	3759	US	25 FEB	HELIOCENTRIC ORBIT					
1969 014B		3760	US	25 FEB	HELIOCENTRIC ORBIT					
1969 016A	ESSA 9	3764	US	26 FEB	115.2	101.5	1503	1423		
1969 016B		3767	US	26 FEB	115.1	101.5	1498	1418		
1969 018B		3770	US	3 MAR	HELIOCENTRIC ORBIT					
1969 024A	COSMOS 274	3818	USSR	17 MAR	109.2	74.0	1206	1176		
1969 024B		3819	USSR	17 MAR	109.1	74.0	1193	1178		
1969 024C		6239	USSR	17 MAR	108.9	74.0	1180	1168		
1969 025C	OV1-19	3825	US	18 MAR	151.8	104.7	5618	476		
1969 025E		3827	US	18 MAR	150.8	104.7	5523	486		
1969 029A	METEOR	3835	USSR	26 MAR	96.4	81.2	604	570		
1969 030A	MARINER 7	3837	US	27 MAR	HELIOCENTRIC ORBIT					
1969 030B		3845	US	27 MAR	HELIOCENTRIC ORBIT					
1969 036A		3889	US	13 APR	CURRENT ELEMENTS NOT MAINTAINED					
1969 037A	NIMBUS 3	3890	US	14 APR	107.2	99.9	1129	1069		
1969 037B	SECOR (EGRS) 13	3891	US	14 APR	107.2	99.9	1127	1067		
1969 037C		3892	US	14 APR	107.3	100.0	1132	1073		
1969 043B		3943	US	18 MAY	HELIOCENTRIC ORBIT					
1969 043C	LM/DESCENT	3948	US	18 MAY	SELENOCENTRIC ORBIT					
1969 043D	LM/ASCENT	3949	US	18 MAY	HELIOCENTRIC ORBIT					
1969 045A	INTELSAT 3 F-4	3947	ITSO	22 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046A	OV5-5/ERS-29	3950	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046B	OV5-6	3951	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046C	OV5-9	3952	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046D		3954	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046E		3955	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046F		3956	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 053B		3993	US	21 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1969 059B		4040	US	16 JUL	HELIOCENTRIC ORBIT					
1969 059C	LUNAR MODULE	4041	US	16 JUL	SELENOCENTRIC ORBIT					9*
1969 062A		4047	US	23 JUL	101.0	98.9	838	770		
1969 062B		4048	US	23 JUL	100.9	98.8	833	767		
1969 064C		4053	US	26 JUL	126.2	30.3	3648	264		
1969 069A	ATS 5	4068	US	12 AUG	1447.4	12.7	36015	35999		
1969 069B		4069	US	12 AUG	703.3	17.8	37296	2341		
1969 069C		5991	US	12 AUG	682.2	17.2	36497	2086		
1969 070A	COSMOS 292	4070	USSR	13 AUG	99.4	74.0	740	723		
1969 070B		4071	USSR	13 AUG	99.1	74.1	729	704		
1969 070C		4084	USSR	13 AUG	99.8	74.1	763	729		
1969 070D		18912	USSR	13 AUG	98.8	74.0	734	667		
1969 082B		4256	US	30 SEP	103.2	70.0	921	895		
1969 082C		4257	US	30 SEP	103.3	70.0	927	899		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1969 LAUNCHES (CONT.)										
1969 082D		4259	US	30 SEP	103.3	70.0	929	900		
1969 082E		4237	US	30 SEP	103.3	70.0	927	899		
1969 082F		4247	US	30 SEP	103.3	70.0	927	899		
1969 082G		4295	US	30 SEP	103.3	70.0	928	899		
1969 082H		4168	US	30 SEP	103.3	70.0	927	899		
1969 082J		4166	US	30 SEP	101.6	70.0	842	822		
1969 082K		4132	US	30 SEP	102.4	70.0	882	860		
1969 082L - 082LF			US	30 SEP	SEE NOTE	11*				11*
1969 084A	METEOR	4119	USSR	6 OCT	96.0	81.2	584	546		
1969 084B		4120	USSR	6 OCT	95.4	81.2	594	477		
1969 091A	COSMOS 304	4138	USSR	21 OCT	99.6	74.0	751	732		
1969 091B		4139	USSR	21 OCT	99.1	74.0	719	708		
1969 097A	GRS-A/AZUR	4221	FRG	8 NOV	112.7	102.8	2321	376		
1969 097B		4222	US	8 NOV	105.1	102.9	1638	361		
1969 099B		4226	US	14 NOV	CURRENT ELEMENTS NOT MAINTAINED					
1969 101A	SKYNET A	4250	UK	22 NOV	1436.2	11.9	35877	35698		
1969 101B		4251	US	22 NOV	CURRENT ELEMENTS NOT MAINTAINED					
1969 103A	COSMOS 312	4254	USSR	24 NOV	108.5	74.0	1173	1139		
1969 103B		4255	USSR	24 NOV	108.3	74.0	1156	1139		
1970 LAUNCHES										
1970 003A	INTELSAT 3 F-5	4297	ITSO	15 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1970 003B		4298	US	15 JAN	534.7	27.6	30608	280		
1970 008A	ITOS 1	4320	US	23 JAN	115.0	101.4	1477	1431		
1970 008B	OSCAR 5	4321	AUSTRL	23 JAN	115.0	101.3	1476	1431		
1970 008C		4322	US	23 JAN	115.0	101.4	1477	1432		
1970 009A	SERT 2	4327	US	4 FEB	106.0	99.1	1045	1037		
1970 011A	OHSUMI	4330	JAPAN	11 FEB	119.6	31.0	2995	330		
1970 012A		4331	US	11 FEB	100.9	99.0	845	752		
1970 012B		4332	US	11 FEB	100.9	98.8	848	755		
1970 021A	NATO 1	4353	NATO	20 MAR	1436.1	11.6	35802	35770		
1970 021B		4354	US	20 MAR	576.1	26.1	32631	483		
1970 021C		5975	US	20 MAR	554.4	25.8	31624	326		
1970 025A	NIMBUS 4	4362	US	8 APR	107.1	99.8	1097	1086		
1970 025B	TOPO 1	4363	US	8 APR	106.9	99.7	1085	1081		
1970 025C - 025DF			US	8 APR	SEE NOTE	12*				12*
1970 027A		4366	US	8 APR	CURRENT ELEMENTS NOT MAINTAINED					
1970 027B		4368	US	8 APR	CURRENT ELEMENTS NOT MAINTAINED					
1970 028A	COSMOS 332	4369	USSR	11 APR	99.5	74.0	740	732		
1970 028B		4370	USSR	11 APR	99.2	74.0	735	709		
1970 028C		14314	USSR	11 APR	99.1	74.0	722	704		
1970 032A	INTELSAT 3 F-7	4376	ITSO	23 APR	CURRENT ELEMENTS NOT MAINTAINED					
1970 032B		4377	US	23 APR	CURRENT ELEMENTS NOT MAINTAINED					
1970 034A	MAO 1	4382	PRC	24 APR	112.0	68.4	2209	431		
1970 034B		4392	PRC	24 APR	103.5	68.4	1430	414		
1970 036A	COSMOS 336	4333	USSR	25 APR	115.4	74.0	1484	1461		
1970 036B	COSMOS 337	4334	USSR	25 APR	116.2	74.0	1550	1466		
1970 036C	COSMOS 338	4335	USSR	25 APR	115.8	74.0	1516	1465		
1970 036D	COSMOS 339	4336	USSR	25 APR	115.0	74.0	1467	1443		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1970 LAUNCHES (CONT.)										
1970 036E	COSMOS 340	4387	USSR	25 APR	114.6	74.0	1468	1405		
1970 036F	COSMOS 341	4388	USSR	25 APR	113.9	74.0	1466	1341		
1970 036G	COSMOS 342	4389	USSR	25 APR	113.5	74.0	1466	1309		
1970 036H	COSMOS 343	4390	USSR	25 APR	114.2	74.0	1466	1373		
1970 036J		4391	USSR	25 APR	116.6	74.0	1586	1466		
1970 037A	METEOR	4393	USSR	28 APR	96.5	81.2	613	564		
1970 037B		4394	USSR	28 APR	97.0	81.2	692	534		
1970 046A		4418	US	19 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1970 046B		4511	US	19 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1970 047A	METEOR	4419	USSR	23 JUN	101.8	81.2	876	815		
1970 047B		4420	USSR	23 JUN	102.1	81.2	922	790		
1970 055A	INTELSAT 3 F-4	4478	ITSO	23 JUL	1408.2	13.3	36638	33838		
1970 055B		4486	US	23 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1970 062A	SKYNET B	4493	UK	19 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1970 067A	NNSS 38196	4507	US	27 AUG	106.7	90.1	1205	945		
1970 067B		4515	US	27 AUG	106.8	90.1	1209	947		
1970 067C		5036	US	27 AUG	103.1	90.1	922	886		
1970 067D		5447	US	27 AUG	109.2	90.1	1435	944		
1970 069A		4510	US	1 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1970 070A		4512	US	3 SEP	100.7	98.8	843	743		
1970 070B		4513	US	3 SEP	100.8	98.9	849	744		
1970 079A	COSMOS 367	4564	USSR	3 OCT	104.5	65.3	1011	927		
1970 083A	COSMOS 371	4578	USSR	12 OCT	99.4	74.0	732	728		
1970 083B		4579	USSR	12 OCT	99.2	74.0	727	711		
1970 085A	METEOR	4583	USSR	15 OCT	95.1	81.2	523	523		
1970 085B		4584	USSR	15 OCT	95.5	81.2	599	489		
1970 086A	COSMOS 372	4588	USSR	16 OCT	100.5	74.1	789	770		
1970 086B		4589	USSR	16 OCT	100.2	74.1	785	754		
1970 086C		5357	USSR	16 OCT	98.9	74.0	713	702		
1970 086D		5358	USSR	16 OCT	99.6	74.1	745	732		
1970 089A	COSMOS 374	4594	USSR	23 OCT	107.9	63.0	1690	570		
1970 089B - 089DG			USSR	23 OCT	SEE NOTE	13*				13*
1970 091A	COSMOS 375	4598	USSR	30 OCT	111.4	62.8	2045	533		
1970 091B - 091AK			USSR	30 OCT	SEE NOTE	15*				15*
1970 093A		4630	US	6 NOV	1198.1	15.9	36096	25881		
1970 093B		4632	US	6 NOV	1197.7	15.9	36113	25849		
1970 102A	COSMOS 381	4783	USSR	2 DEC	104.8	74.0	1006	960		
1970 102B		4784	USSR	2 DEC	104.6	74.0	997	957		
1970 102C		4840	USSR	2 DEC	100.3	74.0	785	762		
1970 102D		5225	USSR	2 DEC	104.1	74.0	967	938		
1970 102E		8764	USSR	2 DEC	104.2	74.0	976	941		
1970 102F		9794	USSR	2 DEC	101.2	74.0	827	802		
1970 103A	COSMOS 382	4786	USSR	2 DEC	171.0	55.8	5255	2399		
1970 103B		4789	USSR	2 DEC	158.8	51.6	5081	1590		
1970 103C		4790	USSR	2 DEC	159.1	51.6	5084	1613		
1970 103D		5316	USSR	2 DEC	95.3	55.2	571	491		
1970 103G		12854	USSR	2 DEC	146.3	50.0	4089	1548		
1970 106A	NOAA 1	4793	US	11 DEC	114.8	101.4	1470	1422		
1970 106B		4794	US	11 DEC	114.9	101.3	1477	1420		
1970 106C		8828	US	11 DEC	116.4	102.3	1543	1492		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1970 LAUNCHES (CONT.)										
1970 108A	COSMOS 385	4799	USSR	12 DEC	104.6	74.0	978	972		
1970 108B		4800	USSR	12 DEC	104.5	74.0	976	963		
1970 109B		4802	FRANCE	12 DEC	97.0	15.0	650	579		
1970 113A	COSMOS 389	4813	USSR	18 DEC	96.4	81.2	604	571		
1970 113B		4814	USSR	18 DEC	96.8	81.2	655	558		
1971 LAUNCHES										
1971 000A		4924	US	UNKN	95.6	18.0	906	192		14*
1971 003A	METEOR	4849	USSR	20 JAN	96.1	81.2	578	562		
1971 003B		4850	USSR	20 JAN	96.0	81.2	622	511		
1971 003C		18277	USSR	20 JAN	95.5	81.2	592	494		
1971 006A	INTELSAT 4 F-2	4881	ITSO	26 JAN	1457.0	11.0	36501	35887		
1971 006B		4882	US	26 JAN	653.5	27.6	36398	737		
1971 009A	NATO 2	4902	NATO	3 FEB	1436.2	12.0	35802	35775		
1971 009B		4903	US	3 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1971 009D		5986	US	3 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1971 010A	COSMOS 394	4922	USSR	9 FEB	95.7	65.8	568	533		
1971 011A	TANSEI 1	4952	JAPAN	16 FEB	106.1	29.7	1106	987		
1971 011B		5126	JAPAN	16 FEB	104.8	29.7	994	975		
1971 012A		4953	US	17 FEB	100.4	98.6	806	745		
1971 012B		4954	US	17 FEB	100.5	98.7	808	750		
1971 015A	COSMOS 397	4964	USSR	25 FEB	113.2	65.7	2174	574		
1971 015B - 015DV			USSR	25 FEB	SEE NOTE 16*					16*
1971 016A	COSMOS 398	4966	USSR	26 FEB	127.7	51.5	3844	196		
1971 020A	COSMOS 400	5050	USSR	18 MAR	104.9	65.8	999	983		
1971 020B		5051	USSR	18 MAR	104.7	65.8	1022	941		
1971 020C		5052	USSR	18 MAR	104.9	65.8	996	983		
1971 021A		5053	US	21 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1971 021B		5054	US	21 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1971 024A	ISIS 2	5104	CANADA	1 APR	113.5	88.2	1423	1354		
1971 024B		5106	US	1 APR	113.5	88.2	1419	1351		
1971 024C		5360	US	1 APR	113.5	88.3	1422	1355		
1971 025A	COSMOS 402	5105	USSR	1 APR	104.9	65.0	1013	963		
1971 028A	COSMOS 405	5117	USSR	7 APR	97.1	81.2	623	614		
1971 028B		5118	USSR	7 APR	97.3	81.2	679	575		
1971 028D		5724	USSR	7 APR	96.6	81.2	601	592		
1971 031A	METEOR	5142	USSR	17 APR	91.3	81.2	340	335		
1971 031B		5143	USSR	17 APR	95.4	81.2	583	492		
1971 035A	COSMOS 407	5174	USSR	23 APR	100.7	74.0	803	776		
1971 035B		5175	USSR	23 APR	100.5	74.0	802	757		
1971 035C		5300	USSR	23 APR	99.9	74.0	762	741		
1971 035D		5301	USSR	23 APR	100.2	74.0	779	754		
1971 038A	COSMOS 409	5180	USSR	28 APR	109.3	74.0	1209	1174		
1971 038B		5181	USSR	28 APR	109.0	74.0	1224	1139		
1971 039A		5204	US	5 MAY	ELEMENTS NOT AVAILABLE					
1971 039B		5205	US	5 MAY	ELEMENTS NOT AVAILABLE					
1971 041A	COSMOS 411	5210	USSR	7 MAY	113.8	74.0	1488	1313		
1971 041B	COSMOS 412	5211	USSR	7 MAY	116.1	74.0	1533	1477		
1971 041C	COSMOS 413	5212	USSR	7 MAY	115.7	74.0	1505	1472		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1971 LAUNCHES (CONT.)										
1971 041D	COSMOS 414	5213	USSR	7 MAY	115.1	74.0	1492	1424		
1971 041E	COSMOS 415	5214	USSR	7 MAY	115.4	74.0	1499	1448		
1971 041F	COSMOS 416	5215	USSR	7 MAY	114.4	74.0	1489	1369		
1971 041G	COSMOS 417	5216	USSR	7 MAY	114.1	74.0	1490	1341		
1971 041H	COSMOS 418	5217	USSR	7 MAY	114.8	74.0	1490	1397		
1971 041J		5218	USSR	7 MAY	116.8	74.0	1592	1484		
1971 045A	MARS 2	5234	USSR	19 MAY	AREOCENTRIC ORBIT					
1971 046A	COSMOS 422	5238	USSR	22 MAY	105.0	74.0	1004	981		
1971 046B		5239	USSR	22 MAY	104.8	74.0	995	978		
1971 049A	MARS 3	5252	USSR	28 MAY	AREOCENTRIC ORBIT					
1971 051A	MARINER 9	5261	US	30 MAY	AREOCENTRIC ORBIT					
1971 051B		5267	US	30 MAY	HELIOCENTRIC ORBIT					
1971 052A	COSMOS 426	5281	USSR	4 JUN	101.8	74.0	1327	364		
1971 052B		5282	USSR	4 JUN	102.6	74.0	1393	366		
1971 059A	METEOR	5327	USSR	16 JUL	93.6	81.2	456	448		
1971 059B		5328	USSR	16 JUL	95.6	81.2	598	498		
1971 063D	APOLLO 15 SUBSATELLITE	5377	US	26 JUL	SELENOCENTRIC ORBIT					
1971 067B	OV1-21	5397	US	7 AUG	101.7	87.6	902	776		
1971 067E		5398	US	7 AUG	101.2	87.6	869	761		
1971 067J		5405	US	7 AUG	98.7	87.6	726	661		
1971 067K		5395	US	7 AUG	101.1	87.6	864	759		
1971 067L		5399	US	7 AUG	98.9	87.6	736	674		
1971 067M		5400	US	7 AUG	98.8	87.6	730	668		
1971 067N		5384	US	7 AUG	101.4	87.6	890	764		
1971 069C		5426	USSR	12 AUG	99.9	49.6	842	666		
1971 071A	EOLE 1	5435	FRANCE	16 AUG	99.9	50.1	852	657		
1971 071B		5438	US	16 AUG	99.8	50.2	848	653		
1971 071C		5440	US	16 AUG	97.8	50.7	721	582		
1971 073B		5449	USSR	2 SEP	SELENOCENTRIC ORBIT					
1971 080A	SHINSEI	5485	JAPAN	28 SEP	113.1	32.0	1867	873		
1971 080B		5498	JAPAN	28 SEP	111.9	32.0	1757	870		
1971 082A	LUNA 19	5488	USSR	28 SEP	SELENOCENTRIC ORBIT					
1971 082C		5490	USSR	28 SEP	SELENOCENTRIC ORBIT					
1971 086A	COSMOS 444	5547	USSR	13 OCT	114.1	74.0	1506	1319		
1971 086B	COSMOS 445	5548	USSR	13 OCT	114.4	74.0	1510	1347		
1971 086C	COSMOS 446	5549	USSR	13 OCT	114.8	74.0	1509	1379		
1971 086D	COSMOS 447	5550	USSR	13 OCT	115.1	74.0	1511	1409		
1971 086E	COSMOS 448	5551	USSR	13 OCT	115.5	74.0	1515	1438		
1971 086F	COSMOS 449	5552	USSR	13 OCT	116.2	74.0	1539	1481		
1971 086G	COSMOS 450	5553	USSR	13 OCT	115.8	74.0	1527	1459		
1971 086H	COSMOS 451	5554	USSR	13 OCT	116.6	74.0	1571	1487		
1971 086J		5555	USSR	13 OCT	117.3	74.0	1622	1500		
1971 087A		5557	US	14 OCT	101.2	99.1	855	776		
1971 087B		5556	US	14 OCT	101.4	99.0	871	777		
1971 089A		5560	US	17 OCT	100.0	92.7	771	742		
1971 093A	PROSPERO	5580	UK	28 OCT	104.8	82.0	1439	533		
1971 093B		5581	UK	28 OCT	104.9	82.0	1449	533		
1971 095A		5587	US	3 NOV	1436.0	11.8	35789	35781		
1971 095B		5588	US	3 NOV	1435.7	11.8	35792	35765		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1971 LAUNCHES (CONT.)										
1971 095C		5589	US	3 NOV	1481.7	12.4	37385	35964		
1971 096A	EXPLORER 45	5598	US	15 NOV	322.8	3.2	18149	272		
1971 099A	COSMOS 457	5614	USSR	20 NOV	109.4	74.0	1216	1181		
1971 099B		5615	USSR	20 NOV	109.3	74.0	1210	1174		
1971 110A		5678	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 110B		5679	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 110C		5680	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 110D		5681	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 110E		5682	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 111A	COSMOS 465	5683	USSR	15 DEC	104.8	74.0	1005	964		
1971 111B		5685	USSR	15 DEC	104.6	74.0	995	959		
1971 114A	COSMOS 468	5705	USSR	17 DEC	100.5	74.0	793	770		
1971 114B		5707	USSR	17 DEC	100.4	74.0	795	757		
1971 114C		5778	USSR	17 DEC	100.1	74.0	770	751		
1971 114D		5858	USSR	17 DEC	100.0	74.0	764	748		
1971 116A	INTELSAT 4 F-3	5709	ITSO	20 DEC	1445.4	8.6	36032	35906		
1971 117A	COSMOS 469	5721	USSR	25 DEC	104.7	64.5	1027	929		
1971 119A	OREOL 1	5729	USSR	27 DEC	110.0	74.0	2059	390		
1971 119B		5730	USSR	27 DEC	109.4	73.9	2011	387		
1971 120A	METEOR	5731	USSR	29 DEC	102.5	81.2	913	838		
1971 120B		5732	USSR	29 DEC	102.1	81.3	872	840		
1971 120C		8826	USSR	29 DEC	101.2	81.2	832	799		
1971 120D		8827	USSR	29 DEC	102.0	81.3	861	843		
1971 120F		15344	USSR	29 DEC	100.0	81.3	771	748		
1972 LAUNCHES										
1972 003A	INTELSAT 4 F-4	5775	ITSO	23 JAN	1442.4	8.0	35935	35886		
1972 003B		5816	US	23 JAN	653.3	27.9	36553	569		
1972 007B		5836	USSR	14 FEB	SELENOCENTRIC ORBIT					
1972 009A	COSMOS 475	5846	USSR	25 FEB	104.7	74.0	994	961		
1972 009B		5847	USSR	25 FEB	104.4	74.0	990	945		
1972 010A		5851	US	1 MAR	ELEMENTS NOT AVAILABLE					
1972 010B		5854	US	1 MAR	ELEMENTS NOT AVAILABLE					
1972 011A	COSMOS 476	5852	USSR	1 MAR	93.7	81.2	455	452		
1972 011B		5853	USSR	1 MAR	94.9	81.2	548	478		
1972 012A	PIONEER 10	5860	US	3 MAR	SOLAR SYSTEM ESCAPE TRAJECTORY					
1972 012B		5861	US	3 MAR	HELIOCENTRIC ORBIT					
1972 018A		5903	US	24 MAR	101.4	98.9	863	784		
1972 018B		5904	US	24 MAR	101.3	98.9	857	786		
1972 019A	COSMOS 480	5905	USSR	25 MAR	109.1	83.0	1196	1170		
1972 019B		5907	USSR	25 MAR	108.9	83.0	1190	1161		
1972 022A	METEOR	5917	USSR	30 MAR	102.3	81.2	879	856		
1972 022B		5918	USSR	30 MAR	102.5	81.2	918	833		
1972 023E		6073	USSR	31 MAR	162.8	52.1	6778	219		
1972 029A	PROGNOZ	5941	USSR	14 APR	CURRENT ELEMENTS NOT MAINTAINED					
1972 031C	LUNAR MODULE	6005	US	16 APR	SELENOCENTRIC ORBIT					9*
1972 035A	COSMOS 489	6019	USSR	6 MAY	104.7	74.0	997	960		
1972 035B		6020	USSR	6 MAY	104.5	74.0	986	954		
1972 041A	INTELSAT 4 F-5	6052	ITSO	13 JUN	1438.2	8.9	35847	35808		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1972 LAUNCHES (CONT.)										
1972 041B		6058	US	13 JUN	650.9	27.1	36467	535		
1972 043A	COSMOS 494	6059	USSR	23 JUN	100.5	74.1	790	774		
1972 043B		6061	USSR	23 JUN	100.3	74.1	787	755		
1972 043C		6063	USSR	23 JUN	99.8	74.0	754	742		
1972 043D		6065	USSR	23 JUN	100.1	74.1	774	747		
1972 049A	METEOR	6079	USSR	30 JUN	102.7	81.2	895	877		
1972 049B		6080	USSR	30 JUN	102.8	81.2	928	857		
1972 049C		20348	USSR	30 JUN	102.8	81.2	927	856		
1972 057A	COSMOS 504	6117	USSR	20 JUL	113.9	74.0	1494	1319		
1972 057B	COSMOS 505	6118	USSR	20 JUL	114.3	74.0	1494	1349		
1972 057C	COSMOS 506	6119	USSR	20 JUL	114.6	74.0	1493	1381		
1972 057D	COSMOS 507	6120	USSR	20 JUL	114.9	74.0	1493	1410		
1972 057E	COSMOS 508	6121	USSR	20 JUL	115.3	74.0	1494	1441		
1972 057F	COSMOS 509	6122	USSR	20 JUL	115.6	74.0	1496	1471		
1972 057G	COSMOS 510	6123	USSR	20 JUL	116.0	74.0	1507	1493		
1972 057H	COSMOS 511	6124	USSR	20 JUL	116.4	74.0	1543	1493		
1972 057J		6125	USSR	20 JUL	117.0	74.0	1599	1490		
1972 058A	LANDSAT 1	6126	US	23 JUL	103.1	99.2	908	897		
1972 058B - 058JL			US	23 JUL	SEE NOTE	17*				17*
1972 062A	COSMOS 514	6148	USSR	16 AUG	104.2	83.0	967	950		
1972 062B		6149	USSR	16 AUG	104.2	83.0	962	947		
1972 062C		6277	USSR	16 AUG	104.1	82.9	956	946		
1972 062D		7560	USSR	16 AUG	102.8	83.0	943	839		
1972 065A	COPERNICUS	6153	US	21 AUG	99.3	35.0	730	718		
1972 065B		6155	US	21 AUG	98.9	35.0	743	672		
1972 066A	COSMOS 516	6154	USSR	21 AUG	104.5	64.8	1038	906		
1972 069A	TRIAD OI-1X	6173	US	2 SEP	100.0	90.0	802	716		
1972 069B		6180	US	2 SEP	99.7	90.0	783	700		
1972 069C		6250	US	2 SEP	98.4	89.7	726	642		
1972 072A	COSMOS 520	6192	USSR	19 SEP	715.3	67.7	36619	3611		
1972 072B		6302	USSR	19 SEP	706.7	67.6	36142	3662		
1972 073A	EXPLORER 47	6197	US	23 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1972 074A	COSMOS 521	6206	USSR	29 SEP	104.9	65.8	1005	975		
1972 074B		6207	USSR	29 SEP	104.7	65.8	1003	960		
1972 074C		6210	USSR	29 SEP	104.9	65.8	1004	974		
1972 076A		6212	US	2 OCT	98.0	98.6	668	656		
1972 076B		6217	US	2 OCT	98.9	98.6	715	697		
1972 076C		6218	US	2 OCT	99.2	98.5	730	710		
1972 076D		6221	US	2 OCT	97.6	98.6	652	638		
1972 079C		6822	US	10 OCT	114.7	95.6	1464	1416		
1972 079D		6823	US	10 OCT	114.7	95.8	1484	1403		
1972 079E		6824	US	10 OCT	114.6	95.5	1444	1430		
1972 082A	NOAA 2	6235	US	15 OCT	114.9	101.8	1453	1447		
1972 082B	AMSAT-OSCAR 6	6236	US	15 OCT	114.9	101.9	1452	1446		
1972 082C		6237	US	15 OCT	109.2	102.8	1465	914		
1972 085A	METEOR	6256	USSR	26 OCT	102.3	81.2	882	853		
1972 085B		6257	USSR	26 OCT	102.4	81.3	917	831		
1972 087A	COSMOS 528	6262	USSR	1 NOV	114.1	74.0	1465	1364		
1972 087B	COSMOS 529	6264	USSR	1 NOV	114.5	74.0	1466	1400		
1972 087C	COSMOS 530	6265	USSR	1 NOV	113.7	74.0	1466	1330		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1972 LAUNCHES (CONT.)										
1972 087D	COSMOS 531	6266	USSR	1 NOV	114.7	74.0	1468	1418		
1972 087E	COSMOS 532	6267	USSR	1 NOV	113.4	74.0	1466	1297		
1972 087F	COSMOS 533	6268	USSR	1 NOV	113.6	74.0	1466	1314		
1972 087G	COSMOS 534	6269	USSR	1 NOV	113.9	74.0	1466	1347		
1972 087H	COSMOS 535	6270	USSR	1 NOV	114.3	74.0	1466	1382		
1972 087J		6271	USSR	1 NOV	116.6	74.0	1591	1465		
1972 089A		6275	US	9 NOV	101.2	98.8	846	789		
1972 089B		6276	US	9 NOV	101.5	98.8	855	801		
1972 090A	ANIK A1	6278	CANADA	10 NOV	1456.8	8.9	36291	36088		
1972 097A	NIMBUS 5	6305	US	11 DEC	107.1	99.7	1099	1086		
1972 097B		6306	US	11 DEC	111.7	99.8	1514	1098		
1972 101A		6317	US	20 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1972 101B		6318	US	20 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1972 102A	COSMOS 539	6319	USSR	21 DEC	112.9	74.0	1377	1340		
1972 102B		6320	USSR	21 DEC	112.7	74.0	1371	1333		
1972 104A	COSMOS 540	6323	USSR	25 DEC	100.5	74.1	793	766		
1972 104B		6324	USSR	25 DEC	100.1	74.1	770	756		
1972 104C		6391	USSR	25 DEC	99.3	74.1	733	716		
1972 104D		6396	USSR	25 DEC	99.2	74.1	732	711		
1973 LAUNCHES										
1973 005A	COSMOS 546	6350	USSR	26 JAN	95.9	50.7	575	547		
1973 009A	PROGNOZ 3	6364	USSR	15 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1973 013A		6380	US	6 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1973 015A	METEOR	6392	USSR	20 MAR	102.4	81.2	880	862		
1973 015B		6393	USSR	20 MAR	102.5	81.3	922	835		
1973 019A	PIONEER 11	6421	US	6 APR	SOLAR SYSTEM ESCAPE TRAJECTORY					
1973 019B		6425	US	6 APR	HELIOCENTRIC ORBIT					
1973 023A	ANIK A2	6437	CANADA	20 APR	1443.1	7.8	35964	35880		
1973 034A	METEOR	6659	USSR	29 MAY	102.2	81.2	881	845		
1973 034B		6660	USSR	29 MAY	102.5	81.2	911	841		
1973 037A	COSMOS 564	6675	USSR	8 JUN	114.6	74.0	1478	1392		
1973 037B	COSMOS 565	6676	USSR	8 JUN	115.3	74.0	1488	1446		
1973 037C	COSMOS 566	6677	USSR	8 JUN	115.0	74.0	1481	1430		
1973 037D	COSMOS 567	6678	USSR	8 JUN	114.8	74.0	1482	1410		
1973 037E	COSMOS 568	6679	USSR	8 JUN	114.4	74.0	1478	1373		
1973 037F	COSMOS 569	6680	USSR	8 JUN	114.2	74.0	1478	1355		
1973 037G	COSMOS 570	6681	USSR	8 JUN	113.9	74.0	1479	1335		
1973 037H	COSMOS 571	6682	USSR	8 JUN	113.7	74.0	1478	1316		
1973 037J		6683	USSR	8 JUN	116.8	74.0	1593	1482		
1973 039A	EXPLORER 49	6686	US	10 JUN	SELENOCENTRIC ORBIT					
1973 039D		6689	US	10 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1973 039F		6725	US	10 JUN	SELENOCENTRIC ORBIT					
1973 039G		6726	US	10 JUN	SELENOCENTRIC ORBIT					
1973 040A		6691	US	12 JUN	ELEMENTS NOT AVAILABLE					
1973 040B		11940	US	12 JUN	ELEMENTS NOT AVAILABLE					
1973 042A	COSMOS 574	6707	USSR	20 JUN	105.0	82.9	1007	977		
1973 042B		6708	USSR	20 JUN	104.8	83.0	995	978		
1973 047A	MARS 4	6742	USSR	21 JUL	HELIOCENTRIC ORBIT					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1973 LAUNCHES (CONT.)										
1973 049A	MARS 5	6754	USSR	25 JUL	AREOCENTRIC ORBIT					
1973 052A	MARS 6	6763	USSR	5 AUG	AREOCENTRIC ORBIT					
1973 053A	MARS 7	6776	USSR	9 AUG	HELIOCENTRIC ORBIT					
1973 053D	CAPSULE	7224	USSR	9 AUG	HELIOCENTRIC ORBIT					
1973 054A		6787	US	17 AUG	101.0	98.8	826	785		
1973 054B		6788	US	17 AUG	101.2	98.8	835	791		
1973 056A		6791	US	21 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1973 056B		6792	US	21 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1973 058A	INTELSAT 4 F-7	6796	ITSO	23 AUG	1452.5	7.9	36141	36072		
1973 058B		6797	US	23 AUG	652.6	27.4	36483	602		
1973 064A	COSMOS 585	6825	USSR	8 SEP	113.5	74.0	1402	1372		
1973 064B		6826	USSR	8 SEP	113.4	74.0	1403	1358		
1973 065A	COSMOS 586	6828	USSR	14 SEP	104.7	82.9	1002	960		
1973 065B		6829	USSR	14 SEP	104.6	82.9	993	957		
1973 069A	COSMOS 588	6845	USSR	2 OCT	115.3	74.0	1491	1446		
1973 069B	COSMOS 589	6846	USSR	2 OCT	114.9	74.0	1485	1413		
1973 069C	COSMOS 590	6847	USSR	2 OCT	115.1	74.0	1485	1431		
1973 069D	COSMOS 591	6848	USSR	2 OCT	114.1	74.0	1484	1344		
1973 069E	COSMOS 592	6849	USSR	2 OCT	113.9	74.0	1482	1328		
1973 069F	COSMOS 593	6850	USSR	2 OCT	114.3	74.0	1483	1361		
1973 069G	COSMOS 594	6851	USSR	2 OCT	114.5	74.0	1484	1378		
1973 069H	COSMOS 595	6852	USSR	2 OCT	114.7	74.0	1483	1397		
1973 069J		6853	USSR	2 OCT	117.1	74.0	1620	1482		
1973 078A	EXPLORER 50	6893	US	26 OCT	ELEMENTS NOT AVAILABLE					
1973 078C		6895	US	26 OCT	100.8	28.8	1254	341		
1973 078D		6896	US	26 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1973 080A	COSMOS 604	6907	USSR	29 OCT	94.0	81.2	475	464		
1973 080B		6908	USSR	29 OCT	94.4	81.2	514	465		
1973 081A	NNSS 30200	6909	US	30 OCT	105.3	89.9	1126	887		
1973 081B		6910	US	30 OCT	105.3	89.9	1127	888		
1973 081C		15764	US	30 OCT	105.8	90.5	1175	890		
1973 084A	COSMOS 606	6916	USSR	2 NOV	717.5	68.1	37275	3064		
1973 084D		6939	USSR	2 NOV	706.6	67.7	36967	2832		
1973 085A	MARINER 10	6919	US	3 NOV	HELIOCENTRIC ORBIT					
1973 086A	NOAA 3	6920	US	6 NOV	116.1	102.1	1508	1499		
1973 086B -	086HF		US	6 NOV	SEE NOTE	18*				18*
1973 088D		6938	US	10 NOV	114.5	96.9	1454	1412		
1973 088E		7559	US	10 NOV	114.6	96.8	1476	1400		
1973 098A	COSMOS 614	6965	USSR	4 DEC	100.3	74.1	789	755		
1973 098B		6966	USSR	4 DEC	100.2	74.1	782	749		
1973 098C		6967	USSR	4 DEC	99.0	74.1	724	698		
1973 098D		9569	USSR	4 DEC	99.8	74.1	763	738		
1973 100A		6973	US	13 DEC	1474.6	11.6	36673	36401		
1973 100B		6974	US	13 DEC	1436.2	11.2	36333	35244		
1973 100D		6976	US	13 DEC	1515.0	12.2	38527	36106		
1973 104A	COSMOS 617	6985	USSR	19 DEC	113.9	74.0	1482	1332		
1973 104B	COSMOS 618	6986	USSR	19 DEC	115.2	74.0	1485	1441		
1973 104C	COSMOS 619	6987	USSR	19 DEC	115.0	74.0	1485	1421		
1973 104D	COSMOS 620	6988	USSR	19 DEC	115.4	74.0	1492	1456		
1973 104E	COSMOS 621	6989	USSR	19 DEC	114.7	74.0	1482	1404		

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1973 LAUNCHES (CONT.)										
1973 104F	COSMOS 622	6990	USSR	19 DEC	114.3	74.0	1482	1368		
1973 104G	COSMOS 623	6991	USSR	19 DEC	114.5	74.0	1482	1385		
1973 104H	COSMOS 624	6992	USSR	19 DEC	114.1	74.0	1483	1349		
1973 104J		6993	USSR	19 DEC	117.0	74.0	1619	1473		
1973 107A	OREOL 2	7003	USSR	26 DEC	104.6	74.0	1560	389		
1973 107B		7004	USSR	26 DEC	104.0	74.0	1517	381		
1973 108A	COSMOS 626	7005	USSR	27 DEC	104.0	65.4	979	911		
1973 109A	COSMOS 627	7008	USSR	29 DEC	104.9	83.0	1013	965		
1973 109B		7009	USSR	29 DEC	104.6	83.0	991	959		
1974 LAUNCHES										
1974 001A	COSMOS 628	7094	USSR	17 JAN	104.7	83.0	1009	950		
1974 001B		7095	USSR	17 JAN	104.5	82.9	999	942		
1974 011A	METEOR	7209	USSR	5 MAR	102.0	81.2	879	822		
1974 011B		7210	USSR	5 MAR	102.0	81.2	912	793		
1974 013A	UK-X4	7213	UK	9 MAR	100.5	97.8	878	682		
1974 013B		7228	US	9 MAR	100.5	97.8	874	692		
1974 015A		7218	US	16 MAR	101.0	99.0	852	761		
1974 015B		7219	US	16 MAR	101.3	99.0	867	769		
1974 017A	COSMOS 637	7229	USSR	26 MAR	1428.8	11.7	35805	35483		
1974 017F		11567	USSR	26 MAR	1425.7	11.6	35768	35398		
1974 020B		7244	US	10 APR	ELEMENTS NOT AVAILABLE					
1974 022A	WESTAR 1	7250	US	13 APR	1441.4	7.4	35906	35873		
1974 024A	COSMOS 641	7265	USSR	23 APR	114.5	74.0	1480	1385		
1974 024B	COSMOS 642	7266	USSR	23 APR	113.7	74.0	1478	1317		
1974 024C	COSMOS 643	7267	USSR	23 APR	114.1	74.0	1479	1350		
1974 024D	COSMOS 644	7268	USSR	23 APR	113.9	74.0	1480	1332		
1974 024E	COSMOS 645	7269	USSR	23 APR	114.3	74.0	1480	1366		
1974 024F	COSMOS 646	7270	USSR	23 APR	114.7	74.0	1482	1401		
1974 024G	COSMOS 647	7271	USSR	23 APR	114.9	74.0	1481	1421		
1974 024H	COSMOS 648	7272	USSR	23 APR	115.1	74.0	1487	1435		
1974 024J		7273	USSR	23 APR	117.0	74.0	1605	1485		
1974 025A	METEOR	7274	USSR	24 APR	102.3	81.2	883	853		
1974 025B		7275	USSR	24 APR	102.4	81.2	915	832		
1974 026A	MOLNIYA 2-9	7276	USSR	26 APR	641.4	62.4	36212	302		
1974 026B		7373	USSR	26 APR	718.3	62.8	40203	178		
1974 028A	COSMOS 650	7281	USSR	29 APR	113.4	74.0	1398	1365		
1974 028B		7284	USSR	29 APR	113.2	74.0	1387	1361		
1974 029A	COSMOS 651	7291	USSR	15 MAY	103.4	65.0	943	895		
1974 032A	COSMOS 654	7297	USSR	17 MAY	104.4	64.9	1008	923		
1974 033A	SMS 1	7298	US	17 MAY	1460.3	13.3	36304	36214		
1974 037A	LUNA 22	7315	USSR	29 MAY	SELENOCENTRIC ORBIT					
1974 039A	ATS 6	7318	US	30 MAY	1412.1	11.1	35434	35196		
1974 039C		7324	US	30 MAY	1430.6	11.2	35771	35588		
1974 044A	COSMOS 660	7337	USSR	18 JUN	105.3	83.0	1625	386		
1974 044B		7338	USSR	18 JUN	103.1	83.0	1426	367		
1974 048A	COSMOS 663	7349	USSR	27 JUN	104.7	82.9	998	961		
1974 048B		7351	USSR	27 JUN	104.5	82.9	986	960		
1974 050A	COSMOS 665	7352	USSR	29 JUN	709.6	61.8	39653	298		

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1974 LAUNCHES (CONT.)										
1974 052C		7354	USSR	29 JUN	682.6	62.5	38557	46		
1974 052A	METEOR	7363	USSR	9 JUL	102.9	81.2	908	884		
1974 052B		7364	USSR	9 JUL	102.5	81.2	908	844		
1974 054A		7369	US	14 JUL	468.7	125.1	13765	13454		
1974 054C		8599	US	14 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1974 056A	MOLNIYA 2-1	7376	USSR	23 JUL	717.5	61.8	39381	959		
1974 056D		7382	USSR	23 JUL	731.9	62.0	40399	650		
1974 060A	MOLNIYA 1-5	7392	USSR	29 JUL	1436.8	12.0	35842	35758		
1974 063A		7411	US	9 AUG	101.3	98.8	851	784		
1974 063B		7412	US	9 AUG	101.4	98.8	858	788		
1974 066A	COSMOS 673	7417	USSR	16 AUG	93.0	81.2	430	410		
1974 066B		7418	USSR	16 AUG	95.1	81.2	552	497		
1974 066C		8424	USSR	16 AUG	91.2	81.2	337	325		
1974 069A	COSMOS 675	7424	USSR	29 AUG	113.6	74.1	1421	1361		
1974 069B		7426	USSR	29 AUG	113.5	74.1	1420	1351		
1974 071A	COSMOS 676	7433	USSR	11 SEP	100.7	74.0	802	781		
1974 071B		7434	USSR	11 SEP	100.5	74.0	799	768		
1974 071C		8756	USSR	11 SEP	100.0	74.1	764	748		
1974 071D		8829	USSR	11 SEP	100.5	74.1	796	765		
1974 072A	COSMOS 677	7435	USSR	19 SEP	114.4	74.0	1464	1395		
1974 072B	COSMOS 678	7436	USSR	19 SEP	115.9	74.0	1530	1464		
1974 072C	COSMOS 679	7437	USSR	19 SEP	115.7	74.0	1508	1464		
1974 072D	COSMOS 680	7438	USSR	19 SEP	115.5	74.0	1489	1465		
1974 072E	COSMOS 681	7439	USSR	19 SEP	115.3	74.0	1469	1464		
1974 072F	COSMOS 682	7440	USSR	19 SEP	115.1	74.0	1465	1450		
1974 072G	COSMOS 683	7441	USSR	19 SEP	114.8	74.0	1465	1431		
1974 072H	COSMOS 684	7442	USSR	19 SEP	114.6	74.0	1464	1413		
1974 072J		7443	USSR	19 SEP	117.7	74.0	1682	1473		
1974 075A	WESTAR 2	7466	US	10 OCT	1442.1	7.1	35933	35873		
1974 075C		7468	US	10 OCT	260.1	24.3	14047	189		
1974 079A	COSMOS 689	7476	USSR	18 OCT	105.0	82.9	1014	970		
1974 079B		7477	USSR	18 OCT	104.8	82.9	1010	960		
1974 083A	METEOR	7490	USSR	28 OCT	102.2	81.2	891	836		
1974 083B		7493	USSR	28 OCT	102.4	81.2	904	835		
1974 083C		15521	USSR	28 OCT	102.3	81.2	902	835		
1974 089A	NOAA 4	7529	US	15 NOV	114.9	101.8	1456	1443		
1974 089B	AMSAT-OSCAR 7	7530	US	15 NOV	114.8	101.8	1457	1438		
1974 089C	INTASAT	7531	SPAIN	15 NOV	114.8	101.8	1457	1439		
1974 089D - 089FF			US	15 NOV	SEE NOTE 19*					19*
1974 092E		7546	USSR	21 NOV	733.3	64.5	40785	330		
1974 093A	INTELSAT 4 F-8	7544	ITSO	21 NOV	1443.2	6.2	35965	35884		
1974 093B		7545	US	21 NOV	652.7	26.1	36486	608		
1974 094A	SKYNET 2B	7547	UK	23 NOV	1435.9	10.1	35811	35754		
1974 097A	HELIOS 1	7567	FRG	10 DEC	HELIOCENTRIC ORBIT					
1974 097B		7568	US	10 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1974 097C		7569	US	10 DEC	HELIOCENTRIC ORBIT					
1974 097D		7570	FRG	10 DEC	HELIOCENTRIC ORBIT					
1974 099A	METEOR	7574	USSR	17 DEC	102.1	81.2	875	842		
1974 099B		7575	USSR	17 DEC	102.1	81.2	901	817		
1974 101A	SYMPHONIE-A	7578	FR/FRG	19 DEC	1440.7	10.2	35894	35860		

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1974 LAUNCHES (CONT.)										
1974 101G		9330	US	19 DEC	658.0	13.4	36978	385		
1974 102D		7586	USSR	21 DEC	438.5	62.0	25389	92		
1974 105A	COSMOS 700	7593	USSR	26 DEC	104.6	83.0	993	958		
1974 105B		7594	USSR	26 DEC	104.5	82.9	980	959		
1975 LAUNCHES										
1975 004A	LANDSAT 2	7615	US	22 JAN	103.1	98.8	912	900		
1975 004B - 004HR			US	22 JAN	SEE NOTE	20*				20*
1975 007A	COSMOS 706	7625	USSR	30 JAN	717.7	67.7	33741	6611		
1975 007D		7629	USSR	30 JAN	716.5	67.5	34339	5950		
1975 009D		7653	USSR	6 FEB	685.8	64.1	38462	304		
1975 010A	STARLETTE	7646	FRANCE	6 FEB	104.2	49.8	1107	806		
1975 010B		7647	FRANCE	6 FEB	104.4	49.8	1128	801		
1975 010C		7654	FRANCE	6 FEB	103.7	49.9	1070	797		
1975 010D		7655	FRANCE	6 FEB	103.8	49.8	1078	795		
1975 010E		7659	FRANCE	6 FEB	103.9	49.8	1090	796		
1975 011A	SMS 2	7648	US	6 FEB	1447.5	9.6	36336	35681		
1975 012A	COSMOS 708	7663	USSR	12 FEB	113.5	69.2	1408	1367		
1975 012B		7665	USSR	12 FEB	113.3	69.2	1396	1363		
1975 016A	COSMOS 711	7678	USSR	28 FEB	115.4	74.0	1491	1459		
1975 016B	COSMOS 712	7679	USSR	28 FEB	114.9	74.0	1487	1409		
1975 016C	COSMOS 713	7680	USSR	28 FEB	114.7	74.0	1484	1394		
1975 016D	COSMOS 714	7681	USSR	28 FEB	115.2	74.0	1489	1442		
1975 016E	COSMOS 715	7682	USSR	28 FEB	115.7	74.0	1502	1467		
1975 016F	COSMOS 716	7683	USSR	28 FEB	115.9	74.0	1512	1477		
1975 016G	COSMOS 717	7684	USSR	28 FEB	116.1	74.0	1533	1478		
1975 016H	COSMOS 718	7685	USSR	28 FEB	115.0	74.0	1487	1427		
1975 016J		7686	USSR	28 FEB	117.9	74.0	1718	1457		
1975 017A		7687	US	10 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1975 017B		7688	US	10 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1975 023A	METEOR	7714	USSR	1 APR	102.3	81.2	885	854		
1975 023B		7715	USSR	1 APR	102.4	81.2	911	834		
1975 024A	COSMOS 723	7718	USSR	2 APR	103.6	64.7	972	889		
1975 025A	COSMOS 724	7727	USSR	7 APR	103.0	65.6	940	857		
1975 027A	GEOS 3	7734	US	9 APR	101.6	115.0	855	814		
1975 027B		7735	US	9 APR	101.3	115.0	860	781		
1975 027C		10723	US	9 APR	101.5	115.2	867	791		
1975 027E		10739	US	9 APR	103.6	115.0	996	858		
1975 028A	COSMOS 726	7736	USSR	11 APR	104.5	83.0	989	951		
1975 028B		7737	USSR	11 APR	104.4	83.0	978	951		
1975 029D		7741	USSR	14 APR	726.6	62.3	40651	139		
1975 033A	ARIABHAT	7752	INDIA	19 APR	93.6	50.7	455	444		
1975 034A	COSMOS 729	7768	USSR	22 APR	104.9	83.0	1005	970		
1975 034B		7769	USSR	22 APR	104.8	83.0	996	970		
1975 036A	MOLNIYA 1-2[illegible]	7770	USSR	23 APR	717.5	62.9	39920	419		
1975 036D		7773	USSR	23 APR	732.9	63.5	40408	689		
1975 038A	ANIK A3	7770	CANADA	7 MAY	1439.3	6.4	35863	35835		
1975 038B		7774	US	7 MAY	419.2	24.4	24079	270		
1975 042A	INTELSAT 4 F-1	7815	ITSO	22 MAY	1450.7	6.3	36119	36026		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1975 LAUNCHES (CONT.)										
1975 042B		7902	US	22 MAY	653.5	26.0	36542	591		
1975 043A		7816	US	24 MAY	ELEMENTS NOT AVAILABLE					
1975 043B		7817	US	24 MAY	ELEMENTS NOT AVAILABLE					
1975 045A	COSMOS 732	7820	USSR	28 MAY	114.6	74.0	1468	1401		
1975 045B	COSMOS 733	7822	USSR	28 MAY	116.2	74.0	1552	1467		
1975 045C	COSMOS 734	7823	USSR	28 MAY	115.0	74.0	1470	1440		
1975 045D	COSMOS 735	7824	USSR	28 MAY	115.2	74.0	1472	1459		
1975 045E	COSMOS 736	7825	USSR	28 MAY	115.5	74.0	1484	1468		
1975 045F	COSMOS 737	7826	USSR	28 MAY	115.9	74.0	1527	1468		
1975 045G	COSMOS 738	7827	USSR	28 MAY	115.7	74.0	1507	1467		
1975 045H	COSMOS 739	7828	USSR	28 MAY	114.8	74.0	1470	1420		
1975 045J		7831	USSR	28 MAY	117.9	74.0	1693	1483		
1975 049B	SRET 2	7910	FRANCE	5 JUN	737.8	62.8	40825	513		
1975 049F		8548	USSR	5 JUN	524.0	62.8	30198	107		
1975 050A	VENERA 9	7915	USSR	8 JUN	HELIOCENTRIC ORBIT					
1975 051C	SSU 1	7937	US	8 JUN	113.5	95.1	1392	1384		
1975 051D		7938	US	8 JUN	113.2	95.0	1403	1342		
1975 051E		7939	US	8 JUN	113.9	95.2	1425	1382		
1975 052A	NIMBUS 6	7924	US	12 JUN	107.4	99.7	1111	1099		
1975 052B		7946	US	12 JUN	107.2	99.6	1099	1091		
1975 054A	VENERA 10	7947	USSR	14 JUN	HELIOCENTRIC ORBIT					
1975 055A		7963	US	18 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1975 055B		7964	US	18 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1975 056A	COSMOS 744	7968	USSR	20 JUN	93.6	81.2	456	447		
1975 056B		7969	USSR	20 JUN	95.3	81.2	555	507		
1975 063A	MOLNIYA 2-13	8015	USSR	8 JUL	718.4	63.0	39942	442		
1975 063D		8018	USSR	8 JUL	733.0	63.6	40426	677		
1975 064A	METEOR 2	8026	USSR	11 JUL	102.2	81.3	879	846		
1975 064B		8027	USSR	11 JUL	102.4	81.3	910	831		
1975 064C		8039	USSR	11 JUL	102.2	81.3	883	847		
1975 064D		8110	USSR	11 JUL	102.1	81.3	882	834		
1975 072A	COS-B	8062	ESA	9 AUG	2203.9	90.3	99002	442		
1975 072B		8063	US	9 AUG	123.8	89.2	3382	321		
1975 074A	COSMOS 755	8072	USSR	14 AUG	104.8	82.9	1005	966		
1975 074B		8073	USSR	14 AUG	104.7	82.9	994	964		
1975 075A	VIKING ORBITER 1	8108	US	20 AUG	AREOCENTRIC ORBIT					
1975 075B		8111	US	20 AUG	HELIOCENTRIC ORBIT					
1975 076A	COSMOS 756	8127	USSR	22 AUG	94.6	81.2	501	494		
1975 076B		8128	USSR	22 AUG	95.6	81.2	576	521		
1975 077A	SYMPHONIE-B	8132	FR/FRG	27 AUG	1440.3	10.1	35876	35861		
1975 077B		8133	US	27 AUG	104.2	25.3	1513	402		
1975 077C		8134	US	27 AUG	645.0	13.4	36344	358		
1975 081A	MOLNIYA 2-14	8195	USSR	9 SEP	717.3	62.6	39963	368		
1975 081D		8418	USSR	9 SEP	733.7	63.4	40641	493		
1975 082A	KIKU	8197	JAPAN	9 SEP	106.0	47.0	1103	975		
1975 082B		8352	JAPAN	9 SEP	105.9	47.0	1101	974		
1975 083A	VIKING ORBITER 2	8199	US	9 SEP	AREOCENTRIC ORBIT					
1975 083B		8272	US	9 SEP	HELIOCENTRIC ORBIT					
1975 086A	COSMOS 761	8235	USSR	17 SEP	114.6	74.0	1479	1398		
1975 086B	COSMOS 762	8236	USSR	17 SEP	115.1	74.0	1482	1436		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1975 LAUNCHES (CONT.)										
1975 086C	COSMOS 763	8287	USSR	17 SEP	115.8	74.0	1508	1471		
1975 086D	COSMOS 764	8288	USSR	17 SEP	116.0	74.0	1524	1476		
1975 086E	COSMOS 765	8289	USSR	17 SEP	116.3	74.0	1548	1476		
1975 086F	COSMOS 766	8290	USSR	17 SEP	114.9	74.0	1481	1416		
1975 086G	COSMOS 767	8291	USSR	17 SEP	115.3	74.0	1484	1453		
1975 086H	COSMOS 768	8292	USSR	17 SEP	115.5	74.0	1489	1468		
1975 086J		8295	USSR	17 SEP	117.8	74.0	1682	1479		
1975 087A	METEOR	8293	USSR	18 SEP	102.1	81.3	912	800		
1975 087B		8294	USSR	18 SEP	102.3	81.3	913	819		
1975 089A	COSMOS 770	8325	USSR	24 SEP	109.1	83.0	1206	1162		
1975 089B		8326	USSR	24 SEP	108.9	83.0	1196	1159		
1975 091A	INTELSAT 4A F-1	8330	ITSO	26 SEP	1440.9	6.3	35910	35850		
1975 091B		8331	US	26 SEP	653.1	22.1	36618	494		
1975 094A	COSMOS 773	8343	USSR	30 SEP	100.5	74.1	792	775		
1975 094B		8344	USSR	30 SEP	100.4	74.1	792	758		
1975 094C		8346	USSR	30 SEP	98.9	74.0	717	698		
1975 094D		14865	USSR	30 SEP	100.2	74.0	774	764		
1975 097A	COSMOS 775	8357	USSR	8 OCT	1436.0	11.5	35845	35722		
1975 097E		8415	USSR	8 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1975 097F		11676	USSR	8 OCT	1438.3	11.5	35941	35717		
1975 099A	TIP 2	8361	US	12 OCT	94.1	90.4	509	440		
1975 100A	GOES 1	8366	US	16 OCT	1435.5	10.0	35793	35757		
1975 100C		8368	US	16 OCT	166.3	23.5	7026	249		
1975 103A	COSMOS 778	8419	USSR	4 NOV	104.8	83.0	1000	966		
1975 103B		8421	USSR	4 NOV	104.6	83.0	995	958		
1975 105A	MOLNIYA 3-3	8425	USSR	14 NOV	717.3	62.9	39892	441		
1975 105D		8462	USSR	14 NOV	733.8	63.6	40543	597		
1975 112A	COSMOS 783	8458	USSR	28 NOV	100.7	74.1	800	781		
1975 112B		8459	USSR	28 NOV	100.5	74.1	794	769		
1975 112C		8757	USSR	28 NOV	99.8	74.0	750	743		
1975 112D		14801	USSR	28 NOV	100.5	74.1	791	775		
1975 112E		18500	USSR	28 NOV	100.7	74.0	804	778		
1975 116A	COSMOS 785	8473	USSR	12 DEC	104.2	65.1	1005	907		
1975 117A	RCA SATCOM I	8476	US	13 DEC	1446.0	6.4	36063	35895		
1975 118A		8482	US	14 DEC	ELEMENTS NOT AVAILABLE					
1975 118C		8516	US	14 DEC	ELEMENTS NOT AVAILABLE					
1975 118D		8517	US	14 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1975 121A	MOLNIYA 2-15	8492	USSR	17 DEC	416.9	62.8	24113	103		
1975 122A	PROGNOZ 4	8510	USSR	22 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1975 123A	RADUGA 1	8513	USSR	22 DEC	ELEMENTS NOT AVAILABLE					
1975 123D		8546	USSR	22 DEC	382.6	46.1	21825	332		
1975 123E		8547	USSR	22 DEC	370.8	46.7	21216	223		
1975 123F		11568	USSR	22 DEC	1432.8	11.2	35797	35646		
1975 124A	METEOR	8519	USSR	25 DEC	102.2	81.3	882	838		
1975 124B		8520	USSR	25 DEC	102.3	81.3	903	828		
1976 LAUNCHES										
1976 003A	HELIOS 2	8532	FRG	15 JAN	HELIOCENTRIC ORBIT					
1976 003B		8533	US	15 JAN	HELIOCENTRIC ORBIT					

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1976 LAUNCHES (CONT.)										
1976 003C		8584	US	15 JAN	HELIOCENTRIC ORBIT					
1976 004A	CTS	8585	CANADA	17 JAN	1436.1	10.6	35855	35716		
1976 005A	COSMOS 789	8591	USSR	20 JAN	104.9	83.0	1011	965		
1976 005B		8597	USSR	20 JAN	104.7	83.0	1001	963		
1976 006A	MOLNIYA 1-32	8601	USSR	22 JAN	720.2	63.4	39757	714		
1976 006B		8701	USSR	22 JAN	695.4	63.4	38677	566		
1976 008A	COSMOS 791	8607	USSR	28 JAN	114.7	74.1	1485	1399		
1976 008B	COSMOS 792	8608	USSR	28 JAN	115.1	74.1	1489	1433		
1976 008C	COSMOS 793	8609	USSR	28 JAN	114.9	74.1	1489	1415		
1976 008D	COSMOS 794	8610	USSR	28 JAN	115.3	74.1	1492	1449		
1976 008E	COSMOS 795	8611	USSR	28 JAN	115.6	74.1	1496	1465		
1976 008F	COSMOS 796	8612	USSR	28 JAN	115.8	74.1	1513	1470		
1976 008G	COSMOS 797	8613	USSR	28 JAN	116.0	74.1	1527	1477		
1976 008H	COSMOS 798	8614	USSR	28 JAN	116.3	74.1	1552	1476		
1976 008J		8615	USSR	28 JAN	117.9	74.1	1693	1481		
1976 010A	INTELSAT 4A F-2	8620	ITSO	29 JAN	1444.5	6.4	35969	35932		
1976 010B		8621	US	29 JAN	654.0	21.3	36577	583		
1976 011A	COSMOS 800	8645	USSR	3 FEB	105.0	83.0	1009	975		
1976 011B		8646	USSR	3 FEB	104.8	83.0	990	982		
1976 014A	COSMOS 803	8688	USSR	12 FEB	95.5	65.9	573	515		
1976 017A	MARISAT 1	8697	US	19 FEB	1436.0	8.5	35795	35777		
1976 017C		8702	US	19 FEB	175.0	24.4	7717	252		
1976 019A	UME	8709	JAPAN	29 FEB	105.1	69.7	1007	986		
1976 019B		8710	JAPAN	29 FEB	105.1	69.7	1010	989		
1976 021A	MOLNIYA 1-33	8741	USSR	11 MAR	669.1	62.6	37773	151		
1976 021D		9411	USSR	11 MAR	730.9	62.9	40645	352		
1976 022A	COSMOS 807	8744	USSR	12 MAR	105.6	82.9	1655	386		
1976 022B		8745	USSR	12 MAR	103.0	82.9	1422	374		
1976 023A	LES 8	8746	US	15 MAR	1435.8	19.9	35826	35736		
1976 023B	LES 9	8747	US	15 MAR	1436.1	19.3	35811	35763		
1976 023C	SOLRAD 11A	8748	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023D	SOLRAD 11B	8749	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023F		8751	US	15 MAR	1465.5	19.8	37045	35676		
1976 023G		8752	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023H		8753	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023J		8832	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023K		13753	US	15 MAR	1420.9	9.0	35497	35480		
1976 024A	COSMOS 808	8754	USSR	16 MAR	94.9	81.2	525	500		
1976 024B		8755	USSR	16 MAR	95.0	81.2	549	489		
1976 029A	RCA SATCOM II	8774	US	26 MAR	1460.1	6.0	36498	36012		
1976 032A	METEOR	8799	USSR	7 APR	102.1	81.3	883	830		
1976 032B		8800	USSR	7 APR	102.2	81.2	933	792		
1976 035A	NATO III-A	8808	NATO	22 APR	1436.2	8.5	35793	35785		
1976 038A		8818	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038B		8819	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038C	SSU-1	8835	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038D	SSU-2	8836	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038E		8839	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038F		8842	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038G		8843	US	30 APR	ELEMENTS NOT AVAILABLE					

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1976 LAUNCHES (CONT.)										
1976 038H		8859	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038J	SSU-3	8884	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038K		9796	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038L		9996	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 039A	LAGEOS	8820	US	4 MAY	225.4	109.9	5946	5837		
1976 039B		8821	US	4 MAY	103.5	109.6	1573	275		
1976 039C		8822	US	4 MAY	225.4	109.9	5942	5836		
1976 039D		14514	US	4 MAY	112.7	110.0	2419	283		
1976 041A	MOLNIYA 3-5	8833	USSR	12 MAY	664.3	62.0	37590	93		
1976 041D		8844	USSR	12 MAY	710.5	61.9	39885	111		
1976 042A	COMSTAR 1	8838	US	13 MAY	1442.6	6.2	35971	35854		
1976 042B		8840	US	13 MAY	648.4	21.8	36235	641		
1976 043A	METEOR	8845	USSR	15 MAY	102.1	81.3	886	826		
1976 043B		8846	USSR	15 MAY	102.3	81.2	905	827		
1976 047A	P 76-5	8860	US	22 MAY	105.4	99.6	1047	982		
1976 047B		8861	US	22 MAY	105.5	99.5	1048	985		
1976 047C		8867	US	22 MAY	106.3	99.2	1112	1000		
1976 047D		8868	US	22 MAY	104.6	100.0	1015	937		
1976 050A		8871	US	2 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1976 050B		8872	US	2 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1976 051A	COSMOS 823	8873	USSR	2 JUN	104.9	83.0	1005	970		
1976 051B		8874	USSR	2 JUN	104.8	83.0	1002	964		
1976 053A	MARISAT 2	8882	US	10 JUN	1436.0	7.7	35810	35762		
1976 053F		8910	US	10 JUN	490.8	25.2	28191	276		
1976 054A	COSMOS 825	8889	USSR	15 JUN	114.6	74.0	1484	1393		
1976 054B	COSMOS 826	8890	USSR	15 JUN	116.2	74.0	1542	1480		
1976 054C	COSMOS 827	8891	USSR	15 JUN	114.9	74.0	1487	1411		
1976 054D	COSMOS 828	8892	USSR	15 JUN	115.1	74.0	1487	1430		
1976 054E	COSMOS 829	8893	USSR	15 JUN	115.3	74.0	1489	1448		
1976 054F	COSMOS 830	8894	USSR	15 JUN	115.5	74.0	1491	1466		
1976 054G	COSMOS 831	8895	USSR	15 JUN	115.7	74.0	1505	1472		
1976 054H	COSMOS 832	8896	USSR	15 JUN	116.0	74.0	1518	1480		
1976 054J		8897	USSR	15 JUN	117.9	74.0	1686	1485		
1976 059A		8916	US	26 JUN	ELEMENTS NOT AVAILABLE					
1976 059C		8918	US	26 JUN	ELEMENTS NOT AVAILABLE					
1976 059D		8919	US	26 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1976 061A	COSMOS 836	8923	USSR	29 JUN	100.7	74.1	803	777		
1976 061B		8924	USSR	29 JUN	100.5	74.1	792	771		
1976 061C		9572	USSR	29 JUN	99.6	74.1	746	733		
1976 061D		14815	USSR	29 JUN	99.8	74.1	759	736		
1976 066C		9008	US	8 JUL	ELEMENTS NOT AVAILABLE					
1976 066A	PALAPA 1	9009	INDNSA	8 JUL	1439.2	4.5	35864	35831		
1976 066C		9017	US	8 JUL	348.7	24.4	19812	254		
1976 067A	COSMOS 839	9011	USSR	8 JUL	115.6	65.9	2063	906		
1976 067B - 067BW			USSR	8 JUL	SEE NOTE	21*				21*
1976 067BU		20030	USSR	8 JUL	118.8	65.7	2264	988		
1976 069A	COSMOS 841	9722	USSR	15 JUL	100.5	74.0	792	772		
1976 069B		9723	USSR	15 JUL	100.3	74.0	788	761		
1976 069C		97 4	USSR	15 JUL	99.8	74.1	753	742		
1976 069D		13499	USSR	15 JUL	100.6	74.1	805	770		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1976 LAUNCHES (CONT.)										
1976 076A	COSMOS 842	9025	USSR	21 JUL	104.8	83.0	1005	964		
1976 076B		9044	USSR	21 JUL	104.6	83.0	989	966		
1976 073A	COMSTAR 2	9047	US	22 JUL	1436.0	5.9	35788	35782		
1976 073B		9329	US	22 JUL	646.0	21.9	36214	540		
1976 074E		9269	USSR	23 JUL	684.1	62.6	38205	476		
1976 077A	NOAA 5	9057	US	29 JUL	116.2	102.0	1519	1504		
1976 077B - 077FR			US	29 JUL	SEE NOTE	22*				22*
1976 078A	COSMOS 846	9061	USSR	29 JUL	104.6	82.9	1008	945		
1976 078B		9062	USSR	29 JUL	104.5	82.9	992	947		
1976 080A		9270	US	6 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1976 080B		9271	US	6 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1976 085B		9390	USSR	27 AUG	93.9	81.1	494	431		
1976 091A	DMSP-F1	9415	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 091B		9419	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 091C		9420	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 091F		9484	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 091G		9518	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 092A	RADUGA 2	9416	USSR	11 SEP	1436.3	10.9	35888	35690		
1976 092F		17872	USSR	11 SEP	1435.4	10.9	35853	35692		
1976 098A	COSMOS 858	9443	USSR	29 SEP	100.6	74.0	797	776		
1976 098B		9444	USSR	29 SEP	100.5	74.1	790	770		
1976 098C		14816	USSR	29 SEP	100.6	74.0	800	770		
1976 098D		14817	USSR	29 SEP	99.8	74.1	760	733		
1976 098E		18504	USSR	29 SEP	100.0	74.1	776	744		
1976 101A	MARISAT 3	9478	US	14 OCT	1436.1	9.0	35796	35779		
1976 102A	METEOR	9481	USSR	15 OCT	102.2	81.3	887	840		
1976 102B		9482	USSR	15 OCT	102.4	81.3	913	827		
1976 103A	COSMOS 860	9486	USSR	17 OCT	104.3	64.7	989	930		
1976 103F		19297	USSR	17 OCT	102.3	64.6	886	852		
1976 104A	COSMOS 861	9494	USSR	21 OCT	104.2	64.9	984	932		
1976 105A	COSMOS 862	9495	USSR	22 OCT	717.1	66.9	38727	1591		
1976 105B - 105P			USSR	22 OCT	SEE NOTE	23*				23*
1976 107A	EKRAN	9503	USSR	26 OCT	1435.4	10.8	36069	35478		
1976 107F		11569	USSR	26 OCT	1419.3	10.7	35516	35398		
1976 108A	COSMOS 864	9509	USSR	29 OCT	104.7	82.9	1004	957		
1976 108B		9510	USSR	29 OCT	104.6	82.9	994	954		
1976 112A	PROGNOZ 5	9557	USSR	25 NOV	CURRENT ELEMENTS NOT MAINTAINED					
1976 116A	MOLNIYA 2-16	9574	USSR	2 DEC	709.8	62.0	39809	153		
1976 116D		9579	USSR	2 DEC	732.0	62.3	40454	598		
1976 118A	COSMOS 871	9588	USSR	7 DEC	114.6	74.0	1462	1415		
1976 118B	COSMOS 872	9589	USSR	7 DEC	114.4	74.0	1462	1396		
1976 118C	COSMOS 873	9590	USSR	7 DEC	115.5	74.0	1494	1461		
1976 118D	COSMOS 874	9591	USSR	7 DEC	115.7	74.0	1514	1461		
1976 118E	COSMOS 875	9592	USSR	7 DEC	114.8	74.0	1462	1434		
1976 118F	COSMOS 876	9593	USSR	7 DEC	116.0	74.0	1537	1461		
1976 118G	COSMOS 877	9594	USSR	7 DEC	115.0	74.0	1462	1452		
1976 118H	COSMOS 878	9595	USSR	7 DEC	115.3	74.0	1473	1461		
1976 118J		9598	USSR	7 DEC	117.6	74.0	1682	1463		
1976 120B - 120BC			USSR	9 DEC	SEE NOTE	24*				24*
1976 122A	COSMOS 883	9610	USSR	15 DEC	104.7	83.0	1005	953		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1976 LAUNCHES (CONT.)										
1976 122B		9613	USSR	15 DEC	104.6	83.0	997	951		
1976 126A	COSMOS 886	9634	USSR	27 DEC	114.8	65.8	2297	590		
1976 126B - 126CG			USSR	27 DEC	SEE NOTE	25*				25*
1976 127A	MOLNIYA 3-6	9635	USSR	28 DEC	257.0	59.5	13594	426		
1976 128A	COSMOS 887	9637	USSR	28 DEC	104.7	82.9	1010	945		
1976 128B		9638	USSR	28 DEC	104.5	82.9	995	948		
1977 LAUNCHES										
1977 002A	METEOR 2-2	9661	USSR	6 JAN	102.7	81.3	894	878		
1977 002B		9662	USSR	6 JAN	102.8	81.3	931	853		
1977 002C		9663	USSR	6 JAN	102.7	81.3	891	881		
1977 002D		9664	USSR	6 JAN	102.7	81.3	895	881		
1977 004A	COSMOS 890	9737	USSR	20 JAN	105.0	83.0	1014	974		
1977 004B		9738	USSR	20 JAN	104.8	83.0	998	975		
1977 005A	NATO III-B	9785	NATO	28 JAN	1436.2	8.2	35798	35780		
1977 005B		9786	US	28 JAN	103.9	28.0	1262	619		
1977 005D		9809	US	28 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1977 005E		9810	US	28 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1977 005F		9811	US	28 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1977 007A		9803	US	6 FEB	ELEMENTS NOT AVAILABLE					
1977 007C		9855	US	6 FEB	ELEMENTS NOT AVAILABLE					
1977 007D		9856	US	6 FEB	ELEMENTS NOT AVAILABLE					
1977 010A	MOLNIYA 2-17	9829	USSR	11 FEB	717.8	63.6	39525	829		
1977 010E		9850	USSR	11 FEB	731.0	64.0	39609	1395		
1977 012A	TANSEI 3	9841	JAPAN	19 FEB	134.1	65.8	3805	797		
1977 012C		9843	JAPAN	19 FEB	134.1	65.7	3802	796		
1977 012E		9981	JAPAN	19 FEB	133.4	65.2	3753	785		
1977 012F		9982	JAPAN	19 FEB	133.6	65.9	3779	775		
1977 012G		9983	JAPAN	19 FEB	134.2	65.6	3787	819		
1977 012H		12857	JAPAN	19 FEB	134.1	66.3	3785	810		
1977 012J		13133	JAPAN	19 FEB	133.2	65.8	3728	790		
1977 012L		19314	JAPAN	19 FEB	133.4	65.4	3910	628		
1977 013A	COSMOS 894	9846	USSR	21 FEB	104.8	82.9	1009	962		
1977 013B		9848	USSR	21 FEB	104.7	82.9	993	967		
1977 014A	KIKU 2	9852	JAPAN	23 FEB	1436.0	9.4	35792	35777		
1977 014B		9859	JAPAN	23 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1977 015A	COSMOS 895	9853	USSR	26 FEB	94.2	81.2	490	471		
1977 015B		9854	USSR	26 FEB	95.2	81.2	565	493		
1977 018A	PALAPA 2	9862	INDNSA	10 MAR	1436.4	11.2	35816	35768		
1977 021A	MOLNIYA 1-36	9880	USSR	24 MAR	717.7	63.5	39673	676		
1977 021D		9927	USSR	24 MAR	732.8	63.9	39872	1220		
1977 024A	METEOR	9903	USSR	5 APR	102.3	81.3	889	844		
1977 024B		9904	USSR	5 APR	102.4	81.3	912	832		
1977 024C		9907	USSR	5 APR	103.0	82.9	922	877		
1977 027A	COSMOS 903	9911	USSR	11 APR	718.5	67.4	37360	3027		
1977 027D		9921	USSR	11 APR	724.0	67.8	37846	2813		
1977 027E		10945	USSR	11 APR	CURRENT ELEMENTS NOT MAINTAINED					
1977 029A	ESA-GEOS	9931	ESA	20 APR	734.1	27.4	38329	2828		
1977 032A	MOLNIYA 3-7	9941	USSR	28 APR	717.7	63.6	39646	703		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1977 LAUNCHES (CONT.)										
1977 034A		10000	US	12 MAY	1489.6	9.8	36896	36758		
1977 034B		10001	US	12 MAY	1509.1	9.4	37375	37031		
1977 034C		10002	US	12 MAY	1506.9	10.0	38414	35909		
1977 036A	COSMOS 909	10010	USSR	19 MAY	117.0	65.9	2100	992		
1977 036B		10011	USSR	19 MAY	116.9	65.9	2090	989		
1977 036C		10013	USSR	19 MAY	117.0	65.9	2099	992		
1977 038A		10016	US	23 MAY	ELEMENTS NOT AVAILABLE					
1977 038B		10017	US	23 MAY	ELEMENTS NOT AVAILABLE					
1977 038C		15422	US	23 MAY	ELEMENTS NOT AVAILABLE					
1977 039A	COSMOS 911	10019	USSR	25 MAY	104.7	82.9	997	963		
1977 039B		10020	USSR	25 MAY	104.5	82.9	995	949		
1977 041A	INTELSAT 4A F-4	10024	ITSO	26 MAY	1448.2	5.2	36057	35987		
1977 041B		10025	US	26 MAY	648.2	21.4	36298	568		
1977 044A	DMSP-F2	10033	US	5 JUN	ELEMENTS NOT AVAILABLE					
1977 044B		10034	US	5 JUN	ELEMENTS NOT AVAILABLE					
1977 044C		10037	US	5 JUN	ELEMENTS NOT AVAILABLE					
1977 044D		10085	US	5 JUN	ELEMENTS NOT AVAILABLE					
1977 047A	COSMOS 917	10059	USSR	16 JUN	716.8	67.6	34453	5852		
1977 047D		10089	USSR	16 JUN	722.4	67.4	35325	5259		
1977 048A	GOES 2	10061	US	16 JUN	1436.1	8.4	35795	35777		
1977 048B		10062	US	16 JUN	108.5	28.4	1736	574		
1977 048F		10409	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1977 048G		20799	US	16 JUN	1431.8	10.0	36190	35213		
1977 053A		10091	US	23 JUN	718.1	64.5	20332	20038		
1977 053B		10960	US	23 JUN	314.4	64.4	16890	984		
1977 054A	MOLNIYA 1-37	10092	USSR	24 JUN	717.8	63.0	39565	788		
1977 054D		10155	USSR	24 JUN	695.4	63.4	38302	941		
1977 055A	COSMOS 921	10095	USSR	24 JUN	97.3	75.8	662	594		
1977 055B		10096	USSR	24 JUN	97.3	75.8	666	594		
1977 057A	METEOR	10113	USSR	29 JUN	94.8	97.4	527	489		
1977 057B		10114	USSR	29 JUN	96.6	97.8	608	584		
1977 059A	COSMOS 923	10120	USSR	1 JUL	100.7	74.0	803	784		
1977 059B		10121	USSR	1 JUL	100.6	74.0	799	771		
1977 059C		14802	USSR	1 JUL	100.3	74.1	782	763		
1977 059D		14818	USSR	1 JUL	100.0	74.1	766	748		
1977 061A	COSMOS 925	10134	USSR	7 JUL	94.7	81.2	510	496		
1977 061B		10135	USSR	7 JUL	95.3	81.2	560	507		
1977 062A	COSMOS 926	10137	USSR	8 JUL	104.9	82.9	1017	966		
1977 062B		10138	USSR	8 JUL	104.8	82.9	1003	970		
1977 064A	COSMOS 928	10141	USSR	13 JUL	104.6	83.0	1005	947		
1977 064B		10142	USSR	13 JUL	104.5	83.0	1001	939		
1977 065A	HIMAWARI	10143	JAPAN	14 JUL	1451.0	8.6	36154	35999		
1977 065B - 65GC			US	14 JUL	SEE NOTE 26*					26*
1977 068A	COSMOS 931	10150	USSR	20 JUL	718.7	67.0	35443	4955		
1977 068D		10167	USSR	20 JUL	710.2	68.2	35235	4743		
1977 068E		12906	USSR	20 JUL	715.6	68.1	35502	4742		
1977 068F		12996	USSR	20 JUL	704.4	61.8	38095	1596		
1977 068G		14000	USSR	20 JUL	718.6	65.7	36856	3540		
1977 068J		19891	USSR	20 JUL	685.7	60.1	37952	808		
1977 071A	RADUGA 3	10159	USSR	23 JUL	1435.4	10.5	35811	35736		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1977 LAUNCHES (CONT.)										
1977 071F		11570	USSR	23 JUL	1473.4	10.8	36572	36453		
1977 076A	VOYAGER 2	10271	US	20 AUG	SOLAR SYSTEM ESCAPE TRAJECTORY					
1977 076B		10272	US	20 AUG	HELIOCENTRIC ORBIT					
1977 076C		10273	US	20 AUG	HELIOCENTRIC ORBIT					
1977 079A	COSMOS 939	10282	USSR	24 AUG	114.8	74.0	1460	1430		
1977 079B	COSMOS 940	10286	USSR	24 AUG	114.4	74.0	1460	1391		
1977 079C	COSMOS 941	10287	USSR	24 AUG	114.6	74.0	1460	1411		
1977 079D	COSMOS 942	10288	USSR	24 AUG	115.9	74.0	1531	1460		
1977 079E	COSMOS 943	10289	USSR	24 AUG	115.0	74.0	1459	1448		
1977 079F	COSMOS 944	10290	USSR	24 AUG	115.2	74.0	1469	1459		
1977 079G	COSMOS 945	10291	USSR	24 AUG	115.4	74.0	1489	1459		
1977 079H	COSMOS 946	10292	USSR	24 AUG	115.6	74.0	1508	1460		
1977 079J		10293	USSR	24 AUG	117.5	74.0	1676	1459		
1977 080A	SIRIO	10294	ITALY	25 AUG	1436.0	7.1	35860	35709		
1977 080B		10295	US	25 AUG	115.5	27.1	2082	875		
1977 082A	MOLNIYA 1-38	10315	USSR	30 AUG	682.1	62.6	37849	728		
1977 082E		10369	USSR	30 AUG	634.4	63.9	35919	238		
1977 084A	VOYAGER 1	10321	US	5 SEP	HELIOCENTRIC ORBIT					
1977 084B		10322	US	5 SEP	HELIOCENTRIC ORBIT					
1977 084C		10323	US	5 SEP	HELIOCENTRIC ORBIT					
1977 087A	COSMOS 951	10352	USSR	13 SEP	104.8	83.0	1009	960		
1977 087B		10355	USSR	13 SEP	104.7	83.0	1005	955		
1977 088A	COSMOS 952	10358	USSR	16 SEP	104.1	64.9	991	911		
1977 091A	COSMOS 955	10362	USSR	20 SEP	95.7	81.2	555	547		
1977 091B		10363	USSR	20 SEP	95.8	81.2	585	526		
1977 092A	EKRAN	10365	USSR	20 SEP	1435.3	10.4	35893	35650		
1977 092G		11571	USSR	20 SEP	1421.8	10.2	35562	35451		
1977 093A	PROGNOZ 6	10370	USSR	22 SEP	ELEMENTS NOT AVAILABLE					
1977 102D		10425	US	22 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1977 105A	MOLNIYA 3-8	10455	USSR	28 OCT	717.6	63.6	38778	1566		
1977 105E		10485	USSR	28 OCT	731.6	63.7	39023	2009		
1977 106A	NNSS 3011	10457	US	28 OCT	106.8	89.7	1099	1059		
1977 106B		10462	US	28 OCT	106.8	89.7	1100	1060		
1977 106C		12858	US	28 OCT	106.9	89.5	1098	1066		
1977 107A	COSMOS 953	10459	USSR	28 OCT	104.8	83.0	1004	961		
1977 107B		10461	USSR	28 OCT	104.6	82.9	1000	952		
1977 108A	METEOSAT 1	10469	ESA	23 NOV	1437.7	9.6	35866	35767		
1977 108B		10490	US	23 NOV	115.5	28.3	2463	491		
1977 109A	COSMOS 963	10491	USSR	24 NOV	109.2	82.9	1205	1175		
1977 109B		10492	USSR	24 NOV	109.1	82.9	1200	1169		
1977 112A		10522	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112B		10524	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112C		10523	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112D		10529	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112E		10544	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112F		10574	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112G		10575	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112H		12359	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 114A		10578	US	11 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1977 114B		10579	US	11 DEC	CURRENT ELEMENTS NOT MAINTAINED					

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1977 LAUNCHES (CONT.)										
1977 116A	COSMOS 967	10512	USSR	13 DEC	104.7	65.8	996	965		
1977 116B		10513	USSR	13 DEC	104.5	65.8	992	951		
1977 116C		10518	USSR	13 DEC	104.6	65.8	991	963		
1977 116D		10526	USSR	13 DEC	104.8	65.8	1014	954		
1977 117A	METEOR 2-3	10514	USSR	14 DEC	102.2	81.2	875	849		
1977 117B		10515	USSR	14 DEC	102.3	81.2	898	834		
1977 117C		14950	USSR	14 DEC	102.3	81.2	899	833		
1977 118A	SAKURA	10516	JAPAN	15 DEC	1455.9	8.0	36194	36151		
1977 118B		10517	US	15 DEC	109.6	28.7	1935	484		
1977 118C		10519	US	15 DEC	110.0	29.1	1910	542		
1977 119A	COSMOS 968	10520	USSR	16 DEC	100.5	74.0	794	768		
1977 119B		10521	USSR	16 DEC	100.3	74.0	787	755		
1977 119C		10524	USSR	16 DEC	100.2	74.0	782	753		
1977 119D		10525	USSR	16 DEC	100.2	74.0	786	754		
1977 119E		18512	USSR	16 DEC	100.1	74.0	770	752		
1977 121A	COSMOS 970	10531	USSR	21 DEC	105.9	65.9	1144	927		
1977 121B - 121BY			USSR	21 DEC	SEE NOTE		27*			27*
1977 121BW		20032	USSR	21 DEC	108.9	62.5	1776	573		
1977 122A	COSMOS 971	10536	USSR	23 DEC	104.9	82.9	1003	972		
1977 122B		10537	USSR	23 DEC	104.7	82.9	996	965		
1977 123A	COSMOS 972	10539	USSR	27 DEC	103.7	75.8	1159	710		
1977 123B		10541	USSR	27 DEC	103.7	75.8	1156	710		
1978 LAUNCHES										
1978 002A	INTELSAT 4A F-3	10557	ITSO	7 JAN	1440.4	4.2	35980	35759		
1978 002B		10722	US	17 JAN	650.3	21.2	36344	628		
1978 004A	COSMOS 975	10561	USSR	10 JAN	95.9	81.2	567	556		
1978 004B		10582	USSR	10 JAN	96.3	81.2	612	545		
1978 005A	COSMOS 976	10581	USSR	10 JAN	115.1	74.0	1462	1453		
1978 005B	COSMOS 977	10584	USSR	10 JAN	114.4	74.0	1462	1397		
1978 005C	COSMOS 978	10585	USSR	10 JAN	114.6	74.0	1462	1416		
1978 005D	COSMOS 979	10586	USSR	10 JAN	114.8	74.0	1462	1434		
1978 005E	COSMOS 980	10587	USSR	10 JAN	115.3	74.0	1473	1461		
1978 005F	COSMOS 981	10588	USSR	10 JAN	115.5	74.0	1493	1462		
1978 005G	COSMOS 982	10589	USSR	10 JAN	115.7	74.0	1513	1462		
1978 005H	COSMOS 983	10590	USSR	10 JAN	116.0	74.0	1535	1461		
1978 005J		10591	USSR	10 JAN	117.7	74.0	1691	1461		
1978 007A	COSMOS 985	10599	USSR	17 JAN	104.6	82.9	1014	937		
1978 007B		10600	USSR	17 JAN	104.5	82.9	1006	935		
1978 009E		10802	USSR	24 JAN	616.5	63.5	35145	87		
1978 012A	IUE	10637	US	26 JAN	1436.1	32.4	41835	29741		
1978 012C		10723	US	26 JAN	594.0	28.9	33851	207		
1978 014A	KYOKKO	10664	JAPAN	4 FEB	134.1	65.4	3961	634		
1978 014C		12329	JAPAN	4 FEB	133.8	65.3	3940	637		
1978 014D		12330	JAPAN	4 FEB	134.0	65.4	3965	630		
1978 014E		12331	JAPAN	4 FEB	132.8	64.8	3859	626		
1978 014F		12406	JAPAN	4 FEB	133.3	65.9	3886	643		
1978 016A	FLTSATCOM 1	10669	US	9 FEB	1436.2	8.7	35811	35765		
1978 016C		12908	US	9 FEB	212.6	26.4	10571	270		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1978 LAUNCHES (CONT.)										
1978 018A	UME 2	10674	JAPAN	16 FEB	107.2	69.4	1218	972		
1978 018B		10675	JAPAN	16 FEB	107.1	69.4	1215	971		
1978 018C		13132	JAPAN	16 FEB	107.9	69.2	1285	973		
1978 019A	COSMOS 990	10676	USSR	17 FEB	100.5	74.0	793	768		
1978 019B		10677	USSR	17 FEB	100.3	74.0	784	760		
1978 019C		14803	USSR	17 FEB	99.7	74.0	746	737		
1978 019D		13500	USSR	17 FEB	100.3	74.1	780	761		
1978 019E		18501	USSR	17 FEB	100.3	74.1	784	761		
1978 020A		10684	US	22 FEB	718.0	63.8	20509	19855		
1978 020B		10801	US	22 FEB	268.4	64.0	14064	744		
1978 021A		10688	US	25 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1978 021B		10689	US	25 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1978 022A	COSMOS 991	10692	USSR	28 FEB	104.6	83.0	1004	950		
1978 022B		10693	USSR	28 FEB	104.6	83.0	988	959		
1978 024A	MOLNIYA 1-39	10696	USSR	2 MAR	717.5	61.9	39738	602		
1978 024D		10803	USSR	2 MAR	729.1	62.1	40170	738		
1978 026A	LANDSAT 3	10702	US	5 MAR	103.1	98.8	917	895		
1978 026B	AMSAT-OSCAR-8	10703	US	5 MAR	103.0	99.0	905	894		
1978 026C -	026HT		US	5 MAR	SEE NOTE 28*					28*
1978 026HS		20029	US	5 MAR	101.3	98.6	876	761		
1978 028A	COSMOS 994	10731	USSR	15 MAR	104.9	82.9	1006	969		
1978 028B		10732	USSR	15 MAR	104.7	82.9	995	967		
1978 029B		10734	US	16 MAR	ELEMENTS NOT AVAILABLE					
1978 031A	COSMOS 996	10744	USSR	28 MAR	104.6	82.9	1005	948		
1978 031B		10745	USSR	28 MAR	104.5	82.9	996	944		
1978 034A	COSMOS 1000	10776	USSR	31 MAR	104.7	82.9	1007	954		
1978 034B		10777	USSR	31 MAR	104.6	82.9	994	954		
1978 035A	INTELSAT 4A F-6	10778	ITSO	31 MAR	1436.9	4.7	35815	35788		
1978 035B		10779	US	31 MAR	648.1	21.2	36199	660		
1978 038A		10787	US	7 APR	CURRENT ELEMENTS NOT MAINTAINED					
1978 038B		10788	US	7 APR	CURRENT ELEMENTS NOT MAINTAINED					
1978 039A	YURI	10792	JAPAN	7 APR	1435.5	9.3	35797	35750		
1978 039B		10793	US	7 APR	111.0	28.2	1975	573		
1978 039C		10794	US	7 APR	217.9	26.9	11001	232		
1978 042A		10820	US	1 MAY	100.9	98.7	805	793		
1978 042B		10853	US	1 MAY	97.4	98.3	639	633		
1978 042C		10854	US	1 MAY	97.9	98.3	660	656		
1978 044A	OTS-2	10855	ESA	11 MAY	1436.2	6.5	35805	35776		
1978 044B		10856	US	11 MAY	139.9	28.0	3526	1573		
1978 044C		10857	US	11 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1978 045A	COSMOS 1005	10860	USSR	12 MAY	95.6	81.2	558	538		
1978 045B		10861	USSR	12 MAY	96.4	81.2	616	554		
1978 047A		10873	US	13 MAY	718.0	64.3	20633	19734		
1978 047B		10894	US	13 MAY	286.6	64.2	15197	844		
1978 051A	PIONEER VENUS ORBITER	10911	US	20 MAY	ELEMENTS NOT AVAILABLE					
1978 051B		10912	US	20 MAY	HELIOCENTRIC ORBIT					
1978 053A	COSMOS 1011	10917	USSR	23 MAY	104.7	82.9	1007	954		
1978 053B		10918	USSR	23 MAY	104.6	82.9	997	953		
1978 055A	MOLNIYA 1-4	10925	USSR	2 JUN	717.9	63.3	38666	1692		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1978 LAUNCHES (CONT.)										
1978 055E		10949	USSR	2 JUN	732.5	63.4	39094	1982		
1978 056A	COSMOS 1013	10930	USSR	7 JUN	116.3	74.0	1552	1476		
1978 056B	COSMOS 1014	10931	USSR	7 JUN	116.1	74.0	1528	1477		
1978 056C	COSMOS 1015	10932	USSR	7 JUN	115.8	74.0	1515	1471		
1978 056D	COSMOS 1016	10933	USSR	7 JUN	115.6	74.0	1496	1468		
1978 056E	COSMOS 1017	10934	USSR	7 JUN	115.4	74.0	1490	1455		
1978 056F	COSMOS 1018	10935	USSR	7 JUN	115.2	74.0	1486	1440		
1978 056G	COSMOS 1019	10936	USSR	7 JUN	115.0	74.0	1485	1422		
1978 056H	COSMOS 1020	10937	USSR	7 JUN	114.8	74.0	1482	1406		
1978 056J		10938	USSR	7 JUN	117.9	74.0	1690	1478		
1978 058A		10941	US	10 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1978 058B		10942	US	10 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1978 062A	GOES 3	10953	US	16 JUN	1436.2	7.3	35827	35748		
1978 062B		10954	US	16 JUN	107.5	28.4	1669	556		
1978 062D		20801	US	16 JUN	1451.1	9.5	40109	32051		
1978 063A	COSMOS 1023	10961	USSR	21 JUN	100.4	74.1	790	769		
1978 063B		10962	USSR	21 JUN	100.3	74.1	789	751		
1978 063C		14804	USSR	21 JUN	99.1	74.0	725	704		
1978 063D		13497	USSR	21 JUN	100.5	74.1	796	771		
1978 064A	SEASAT 1	10967	US	27 JUN	100.2	108.0	771	767		
1978 066A	COSMOS 1024	10970	USSR	28 JUN	717.6	67.7	34595	5752		
1978 066D		10998	USSR	28 JUN	720.1	67.7	34883	5587		
1978 067A	COSMOS 1025	10973	USSR	28 JUN	96.4	82.5	598	576		
1978 067B		10974	USSR	28 JUN	97.3	82.5	641	615		
1978 068A	COMSTAR 3	10975	US	29 JUN	1451.7	4.4	36163	36019		
1978 068B		10976	US	29 JUN	649.0	21.8	36266	638		
1978 071A	ESA GEOS 2	10981	ESA	14 JUL	1449.1	9.5	36049	36032		
1978 071C		10983	US	14 JUL	440.9	25.8	25354	266		
1978 072A	MOLNIYA 1-41	10984	USSR	14 JUL	684.5	61.8	38336	364		
1978 072D		11073	USSR	14 JUL	692.5	62.0	38801	299		
1978 073A	RADUGA 4	10987	USSR	18 JUL	1436.1	9.9	35819	35752		
1978 073D		11074	USSR	18 JUL	565.8	46.0	32099	466		
1978 073E		11941	USSR	18 JUL	1475.9	10.2	36642	36482		
1978 074A	COSMOS 1027	10991	USSR	27 JUL	104.6	82.9	997	956		
1978 074B		10992	USSR	27 JUL	104.5	82.9	986	959		
1978 075A		10993	US	5 AUG	ELEMENTS NOT AVAILABLE					
1978 075B		10994	US	5 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1978 078C		11003	US	8 AUG	HELIOCENTRIC ORBIT					
1978 079A	ICE	11004	US	12 AUG	HELIOCENTRIC ORBIT					
1978 079C		11006	US	12 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1978 079D		13413	US	12 AUG	ELEMENTS NOT AVAILABLE					
1978 080A	MOLNIYA 1-42	11007	USSR	22 AUG	717.7	63.8	39648	700		
1978 080D		11075	USSR	22 AUG	732.4	64.1	39901	1171		
1978 083A	COSMOS 1030	11015	USSR	6 SEP	717.0	67.6	36185	4131		
1978 083D		11076	USSR	6 SEP	723.6	66.0	36934	3708		
1978 083E		12907	USSR	6 SEP	711.4	64.0	36813	3227		
1978 083F		12919	USSR	6 SEP	719.5	64.0	37421	3020		
1978 083G		13959	USSR	6 SEP	721.7	63.7	37601	2948		
1978 084A	VENERA 11	11020	USSR	9 SEP	HELIOCENTRIC ORBIT					
1978 086A	VENERA 12	11025	USSR	14 SEP	HELIOCENTRIC ORBIT					

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1978 LAUNCHES (CONT.)										
1978 087A	JIKI*KEN	11027	JAPAN	16 SEP	392.7	31.2	22497	271		
1978 087B		11028	JAPAN	16 SEP	354.2	31.2	20156	251		
1978 091A	COSMOS 1034	11042	USSR	4 OCT	114.9	74.0	1479	1419		
1978 091B	COSMOS 1035	11044	USSR	4 OCT	114.6	74.0	1478	1400		
1978 091C	COSMOS 1036	11045	USSR	4 OCT	115.1	74.0	1479	1439		
1978 091D	COSMOS 1037	11046	USSR	4 OCT	115.3	74.0	1480	1459		
1978 091E	COSMOS 1038	11047	USSR	4 OCT	115.5	74.0	1484	1475		
1978 091F	COSMOS 1039	11048	USSR	4 OCT	116.3	74.0	1550	1476		
1978 091G	COSMOS 1040	11049	USSR	4 OCT	116.0	74.0	1525	1477		
1978 091H	COSMOS 1041	11050	USSR	4 OCT	115.8	74.0	1506	1475		
1978 091J		11051	USSR	4 OCT	117.9	74.0	1697	1480		
1978 093A		11054	US	7 OCT	717.9	63.8	20342	20020		
1978 093B		11078	US	7 OCT	166.7	62.9	7140	166		
1978 094A	COSMOS 1043	11055	USSR	10 OCT	95.2	81.2	533	519		
1978 094B		11056	USSR	10 OCT	95.7	81.2	588	519		
1978 095A	MOLNIYA 3-10	11057	USSR	13 OCT	717.5	63.1	38824	1517		
1978 095E		11079	USSR	13 OCT	734.2	63.1	39629	1533		
1978 096A	TIROS-N	11060	US	13 OCT	101.7	98.8	849	831		
1978 096B		11061	US	13 OCT	100.6	98.8	788	784		
1978 096C		11062	US	13 OCT	100.6	98.8	788	782		
1978 098A	NIMBUS 7	11080	US	24 OCT	104.0	99.1	955	942		
1978 098B	CAMEO	11081	US	24 OCT	104.0	99.5	968	924		
1978 100A	COSMOS 1045	11084	USSR	26 OCT	120.3	82.6	1703	1682		
1978 100B	RADIO 1	11085	USSR	26 OCT	120.3	82.6	1705	1682		
1978 100C	RADIO 2	11086	USSR	26 OCT	120.3	82.6	1704	1682		
1978 100D		11087	USSR	26 OCT	120.2	82.6	1700	1683		
1978 100D - 100AW			USSR	26 OCT	SEE NOTE	29*				29*
1978 105A	COSMOS 1048	11111	USSR	16 NOV	100.6	74.0	800	771		
1978 105B		11112	USSR	16 NOV	100.5	74.0	808	753		
1978 105C		11113	USSR	16 NOV	100.2	74.0	777	755		
1978 105D		11114	USSR	16 NOV	100.0	74.0	766	748		
1978 106A	NATO III-C	11115	NATO	19 NOV	1436.1	5.0	35791	35782		
1978 109A	COSMOS 1051	11128	USSR	5 DEC	114.6	74.0	1484	1392		
1978 109B	COSMOS 1052	11129	USSR	5 DEC	114.8	74.0	1486	1409		
1978 109C	COSMOS 1053	11130	USSR	5 DEC	115.0	74.0	1485	1428		
1978 109D	COSMOS 1054	11131	USSR	5 DEC	115.2	74.0	1487	1444		
1978 109E	COSMOS 1055	11132	USSR	5 DEC	115.5	74.0	1488	1462		
1978 109F	COSMOS 1056	11133	USSR	5 DEC	115.7	74.0	1501	1470		
1978 109G	COSMOS 1057	11134	USSR	5 DEC	115.9	74.0	1513	1478		
1978 109H	COSMOS 1058	11135	USSR	5 DEC	116.1	74.0	1536	1478		
1978 109J		11136	USSR	5 DEC	118.1	74.0	1698	1489		
1978 112A		11141	US	11 DEC	718.0	63.8	20334	20031		
1978 112B		11142	US	11 DEC	269.7	63.6	14359	539		
1978 113A		11144	US	14 DEC	1435.7	7.0	35804	35751		
1978 113B		11145	US	14 DEC	1436.2	6.9	35811	35766		
1978 113D		11147	US	14 DEC	1339.2	3.9	35596	32137		
1978 116A	ANIK B1	11153	CANADA	16 DEC	1442.8	3.9	35948	35886		
1978 117A	COSMOS 1063	11155	USSR	19 DEC	95.9	81.2	562	558		
1978 117B		11156	USSR	19 DEC	95.9	81.2	597	527		
1978 118A	GORIZONT 1	11158	USSR	19 DEC	1435.8	19.3	49802	21757		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1978 LAUNCHES (CONT.)										
1978 118C		11926	USSR	19 DEC	1417.4	19.5	49073	21766		
1978 121A	COSMOS 1066	11165	USSR	23 DEC	102.1	81.2	891	821		
1978 121B		11166	USSR	23 DEC	101.9	81.2	899	800		
1978 121C		19643	USSR	23 DEC	101.9	81.2	897	800		
1978 122A	COSMOS 1067	11168	USSR	26 DEC	109.0	83.0	1210	1154		
1978 122B		11170	USSR	26 DEC	108.9	83.0	1196	1155		
1979 LAUNCHES										
1979 003A	COSMOS 1072	11238	USSR	16 JAN	104.8	82.9	1012	958		
1979 003B		11239	USSR	16 JAN	104.7	82.9	1010	949		
1979 004A	MOLNIYA 3-11	11240	USSR	18 JAN	717.6	64.0	38635	1711		
1979 004D		11553	USSR	18 JAN	732.9	64.2	38910	2189		
1979 005A	METEOR 1-29	11251	USSR	25 JAN	96.5	97.6	621	564		
1979 005B		11252	USSR	25 JAN	95.6	97.4	556	537		
1979 007A	SCATHA	11256	US	30 JAN	1415.7	7.6	42372	28399		
1979 009A	AYAME 1	11261	JAPAN	6 FEB	1312.7	1.5	37340	29329		
1979 011A	COSMOS 1076	11266	USSR	12 FEB	96.0	82.5	580	557		
1979 011B		11267	USSR	12 FEB	97.2	82.5	638	612		
1979 012A	COSMOS 1077	11268	USSR	13 FEB	95.5	81.2	548	541		
1979 012B		11269	USSR	13 FEB	95.8	81.2	591	518		
1979 015A	EKRAN 3	11273	USSR	21 FEB	1436.8	9.3	35947	35654		
1979 015D		13900	USSR	21 FEB	1421.0	9.5	35536	35443		
1979 017A	SOLWIND	11278	US	24 FEB	93.8	97.9	473	448		
1979 017A - 017LZ			US	24 FEB	SEE NOTE	30*				30*
1979 020A	INTERCOSMOS 19	11285	USSR	27 FEB	97.4	74.0	794	470		
1979 020B		11286	USSR	27 FEB	97.5	74.0	812	466		
1979 021A	METEOR 2-4	11288	USSR	1 MAR	102.1	81.2	874	837		
1979 021B		11289	USSR	1 MAR	102.1	81.2	914	799		
1979 021C		11290	USSR	1 MAR	102.1	81.2	880	837		
1979 021D		14632	USSR	1 MAR	102.8	81.3	932	854		
1979 024A	COSMOS 1081	11296	USSR	15 MAR	114.5	74.0	1463	1402		
1979 024B	COSMOS 1082	11297	USSR	15 MAR	114.7	74.0	1463	1421		
1979 024C	COSMOS 1083	11298	USSR	15 MAR	114.9	74.0	1463	1440		
1979 024D	COSMOS 1084	11299	USSR	15 MAR	115.1	74.0	1463	1459		
1979 024E	COSMOS 1085	11300	USSR	15 MAR	115.6	74.0	1502	1463		
1979 024F	COSMOS 1086	11301	USSR	15 MAR	115.4	74.0	1480	1463		
1979 024G	COSMOS 1087	11302	USSR	15 MAR	115.8	74.0	1522	1464		
1979 024H	COSMOS 1088	11303	USSR	15 MAR	116.1	74.0	1545	1463		
1979 024J		11304	USSR	15 MAR	117.6	74.0	1688	1457		
1979 025B		11306	US	16 MAR	ELEMENTS NOT AVAILABLE					
1979 026A	COSMOS 1089	11308	USSR	21 MAR	104.7	83.0	997	965		
1979 026B		11309	USSR	21 MAR	104.6	83.0	989	963		
1979 028A	COSMOS 1091	11320	USSR	7 APR	104.8	82.9	1006	960		
1979 028B		11321	USSR	7 APR	104.6	82.9	992	963		
1979 030A	COSMOS 1092	11326	USSR	11 APR	104.7	82.9	1003	958		
1979 030B		11327	USSR	11 APR	104.6	82.9	997	955		
1979 031A	MOLNIYA 1-43	11328	USSR	12 APR	100.4	63.7	1460	99		
1979 031D		11551	USSR	12 APR	620.8	64.1	35321	132		
1979 032A	COSMOS 1093	11331	USSR	14 APR	95.5	81.2	543	537		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1979 LAUNCHES (CONT.)										
1979 032B		11332	USSR	14 APR	96.2	81.2	615	538		
1979 035A	RADUGA 5	11343	USSR	25 APR	1435.8	9.5	35802	35758		
1979 035E		17873	USSR	25 APR	1437.8	9.5	35946	35694		
1979 038A	FLTSATCOM 2	11353	US	4 MAY	1436.1	7.3	35836	35737		
1979 046A	COSMOS 1104	11378	USSR	31 MAY	104.7	82.9	1005	954		
1979 046B		11379	USSR	31 MAY	104.6	82.9	991	957		
1979 048A	MOLNIYA 3-12	11384	USSR	5 JUN	422.3	63.2	24397	136		
1979 050A		11389	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 050B		11403	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 050C		11408	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 050D		11410	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 050G		11534	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 053A		11397	US	10 JUN	ELEMENTS NOT AVAILABLE					
1979 053C		11436	US	10 JUN	ELEMENTS NOT AVAILABLE					
1979 053D		20364	US	10 JUN	ELEMENTS NOT AVAILABLE					
1979 057A	NOAA 6	11416	US	27 JUN	100.9	98.5	807	789		
1979 057B		11419	US	27 JUN	99.7	98.4	747	744		
1979 057C		11634	US	27 JUN	99.7	98.3	745	741		
1979 058A	COSMOS 1109	11417	USSR	27 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1979 058D		11555	USSR	27 JUN	721.6	67.5	38151	2392		
1979 058E		12833	USSR	27 JUN	714.9	67.4	37615	2599		
1979 058F		12834	USSR	27 JUN	719.1	67.9	35327	5093		
1979 058G		12909	USSR	27 JUN	719.6	68.2	39114	1329		
1979 058H		12995	USSR	27 JUN	698.9	66.3	38251	1169		
1979 058J		13960	USSR	27 JUN	720.5	67.3	37953	2534		
1979 060A	COSMOS 1110	11425	USSR	28 JUN	100.7	74.0	800	779		
1979 060B		11427	USSR	28 JUN	100.5	74.0	797	765		
1979 060C		14866	USSR	28 JUN	99.8	74.1	753	746		
1979 060D		15784	USSR	28 JUN	100.2	74.0	771	763		
1979 062A	GORIZONT 2	11440	USSR	5 JUL	1436.5	9.0	35796	35791		
1979 062D		14005	USSR	5 JUL	1474.4	9.3	36556	36509		
1979 067A	COSMOS 1116	11457	USSR	20 JUL	94.7	81.2	515	490		
1979 067B		11458	USSR	20 JUL	95.6	81.2	577	513		
1979 070A	MOLNIYA 1-44	11474	USSR	31 JUL	717.8	63.8	38234	2119		
1979 070D		11556	USSR	31 JUL	733.1	64.1	38646	2461		
1979 072A	WESTAR 3	11484	US	10 AUG	1440.9	2.7	35889	35873		
1979 077A	COSMOS 1124	11509	USSR	28 AUG	716.5	68.0	35457	4835		
1979 077D		11550	USSR	28 AUG	723.9	68.0	35904	4749		
1979 077E		12814	USSR	28 AUG	612.5	63.3	33209	1813		
1979 077F		12815	USSR	28 AUG	708.7	64.3	36960	2947		
1979 077G		12816	USSR	28 AUG	686.5	63.6	36895	1904		
1979 077H		12817	USSR	28 AUG	720.6	63.3	37929	2564		
1979 078A	COSMOS 1125	11510	USSR	28 AUG	100.7	74.0	799	780		
1979 078B		11511	USSR	28 AUG	100.5	74.0	794	770		
1979 078C		14305	USSR	28 AUG	99.8	74.1	754	746		
1979 078D		14306	USSR	28 AUG	100.7	74.0	793	787		
1979 078E		18550	USSR	28 AUG	99.7	74.1	752	740		
1979 084A	COSMOS 1130	11538	USSR	25 SEP	114.6	74.0	1477	1396		
1979 084B	COSMOS 1131	11539	USSR	25 SEP	114.8	74.0	1480	1409		
1979 084C	COSMOS 1132	11540	USSR	25 SEP	114.9	74.0	1480	1424		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1979 LAUNCHES (CONT.)										
1979 084D	COSMOS 1133	11541	USSR	25 SEP	115.1	74.0	1481	1437		
1979 084E	COSMOS 1134	11542	USSR	25 SEP	115.3	74.0	1482	1451		
1979 084F	COSMOS 1135	11543	USSR	25 SEP	115.4	74.0	1490	1459		
1979 084G	COSMOS 1136	11544	USSR	25 SEP	115.6	74.0	1495	1470		
1979 084H	COSMOS 1137	11545	USSR	25 SEP	115.8	74.0	1512	1470		
1979 084J		11546	USSR	25 SEP	117.8	74.0	1682	1480		
1979 086A		11558	US	1 OCT	ELEMENTS NOT AVAILABLE					
1979 086C		11560	US	1 OCT	ELEMENTS NOT AVAILABLE					
1979 087A	EKRAN 4	11561	USSR	3 OCT	1436.3	9.2	35846	35734		
1979 087C		17939	USSR	3 OCT	1433.5	9.1	35845	35627		
1979 089A	COSMOS 1140	11573	USSR	11 OCT	100.4	74.1	791	767		
1979 089B		11574	USSR	11 OCT	100.3	74.1	783	759		
1979 089C		14807	USSR	11 OCT	99.8	74.1	754	741		
1979 089D		14345	USSR	11 OCT	100.2	74.0	782	757		
1979 089E		19048	USSR	11 OCT	100.3	74.0	793	765		
1979 090A	COSMOS 1141	11585	USSR	16 OCT	104.6	82.9	996	954		
1979 090B		11586	USSR	16 OCT	104.5	82.9	989	947		
1979 090C		11587	USSR	16 OCT	102.9	82.9	917	877		
1979 091A	MOLNIYA 1-45	11589	USSR	20 OCT	717.5	62.8	39847	490		
1979 091D		11602	USSR	20 OCT	732.0	63.3	40597	455		
1979 093A	COSMOS 1143	11600	USSR	26 OCT	96.1	81.2	579	560		
1979 093B		11601	USSR	26 OCT	96.3	81.2	610	549		
1979 095A	METEOR 2-5	11605	USSR	31 OCT	102.4	81.2	881	862		
1979 095B		11608	USSR	31 OCT	102.5	81.2	916	833		
1979 098A		11621	US	21 NOV	1436.0	6.8	35798	35770		
1979 098B		11622	US	21 NOV	1436.1	6.8	35791	35779		
1979 098C		11623	US	21 NOV	1510.8	8.1	38502	35970		
1979 099A	COSMOS 1145	11629	USSR	27 NOV	95.6	81.2	553	545		
1979 099B		11630	USSR	27 NOV	96.1	81.2	608	533		
1979 101A	RCA SATCOM III	11635	US	7 DEC	788.9	8.9	35661	8148		
1979 105A	GORIZONT 3	11648	USSR	28 DEC	1435.4	8.6	35777	35766		
1979 105E		11684	USSR	28 DEC	1459.3	8.9	36286	36191		
1980 LAUNCHES										
1980 002A	MOLNIYA 1-46	11662	USSR	11 JAN	717.5	64.0	39799	544		
1980 002F		11670	USSR	11 JAN	732.7	64.2	40186	902		
1980 003A	COSMOS 1150	11667	USSR	14 JAN	104.8	83.0	1012	962		
1980 003B		11668	USSR	14 JAN	104.7	82.9	997	962		
1980 004A	FLTSATCOM 3	11669	US	18 JAN	1436.1	6.7	35880	35692		
1980 005A	COSMOS 1151	11671	USSR	23 JAN	96.8	82.5	614	592		
1980 005B		11672	USSR	23 JAN	97.3	82.5	641	614		
1980 007A	COSMOS 1153	11680	USSR	25 JAN	104.8	82.9	1014	958		
1980 007B		11681	USSR	25 JAN	104.7	82.9	1009	952		
1980 008A	COSMOS 1154	11682	USSR	30 JAN	96.2	81.2	582	573		
1980 008B		11683	USSR	30 JAN	96.4	81.2	626	549		
1980 011A		11690	US	9 FEB	718.0	64.3	20501	19863		
1980 011B		11705	US	9 FEB	289.6	63.6	15713	531		
1980 012A	COSMOS 1156	11691	USSR	11 FEB	114.5	74.0	1473	1395		
1980 012B	COSMOS 1157	11692	USSR	11 FEB	114.8	74.0	1475	1412		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1980 LAUNCHES (CONT.)										
1980 012C	COSMOS 1158	11693	USSR	11 FEB	115.0	74.0	1475	1431		
1980 012D	COSMOS 1159	11694	USSR	11 FEB	115.2	74.0	1476	1448		
1980 012E	COSMOS 1160	11695	USSR	11 FEB	115.4	74.0	1480	1463		
1980 012F	COSMOS 1161	11696	USSR	11 FEB	115.6	74.0	1500	1466		
1980 012G	COSMOS 1162	11697	USSR	11 FEB	115.8	74.0	1517	1469		
1980 012H	COSMOS 1163	11698	USSR	11 FEB	116.1	74.0	1541	1469		
1980 012J		11699	USSR	11 FEB	117.8	74.0	1692	1467		
1980 016A	RADUGA 6	11708	USSR	20 FEB	1435.3	8.8	35792	35750		
1980 016D		11728	USSR	20 FEB	1475.1	9.2	36602	36490		
1980 018A	AYAME 2	11715	JAPAN	22 FEB	1386.6	1.4	36839	32785		
1980 018C		11718	JAPAN	22 FEB	346.8	24.4	19704	241		
1980 019A		11720	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019B		11721	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019C		11731	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019D		11732	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019E		11733	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019F		11734	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019G		11745	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019H		11746	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 022A	COSMOS 1168	11735	USSR	17 MAR	104.7	82.9	1007	957		
1980 022B		11736	USSR	17 MAR	104.6	82.9	1001	953		
1980 022C		12404	USSR	17 MAR	103.5	82.9	945	902		
1980 026A	COSMOS 1171	11750	USSR	3 APR	104.8	65.8	1007	964		
1980 026B		11751	USSR	3 APR	104.6	65.8	992	961		
1980 026C		11752	USSR	3 APR	104.8	65.8	1005	962		
1980 028A	COSMOS 1172	11758	USSR	12 APR	718.0	66.1	37256	3108		
1980 028B		11762	USSR	12 APR	722.0	66.6	38243	2321		
1980 030A	COSMOS 1174	11765	USSR	18 APR	103.6	66.1	1488	372		
1980 030B - 030AY			USSR	18 APR	SEE NOTE	31*				31*
1980 032A		11783	US	26 APR	718.0	63.6	20582	19781		
1980 032B		11791	US	26 APR	235.8	63.3	12261	266		
1980 034A	COSMOS 1176	11788	USSR	29 APR	103.4	64.8	961	875		
1980 034D		11971	USSR	29 APR	103.1	64.8	934	874		
1980 039A	COSMOS 1181	11803	USSR	20 MAY	104.8	82.9	1003	967		
1980 039B		11804	USSR	20 MAY	104.7	82.9	994	963		
1980 044A	COSMOS 1184	11821	USSR	4 JUN	96.1	81.2	580	560		
1980 044B		11822	USSR	4 JUN	96.6	81.3	628	565		
1980 049A	GORIZONT 4	11841	USSR	14 JUN	1460.1	8.4	36261	36247		
1980 049F		11862	USSR	14 JUN	1470.3	8.6	36591	36317		
1980 050A	COSMOS 1188	11844	USSR	14 JUN	717.6	67.4	36443	3900		
1980 050B		11847	USSR	14 JUN	722.8	67.4	36975	3628		
1980 051A	METEOR 1-30	11848	USSR	18 JUN	94.4	97.7	507	473		
1980 051B		11849	USSR	18 JUN	96.5	97.5	615	568		
1980 052C		11852	US	18 JUN	ELEMENTS NOT AVAILABLE					
1980 053A	MOLNIYA 1-47	11856	USSR	21 JUN	676.1	63.7	38140	136		
1980 053D		11861	USSR	21 JUN	727.7	64.3	40653	187		
1980 056A	COSMOS 1190	11867	USSR	1 JUL	100.6	74.0	794	780		
1980 056B		11870	USSR	1 JUL	100.5	74.1	794	769		
1980 056C		14308	USSR	1 JUL	101.0	74.0	819	789		
1980 056D		14309	USSR	1 JUL	100.8	74.0	806	784		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1980 LAUNCHES (CONT.)										
1980 057A	COSMOS 1191	11871	USSR	2 JUL	716.5	67.9	35374	4917		
1980 057D		11888	USSR	2 JUL	721.9	67.8	35722	4834		
1980 057E		13999	USSR	2 JUL	708.6	65.6	37648	2254		
1980 058A	COSMOS 1192	11875	USSR	9 JUL	114.5	74.0	1471	1394		
1980 058B	COSMOS 1193	11876	USSR	9 JUL	114.7	74.0	1472	1412		
1980 058C	COSMOS 1194	11877	USSR	9 JUL	114.9	74.0	1473	1429		
1980 058D	COSMOS 1195	11878	USSR	9 JUL	115.1	74.0	1473	1447		
1980 058E	COSMOS 1196	11879	USSR	9 JUL	115.3	74.0	1474	1465		
1980 058F	COSMOS 1197	11880	USSR	9 JUL	115.5	74.0	1490	1469		
1980 058G	COSMOS 1198	11881	USSR	9 JUL	115.7	74.0	1506	1472		
1980 058H	COSMOS 1199	11882	USSR	9 JUL	116.0	74.0	1528	1471		
1980 058J		11883	USSR	9 JUL	117.6	74.0	1680	1467		
1980 060A	EKRAN 5	11890	USSR	14 JUL	1438.4	9.6	69711	1953		
1980 060F		14193	USSR	14 JUL	1417.2	8.6	35488	35344		
1980 063A	MOLNIYA 3-13	11896	USSR	18 JUL	717.7	63.5	39197	1153		
1980 063D		11909	USSR	18 JUL	732.5	63.8	40018	1058		
1980 069A	COSMOS 1206	11932	USSR	15 AUG	96.1	81.2	571	568		
1980 069B		11933	USSR	15 AUG	96.5	81.2	631	551		
1980 073A	METEOR 2-6	11962	USSR	9 SEP	102.2	81.2	887	835		
1980 073B		11963	USSR	9 SEP	102.2	81.2	912	815		
1980 074A	GOES 4	11964	US	9 SEP	1451.3	6.8	36223	35942		
1980 074C		11970	US	9 SEP	2254.5	2.0	67235	33916		
1980 081A	RADUGA 7	12003	USSR	5 OCT	1435.4	7.8	35795	35751		
1980 081F		12447	USSR	5 OCT	1440.4	8.5	35891	35850		
1980 085A	COSMOS 1217	12032	USSR	24 OCT	716.4	67.3	36494	3792		
1980 085D		12035	USSR	24 OCT	721.9	67.5	37485	3071		
1980 087A	FLTSATCOM 4	12046	US	31 OCT	1436.0	6.7	35800	35768		
1980 087B		12069	US	31 OCT	197.3	26.2	9427	273		
1980 089A	COSMOS 1220	12054	USSR	4 NOV	98.4	65.0	820	542		
1980 089B -	089CG		USSR	4 NOV	SEE NOTE		32*			32*
1980 091A	SBS 1	12065	US	15 NOV	1436.0	2.4	35798	35775		
1980 092A	MOLNIYA 1-48	12066	USSR	16 NOV	713.7	64.2	39486	667		
1980 092D		12070	USSR	16 NOV	733.5	64.2	40322	807		
1980 093A	COSMOS 1222	12071	USSR	21 NOV	96.4	81.2	588	580		
1980 093B		12072	USSR	21 NOV	96.5	81.2	632	546		
1980 095A	COSMOS 1223	12078	USSR	27 NOV	718.3	67.9	36027	4354		
1980 095E		12086	USSR	27 NOV	723.3	67.8	36530	4094		
1980 097A	COSMOS 1225	12087	USSR	5 DEC	104.8	82.9	1023	944		
1980 097B		12088	USSR	5 DEC	104.6	82.9	1010	941		
1980 098A	INTELSAT 5 F-2	12089	ITSO	6 DEC	1436.2	1.9	35807	35767		
1980 098B		12445	US	6 DEC	230.9	23.6	11862	314		
1980 099A	COSMOS 1226	12091	USSR	10 DEC	104.8	82.9	1007	959		
1980 099B		12092	USSR	10 DEC	104.6	82.9	997	955		
1980 100A		12093	US	13 DEC	ELEMENTS NOT AVAILABLE					
1980 100B		12094	US	13 DEC	ELEMENTS NOT AVAILABLE					
1980 102A	COSMOS 1228	12107	USSR	23 DEC	114.4	74.0	1462	1391		
1980 102B	COSMOS 1229	12108	USSR	23 DEC	114.6	74.0	1462	1413		
1980 102C	COSMOS 1230	12109	USSR	23 DEC	114.4	74.0	1462	1398		
1980 102D	COSMOS 1231	12110	USSR	23 DEC	114.5	74.0	1462	1404		
1980 102E	COSMOS 1232	12111	USSR	23 DEC	114.6	74.0	1462	1411		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1980 LAUNCHES (CONT.)										
1980 102F	COSMOS 1233	12112	USSR	23 DEC	114.7	74.0	1462	1417		
1980 102G	COSMOS 1234	12113	USSR	23 DEC	114.6	74.0	1462	1408		
1980 102H	COSMOS 1235	12114	USSR	23 DEC	114.6	74.0	1461	1412		
1980 102J		12115	USSR	23 DEC	114.9	74.0	1466	1436		
1980 103A	PROGNOZ 8	12116	USSR	25 DEC	5687.8	65.8	197364	978		
1980 104A	EKRAN 6	12120	USSR	26 DEC	1436.5	8.4	35813	35774		
1980 104E		12471	USSR	26 DEC	1421.0	8.2	35639	35340		
1981 LAUNCHES										
1981 002A	MOLNIYA 3-14	12133	USSR	9 JAN	717.8	64.0	38367	1989		
1981 002B		12134	USSR	9 JAN	732.2	64.3	38825	2237		
1981 003A	COSMOS 1238	12138	USSR	16 JAN	107.0	83.0	1778	398		
1981 003B		12139	USSR	16 JAN	105.9	83.0	1677	396		
1981 006A	COSMOS 1241	12149	USSR	21 JAN	104.9	65.8	1004	978		
1981 006B		12150	USSR	21 JAN	104.6	65.8	1022	932		
1981 006C		12151	USSR	21 JAN	104.9	65.8	1002	974		
1981 008A	COSMOS 1242	12154	USSR	27 JAN	96.7	81.2	610	589		
1981 008B		12155	USSR	27 JAN	96.8	81.2	650	556		
1981 009A	MOLNIYA 1-49	12156	USSR	30 JAN	718.2	63.9	38411	1965		
1981 009D		12159	USSR	30 JAN	731.6	64.2	39070	1964		
1981 012A	KIKU 3	12295	JAPAN	11 FEB	437.4	28.3	25203	212		
1981 012C		12787	JAPAN	11 FEB	540.2	28.5	30926	261		
1981 013A	COSMOS 1244	12297	USSR	12 FEB	104.7	83.0	1005	958		
1981 013B		12298	USSR	12 FEB	104.6	83.0	1000	953		
1981 016A	COSMOS 1247	12303	USSR	19 FEB	711.1	67.7	35682	4342		
1981 016E		12311	USSR	19 FEB	703.5	67.5	35302	4345		
1981 016F		12984	USSR	19 FEB	710.4	67.7	35641	4351		
1981 016G		12985	USSR	19 FEB	710.1	65.4	37292	2682		
1981 016H		12992	USSR	19 FEB	706.6	65.8	38696	1106		
1981 017A	ASTRO A	12307	JAPAN	21 FEB	93.8	31.3	470	446		
1981 017B		12308	JAPAN	21 FEB	93.6	31.3	460	436		
1981 018A	COMSTAR 4	12309	US	21 FEB	1436.0	4.3	35788	35782		
1981 018B		12363	US	21 FEB	650.0	20.0	36340	613		
1981 021A	COSMOS 1249	12319	USSR	5 MAR	103.9	65.0	980	902		
1981 021C		12551	USSR	5 MAR	103.5	65.0	951	900		
1981 022A	COSMOS 1250	12320	USSR	6 MAR	114.4	74.0	1469	1388		
1981 022B	COSMOS 1251	12321	USSR	6 MAR	114.6	74.0	1471	1401		
1981 022C	COSMOS 1252	12322	USSR	6 MAR	114.7	74.0	1470	1416		
1981 022D	COSMOS 1253	12323	USSR	6 MAR	115.6	74.0	1494	1466		
1981 022E	COSMOS 1254	12324	USSR	6 MAR	114.9	74.0	1471	1429		
1981 022F	COSMOS 1255	12325	USSR	6 MAR	115.0	74.0	1470	1443		
1981 022G	COSMOS 1256	12326	USSR	6 MAR	115.2	74.0	1475	1454		
1981 022H	COSMOS 1257	12327	USSR	6 MAR	115.4	74.0	1477	1466		
1981 022J		12328	USSR	6 MAR	117.6	74.0	1694	1454		
1981 025A		12339	US	16 MAR	ELEMENTS NOT AVAILABLE					
1981 025C		12371	US	16 MAR	ELEMENTS NOT AVAILABLE					
1981 027A	RADUGA 5	12361	USSR	18 MAR	1434.4	8.3	36095	35413		
1981 027F		14194	USSR	18 MAR	1474.5	8.5	36616	36453		
1981 028B - 028W			USSR	20 MAR	SEE NOTE 33*					33*

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1981 LAUNCHES (CONT.)										
1981 030A	MOLNIYA 3-15	12368	USSR	24 MAR	717.8	64.7	39510	845		
1981 030D		12383	USSR	24 MAR	732.7	65.0	39945	1143		
1981 031A	COSMOS 1261	12376	USSR	31 MAR	716.6	68.0	36291	4003		
1981 031D		12384	USSR	31 MAR	707.5	67.9	35705	4139		
1981 031E		12392	USSR	31 MAR	719.5	67.8	36303	4137		
1981 031F		12393	USSR	31 MAR	716.1	64.2	37401	2868		
1981 031G		12394	USSR	31 MAR	718.4	65.3	37210	3174		
1981 033A	COSMOS 1263	12388	USSR	9 APR	106.8	83.0	1771	389		
1981 033B		12389	USSR	9 APR	105.2	83.0	1635	375		
1981 036E		12427	USSR	16 APR	102.8	99.0	1015	762		
1981 037A	COSMOS 1266	12409	USSR	21 APR	103.6	64.8	950	904		
1981 037D		12435	USSR	21 APR	103.4	64.8	936	898		
1981 038A		12418	US	24 APR	ELEMENTS NOT AVAILABLE					
1981 038B		12446	US	24 APR	ELEMENTS NOT AVAILABLE					
1981 041A	COSMOS 1269	12442	USSR	7 MAY	100.7	74.1	799	785		
1981 041B		12443	USSR	7 MAY	100.6	74.1	791	783		
1981 041C		13498	USSR	7 MAY	100.4	74.0	791	766		
1981 041D		14346	USSR	7 MAY	100.0	74.0	769	751		
1981 043A	METEOR 2-7	12456	USSR	14 MAY	102.2	81.3	891	837		
1981 043B		12457	USSR	14 MAY	102.4	81.3	916	826		
1981 043C		15769	USSR	14 MAY	102.4	81.3	919	824		
1981 044A	NNSS 30480	12458	US	15 MAY	ELEMENTS NOT AVAILABLE					
1981 046A	COSMOS 1271	12464	USSR	19 MAY	96.7	81.2	608	592		
1981 046B		12465	USSR	19 MAY	97.0	81.2	653	574		
1981 049A	GOES 5	12472	US	22 MAY	1437.0	3.7	35810	35802		
1981 050A	INTELSAT 5 F-1	12474	ITSO	23 MAY	1436.1	2.3	35802	35773		
1981 050B		12497	US	23 MAY	227.5	24.0	11617	313		
1981 053A	COSMOS 1275	12504	USSR	4 JUN	104.7	83.0	1006	955		
1981 053B -	053MR		USSR	4 JUN	SEE NOTE	34*				34*
1981 054A	MOLNIYA 3-16	12512	USSR	9 JUN	717.7	64.0	38666	1685		
1981 054E		12519	USSR	9 JUN	733.6	64.3	39147	1984		
1981 057A	METEOSAT 2	12544	ESA	19 JUN	1436.2	3.7	35800	35776		
1981 057B	APPLE	12545	INDIA	19 JUN	1447.7	0.8	36478	35548		
1981 057C		12546	ESA	19 JUN	542.0	10.3	31050	231		
1981 057D		12562	ESA	19 JUN	333.4	10.7	18878	216		
1981 057E		14125	ESA	19 JUN	149.1	10.3	5720	150		
1981 058A	COSMOS 1278	12547	USSR	19 JUN	719.1	67.1	36254	4163		
1981 058D		12561	USSR	19 JUN	723.9	67.5	36987	3669		
1981 058E		17256	USSR	19 JUN	718.9	67.1	36237	4170		
1981 059A	NOAA 7	12553	US	23 JUN	101.7	99.0	850	832		
1981 059B		12559	US	23 JUN	101.2	99.0	819	812		
1981 059C		12560	US	23 JUN	101.2	99.0	819	812		
1981 060A	MOLNIYA 1-50	12556	USSR	24 JUN	717.4	64.4	39946	390		
1981 060D		12563	USSR	24 JUN	732.0	64.7	40484	570		
1981 061A	EKRAN 7	12564	USSR	25 JUN	1435.4	8.0	35802	35743		
1981 061F		12851	USSR	25 JUN	1425.7	7.9	35595	35569		
1981 065A	METEOR 1-31	12585	USSR	10 JUL	97.0	97.8	637	590		
1981 065B		12586	USSR	10 JUL	97.1	97.8	636	603		
1981 069A	RADUGA 9	12618	USSR	30 JUL	1436.5	7.9	35816	35774		
1981 069F		12350	USSR	30 JUL	1473.9	8.1	36629	36418		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1981 LAUNCHES (CONT.)										
1981 070A	DE 1	12624	US	3 AUG	410.1	88.9	23287	527		
1981 070E		12679	US	3 AUG	411.5	89.0	23381	514		
1981 070J		14620	US	3 AUG	402.3	89.2	22852	498		
1981 070K		14621	US	3 AUG	401.3	89.2	22807	479		
1981 070L		19478	US	3 AUG	407.1	89.1	23115	516		
1981 071A	COSMOS 1285	12627	USSR	4 AUG	726.9	68.0	36826	3977		
1981 071D		12680	USSR	4 AUG	722.8	68.0	36523	4078		
1981 071E		12993	USSR	4 AUG	727.7	68.1	36651	4192		
1981 071F		13961	USSR	4 AUG	726.8	64.2	38048	2748		
1981 073A	FLTSATCOM 5	12635	US	6 AUG	1460.3	6.4	36313	36203		
1981 074A	COSMOS 1287	12636	USSR	6 AUG	115.7	74.0	1511	1462		
1981 074B	COSMOS 1288	12637	USSR	6 AUG	115.5	74.0	1491	1462		
1981 074C	COSMOS 1289	12638	USSR	6 AUG	114.7	74.0	1462	1424		
1981 074D	COSMOS 1290	12639	USSR	6 AUG	114.9	74.0	1462	1439		
1981 074E	COSMOS 1291	12640	USSR	6 AUG	115.1	74.0	1461	1456		
1981 074F	COSMOS 1292	12641	USSR	6 AUG	115.3	74.0	1475	1461		
1981 074G	COSMOS 1293	12642	USSR	6 AUG	114.6	74.0	1462	1407		
1981 074H	COSMOS 1294	12643	USSR	6 AUG	114.4	74.0	1463	1390		
1981 074J		12644	USSR	6 AUG	117.4	74.0	1669	1462		
1981 075A	INTERCOSMOS	12645	USSR	7 AUG	101.7	81.2	884	789		
1981 075B		12646	USSR	7 AUG	101.8	81.2	892	793		
1981 076A	GMS 2	12677	JAPAN	10 AUG	1446.4	6.5	36020	35957		
1981 076C		12810	JAPAN	10 AUG	98.5	28.4	1231	139		
1981 077A	COSMOS 1295	12681	USSR	12 AUG	104.6	82.9	1008	945		
1981 077B		12682	USSR	12 AUG	104.5	82.9	996	945		
1981 081A	COSMOS 1299	12783	USSR	24 AUG	103.9	65.1	963	925		
1981 082A	COSMOS 1300	12785	USSR	24 AUG	97.1	82.5	633	606		
1981 082B		12786	USSR	24 AUG	97.4	82.5	649	619		
1981 084A	COSMOS 1302	12791	USSR	28 AUG	100.6	74.0	801	772		
1981 084B		12792	USSR	28 AUG	100.5	74.0	790	769		
1981 084C		12793	USSR	28 AUG	100.3	74.0	779	768		
1981 084D		14810	USSR	28 AUG	100.8	74.0	813	783		
1981 087A	COSMOS 1304	12803	USSR	4 SEP	103.8	82.9	972	905		
1981 087B		12804	USSR	4 SEP	103.7	82.9	965	902		
1981 088A	COSMOS 1305	12818	USSR	11 SEP	263.7	63.4	13367	1118		
1981 088F		12827	USSR	11 SEP	262.4	63.4	13310	1085		
1981 088G		14131	USSR	11 SEP	248.7	63.2	12583	859		
1981 088H		18598	USSR	11 SEP	251.1	63.4	12865	746		
1981 091A	COSMOS 1308	12835	USSR	18 SEP	104.7	82.9	1001	959		
1981 091B		12836	USSR	18 SEP	104.6	82.9	994	959		
1981 094A	OREOL 3	12848	USSR	21 SEP	107.1	82.5	1784	396		
1981 094B		12849	USSR	21 SEP	108.5	82.5	1909	400		
1981 096A	SBS 2	12855	US	24 SEP	1436.1	2.6	35797	35777		
1981 098A	COSMOS 1312	12879	USSR	30 SEP	115.9	82.6	1501	1488		
1981 098B		12880	USSR	30 SEP	115.8	82.6	1498	1485		
1981 100A	SME	12887	US	6 OCT	91.8	97.6	361	360		
1981 100C		12889	US	6 OCT	118.9	99.9	2711	550		
1981 102A	RADUGA 10	12897	USSR	9 OCT	1436.1	7.7	35807	35765		
1981 102F		14195	USSR	9 OCT	1437.2	7.7	35868	35749		
1981 103A	COSMOS 1315	12913	USSR	13 OCT	96.9	81.2	625	592		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1981 LAUNCHES (CONT.)										
1981 103B		12904	USSR	13 OCT	97.1	81.2	653	590		
1981 105A	MOLNIYA 3-17	12915	USSR	17 OCT	713.8	64.3	39266	891		
1981 105B		12920	USSR	17 OCT	733.2	64.5	39845	1269		
1981 106A	VENERA 13	12927	USSR	30 OCT	HELIOCENTRIC ORBIT					
1981 107A		12930	US	31 OCT	ELEMENTS NOT AVAILABLE					
1981 107C		12932	US	31 OCT	ELEMENTS NOT AVAILABLE					
1981 108A	COSMOS 1317	12933	USSR	31 OCT	719.3	67.5	36007	4419		
1981 108D		12940	USSR	31 OCT	723.2	67.5	36619	4000		
1981 108E		14734	USSR	31 OCT	713.6	65.3	36709	3438		
1981 108F		14735	USSR	31 OCT	714.7	65.1	36478	3725		
1981 108G		14736	USSR	31 OCT	719.4	62.9	38860	1576		
1981 110A	VENERA 14	12938	USSR	4 NOV	HELIOCENTRIC ORBIT					
1981 113A	MOLNIYA 1-51	12959	USSR	17 NOV	717.6	64.1	39032	1313		
1981 113D		12986	USSR	17 NOV	698.9	64.3	37995	1423		
1981 114A	RCA SATCOM IIIR	12967	US	20 NOV	1436.1	0.0	35794	35778		
1981 115A	BHASKARA 2	12968	INDIA	20 NOV	93.1	50.7	431	422		
1981 116A	COSMOS 1320	12975	USSR	28 NOV	117.2	74.0	1633	1478		
1981 116B	COSMOS 1321	12976	USSR	28 NOV	117.2	74.0	1629	1479		
1981 116C	COSMOS 1322	12977	USSR	28 NOV	117.2	74.0	1627	1478		
1981 116D	COSMOS 1323	12978	USSR	28 NOV	117.1	74.0	1622	1479		
1981 116E	COSMOS 1324	12979	USSR	28 NOV	117.1	74.0	1618	1479		
1981 116F	COSMOS 1325	12980	USSR	28 NOV	117.0	74.0	1615	1479		
1981 116G	COSMOS 1326	12981	USSR	28 NOV	117.0	74.0	1609	1478		
1981 116H	COSMOS 1327	12982	USSR	28 NOV	116.9	74.0	1601	1479		
1981 116J		12983	USSR	28 NOV	117.5	74.0	1656	1483		
1981 117A	COSMOS 1328	12987	USSR	3 DEC	97.2	82.5	638	609		
1981 117B		12988	USSR	3 DEC	97.4	82.5	651	619		
1981 119A	INTELSAT 5 F-3	12994	ITSO	15 DEC	1436.1	1.4	35800	35774		
1981 119B		13007	US	15 DEC	230.7	23.6	11831	329		
1981 120A	RADIO 3	12997	USSR	17 DEC	118.4	83.0	1656	1561		
1981 120B	RADIO 8	12998	USSR	17 DEC	119.6	83.0	1681	1647		
1981 120C	RADIO 5	12999	USSR	17 DEC	119.4	83.0	1665	1645		
1981 120D	RADIO 4	13000	USSR	17 DEC	119.3	83.0	1662	1634		
1981 120E	RADIO 7	13001	USSR	17 DEC	119.1	83.0	1656	1622		
1981 120F	RADIO 6	13002	USSR	17 DEC	118.6	83.0	1657	1577		
1981 120G		13003	USSR	17 DEC	120.8	83.0	1781	1651		
1981 122A	MARECS A	13010	ESA	20 DEC	1436.0	4.3	35802	35771		
1981 122B	CAT 4	13011	ESA	20 DEC	566.1	10.5	32321	258		
1981 123A	MOLNIYA 1-52	13012	USSR	23 DEC	717.6	64.0	38784	1560		
1981 123D		13016	USSR	23 DEC	695.2	64.2	37497	1739		
1982 LAUNCHES										
1982 001A	COSMOS 1331	13027	USSR	7 JAN	100.4	74.0	798	760		
1982 001B		13028	USSR	7 JAN	100.4	74.0	793	762		
1982 001C		13029	USSR	7 JAN	100.3	74.0	783	764		
1982 001D		13030	USSR	7 JAN	99.9	74.0	772	734		
1982 003A	COSMOS 1333	13033	USSR	14 JAN	104.9	82.9	1012	964		
1982 003B		13034	USSR	14 JAN	104.7	82.9	1004	958		
1982 004A	RCA SATCOM IV	13035	US	16 JAN	1436.1	0.0	35798	35776		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1982 LAUNCHES (CONT.)										
1982 006C		13103	US	21 JAN	ELEMENTS NOT AVAILABLE					
1982 006D		13104	US	21 JAN	ELEMENTS NOT AVAILABLE					
1982 006E		13105	US	21 JAN	ELEMENTS NOT AVAILABLE					
1982 006F		13152	US	21 JAN	ELEMENTS NOT AVAILABLE					
1982 009A	EKRAN 8	13056	USSR	5 FEB	1440.8	7.5	35986	35768		
1982 009D		13059	USSR	5 FEB	538.2	48.3	29461	1614		
1982 009F		14117	USSR	5 FEB	1426.1	7.4	35763	35417		
1982 012A	COSMOS 1339	13065	USSR	17 FEB	104.7	82.9	1014	947		
1982 012B		13066	USSR	17 FEB	104.6	82.9	1008	940		
1982 013A	COSMOS 1340	13067	USSR	19 FEB	97.0	81.2	622	603		
1982 013B		13068	USSR	19 FEB	97.0	81.2	641	590		
1982 014A	WESTAR 4	13069	US	26 FEB	1436.1	0.0	35797	35777		
1982 015A	MOLNIYA 1-53	13070	USSR	26 FEB	717.8	63.9	39502	853		
1982 015D		13075	USSR	26 FEB	730.9	64.1	39996	1002		
1982 016A	COSMOS 1341	13080	USSR	3 MAR	716.8	67.7	36025	4278		
1982 016D		13090	USSR	3 MAR	708.9	67.6	35791	4123		
1982 017A	INTELSAT 5 F-4	13083	ITSO	5 MAR	1436.0	1.4	35799	35773		
1982 019A		13086	US	6 MAR	ELEMENTS NOT AVAILABLE					
1982 019B		13089	US	6 MAR	ELEMENTS NOT AVAILABLE					
1982 020A	GORIZONT 5	13092	USSR	15 MAR	1461.6	7.3	36430	36136		
1982 020F		13899	USSR	15 MAR	1459.9	7.5	36381	36121		
1982 023A	MOLNIYA 3-18	13107	USSR	24 MAR	717.9	64.6	39627	730		
1982 023D		13112	USSR	24 MAR	732.3	64.9	40152	917		
1982 024A	COSMOS 1344	13110	USSR	24 MAR	104.8	82.9	1007	964		
1982 024B		13111	USSR	24 MAR	104.7	82.9	1010	950		
1982 025A	METEOR 2	13113	USSR	25 MAR	104.0	82.5	958	933		
1982 025B		13114	USSR	25 MAR	104.0	82.5	957	934		
1982 027A	COSMOS 1346	13120	USSR	31 MAR	96.9	81.2	627	592		
1982 027B		13121	USSR	31 MAR	97.1	81.2	650	588		
1982 029A	COSMOS 1348	13124	USSR	7 APR	718.4	66.9	36154	4233		
1982 029D		13169	USSR	7 APR	705.4	67.1	35920	3819		
1982 030A	COSMOS 1349	13127	USSR	8 APR	104.8	82.9	1008	964		
1982 030B		13128	USSR	8 APR	104.7	82.9	1000	959		
1982 031A	INSAT-1A	13129	INDIA	10 APR	1434.2	0.1	35936	35562		
1982 033A	SALYUT 7	13138	USSR	19 APR	90.9	51.6	323	317		BX*
1982 037A	COSMOS 1354	13148	USSR	28 APR	100.7	74.0	799	787		
1982 037B		13149	USSR	28 APR	100.6	74.0	796	776		
1982 037C		14811	USSR	28 APR	101.0	74.0	824	785		
1982 039A	COSMOS 1356	13153	USSR	5 MAY	97.1	81.2	636	606		
1982 039B		13154	USSR	5 MAY	97.4	81.2	677	592		
1982 040A	COSMOS 1357	13160	USSR	6 MAY	114.6	74.0	1476	1399		
1982 040B	COSMOS 1358	13161	USSR	6 MAY	114.8	74.0	1478	1414		
1982 040C	COSMOS 1359	13162	USSR	6 MAY	115.0	74.0	1478	1430		
1982 040D	COSMOS 1360	13163	USSR	6 MAY	115.2	74.0	1480	1444		
1982 040E	COSMOS 1361	13164	USSR	6 MAY	115.3	74.0	1481	1459		
1982 040F	COSMOS 1362	13165	USSR	6 MAY	115.5	74.0	1493	1464		
1982 040G	COSMOS 1363	13166	USSR	6 MAY	115.7	74.0	1503	1471		
1982 040H	COSMOS 1364	13167	USSR	6 MAY	115.9	74.0	1522	1471		
1982 040J		13168	USSR	6 MAY	117.7	74.1	1685	1470		
1982 041C		13172	US	11 MAY	ELEMENTS NOT AVAILABLE					

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1982 LAUNCHES (CONT.)										
1982 043A	COSMOS 1365	13175	USSR	14 MAY	103.6	65.1	983	877		
1982 043D		13594	USSR	14 MAY	103.4	65.1	964	869		
1982 044A	COSMOS 1366	13177	USSR	17 MAY	1436.0	7.0	35807	35759		
1982 044F		14114	USSR	17 MAY	1435.7	6.8	35859	35698		
1982 045A	COSMOS 1367	13205	USSR	20 MAY	717.3	66.0	36382	3949		
1982 045D		13215	USSR	20 MAY	704.1	66.1	36286	3390		
1982 050A	MOLNIYA 1-54	13237	USSR	28 MAY	717.8	64.8	39275	1079		
1982 050E		13253	USSR	28 MAY	732.2	65.0	39741	1320		
1982 051A	COSMOS 1371	13241	USSR	1 JUN	100.8	74.0	804	784		
1982 051B		13242	USSR	1 JUN	100.6	74.0	804	766		
1982 051C		14398	USSR	1 JUN	100.6	74.1	791	786		
1982 051D		18502	USSR	1 JUN	100.7	74.1	790	789		
1982 051E		18509	USSR	1 JUN	100.6	74.0	799	779		
1982 051F		18510	USSR	1 JUN	100.7	74.0	805	777		
1982 051G		19102	USSR	1 JUN	100.6	74.1	800	774		
1982 052A	COSMOS 1372	13243	USSR	1 JUN	103.9	64.9	965	919		
1982 052D		13416	USSR	1 JUN	103.6	64.9	949	907		
1982 055A	COSMOS 1375	13259	USSR	6 JUN	105.0	65.8	1015	974		
1982 055B - 055BL			USSR	6 JUN	SEE NOTE		37*			37*
1982 058A	WESTAR 5	13269	US	9 JUN	1436.1	0.0	35797	35777		
1982 059A	COSMOS 1378	13271	USSR	10 JUN	97.2	82.5	639	611		
1982 059B		13272	USSR	10 JUN	97.4	82.5	650	619		
1982 064A	COSMOS 1382	13295	USSR	25 JUN	717.3	67.9	36233	4096		
1982 064D		13298	USSR	25 JUN	708.4	67.8	36071	3818		
1982 066A	COSMOS 1383	13301	USSR	29 JUN	105.2	82.9	1025	983		
1982 066B		13302	USSR	29 JUN	105.1	82.9	1028	969		
1982 069A	COSMOS 1386	13353	USSR	7 JUL	104.6	83.0	1007	947		
1982 069B		13354	USSR	7 JUL	104.5	83.0	1009	930		
1982 072A	LANDSAT 4	13367	US	16 JUL	98.7	98.1	702	696		
1982 073A	COSMOS 1388	13375	USSR	21 JUL	114.5	74.0	1472	1391		
1982 073B	COSMOS 1389	13376	USSR	21 JUL	114.7	74.0	1474	1407		
1982 073C	COSMOS 1390	13377	USSR	21 JUL	114.9	74.0	1473	1424		
1982 073D	COSMOS 1391	13378	USSR	21 JUL	115.0	74.0	1473	1440		
1982 073E	COSMOS 1392	13379	USSR	21 JUL	115.2	74.0	1473	1457		
1982 073F	COSMOS 1393	13380	USSR	21 JUL	115.4	74.0	1481	1468		
1982 073G	COSMOS 1394	13381	USSR	21 JUL	115.6	74.0	1493	1472		
1982 073H	COSMOS 1395	13382	USSR	21 JUL	115.8	74.0	1513	1472		
1982 073J		13386	USSR	21 JUL	117.9	74.0	1710	1462		
1982 074A	MOLNIYA 1-55	13383	USSR	21 JUL	717.7	64.7	39571	781		
1982 074D		13390	USSR	21 JUL	698.6	64.7	38603	802		
1982 079A	COSMOS 1400	13402	USSR	5 AUG	96.9	81.2	617	598		
1982 079B		13403	USSR	5 AUG	97.2	81.2	661	584		
1982 082A	ANIK D-1	13431	CANADA	26 AUG	1436.0	0.0	35796	35777		
1982 083A	MOLNIYA 3-19	13432	USSR	27 AUG	717.0	64.2	39059	1255		
1982 083E		13446	USSR	27 AUG	733.1	64.3	39551	1557		
1982 087A	ETS 3	13492	JAPAN	3 SEP	107.2	44.6	1227	966		
1982 087B		13493	JAPAN	3 SEP	105.1	44.6	1009	992		
1982 087C		13510	JAPAN	3 SEP	107.1	44.6	1230	955		
1982 087D		14569	JAPAN	3 SEP	106.3	44.8	1146	964		
1982 092A	COSMOS 1408	13552	USSR	16 SEP	97.2	82.6	636	608		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1982 LAUNCHES (CONT.)										
1982 092B		13553	USSR	16 SEP	97.4	82.6	652	620		
1982 093A	EKRAN 9	13554	USSR	16 SEP	1437.1	7.0	35899	35713		
1982 093F		14115	USSR	16 SEP	1422.2	7.0	35533	35495		
1982 095A	COSMOS 1409	13585	USSR	22 SEP	719.0	64.9	36669	3746		
1982 095D		13591	USSR	22 SEP	707.2	65.4	36741	3091		
1982 096A	COSMOS 1410	13589	USSR	24 SEP	115.9	82.6	1498	1490		
1982 096B		13590	USSR	24 SEP	115.8	82.6	1497	1488		
1982 097A	INTELSAT 5F 5	13595	ITSO	28 SEP	1436.1	0.8	35802	35774		
1982 097B		13599	US	28 SEP	135.6	24.3	4521	211		
1982 099A	COSMOS 1412	13600	USSR	2 OCT	103.9	64.8	998	886		
1982 099E		13653	USSR	2 OCT	103.6	64.8	967	888		
1982 100A	COSMOS 1413	13603	USSR	12 OCT	673.3	64.7	19073	19063		
1982 100D	COSMOS 1414	13606	USSR	12 OCT	675.7	64.7	19205	19052		
1982 100E	COSMOS 1415	13607	USSR	12 OCT	673.5	64.7	19074	19071		
1982 100F		13608	USSR	12 OCT	306.2	52.2	17083	259		
1982 100G		13609	USSR	12 OCT	318.1	52.2	17816	299		
1982 100H		13610	USSR	12 OCT	672.9	64.7	19072	19042		
1982 102A	COSMOS 1417	13617	USSR	19 OCT	104.7	83.0	1007	954		
1982 102B		13618	USSR	19 OCT	104.6	83.0	999	952		
1982 103A	GORIZONT 6	13624	USSR	20 OCT	1435.9	6.6	35786	35777		
1982 103E		13630	USSR	20 OCT	1435.0	6.5	35826	35702		
1982 105A	RCA SATCOM-V	13631	US	28 OCT	1436.2	0.0	35790	35785		
1982 106A		13636	US	30 OCT	1436.1	3.8	35814	35759		
1982 106B		13637	US	30 OCT	1436.1	0.7	35797	35775		
1982 106D		13643	US	30 OCT	1449.0	5.1	36236	35842		
1982 109A	COSMOS 1420	13648	USSR	11 NOV	100.6	74.0	802	773		
1982 109B		13649	USSR	11 NOV	100.5	74.0	796	768		
1982 109D		15528	USSR	11 NOV	100.5	74.0	796	772		
1982 110B	SBS 3	13651	US	11 NOV	1436.1	0.0	35796	35778		35*
1982 110C	ANIK C-3	13652	CANADA	12 NOV	1436.1	0.0	35794	35780		35*
1982 110D		13658	US	11 NOV	638.6	23.4	36003	370		
1982 110E		13666	US	11 NOV	637.4	23.2	35930	379		
1982 113A	RADUGA 11	13669	USSR	26 NOV	1473.8	6.0	36680	36363		
1982 113F		13954	USSR	26 NOV	1475.9	6.2	36646	36477		
1982 115B - 115AJ			USSR	8 DEC	SEE NOTE		36*			36*
1982 116A	METEOR 2-9	13718	USSR	14 DEC	101.8	81.2	884	803		
1982 116B		13719	USSR	14 DEC	101.9	81.3	898	796		
1982 116C		13720	USSR	14 DEC	101.8	81.2	884	803		
1982 116D		17755	USSR	14 DEC	101.9	81.2	897	796		
1982 118A		13736	US	21 DEC	101.1	98.7	815	803		
1982 118B		13737	US	21 DEC	98.4	98.6	682	680		
1982 118C		13738	US	21 DEC	99.7	98.6	746	741		
1982 118D		13773	US	21 DEC	97.9	98.6	661	656		
1982 118E		13774	US	21 DEC	98.5	98.6	689	684		
1983 LAUNCHES										
1983 001A	COSMOS 1428	13757	USSR	12 JAN	104.6	82.9	1000	950		
1983 001B		13758	USSR	12 JAN	104.5	82.9	990	951		
1983 001C		14563	USSR	12 JAN	103.8	82.9	960	913		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1983 LAUNCHES (CONT.)										
1983 002A	COSMOS 1429	13761	USSR	19 JAN	115.8	74.0	1516	1464		
1983 002B	COSMOS 1430	13762	USSR	19 JAN	115.6	74.0	1497	1465		
1983 002C	COSMOS 1431	13763	USSR	19 JAN	115.4	74.0	1482	1463		
1983 002D	COSMOS 1432	13764	USSR	19 JAN	115.2	74.0	1466	1461		
1983 002E	COSMOS 1433	13765	USSR	19 JAN	115.0	74.0	1465	1444		
1983 002F	COSMOS 1434	13766	USSR	19 JAN	114.8	74.0	1465	1429		
1983 002G	COSMOS 1435	13767	USSR	19 JAN	114.6	74.0	1465	1413		
1983 002H	COSMOS 1436	13768	USSR	19 JAN	114.5	74.0	1464	1397		
1983 002J		13769	USSR	19 JAN	117.9	74.0	1693	1476		
1983 003A	COSMOS 1437	13770	USSR	20 JAN	97.0	81.2	628	600		
1983 003B		13771	USSR	20 JAN	97.1	81.2	655	586		
1983 004A	IRAS	13777	US	26 JAN	102.9	99.0	904	885		
1983 004B		13778	US	26 JAN	102.3	100.1	884	852		
1983 004C		13783	US	26 JAN	102.9	99.0	902	885		
1983 006A	CS-2A	13782	JAPAN	4 FEB	1436.2	3.1	35793	35785		
1983 006B		13786	JAPAN	4 FEB	185.3	28.5	8541	234		
1983 008A		13791	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008B		13792	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008C		13834	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008D		13835	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008E		13844	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008F		13845	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008G		13849	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008H		13874	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 010A	COSMOS 1441	13818	USSR	16 FEB	96.8	81.1	609	600		
1983 010B		13819	USSR	16 FEB	97.0	81.1	653	573		
1983 015A	MOLNIYA 3-20	13875	USSR	11 MAR	718.0	64.1	39092	1272		
1983 015E		13882	USSR	11 MAR	731.9	64.2	39672	1378		
1983 016A	EKRAN 10	13878	USSR	12 MAR	1515.4	7.4	37491	37157		
1983 016F		14086	USSR	12 MAR	1424.5	7.0	35609	35507		
1983 019A	MOLNIYA 1-56	13890	USSR	16 MAR	720.6	63.9	39115	1378		
1983 019D		13897	USSR	16 MAR	732.7	64.0	39548	1539		
1983 020A	ASTRON	13901	USSR	23 MAR	5915.8	79.8	178817	25128		
1983 020D		20413	USSR	23 MAR	5812.1	15.4	196455	4950		
1983 021A	COSMOS 1447	13916	USSR	24 MAR	104.7	82.9	1010	953		
1983 021B		13917	USSR	24 MAR	104.6	82.9	998	955		
1983 022A	NOAA 8	13923	US	28 MAR	101.1	98.5	821	796		
1983 022B		13924	US	28 MAR	98.5	98.6	691	684		
1983 022C		14477	US	28 MAR	97.8	98.6	656	651		
1983 023A	COSMOS 1448	13949	USSR	30 MAR	104.7	83.0	1002	955		
1983 023B		13950	USSR	30 MAR	104.6	83.0	1005	947		
1983 025A	MOLNIYA 1-57	13964	USSR	2 APR	717.5	64.0	38873	1469		
1983 025D		13967	USSR	2 APR	699.2	64.3	37753	1682		
1983 026B	TDRS 1	13969	US	4 APR	1436.2	4.7	35804	35774		
1983 026C		13970	US	4 APR	1089.7	3.1	35217	22180		
1983 026D		13971	US	4 APR	554.6	25.8	31693	270		
1983 028A	RADUGA 12	13974	USSR	8 APR	1436.5	5.8	35808	35778		
1983 028F		13983	USSR	8 APR	1439.3	5.8	35954	35744		
1983 030A	RCA SATCOM VI	13984	US	11 APR	1436.1	0.0	35795	35779		
1983 030B		13985	US	11 APR	119.1	25.4	2983	298		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1983 LAUNCHES (CONT.)										
1983 031A	COSMOS 1452	13991	USSR	12 APR	100.7	74.0	802	778		
1983 031B		13992	USSR	12 APR	100.5	74.1	789	779		
1983 031D		14812	USSR	12 APR	101.0	74.1	819	789		
1983 037A	COSMOS 1455	14032	USSR	23 APR	97.2	82.5	637	612		
1983 037B		14033	USSR	23 APR	97.5	82.5	651	623		
1983 038A	COSMOS 1456	14034	USSR	25 APR	717.8	66.9	36855	3501		
1983 038E		14041	USSR	25 APR	707.3	66.7	36504	3331		
1983 038H		14297	USSR	25 APR	719.3	66.9	36924	3507		
1983 038J		14301	USSR	25 APR	789.5	67.0	43591	246		
1983 038K		14306	USSR	25 APR	720.6	64.3	39697	795		
1983 041A	GOES 6	14050	US	28 APR	1436.2	2.4	35794	35785		
1983 041B		14051	US	28 APR	116.6	25.3	2648	406		
1983 041C		14069	US	28 APR	1703.3	1.2	54325	27405		
1983 042A	COSMOS 1459	14057	USSR	6 MAY	104.6	83.0	1013	940		
1983 042B		14059	USSR	6 MAY	104.5	83.0	1003	939		
1983 044A	COSMOS 1461	14064	USSR	7 MAY	98.9	65.0	847	566		
1983 044B - 044FQ			USSR	7 MAY	SEE NOTE		39*			39*
1983 046A	COSMOS 1463	14075	USSR	19 MAY	97.5	82.9	991	282		
1983 047A	INTELSAT 5 F-6	14077	ITSO	19 MAY	1436.1	0.0	35801	35774		
1983 048A	COSMOS 1464	14084	USSR	24 MAY	104.8	82.9	1005	962		
1983 048B		14085	USSR	24 MAY	104.7	82.9	999	958		
1983 051B		14096	US	26 MAY	119.1	72.3	2522	755		
1983 053A	VENERA 15	14104	USSR	2 JUN	HELIOCENTRIC ORBIT					
1983 054A	VENERA 16	14107	USSR	7 JUN	HELIOCENTRIC ORBIT					
1983 056A		14112	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056B		14113	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056C		14143	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056D		14144	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056E		14145	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056F		14146	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056G		14180	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056H		14181	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 058A	ECS 1	14128	ESA	16 JUN	1436.1	1.2	35911	35662		
1983 058B	OSCAR 10	14129	FRG	16 JUN	699.5	26.0	35280	4170		
1983 058C		14130	ESA	16 JUN	378.5	8.4	21713	193		
1983 058E		17302	ESA	16 JAN	97.5	6.3	1142	136		
1983 058F		17331	ESA	16 JUN	271.9	7.3	14698	349		
1983 059B	ANIK C2	14133	CANADA	18 JUN	1436.0	0.0	35792	35782		35*
1983 059C	PALAPA B1	14134	INDNSA	18 JUN	1436.2	0.5	35790	35787		35*
1983 059D		14135	US	18 JUN	614.9	23.5	34803	345		
1983 059E		14136	US	18 JUN	662.1	25.6	37246	324		
1983 059C		14139	US	20 JUN	ELEMENTS NOT AVAILABLE					
1983 061A	COSMOS 1470	14147	USSR	22 JUN	97.3	82.5	646	612		
1983 061B		14148	USSR	22 JUN	97.5	82.5	656	621		
1983 063A		14154	US	27 JUN	100.7	82.0	824	760		
1983 063B		14155	US	27 JUN	100.7	82.0	822	756		
1983 063C		14222	US	27 JUN	99.9	82.4	776	735		
1983 063D		14223	US	27 JUN	101.0	81.7	854	758		
1983 065A	GALAXY 1	14158	US	28 JUN	1436.1	0.0	35791	35786		
1983 065C		14163	US	28 JUN	344.8	23.2	19624	198		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1983 LAUNCHES (CONT.)										
1983 066A	GORIZONT 7	14150	USSR	30 JUN	1464.2	5.3	36376	36294		
1983 066E		14167	USSR	30 JUN	230.9	46.5	11979	202		
1983 066F		15141	USSR	30 JUN	1475.2	5.6	36603	36493		
1983 067A	PROGNOZ 9	14153	USSR	1 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1983 069A	COSMOS 1473	14171	USSR	6 JUL	114.4	74.0	1461	1392		
1983 069B	COSMOS 1474	14172	USSR	6 JUL	114.6	74.0	1461	1409		
1983 069C	COSMOS 1475	14173	USSR	6 JUL	114.8	74.0	1461	1427		
1983 069D	COSMOS 1476	14174	USSR	6 JUL	114.9	74.0	1460	1444		
1983 069E	COSMOS 1477	14175	USSR	6 JUL	115.1	74.0	1463	1459		
1983 069F	COSMOS 1478	14176	USSR	6 JUL	115.3	74.0	1480	1460		
1983 069G	COSMOS 1479	14177	USSR	6 JUL	115.5	74.0	1498	1460		
1983 069H	COSMOS 1480	14178	USSR	6 JUL	115.8	74.0	1518	1460		
1983 069J		14179	USSR	6 JUL	117.4	74.0	1671	1460		
1983 070A	COSMOS 1481	14182	USSR	8 JUL	707.3	67.4	36380	3453		
1983 070D		14191	USSR	8 JUL	707.9	67.5	36337	3530		
1983 070E		14192	USSR	8 JUL	708.8	67.4	36476	3435		
1983 070F		20412	USSR	8 JUL	705.8	67.6	36962	2797		
1983 072A		14189	US	14 JUL	717.9	63.4	20567	19795		
1983 072B		14190	US	14 JUL	371.8	63.9	20345	1153		
1983 073A	MOLNIYA 1-58	14199	USSR	19 JUL	624.6	64.0	34947	706		
1983 075A	COSMOS 1484	14207	USSR	24 JUL	96.6	97.7	623	567		
1983 075B		14208	USSR	24 JUL	97.1	97.7	644	592		
1983 075C		14209	USSR	24 JUL	96.8	97.7	636	572		
1983 075D		14229	USSR	24 JUL	97.4	97.7	660	604		
1983 075E		14631	USSR	24 JUL	96.7	97.6	622	581		
1983 075F		14928	USSR	24 JUL	97.1	97.7	643	593		
1983 077A	TELSTAR 3A	14234	US	28 JUL	1436.2	0.0	35801	35774		
1983 077C		14236	US	28 JUL	255.6	22.8	13722	204		
1983 078A		14237	US	31 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1983 078B		14238	US	31 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1983 079A	COSMOS 1486	14240	USSR	3 AUG	100.6	74.1	798	776		
1983 079B		14241	USSR	3 AUG	100.5	74.1	796	771		
1983 079C		14344	USSR	3 AUG	100.9	74.1	815	784		
1983 079D		14813	USSR	3 AUG	101.0	74.0	822	788		
1983 079E		15756	USSR	3 AUG	100.2	74.1	778	756		
1983 081A	CS-2B	14248	JAPAN	5 AUG	1457.3	1.6	36216	36189		
1983 081C		14287	JAPAN	5 AUG	196.9	28.4	9498	165		
1983 084A	COSMOS 1490	14258	USSR	10 AUG	675.7	64.8	19170	19088		
1983 084B	COSMOS 1491	14259	USSR	10 AUG	668.4	64.7	19078	18811		
1983 084C	COSMOS 1492	14260	USSR	10 AUG	676.8	64.7	19159	19154		
1983 084F		14264	USSR	10 AUG	676.3	64.8	19158	19128		
1983 084G		14277	USSR	10 AUG	330.7	52.0	18511	411		
1983 084H		14278	USSR	10 AUG	329.6	52.1	18476	378		
1983 088A	RADUGA 13	14307	USSR	25 AUG	1466.8	5.3	36454	36317		
1983 088F		14333	USSR	25 AUG	1475.2	5.5	36628	36468		
1983 089B	INSAT 1B	14318	INDIA	31 AUG	1436.1	1.0	35831	35743		
1983 089C		14524	US	31 AUG	585.2	24.7	33322	270		
1983 090A	MOLNIYA 3-21	14313	USSR	30 AUG	716.3	64.6	39010	1272		
1983 090D		14319	USSR	30 AUG	731.3	64.4	39830	1186		
1983 091C - 091AC			USSR	31 AUG	SEE NOTE	38*				38*

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1983 LAUNCHES (CONT.)										
1983 094A	RCA SATCOM VII	14328	US	8 SEP	1436.2	0.1	35808	35768		
1983 094B		14329	US	8 SEP	117.1	25.5	2809	287		
1983 098A	GALAXY 2	14365	US	22 SEP	1436.0	0.0	35790	35783		
1983 099A	COSMOS 1500	14372	USSR	28 SEP	97.2	82.5	643	609		
1983 099B		14373	USSR	28 SEP	97.5	82.5	655	620		
1983 100A	EKRAN 11	14377	USSR	30 SEP	1435.3	6.1	35777	35763		
1983 100F		14394	USSR	30 SEP	1425.0	6.1	35662	35476		
1983 103A	COSMOS 1503	14401	USSR	12 OCT	100.7	74.0	802	783		
1983 103B		14402	USSR	12 OCT	100.6	74.1	805	765		
1983 105A	INTELSAT 5 F-7	14421	ITSO	19 OCT	1436.1	0.2	35803	35773		
1983 108A	COSMOS 1506	14450	USSR	26 OCT	104.7	82.9	1009	947		
1983 108B		14451	USSR	26 OCT	104.5	82.9	999	946		
1983 109A	METEOR 2-10	14452	USSR	28 OCT	101.1	81.2	881	744		
1983 109B		14453	USSR	28 OCT	101.2	81.2	894	736		
1983 109C		14454	USSR	28 OCT	101.1	81.2	883	740		
1983 111A	COSMOS 1508	14483	USSR	11 NOV	107.7	82.9	1848	394		
1983 111B		14484	USSR	11 NOV	106.4	82.9	1743	372		
1983 113A		14506	US	18 NOV	101.2	98.4	823	804		
1983 113B		14553	US	18 NOV	98.6	98.6	694	687		
1983 113C		14554	US	18 NOV	98.7	98.6	702	692		
1983 113D		14609	US	18 NOV	99.3	98.6	731	719		
1983 113E		14610	US	18 NOV	99.9	98.6	761	748		
1983 114A	MOLNIYA 1-59	14516	USSR	23 NOV	717.9	64.2	39196	1165		
1983 114D		14520	USSR	23 NOV	699.2	64.4	38110	1322		
1983 115A	COSMOS 1510	14521	USSR	24 NOV	116.0	73.6	1522	1478		
1983 115B		14522	USSR	24 NOV	115.9	73.6	1518	1477		
1983 118A	GORIZONT 8	14532	USSR	30 NOV	1465.4	5.0	36481	36235		
1983 118F		14548	USSR	30 NOV	1436.4	5.0	35975	35610		
1983 120A	COSMOS 1513	14546	USSR	8 DEC	104.8	82.9	1014	955		
1983 120B		14547	USSR	8 DEC	104.6	82.9	1011	939		
1983 122A	COSMOS 1515	14551	USSR	15 DEC	97.2	82.5	640	613		
1983 122B		14552	USSR	15 DEC	97.5	82.5	652	624		
1983 123A	MOLNIYA 3-22	14570	USSR	21 DEC	717.8	65.2	38676	1679		
1983 123D		14582	USSR	21 DEC	732.4	65.0	39245	1830		
1983 126A	COSMOS 1518	14587	USSR	28 DEC	713.9	67.0	36811	3354		
1983 126D		14596	USSR	28 DEC	705.5	66.9	36478	3267		
1983 127A	COSMOS 1519	14590	USSR	29 DEC	675.7	66.2	19188	19070		
1983 127B	COSMOS 1520	14591	USSR	29 DEC	675.7	66.2	19142	19116		
1983 127C	COSMOS 1521	14592	USSR	29 DEC	673.4	66.1	19150	18991		
1983 127F		14595	USSR	29 DEC	97.0	66.9	636	589		
1983 127G		14607	USSR	29 DEC	329.7	51.9	18579	284		
1983 127H		14608	USSR	29 DEC	334.5	51.9	18861	307		
1984 LAUNCHES										
1984 001A	COSMOS 1522	14611	USSR	5 JAN	115.4	74.0	1491	1459		
1984 001B	COSMOS 1522	14612	USSR	5 JAN	114.4	74.0	1460	1394		
1984 001C	COSMOS 1524	14613	USSR	5 JAN	114.6	74.0	1460	1409		
1984 001D	COSMOS 1525	14614	USSR	5 JAN	114.7	74.0	1460	1425		
1984 001E	COSMOS 1526	14615	USSR	5 JAN	114.9	74.0	1460	1440		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1984 LAUNCHES (CONT.)										
1984 001F	COSMOS 1527	14616	USSR	5 JAN	115.1	74.0	1460	1456		
1984 001G	COSMOS 1528	14617	USSR	5 JAN	115.3	74.0	1474	1459		
1984 001H	COSMOS 1529	14618	USSR	5 JAN	115.6	74.0	1509	1459		
1984 001J		14619	USSR	5 JAN	117.5	74.0	1671	1467		
1984 003A	COSMOS 1531	14624	USSR	11 JAN	105.0	82.9	1006	978		
1984 003B		14625	USSR	11 JAN	104.8	82.9	1002	968		
1984 005A	BS-2A	14659	JAPAN	23 JAN	1453.9	2.3	36170	36096		
1984 008A	PRC 14	14670	PRC	29 JAN	162.8	36.1	6523	476		
1984 009A		14675	US	31 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1984 009C		14677	US	31 JAN	ELEMENTS NOT AVAILABLE					
1984 010A	COSMOS 1535	14679	USSR	2 FEB	104.7	83.0	1012	952		
1984 010B		14680	USSR	2 FEB	104.6	83.0	1002	952		
1984 011E		14693	US	6 FEB	97.1	28.2	967	272		
1984 011F		14694	US	3 FEB	98.7	27.7	1092	303		
1984 012A		14690	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012B		14691	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012C		14728	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012D		14729	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012F		14795	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012J		15347	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012K		15348	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012L		15349	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 013A	COSMOS 1536	14699	USSR	8 FEB	97.3	82.5	643	612		
1984 013B		14700	USSR	8 FEB	97.5	82.5	654	622		
1984 016A	RADUGA 14	14725	USSR	15 FEB	1435.8	5.0	35807	35755		
1984 016F		17874	USSR	15 FEB	1436.9	5.0	35954	35650		
1984 019A	COSMOS 1538	14759	USSR	21 FEB	100.6	74.0	803	771		
1984 019B		14760	USSR	21 FEB	100.6	74.0	805	764		
1984 019C		15785	USSR	21 FEB	100.4	74.0	787	766		
1984 019D		18519	USSR	21 FEB	100.4	74.1	790	763		
1984 021A	LANDSAT 5	14780	US	1 MAR	98.7	98.1	700	699		
1984 021B	UOSAT 2	14781	UK	1 MAR	98.2	97.9	680	661		
1984 021C		14782	US	1 MAR	94.4	100.0	547	434		
1984 022A	COSMOS 1540	14783	USSR	2 MAR	1436.2	5.6	35792	35786		
1984 022F		14948	USSR	2 MAR	1441.9	5.7	36008	35791		
1984 023A	INTELSAT 5 F-8	14786	ITSO	5 MAR	1436.1	0.0	35802	35772		
1984 023B		14787	ESA	5 MAR	554.3	11.0	31648	298		
1984 024A	COSMOS 1541	14790	USSR	6 MAR	718.1	64.4	36995	3374		
1984 024D		14796	USSR	6 MAR	709.8	64.5	36604	3354		
1984 027A	COSMOS 1544	14819	USSR	15 MAR	97.2	82.5	637	612		
1984 027B		14820	USSR	15 MAR	97.5	82.5	651	623		
1984 028A	EKRAN 12	14821	USSR	16 MAR	1499.1	6.4	37068	36954		
1984 028D		14828	USSR	16 MAR	624.7	46.6	35418	238		
1984 028F		15139	USSR	16 MAR	1419.8	6.2	35542	35392		
1984 029A	MOLNIYA 1-60	14825	USSR	16 MAR	716.9	64.9	38521	1789		
1984 029D		14830	USSR	16 MAR	731.0	65.1	39090	1912		
1984 031A	COSMOS 1546	14867	USSR	29 MAR	1436.1	4.8	35881	35692		
1984 031D		14887	USSR	29 MAR	566.9	45.3	32280	345		
1984 031F		14951	USSR	29 MAR	1448.4	4.8	36920	35131		
1984 033A	COSMOS 1547	14884	USSR	4 APR	717.4	67.6	37240	3094		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1984 LAUNCHES (CONT.)										
1984 033D		14894	USSR	4 APR	706.5	67.5	36760	3038		
1984 035A	PRC 15	14899	PRC	8 APR	1435.1	3.5	35805	35727		
1984 035B		14900	PRC	8 APR	626.8	30.4	35391	376		
1984 037A		14930	US	14 APR	ELEMENTS NOT AVAILABLE					
1984 037B		14931	US	14 APR	ELEMENTS NOT AVAILABLE					
1984 041A	GORIZONT 9	14940	USSR	22 APR	1436.8	4.6	35807	35794		
1984 041D		14943	USSR	22 APR	1460.1	4.8	36327	36182		
1984 041E		14944	USSR	22 APR	471.0	49.1	26940	408		
1984 043A	COSMOS 1550	14965	USSR	11 MAY	104.9	83.0	1009	970		
1984 043B		14966	USSR	11 MAY	104.8	83.0	998	971		
1984 046A	COSMOS 1553	14973	USSR	17 MAY	104.7	82.9	1005	958		
1984 046B		14974	USSR	17 MAY	104.6	82.9	997	954		
1984 047A	COSMOS 1554	14977	USSR	19 MAY	675.7	66.1	19168	19090		
1984 047B	COSMOS 1555	14978	USSR	19 MAY	675.7	66.1	19157	19101		
1984 047C	COSMOS 1556	14979	USSR	19 MAY	676.3	66.1	19160	19128		
1984 047F		14984	USSR	19 MAY	675.5	66.1	19167	19081		
1984 047G		15053	USSR	19 MAY	335.9	52.0	18947	310		
1984 047H		15054	USSR	19 MAY	322.6	61.9	18152	253		
1984 049A	SPACENET 1	14985	US	23 MAY	1436.0	0.0	35788	35782		
1984 052A	COSMOS 1559	14998	USSR	28 MAY	115.7	74.0	1508	1467		
1984 052B	COSMOS 1560	14999	USSR	28 MAY	115.5	74.0	1490	1460		
1984 052C	COSMOS 1561	15000	USSR	28 MAY	115.4	74.0	1483	1459		
1984 052D	COSMOS 1562	15001	USSR	28 MAY	115.2	74.0	1475	1451		
1984 052E	COSMOS 1563	15002	USSR	28 MAY	115.0	74.0	1475	1435		
1984 052F	COSMOS 1564	15003	USSR	28 MAY	114.8	74.0	1474	1422		
1984 052G	COSMOS 1565	15004	USSR	28 MAY	114.7	74.0	1474	1406		
1984 052H	COSMOS 1566	15005	USSR	28 MAY	114.5	74.0	1472	1392		
1984 052J		15006	USSR	28 MAY	117.7	74.0	1677	1473		
1984 055A	COSMOS 1569	15027	USSR	6 JUN	718.4	65.9	37095	3288		
1984 055D		15030	USSR	6 JUN	706.8	66.2	36615	3198		
1984 056A	COSMOS 1570	15031	USSR	8 JUN	100.7	74.1	803	784		
1984 056B		15032	USSR	8 JUN	100.6	74.1	801	774		
1984 056C		15033	USSR	8 JUN	101.0	74.1	815	792		
1984 056D		15757	USSR	8 JUN	97.0	74.0	622	611		
1984 059A		15039	US	13 JUN	717.9	63.2	20247	20115		
1984 059B		15040	US	13 JUN	367.0	62.5	20748	453		
1984 062A	COSMOS 1574	15055	USSR	21 JUN	104.8	83.0	1003	965		
1984 062B		15056	USSR	21 JUN	104.7	83.0	996	961		
1984 063A	RADUGA 15	15057	USSR	22 JUN	1434.6	4.5	35778	35736		
1984 063E		15076	USSR	22 JUN	399.2	46.8	22925	237		
1984 063F		15693	USSR	22 JUN	1394.2	4.5	35028	34895		
1984 065C		15071	US	25 JUN	ELEMENTS NOT AVAILABLE					
1984 067A	COSMOS 1577	15077	USSR	27 JUN	104.7	83.0	1006	955		
1984 067B		15078	USSR	27 JUN	104.6	83.0	993	957		
1984 068A	COSMOS 1578	15080	USSR	28 JUN	98.4	50.6	1083	281		
1984 069A	COSMOS 1579	15085	USSR	29 JUN	103.9	65.1	977	908		
1984 069D		15336	USSR	29 JUN	103.6	65.0	948	908		
1984 069E		19453	USSR	29 JUN	103.0	65.8	955	846		
1984 071A	COSMOS 1581	15095	USSR	3 JUL	720.8	67.7	37318	3186		
1984 071D		15098	USSR	3 JUL	705.7	67.6	36812	2942		

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1984 LAUNCHES (CONT.)										
1984 072A	METEOR 2-11	15099	USSR	5 JUL	104.0	82.5	956	938		
1984 072B		15100	USSR	5 JUL	104.0	82.5	954	939		
1984 078A	GORIZONT 10	15144	USSR	1 AUG	1435.5	4.4	35781	35768		
1984 078F		15181	USSR	1 AUG	1437.0	4.4	39099	32508		
1984 079A	COSMOS 1586	15147	USSR	2 AUG	716.7	64.5	37108	3192		
1984 079D		15156	USSR	2 AUG	705.8	64.5	36655	3104		
1984 080A	GMS 3	15152	JAPAN	2 AUG	1435.9	1.9	35788	35777		
1984 080C		15157	JAPAN	2 AUG	277.8	28.8	15248	202		
1984 081A	ECS 2	15158	ESA	4 AUG	1436.1	0.4	37166	34406		
1984 081B	TELECOM 1A	15159	FRANCE	4 AUG	1436.1	0.2	35793	35781		
1984 081D		15166	ESA	4 AUG	599.0	6.7	33649	674		
1984 081E		20674	ESA	4 AUG	601.0	6.5	33684	738		
1984 083B - 083AX			USSR	7 AUG	SEE NOTE		41*			41*
1984 084A	COSMOS 1589	15171	USSR	8 AUG	115.9	82.6	1500	1490		
1984 084B		15172	USSR	8 AUG	115.8	82.6	1498	1488		
1984 085A	MOLNIYA 1-61	15182	USSR	10 AUG	716.4	64.2	39475	810		
1984 085D		15188	USSR	10 AUG	731.0	64.4	40166	836		
1984 088A	CCE	15199	US	16 AUG	939.5	3.0	49726	1066		
1984 088B	IRM	15200	FRG	16 AUG	2653.4	27.0	113818	402		
1984 088C	UKS	15201	UK	16 AUG	2659.6	26.9	113417	1002		
1984 088D		15202	US	16 AUG	134.1	28.9	4048	549		
1984 088E		15205	US	16 AUG	133.2	28.7	3972	552		
1984 088F		15206	US	16 AUG	921.8	26.6	49409	586		
1984 088G		19008	US	16 AUG	132.3	28.7	3896	550		
1984 088H		19599	US	16 AUG	133.3	28.7	3975	552		
1984 089A	MOLNIYA 1-62	15214	USSR	24 AUG	735.2	63.8	39305	1905		
1984 089D		15223	USSR	24 AUG	738.9	63.9	39075	2318		
1984 090A	EKRAN 13	15219	USSR	24 AUG	1499.7	5.5	37088	36956		
1984 090F		17875	USSR	24 AUG	1422.1	5.3	35596	35426		
1984 091A		15226	US	28 AUG	ELEMENTS NOT AVAILABLE					
1984 091B		15227	US	28 AUG	ELEMENTS NOT AVAILABLE					
1984 093B	SBS 4	15235	US	31 AUG	1436.0	0.0	35793	35779		35*
1984 093C	SYNCOM IV-2	15236	US	31 AUG	1432.5	1.9	35794	35639		35*
1984 093D	TELSTAR 3C	15237	US	1 SEP	1436.2	0.0	35792	35784		35*
1984 093E		15244	US	31 AUG	264.6	27.1	14223	325		
1984 093F		15245	US	31 AUG	607.6	22.2	34466	305		
1984 093G		15246	US	1 SEP	650.8	24.9	36649	345		
1984 095A	COSMOS 1593	15259	USSR	4 SEP	675.7	64.8	19175	19083		
1984 095B		15260	USSR	4 SEP	677.2	64.7	19191	19142		
1984 095C		15261	USSR	4 SEP	675.7	64.7	19173	19085		
1984 095F		15264	USSR	4 SEP	675.9	64.7	19173	19094		
1984 095G		15265	USSR	4 SEP	330.3	52.1	18558	340		
1984 095H		15266	USSR	4 SEP	333.1	52.0	18722	353		
1984 096A	COSMOS 1596	15267	USSR	7 SEP	717.1	67.2	37111	3210		
1984 096D		15270	USSR	7 SEP	703.2	67.2	36681	2949		
1984 097A		15271	US	8 SEP	718.0	63.5	20411	19952		
1984 097B		15272	US	8 SEP	369.2	63.8	20413	925		
1984 100A	COSMOS 1598	15292	USSR	13 SEP	1436.0	0.0	35793	35780		
1984 100B		15293	USSR	13 SEP	104.8	82.9	1000	966		
1984 101A	GALAXY 3	15308	US	21 SEP	1436.1	0.0	35795	35779		

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1984 LAUNCHES (CONT.)										
1984 104B - 104AF			USSR	27 SEP	SEE NOTE	40*				40*
1984 105A	COSMOS 1602	15331	USSR	28 SEP	97.3	82.5	645	614		
1984 105B		15332	USSR	28 SEP	97.5	82.5	655	622		
1984 106A	COSMOS 1603	15333	USSR	28 SEP	101.9	71.0	868	828		
1984 106C		15335	USSR	28 SEP	101.5	66.6	847	812		
1984 106F		15338	USSR	28 SEP	101.7	66.6	847	834		
1984 106G		17358	USSR	28 SEP	101.9	71.0	850	845		
1984 107A	COSMOS 1604	15350	USSR	4 OCT	718.4	66.3	36950	3436		
1984 107D		15355	USSR	4 OCT	708.1	66.4	36619	3257		
1984 108B	ERBS	15354	US	5 OCT	96.5	56.9	598	588		
1984 109A	COSMOS 1605	15359	USSR	11 OCT	104.7	82.9	1014	947		
1984 109B		15360	USSR	11 OCT	104.6	82.9	1008	946		
1984 110A		15362	US	12 OCT	108.9	90.0	1199	1149		
1984 111A	COSMOS 1606	15369	USSR	18 OCT	97.2	82.5	641	611		
1984 111B		15370	USSR	18 OCT	97.5	82.5	652	621		
1984 112A	COSMOS 1607	15378	USSR	31 OCT	104.1	65.0	993	909		
1984 112C		15503	USSR	31 OCT	103.8	65.0	965	908		
1984 113B	ANIK D2	15383	CANADA	9 NOV	1436.1	0.0	35793	35781		35*
1984 113C	SYNCOM IV-1	15384	US	10 NOV	1436.0	1.3	35904	35666		35*
1984 113D		15387	US	9 NOV	624.4	25.9	35289	350		
1984 113E		15390	US	10 NOV	264.8	27.1	14241	322		
1984 114A	SPACENET 2	15385	US	10 NOV	1436.1	0.0	35789	35786		
1984 114B	MARECS B2	15386	ESA	10 NOV	1436.2	2.1	35808	35772		
1984 114C		15388	ESA	10 NOV	613.1	7.3	34718	338		
1984 115A	NATO III-D	15391	NATO	14 NOV	1436.1	0.7	35795	35778		
1984 115B		15392	US	14 NOV	115.9	21.5	2316	674		
1984 115C		15402	US	14 NOV	640.4	22.5	36117	350		
1984 118A	COSMOS 1610	15398	USSR	15 NOV	104.8	82.9	1009	963		
1984 118B		15399	USSR	15 NOV	104.7	82.9	1003	955		
1984 122A		15423	US	4 DEC	ELEMENTS NOT AVAILABLE					
1984 123A	NOAA 9	15427	US	12 DEC	101.9	99.1	861	838		
1984 123B		15440	US	12 DEC	100.3	99.0	774	767		
1984 123C		15441	US	12 DEC	99.8	99.0	751	744		
1984 124A	MOLNIYA 1-63	15429	USSR	14 DEC	717.6	63.2	38549	1795		
1984 124H		15439	USSR	14 DEC	733.4	63.5	39060	2062		
1984 125A	VEGA 1	15432	USSR	15 DEC	HELIOCENTRIC ORBIT					
1984 125D		15447	USSR	15 DEC	HELIOCENTRIC ORBIT					
1984 128A	VEGA 2	15449	USSR	21 DEC	HELIOCENTRIC ORBIT					
1984 128B		15450	USSR	21 DEC	HELIOCENTRIC ORBIT					
1984 129A		15453	US	22 DEC	ELEMENTS NOT AVAILABLE					
1984 129B		15454	US	22 DEC	ELEMENTS NOT AVAILABLE					
1985 LAUNCHES										
1985 001A	MS-T5	15464	JAPAN	7 JAN	HELIOCENTRIC ORBIT					
1985 001B		15465	JAPAN	7 JAN	HELIOCENTRIC ORBIT					
1985 003A	COSMOS 1617	15469	USSR	15 JAN	114.0	82.6	1412	1409		
1985 003B	COSMOS 1618	15470	USSR	15 JAN	114.0	82.6	1410	1405		
1985 003C	COSMOS 1619	15471	USSR	15 JAN	113.7	82.6	1411	1380		
1985 003D	COSMOS 1620	15472	USSR	15 JAN	113.9	82.6	1410	1388		

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1985 LAUNCHES (CONT.)										
1985 003E	COSMOS 1621	15473	USSR	15 JAN	113.8	82.6	1410	1393		
1985 003F	COSMOS 1622	15474	USSR	15 JAN	113.9	82.6	1410	1398		
1985 003G		15475	USSR	15 JAN	114.7	82.6	1469	1411		
1985 004A	MOLNIYA 3-23	15476	USSR	16 JAN	717.5	64.8	38792	1550		
1985 004D		15481	USSR	16 JAN	731.7	65.0	39456	1582		
1985 006A	COSMOS 1624	15482	USSR	17 JAN	100.7	74.0	801	779		
1985 006B		15483	USSR	17 JAN	100.5	74.0	799	767		
1985 006C		15490	USSR	17 JAN	100.6	74.0	788	781		
1985 006D		15491	USSR	17 JAN	101.0	74.0	819	788		
1985 007A	GORIZONT 11	15484	USSR	18 JAN	1436.1	3.9	35806	35768		
1985 007D		15487	USSR	18 JAN	1397.7	3.7	35090	34974		
1985 007F		15489	USSR	18 JAN	468.6	47.0	26956	258		
1985 009A	COSMOS 1626	15494	USSR	24 JAN	97.2	82.5	639	608		
1985 009B		15495	USSR	24 JAN	97.4	82.5	651	620		
1985 010B		15543	US	24 JAN	ELEMENTS NOT AVAILABLE					35*
1985 010C		15544	US	24 JAN	ELEMENTS NOT AVAILABLE					
1985 010D		15545	US	24 JAN	ELEMENTS NOT AVAILABLE					
1985 011A	COSMOS 1627	15505	USSR	1 FEB	104.8	82.9	1014	953		
1985 011B		15506	USSR	1 FEB	104.7	82.9	1005	953		
1985 013A	METEOR 2-12	15516	USSR	6 FEB	104.0	82.5	958	932		
1985 013B		15517	USSR	6 FEB	104.0	82.5	957	933		
1985 014A		15546	US	8 FEB	ELEMENTS NOT AVAILABLE					
1985 014B		15547	US	8 FEB	ELEMENTS NOT AVAILABLE					
1985 015A	ARABSAT 1	15560	SA	8 FEB	1436.1	0.0	35936	35636		
1985 015B	SBTS 1	15561	BRAZIL	8 FEB	1436.2	0.1	35808	35769		
1985 015C		15562	ESA	8 FEB	600.7	6.5	34126	281		
1985 016A	COSMOS 1629	15574	USSR	21 FEB	1436.1	4.0	35805	35767		
1985 016F		15581	USSR	21 FEB	1448.7	4.1	36133	35930		
1985 018A	COSMOS 1631	15584	USSR	27 FEB	89.8	65.8	269	258		
1985 020A	COSMOS 1633	15592	USSR	5 MAR	97.2	82.5	632	615		
1985 021A	GEOSAT	15595	US	13 MAR	100.5	108.1	784	780		
1985 021B		15596	US	13 MAR	100.4	108.1	803	749		
1985 021C		15613	US	13 MAR	97.9	108.5	688	629		
1985 021D		15614	US	13 MAR	99.7	108.3	758	728		
1985 021E		15615	US	13 MAR	100.6	107.8	830	744		
1985 021F		15616	US	13 MAR	100.9	107.5	880	720		
1985 022A	COSMOS 1634	15597	USSR	14 MAR	104.7	82.9	1007	956		
1985 022B		15598	USSR	14 MAR	104.6	82.9	992	961		
1985 023A	COSMOS 1635	15617	USSR	21 MAR	115.8	74.1	1510	1472		
1985 023B	COSMOS 1636	15618	USSR	21 MAR	115.6	74.1	1492	1472		
1985 023C	COSMOS 1637	15619	USSR	21 MAR	115.4	74.1	1486	1462		
1985 023D	COSMOS 1638	15620	USSR	21 MAR	115.2	74.1	1479	1453		
1985 023E	COSMOS 1639	15621	USSR	21 MAR	115.1	74.1	1478	1438		
1985 023F	COSMOS 1640	15622	USSR	21 MAR	114.9	74.1	1478	1424		
1985 023G	COSMOS 1641	15623	USSR	21 MAR	114.8	74.1	1478	1409		
1985 023H	COSMOS 1642	15624	USSR	21 MAR	114.6	74.1	1476	1396		
1985 023J		15625	USSR	21 MAR	118.0	74.1	1710	1473		
1985 024A	EKRAN 14	15626	USSR	22 MAR	1519.1	5.0	37451	37339		
1985 024D		15630	USSR	22 MAR	1422.6	4.8	35581	35462		
1985 025A	INTELSAT VF10	15629	ITSO	22 MAR	1436.1	0.0	35804	35771		

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INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1985 LAUNCHES (CONT.)										
1985 028B		15631	US	22 MAR	433.9	23.0	24992	224		
1985 028B	ANIK C1	15642	CANADA	13 APR	1436.1	0.0	35795	35779		35*
1985 028C	SYNCOM IV-3	15643	US	12 APR	1436.0	1.3	35796	35777		35*
1985 028D		15644	US	13 APR	603.0	22.7	34232	295		
1985 028E		16229	US	12 APR	279.8	26.9	15279	306		
1985 030D - 030AA			USSR	18 APR	SEE NOTE		43*			43*
1985 033A	PROGNOZ 10	15661	USSR	26 APR	5783.7	76.8	194734	5975		
1985 033D		15664	USSR	26 APR	5784.8	65.0	200315	420		
1985 035A	GSTAR 1	15677	US	8 MAY	1436.0	0.0	35792	35780		
1985 035B	TELECOM 1B	15678	FRANCE	8 MAY	1437.8	2.6	35843	35797		
1985 035C		15679	ESA	8 MAY	529.2	6.8	30330	260		
1985 035D		15680	ESA	8 MAY	304.5	6.7	16523	704		
1985 037A	COSMOS 1650	15697	USSR	17 MAY	675.7	64.8	19177	19081		
1985 037B	COSMOS 1651	15698	USSR	17 MAY	675.6	64.8	19145	19110		
1985 037C	COSMOS 1652	15699	USSR	17 MAY	675.8	64.8	19151	19112		
1985 037F		15702	USSR	17 MAY	675.0	64.8	19167	19056		
1985 037G		15714	USSR	17 MAY	336.1	51.7	18970	301		
1985 037H		15715	USSR	17 MAY	334.2	51.8	18868	281		
1985 040A	MOLNIYA 3-24	15738	USSR	29 MAY	717.9	63.5	39104	1255		
1985 040D		15741	USSR	29 MAY	732.3	63.4	39405	1661		
1985 041A	COSMOS 1655	15751	USSR	30 MAY	105.0	82.9	1013	973		
1985 041B		15752	USSR	30 MAY	104.9	82.9	1009	970		
1985 042A	COSMOS 1656	15755	USSR	30 MAY	101.5	71.1	855	803		
1985 042D		15772	USSR	30 MAY	101.5	71.1	853	801		
1985 042E		15773	USSR	30 MAY	101.2	66.6	844	783		
1985 042F		15774	USSR	30 MAY	101.3	66.6	839	798		
1985 042G		18764	USSR	30 MAY	100.2	66.6	852	687		
1985 042H		18765	USSR	30 MAY	101.5	66.6	840	819		
1985 042J		18766	USSR	30 MAY	102.9	66.6	956	836		
1985 042K		18767	USSR	30 MAY	104.6	66.6	1107	840		
1985 042L		18819	USSR	30 MAY	102.4	66.6	917	828		
1985 045A	COSMOS 1658	15808	USSR	11 JUN	718.0	65.3	37742	2621		
1985 045D		15811	USSR	11 JUN	709.3	65.8	37191	2743		
1985 047A	COSMOS 1660	15821	USSR	14 JUN	116.0	73.6	1523	1480		
1985 047B		15822	USSR	14 JUN	116.0	73.6	1519	1479		
1985 048B	MORELOS A	15824	MEXICO	17 JUN	1436.1	0.0	35795	35778		35*
1985 048C	ARABSAT 1B	15825	SA	18 JUN	1436.1	0.1	35843	35729		35*
1985 048D	TELSTAR 3D	15826	US	19 JUN	1436.1	0.1	35819	35754		35*
1985 048F		15832	US	17 JUN	629.8	25.6	35505	415		
1985 048G		15836	US	18 JUN	622.8	26.7	35126	431		
1985 048H		15837	US	18 JUN	655.3	25.6	36810	413		
1985 049A	COSMOS 1661	15827	USSR	18 JUN	717.2	66.1	37358	2968		
1985 049D		15830	USSR	18 JUN	724.8	66.6	37810	2891		
1985 055A	INTELSAT VA F11	15873	ITSO	30 JUN	1426.6	0.0	35602	35598		
1985 055B		15874	US	30 JUN	563.8	23.3	32137	319		
1985 056A	GIOTTO	15875	ESA	2 JUL	HELIOCENTRIC ORBIT					
1985 056B		15876	ESA	2 JUL	498.2	8.1	28592	288		
1985 056C		17255	ESA	2 JUL	598.8	8.5	33993	314		
1985 056D		17325	ESA	2 JUL	576.1	7.1	32793	318		
1985 056E		17332	ESA	2 JUL	516.7	7.4	29372	529		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1985 LAUNCHES (CONT.)										
1985 058A	COSMOS 1665	15939	USSR	8 JUL	97.3	82.5	644	610		
1985 058B		15940	USSR	8 JUL	97.5	82.5	656	620		
1985 058C		19241	USSR	8 JUL	97.1	82.5	637	602		
1985 061A	MOLNIYA 3-26	15949	USSR	17 JUL	717.6	64.2	39607	737		
1985 061B		15916	USSR	17 JUL	737.9	64.1	40653	687		
1985 064A	COSMOS 1670	15930	USSR	1 AUG	104.1	64.9	1008	893		
1985 066A	NNSS 30304	15935	US	3 AUG	107.9	89.9	1256	1000		
1985 066B	NNSS 30404	15936	US	3 AUG	107.9	89.9	1257	1000		
1985 066C		15933	US	3 AUG	107.9	89.9	1257	1001		
1985 066D		15950	US	3 AUG	107.1	89.9	1217	971		
1985 066E		15951	US	3 AUG	107.3	89.9	1223	976		
1985 066F		16020	US	3 AUG	107.6	90.2	1221	1006		
1985 066G		17164	US	3 AUG	108.2	89.4	1297	988		
1985 069A	COSMOS 1674	15944	USSR	8 AUG	97.2	82.5	640	609		
1985 069B		15945	USSR	8 AUG	97.5	82.5	653	620		
1985 070A	RADUGA 10	15946	USSR	8 AUG	1436.2	3.6	35796	35779		
1985 070B		15963	USSR	8 AUG	1472.4	3.7	36556	36430		
1985 071A	COSMOS 1675	15952	USSR	12 AUG	718.5	67.4	37948	2440		
1985 071D		15955	USSR	12 AUG	708.2	67.3	37481	2400		
1985 073A	PLANET A	15967	JAPAN	18 AUG	HELIOCENTRIC ORBIT					
1985 073C		15969	JAPAN	18 AUG	HELIOCENTRIC ORBIT					
1985 074A	MOLNIYA 1-64	15977	USSR	22 AUG	717.7	64.8	39373	976		
1985 074D		15983	USSR	22 AUG	732.3	65.0	40089	979		
1985 075A	COSMOS 1677	15986	USSR	23 AUG	103.9	64.7	1002	880		
1985 076B	AUSSAT 1	15993	AUSTRL	27 AUG	1436.2	0.0	35792	35782		35*
1985 076C	ASC 1	15994	US	27 AUG	1436.2	0.0	35799	35777		35*
1985 076D	SYNCOM IV-4	15995	US	29 AUG	1437.6	0.0	35838	35795		35*
1985 076E		15996	US	27 AUG	634.5	26.5	35786	377		
1985 076F		16001	US	29 AUG	280.0	27.4	15220	379		
1985 076G		16007	US	29 AUG	632.6	27.1	35679	384		
1985 077K		16389	USSR	29 AUG	104.8	71.0	1127	841		
1985 077K		18608	USSR	29 AUG	100.5	74.0	795	770		
1985 077L		16390	USSR	29 AUG	105.1	71.0	1155	842		
1985 077M		16391	USSR	29 AUG	104.8	71.0	1127	839		
1985 077N		16392	USSR	29 AUG	104.9	71.0	1143	839		
1985 079A	COSMOS 1680	16011	USSR	4 SEP	100.7	74.0	800	778		
1985 079B		16012	USSR	4 SEP	100.5	74.1	793	773		
1985 079C		17754	USSR	4 SEP	100.9	74.0	817	785		
1985 082B - 082Z			USSR	19 SEP	SEE NOTE		42*			42*
1985 084A	COSMOS 1684	16064	USSR	24 SEP	717.6	63.2	37439	2907		
1985 084D		16070	USSR	24 SEP	706.0	63.8	36899	2870		
1985 086A	COSMOS 1686	16095	USSR	27 SEP	90.9	51.6	322	318		
1985 087A	INTELSAT VA F-12	16101	ITSO	29 SEP	1436.1	0.0	35799	35773		
1985 087B		16102	US	29 SEP	535.9	23.0	30721	230		
1985 088A	COSMOS 1687	16103	USSR	30 SEP	717.5	65.3	37042	3296		
1985 088D		16106	USSR	30 SEP	703.6	65.6	36697	2954		
1985 090A	COSMOS 1689	16110	USSR	3 OCT	96.1	97.7	602	537		
1985 090B		16111	USSR	3 OCT	96.7	97.7	642	563		
1985 091A	MOLNIYA 3-26	16112	USSR	3 OCT	718.4	64.6	38121	2264		
1985 091B		16125	USSR	3 OCT	734.0	64.8	38716	2436		

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1985 LAUNCHES (CONT.)										
1985 092J		16116	US	3 OCT	ELEMENTS NOT AVAILABLE					35*
1985 092C		16117	US	3 OCT	ELEMENTS NOT AVAILABLE					35*
1985 092D		16118	US	3 OCT	ELEMENTS NOT AVAILABLE					
1985 092E		16119	US	3 OCT	ELEMENTS NOT AVAILABLE					
1985 093A		16129	US	9 OCT	718.0	64.0	20512	19850		
1985 093B		16137	US	9 OCT	368.2	63.7	20393	885		
1985 094A	COSMOS 1690	16138	USSR	9 OCT	113.7	82.6	1415	1377		
1985 094B	COSMOS 1691	16139	USSR	9 OCT	114.0	82.6	1414	1408		
1985 094C	COSMOS 1692	16140	USSR	9 OCT	113.8	82.6	1414	1385		
1985 094D	COSMOS 1693	16141	USSR	9 OCT	113.8	82.6	1415	1389		
1985 094E	COSMOS 1694	16142	USSR	9 OCT	113.9	82.6	1415	1395		
1985 094F	COSMOS 1695	16143	USSR	9 OCT	114.0	82.6	1415	1401		
1985 094G		16144	USSR	9 OCT	114.7	82.6	1468	1413		
1985 094K		16266	USSR	9 OCT	114.0	82.6	1429	1392		
1985 094L		16267	USSR	9 OCT	113.2	82.6	1447	1295		
1985 094M		16268	USSR	9 OCT	115.0	82.7	1519	1388		
1985 094N		16269	USSR	9 OCT	114.1	82.6	1425	1401		
1985 094P		16270	USSR	9 OCT	113.7	82.7	1605	1190		
1985 094Q		16271	USSR	9 OCT	114.0	82.6	1414	1402		
1985 094R		16272	USSR	9 OCT	113.5	82.6	1419	1352		
1985 094S		17168	USSR	9 OCT	113.4	82.6	1397	1366		
1985 094U		18777	USSR	9 OCT	114.0	82.6	1412	1410		
1985 097A	COSMOS 1697	16181	USSR	22 OCT	101.9	71.0	852	845		
1985 097B		16182	USSR	22 OCT	101.7	71.0	844	836		
1985 098A	COSMOS 1698	16183	USSR	22 OCT	716.9	64.4	37122	3186		
1985 098B		16196	USSR	22 OCT	707.9	64.5	36784	3079		
1985 099A	MOLNIYA 1-65	16187	USSR	23 OCT	717.6	64.7	38137	2206		
1985 099B		16197	USSR	23 OCT	698.0	64.6	37190	2184		
1985 100A	METEOR 3	16191	USSR	24 OCT	109.3	82.5	1209	1177		
1985 100B		16194	USSR	24 OCT	110.2	82.5	1246	1222		
1985 102A	COSMOS 1700	16199	USSR	25 OCT	1436.3	3.3	35824	35756		
1985 102B		16214	USSR	25 OCT	1431.0	3.2	35787	35587		
1985 103A	MOLNIYA 1-66	16220	USSR	28 OCT	717.7	64.0	39830	519		
1985 103B		16223	USSR	28 OCT	701.0	64.1	38803	720		
1985 106A	COSMOS 1701	16235	USSR	9 NOV	717.4	67.2	38002	2334		
1985 106B		16243	USSR	9 NOV	706.2	67.3	37475	2304		
1985 107A	RADUGA 17	16236	USSR	15 NOV	1436.3	3.4	35803	35776		
1985 107B		16339	USSR	15 NOV	1477.1	3.5	36685	36483		
1985 108A	COSMOS 1703	16252	USSR	22 NOV	97.3	82.5	643	612		
1985 108B		16263	USSR	22 NOV	97.5	82.5	655	622		
1985 109A	MORELOS 1	16274	MEXICO	27 NOV	1436.1	0.1	35791	35782		35*
1985 109C	AUSSAT 2	16275	AUSTRL	27 NOV	1436.2	0.1	35797	35778		35*
1985 109D	SATCOM KU2	16276	US	28 NOV	1436.2	0.1	35795	35781		35*
1985 109F		16293	US	27 NOV	643.0	26.2	36207	391		
1985 109G		16294	US	27 NOV	639.1	26.5	36002	396		
1985 109H		16295	US	28 NOV	620.7	26.5	35078	373		
1985 110A	COSMOS 1704	16291	USSR	28 NOV	104.8	82.9	1006	960		
1985 110B		16292	USSR	28 NOV	104.6	82.9	995	955		
1985 113A	COSMOS 1707	16326	USSR	12 DEC	97.3	82.5	642	615		
1985 113B		16327	USSR	12 DEC	97.5	82.5	653	623		

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INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1985 LAUNCHES (CONT.)										
1985 118A	COSMOS 1709	16398	USSR	19 DEC	104.8	82.9	1010	957		
1985 118B		16399	USSR	19 DEC	104.6	82.9	1001	952		
1985 117A	MOLNIYA 3-27	16393	USSR	24 DEC	712.8	63.3	38177	1929		
1985 117B		16402	USSR	24 DEC	732.6	63.3	38876	2206		
1985 118A	COSMOS 171[illegible]	16396	USSR	24 DEC	675.7	65.9	19148	19110		
1985 118B	COSMOS 1711	16397	USSR	24 DEC	675.7	65.9	19152	19106		
1985 118C	COSMOS 1712	16398	USSR	24 DEC	676.3	65.9	19155	19132		
1985 118F		16404	USSR	24 DEC	675.5	65.9	19132	19116		
1985 118K		16445	USSR	24 DEC	340.4	65.2	18752	787		
1985 118L		16446	USSR	24 DEC	340.3	65.3	18744	793		
1985 119A	METEOR 2-13	16408	USSR	26 DEC	104.0	82.5	956	934		
1985 119B		16409	USSR	26 DEC	104.0	82.5	955	935		
1986 LAUNCHES										
1986 002A	COSMOS 1716	16449	USSR	9 JAN	115.5	74.0	1489	1462		
1986 002B	COSMOS 1717	16450	USSR	9 JAN	115.8	74.0	1511	1473		
1986 002C	COSMOS 1718	16451	USSR	9 JAN	115.6	74.0	1493	1473		
1986 002D	COSMOS 1719	16452	USSR	9 JAN	115.3	74.0	1482	1453		
1986 002E	COSMOS 1720	16453	USSR	9 JAN	115.1	74.0	1482	1438		
1986 002F	COSMOS 1721	16454	USSR	9 JAN	115.0	74.0	1481	1424		
1986 002G	COSMOS 1722	16455	USSR	9 JAN	114.8	74.0	1482	1410		
1986 002H	COSMOS 1723	16456	USSR	9 JAN	114.6	74.0	1480	1397		
1986 002J		16457	USSR	9 JAN	117.9	74.0	1695	1478		
1986 003B	SATCOM KU1	16482	US	12 JAN	1436.2	0.0	35792	35784		
1986 003C		16483	US	12 JAN	621.4	26.8	35080	408		
1986 006A	COSMOS 1725	16493	USSR	17 JAN	104.8	82.9	1001	965		
1986 006B		16494	USSR	17 JAN	104.6	82.9	992	962		
1986 006A	COSMOS 1726	16495	USSR	17 JAN	97.2	82.5	637	610		
1986 006B		16496	USSR	17 JAN	97.4	82.5	651	621		
1986 007A	RADUGA 18	16497	USSR	17 JAN	1436.3	3.3	35796	35786		
1986 007E		16501	USSR	17 JAN	647.7	47.0	36585	252		
1986 007F		16870	USSR	17 JAN	1472.4	3.4	36644	36345		
1986 008A	COSMOS 1727	16510	USSR	23 JAN	104.8	82.9	1014	955		
1986 008B		16511	USSR	23 JAN	104.7	82.9	1005	955		
1986 010A	PRC 15	16526	PRC	1 FEB	1436.6	2.1	35803	35790		
1986 010B		16528	PRC	1 FEB	628.6	31.0	35379	478		
1986 011A	COSMOS 1729	16527	USSR	1 FEB	717.4	63.2	37959	2375		
1986 011F		16533	USSR	1 FEB	705.7	63.6	37329	2426		
1986 014A		16591	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014B		16592	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014C		16622	US	9 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1986 014D		16623	US	9 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1986 014E		16624	US	9 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1986 014F		16625	US	9 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1986 014G		16630	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014H		16631	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 015A	COSMOS 1732	16593	USSR	11 FEB	116.0	73.6	1524	1477		
1986 015B		16594	USSR	11 FEB	115.9	73.6	1519	1476		
1986 016A	BS-2A	16597	JAPAN	12 FEB	1436.1	0.1	35800	35774		

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INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1986 LAUNCHES (CONT.)										
1986 016C		16600	JAPAN	12 FEB	471.1	28.3	27130	225		
1986 017A	MIR	16609	USSR	19 FEB	92.3	51.6	407	363		
1986 017B - 017CP			USSR	19 FEB	SEE NOTE	47*				47*
1986 018A	COSMOS 1733	16611	USSR	19 FEB	97.2	82.5	639	610		
1986 018B		16612	USSR	19 FEB	97.4	82.5	651	621		
1986 019A	SPOT 1	16613	FRANCE	22 FEB	101.3	98.7	823	821		
1986 019B	VIKING	16614	SWEDEN	22 FEB	261.6	98.8	13531	810		
1986 019C - 019VL			ESA	22 FEB	SEE NOTE	45*				45*
1986 022C		16863	USSR	13 MAR	89.5	51.6	253	244		
1986 024A	COSMOS 1736	16647	USSR	21 MAR	104.4	65.0	991	940		
1986 024B - 024AF			USSR	21 MAR	SEE NOTE	44*				44*
1986 026A	GSTAR 2	16649	US	28 MAR	1436.0	0.0	35788	35784		
1986 026B	SBTS 2	16650	BRAZIL	28 MAR	1436.2	0.0	35798	35778		
1986 026C		16657	ESA	28 MAR	653.4	6.9	36717	410		
1986 026E		17253	ESA	28 MAR	537.6	7.9	30733	309		
1986 026F		17254	ESA	28 MAR	505.6	8.7	29038	253		
1986 027A	COSMOS 1738	16657	USSR	4 APR	1437.7	3.1	35875	35758		
1986 027F		16676	USSR	4 APR	1474.1	3.1	36697	36356		
1986 030A	COSMOS 1741	16681	USSR	18 APR	100.7	74.0	804	776		
1986 030B		16682	USSR	18 APR	100.6	74.0	796	773		
1986 030C		17842	USSR	18 APR	101.0	74.0	819	790		
1986 030D		17843	USSR	18 APR	101.0	74.0	817	790		
1986 030E		18274	USSR	18 APR	100.5	74.1	813	747		
1986 030F		18526	USSR	18 APR	100.5	74.0	787	780		
1986 030G		18681	USSR	18 APR	101.0	74.0	820	790		
1986 030H		19235	USSR	18 APR	104.0	74.0	952	944		
1986 031A	MOLNIYA 3-28	16683	USSR	18 APR	717.8	64.8	38559	1798		
1986 031B		16686	USSR	18 APR	733.5	65.0	39322	1805		
1986 034A	COSMOS 1743	16719	USSR	15 MAY	97.2	82.6	641	612		
1986 034B		16720	USSR	15 MAY	97.5	82.6	653	622		
1986 037A	COSMOS 1745	16727	USSR	23 MAY	104.8	83.0	1009	960		
1986 037B		16728	USSR	23 MAY	104.7	83.0	1000	956		
1986 038A	EKRAN 15	16729	USSR	24 MAY	1491.6	4.0	36925	36805		
1986 038B		16732	USSR	24 MAY	1420.5	3.7	35565	35397		
1986 038C		16733	USSR	24 MAY	254.4	47.9	13280	559		
1986 039A	METEOR 2-14	16735	USSR	27 MAY	104.0	82.5	957	935		
1986 039B		16736	USSR	27 MAY	104.0	82.5	956	935		
1986 042A	COSMOS 1748	16758	USSR	6 JUN	115.1	74.0	1468	1451		
1986 042B	COSMOS 1749	16759	USSR	6 JUN	114.4	74.0	1467	1391		
1986 042C	COSMOS 1750	16760	USSR	6 JUN	114.6	74.0	1468	1406		
1986 042D	COSMOS 1751	16761	USSR	6 JUN	115.6	74.0	1503	1465		
1986 042E	COSMOS 1752	16762	USSR	6 JUN	115.4	74.0	1484	1466		
1986 042F	COSMOS 1753	16763	USSR	6 JUN	115.3	74.0	1476	1459		
1986 042G	COSMOS 1754	16764	USSR	6 JUN	114.9	74.0	1468	1436		
1986 042H	COSMOS 1755	16765	USSR	6 JUN	114.8	74.0	1468	1422		
1986 042J		16766	USSR	6 JUN	117.7	74.0	1681	1470		
1986 044A	GORIZONT 14	16769	USSR	10 JUN	1436.2	2.7	35801	35777		
1986 044F		16797	USSR	10 JUN	1474.4	2.8	36580	36486		
1986 046A	COSMOS 1758	16791	USSR	12 JUN	97.4	82.5	653	612		
1986 046B		16792	USSR	12 JUN	97.5	82.5	659	618		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1986 LAUNCHES (CONT.)										
1986 047A	COSMOS 1759	16798	USSR	18 JUN	104.7	82.9	1001	963		
1986 047B		16799	USSR	18 JUN	104.6	82.9	1025	924		
1986 049A	MOLNIYA 3-27	16812	USSR	19 JUN	718.6	64.8	39653	743		
1986 049B		16815	USSR	19 JUN	733.2	65.1	40384	726		
1986 050A	COSMOS 1761	16849	USSR	5 JUL	718.1	64.2	37376	2992		
1986 050B		16854	USSR	5 JUL	710.0	64.5	37038	2932		
1986 052A	COSMOS 1763	16860	USSR	16 JUL	100.3	74.0	799	750		
1986 052B		16864	USSR	16 JUL	100.3	74.0	799	747		
1986 052C		16865	USSR	16 JUL	99.9	74.0	778	731		
1986 052D		16866	USSR	16 JUL	99.9	74.0	774	728		
1986 052E		16867	USSR	16 JUL	100.0	74.0	782	735		
1986 055A	COSMOS 1766	16831	USSR	28 JUL	97.3	82.5	645	617		
1986 055B		16832	USSR	28 JUL	97.5	82.5	654	624		
1986 057A	MOLNIYA 1-67	16885	USSR	30 JUL	717.8	64.7	39142	1212		
1986 057D		16889	USSR	30 JUL	731.6	65.0	39844	1191		
1986 061A	EGP	16918	JAPAN	12 AUG	115.7	50.0	1497	1479		
1986 061B	JAS-1	16919	JAPAN	12 AUG	115.7	50.0	1497	1479		
1986 061C		16910	JAPAN	12 AUG	116.9	50.0	1595	1484		
1986 062A	COSMOS 1771	16917	USSR	20 AUG	104.2	65.0	1002	907		
1986 062C		17035	USSR	20 AUG	103.9	65.0	979	901		
1986 065A	COSMOS 1774	16922	USSR	28 AUG	718.5	64.7	38500	1890		
1986 065D		16925	USSR	28 AUG	707.0	65.3	37727	2093		
1986 067B	067AF		USSR	3 SEP	SEE NOTE	46*				46*
1986 068A	MOLNIYA 1-68	16934	USSR	5 SEP	717.8	64.7	38437	1918		
1986 068D		16939	USSR	5 SEP	731.2	64.8	39105	1910		
1986 070A	COSMOS 1777	16952	USSR	10 SEP	100.6	74.0	805	772		
1986 070B		16953	USSR	10 SEP	100.5	74.0	787	772		
1986 071A	COSMOS 1778	16961	USSR	16 SEP	675.7	64.8	19139	19118		
1986 071B	COSMOS 1779	16962	USSR	16 SEP	675.7	64.8	19140	19118		
1986 071C	COSMOS 1780	16963	USSR	16 SEP	675.7	64.8	19150	19108		
1986 071F		16968	USSR	16 SEP	675.2	64.8	19146	19086		
1986 071G		16984	USSR	16 SEP	338.3	64.7	19115	295		
1986 071H		16985	USSR	16 SEP	338.1	64.8	19105	288		
1986 073A	NOAA 10	16969	US	17 SEP	101.1	98.5	822	802		
1986 073B		16982	US	17 SEP	99.7	98.7	749	740		
1986 073C		16983	US	17 SEP	98.6	98.7	700	679		
1986 074A	COSMOS 1782	16986	USSR	30 SEP	97.4	82.5	647	617		
1986 074B		16987	USSR	30 SEP	97.5	82.5	655	623		
1986 075A	COSMOS 1783	16993	USSR	3 OCT	358.0	63.6	19617	1030		
1986 075D		16996	USSR	3 OCT	357.0	63.5	19555	1027		
1986 078A	COSMOS 1785	17031	USSR	15 OCT	717.9	66.8	38458	1899		
1986 078D		17037	USSR	15 OCT	707.6	67.4	37938	1912		
1986 079A	MOLNIYA 3-38	17038	USSR	20 OCT	717.8	64.9	39095	1259		
1986 079D		17041	USSR	20 OCT	699.0	64.8	38139	1283		
1986 082A	RADUGA 19	17046	USSR	25 OCT	1436.2	2.5	35791	35786		
1986 082D		17052	USSR	25 OCT	637.1	45.9	36043	252		
1986 082E		17053	USSR	25 OCT	141.8	46.6	5115	146		
1986 082F		17065	USSR	25 OCT	1475.5	2.4	36690	36416		
1986 083A	COSMOS 1788	17050	USSR	27 OCT	90.9	65.8	325	310		
1986 086A	COSMOS 1791	17056	USSR	13 NOV	104.7	82.9	1010	949		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1986 LAUNCHES (CONT.)										
1986 086J		17067	USSR	13 NOV	104.6	82.9	999	949		
1986 086C		18552	USSR	13 NOV	104.1	82.9	971	930		
1986 088A	POLAR BEAR	17070	US	14 NOV	104.8	89.5	1014	957		
1986 088B		17071	US	14 NOV	104.8	89.5	1013	956		
1986 088C		18426	US	14 NOV	105.1	89.1	1051	949		
1986 088D		18525	US	14 NOV	104.3	89.9	964	958		
1986 089A	MOLNIYA 1-69	17078	USSR	15 NOV	718.0	63.2	38202	2162		
1986 089B		17081	USSR	15 NOV	735.8	63.2	38786	2451		
1986 090A	GORIZONT 13	17083	USSR	18 NOV	1436.3	2.3	35804	35776		
1986 090D		17125	USSR	18 NOV	1437.6	2.3	35867	35765		
1986 090F		17149	USSR	18 NOV	632.9	47.3	35812	268		
1986 091A	COSMOS 1793	17134	USSR	20 NOV	717.9	65.5	37967	2394		
1986 091D		17147	USSR	20 NOV	705.9	66.1	37532	2235		
1986 092A	COSMOS 1794	17138	USSR	21 NOV	115.6	74.0	1498	1464		
1986 092B	COSMOS 1795	17139	USSR	21 NOV	115.4	74.0	1480	1464		
1986 092C	COSMOS 1796	17140	USSR	21 NOV	115.2	74.0	1476	1452		
1986 092D	COSMOS 1797	17141	USSR	21 NOV	115.0	74.0	1470	1442		
1986 092E	COSMOS 1798	17142	USSR	21 NOV	114.9	74.0	1470	1426		
1986 092F	COSMOS 1799	17143	USSR	21 NOV	114.7	74.0	1469	1412		
1986 092G	COSMOS 1800	17144	USSR	21 NOV	114.5	74.0	1470	1397		
1986 092H	COSMOS 1801	17145	USSR	21 NOV	114.4	74.0	1468	1383		
1986 092J		17146	USSR	21 NOV	117.6	74.0	1673	1475		
1986 093A	COSMOS 1802	17159	USSR	24 NOV	104.9	82.9	1020	959		
1986 093B		17160	USSR	24 NOV	104.8	82.9	1017	952		
1986 094A	COSMOS 1803	17177	USSR	2 DEC	115.9	82.6	1500	1494		
1986 094B		17178	USSR	2 DEC	115.9	82.6	1498	1492		
1986 094C		20284	USSR	2 DEC	117.4	83.2	1734	1391		
1986 096A		17181	US	5 DEC	1436.2	1.7	35844	35733		
1986 097A	COSMOS 1805	17191	USSR	10 DEC	97.3	82.5	639	616		
1986 097B		17192	USSR	10 DEC	97.5	82.5	649	625		
1986 098A	COSMOS 1806	17213	USSR	12 DEC	718.5	62.9	37936	2452		
1986 098B		17216	USSR	12 DEC	705.8	63.2	37377	2385		
1986 100A	COSMOS 1808	17230	USSR	17 DEC	105.0	82.9	1016	969		
1986 100B		17240	USSR	17 DEC	104.8	82.9	1008	964		
1986 100C		18545	USSR	17 DEC	104.4	82.9	987	947		
1986 101A	COSMOS 1809	17241	USSR	18 DEC	104.1	82.5	961	940		
1986 101B		17242	USSR	18 DEC	104.1	82.5	960	940		
1986 101C		17258	USSR	18 DEC	103.8	82.6	959	916		
1986 101D		17259	USSR	18 DEC	104.2	82.6	973	944		
1986 101E		17270	USSR	18 DEC	104.1	82.4	953	948		
1986 101F		17271	USSR	18 DEC	103.6	82.4	948	905		
1986 101G		17272	USSR	18 DEC	103.5	82.5	934	913		
1986 101H		17273	USSR	18 DEC	103.4	82.5	932	909		
1986 101J		17274	USSR	18 DEC	104.3	82.5	984	936		
1986 101K		17344	USSR	18 DEC	103.5	82.5	938	908		
1986 101L		18633	USSR	18 DEC	103.5	82.5	937	912		
1986 103A	MOLNIYA 1-7	17264	USSR	26 DEC	717.7	63.2	39083	1265		
1986 103B		17267	USSR	26 DEC	698.9	63.2	38320	1096		
1987 LAUNCHES										

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OBJECTS IN ORBIT

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1987 001A	METEOR 2-15	17290	USSR	5 JAN	104.0	82.5	955	938		
1987 001B		17291	USSR	5 JAN	104.0	82.5	954	938		
1987 003A	COSMOS 1812	17295	USSR	14 JAN	97.3	82.5	644	613		
1987 003B		17296	USSR	14 JAN	97.5	82.5	654	621		
1987 004C - 004C			USSR	15 JAN	SEE NOTE	48*				48*
1987 006A	COSMOS 1814	17313	USSR	21 JAN	100.5	74.1	802	765		
1987 006B		17314	USSR	21 JAN	100.4	74.1	798	760		
1987 006C		18257	USSR	21 JAN	100.4	74.0	784	774		
1987 008A	MOLNIYA 3-31	17324	USSR	22 JAN	717.7	63.1	38382	1969		
1987 008B		17333	USSR	22 JAN	730.7	63.1	38863	2128		
1987 009A	COSMOS 1816	17359	USSR	29 JAN	104.8	82.9	1009	958		
1987 009B		17360	USSR	29 JAN	104.6	82.9	1006	947		
1987 011A	COSMOS 1818	17369	USSR	1 FEB	100.7	65.0	803	777		
1987 012A	ASTRO C	17480	JAPAN	5 FEB	94.6	31.1	543	452		
1987 012B		17481	JAPAN	5 FEB	95.8	31.1	626	487		
1987 012K		18327	JAPAN	5 FEB	95.3	30.8	585	478		
1987 015A		17506	US	12 FEB	ELEMENTS NOT AVAILABLE					
1987 015B		17507	US	12 FEB	ELEMENTS NOT AVAILABLE					
1987 017A	COSMOS 1821	17525	USSR	18 FEB	104.8	82.9	1014	957		
1987 017B		17526	USSR	18 FEB	104.6	82.9	1009	946		
1987 018A	405-1	17527	JAPAN	19 FEB	103.2	99.1	909	908		
1987 018B		17528	JAPAN	19 FEB	99.9	97.5	880	630		
1987 020A	COSMOS 1823	17535	USSR	20 FEB	116.0	73.6	1522	1476		
1987 020B		17536	USSR	20 FEB	115.9	73.6	1518	1477		
1987 020B - 020B			USSR	20 FEB	SEE NOTE	49*				49*
1987 022A	GOES 7	17561	US	26 FEB	1436.0	0.0	35804	35769		
1987 022B		17562	US	26 FEB	104.6	21.7	1710	237		
1987 022C		17563	US	26 FEB	661.0	17.3	37189	325		
1987 024A	COSMOS 1825	17566	USSR	3 MAR	97.2	82.5	640	612		
1987 024B		17567	USSR	3 MAR	97.5	82.5	651	622		
1987 026A	COSMOS 1827	17582	USSR	13 MAR	113.8	82.6	1408	1394		
1987 026B	COSMOS 1828	17583	USSR	13 MAR	113.7	82.6	1408	1383		
1987 026C	COSMOS 1829	17584	USSR	13 MAR	114.0	82.6	1412	1408		
1987 026D	COSMOS 1830	17585	USSR	13 MAR	113.9	82.6	1407	1406		
1987 026E	COSMOS 1831	17586	USSR	13 MAR	113.8	82.6	1407	1390		
1987 026F	COSMOS 1832	17587	USSR	13 MAR	113.9	82.6	1408	1399		
1987 026G		17588	USSR	13 MAR	114.6	82.6	1468	1408		
1987 027A	COSMOS 1833	17589	USSR	18 MAR	101.9	70.9	854	843		
1987 027B		17590	USSR	18 MAR	101.7	71.0	842	835		
1987 027C		18416	USSR	18 MAR	104.7	71.0	1124	840		
1987 027D		18417	USSR	18 MAR	105.0	71.0	1147	839		
1987 027E		18527	USSR	18 MAR	104.9	71.0	1136	841		
1987 027F		18550	USSR	18 MAR	104.6	71.0	1114	838		
1987 028A	RADUGA 20	17611	USSR	19 MAR	1436.2	2.5	35797	35781		
1987 028B		17705	USSR	19 MAR	1441.9	2.5	36022	35776		
1987 028E		17709	USSR	19 MAR	635.6	47.4	35901	318		
1987 029A	PALAPA B-2P	17706	INDNSA	20 MAR	1436.2	0.0	35790	35785		
1987 030A	KVANT 1	17845	USSR	31 MAR	92.3	51.6	408	363		
1987 036A	COSMOS 1838	17902	USSR	24 APR	227.8	64.8	11803	148		
1987 036B	COSMOS 1839	17903	USSR	24 APR	221.6	64.7	11359	144		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1987 LAUNCHES (CONT.)										
1987 036C	COSMOS 1840	17904	USSR	24 APR	247.3	64.7	13191	154		
1987 036G		17910	USSR	24 APR	211.0	64.8	10583	137		
1987 036H		17913	USSR	24 APR	176.2	64.7	7858	210		
1987 038A	COSMOS 1842	17911	USSR	27 APR	97.4	82.5	648	615		
1987 038B		17912	USSR	27 APR	97.5	82.5	656	622		
1987 040A	GORIZONT 14	17969	USSR	11 MAY	1436.3	4.1	35801	35778		
1987 040D		17972	USSR	11 MAY	1397.9	4.0	35090	34980		
1987 040E		18111	USSR	11 MAY	537.1	46.9	30892	128		
1987 040F		18112	USSR	11 MAY	597.7	47.0	34107	144		
1987 041A	COSMOS 1844	17973	USSR	13 MAY	101.9	70.9	854	843		
1987 041B		17974	USSR	13 MAY	101.7	71.0	846	828		
1987 041C		18410	USSR	13 MAY	105.0	71.0	1146	843		
1987 041D		18411	USSR	13 MAY	104.8	71.0	1127	844		
1987 041E		18412	USSR	13 MAY	104.8	71.0	1131	840		
1987 041F		18476	USSR	13 MAY	105.1	71.0	1154	842		
1987 041G		18687	USSR	13 MAY	100.2	71.0	772	760		
1987 043A		17997	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043B		17998	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043C		18007	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043D		18008	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043E		18009	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043F		18010	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043G		18024	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043H		18025	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 048A	COSMOS 1849	18083	USSR	4 JUN	719.0	66.5	38763	1653		
1987 048D		18086	USSR	4 JUN	706.2	66.8	38166	1616		
1987 049A	COSMOS 1850	18095	USSR	9 JUN	100.7	74.0	801	777		
1987 049B		18096	USSR	9 JUN	100.5	74.0	796	770		
1987 050A	COSMOS 1851	18103	USSR	12 JUN	717.0	63.1	38479	1838		
1987 050D		18106	USSR	12 JUN	707.3	63.2	37951	1885		
1987 051A	COSMOS 1852	18113	USSR	16 JUN	115.6	74.0	1498	1470		
1987 051B	COSMOS 1853	18114	USSR	16 JUN	115.4	74.0	1480	1470		
1987 051C	COSMOS 1854	18115	USSR	16 JUN	115.3	74.0	1478	1457		
1987 051D	COSMOS 1855	18116	USSR	16 JUN	115.1	74.0	1475	1445		
1987 051E	COSMOS 1856	18117	USSR	16 JUN	114.9	74.0	1475	1429		
1987 051F	COSMOS 1857	18118	USSR	16 JUN	114.8	74.0	1475	1415		
1987 051G	COSMOS 1858	18119	USSR	16 JUN	114.6	74.0	1475	1400		
1987 051H	COSMOS 1859	18120	USSR	16 JUN	114.4	74.0	1474	1386		
1987 051J		18121	USSR	16 JUN	117.8	74.0	1686	1475		
1987 052A	COSMOS 1860	18122	USSR	18 JUN	104.0	65.0	991	902		
1987 052D		18241	USSR	18 JUL	103.7	65.0	962	901		
1987 053A		18123	US	20 JUN	101.8	98.8	851	832		
1987 053B		18127	US	20 JUN	100.9	98.8	809	791		
1987 053C		18128	US	20 JUN	100.4	98.8	783	772		
1987 053D		18154	US	20 JUN	100.4	98.8	782	771		
1987 054A	COSMOS 1861	18129	USSR	23 JUN	104.9	82.9	998	979		
1987 054B		18130	USSR	23 JUN	104.7	82.9	991	965		
1987 054C		18131	USSR	23 JUN	105.0	82.9	1021	971		
1987 055A	COSMOS 1862	18152	USSR	1 JUL	97.4	82.5	647	617		
1987 057A	COSMOS 1864	18153	USSR	6 JUL	104.7	82.9	1004	955		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1987 LAUNCHES (CONT.)										
1987 057B		18161	USSR	6 JUL	104.6	82.9	1001	951		
1987 060A	COSMOS 1867	18187	USSR	10 JUL	100.7	65.0	802	780		
1987 062A	COSMOS 1869	18214	USSR	16 JUL	97.4	82.5	646	617		
1987 062B		18215	USSR	16 JUL	97.5	82.5	655	624		
1987 065C		19033	USSR	1 AUG	115.5	102.0	1498	1459		
1987 068A	METEOR 2-16	18312	USSR	18 AUG	104.0	82.6	956	939		
1987 068B		18313	USSR	18 AUG	104.0	82.6	954	939		
1987 070A	ETS-V	18316	JAPAN	27 AUG	1436.1	0.0	35803	35770		
1987 073A	EKRAN 16	18328	USSR	4 SEP	1492.5	2.5	36906	36861		
1987 073D		18331	USSR	4 SEP	1420.4	2.5	35577	35379		
1987 073E		18332	USSR	4 SEP	480.8	46.7	27673	232		
1987 074A	COSMOS 1875	18334	USSR	7 SEP	113.7	82.6	1406	1384		
1987 074B	COSMOS 1876	18335	USSR	7 SEP	114.0	82.6	1413	1406		
1987 074C	COSMOS 1877	18336	USSR	7 SEP	113.9	82.6	1407	1406		
1987 074D	COSMOS 1878	18337	USSR	7 SEP	113.9	82.6	1406	1400		
1987 074E	COSMOS 1879	18338	USSR	7 SEP	113.8	82.6	1406	1395		
1987 074F	COSMOS 1880	18339	USSR	7 SEP	113.8	82.6	1406	1391		
1987 074G		18340	USSR	7 SEP	114.6	82.6	1471	1406		
1987 078A	AUSSAT K3	18350	AUSTRL	16 SEP	1436.1	0.1	35793	35781		
1987 078B	ECS 4	18351	ESA	16 SEP	1436.1	0.0	35812	35761		
1987 078C		18352	ESA	16 SEP	363.0	7.1	20771	182		
1987 079A	COSMOS 1883	18355	USSR	16 SEP	675.7	65.5	19147	19111		
1987 079B	COSMOS 1884	18356	USSR	16 SEP	675.7	65.6	19150	19108		
1987 079C	COSMOS 1885	18357	USSR	16 SEP	675.7	65.6	19153	19105		
1987 079F		18360	USSR	16 SEP	674.7	65.6	19136	19072		
1987 079G		18374	USSR	16 SEP	339.7	65.3	18889	607		
1987 079H		18375	USSR	16 SEP	339.6	65.2	18876	617		
1987 080A		18361	US	16 SEP	107.2	90.3	1178	1013		
1987 080B		18362	US	16 SEP	107.2	90.3	1180	1013		
1987 080C		18363	US	16 SEP	107.2	90.3	1180	1014		
1987 080E		18365	US	16 SEP	107.0	90.3	1169	1009		
1987 080F		18530	US	16 SEP	106.4	90.4	1125	994		
1987 080G		18561	US	16 SEP	107.1	90.4	1166	1014		
1987 080H		18562	US	16 SEP	107.8	90.2	1264	988		
1987 084A	COSMOS 1888	18384	USSR	1 OCT	1436.1	1.5	35819	35755		
1987 084E		18388	USSR	1 OCT	129.5	46.7	4108	89		
1987 087A	COSMOS 1891	18402	USSR	14 OCT	104.8	82.9	1024	949		
1987 087B		18403	USSR	14 OCT	104.7	82.9	1023	934		
1987 088A	COSMOS 1892	18421	USSR	20 OCT	97.3	82.5	640	615		
1987 088B		18422	USSR	20 OCT	97.5	82.5	653	624		
1987 090A		18441	US	26 OCT	ELEMENTS NOT AVAILABLE					
1987 091A	COSMOS 1894	18443	USSR	28 OCT	1436.2	1.6	35799	35778		
1987 091D		18446	USSR	28 OCT	1436.2	1.5	35871	35707		
1987 091F		18448	USSR	28 OCT	599.4	46.8	34204	135		
1987 095A	TVSAT 1	18570	FRG	21 NOV	1452.5	1.6	36149	36066		
1987 096A	COSMOS 1897	18575	USSR	26 NOV	1436.3	1.3	35807	35772		
1987 096D		18578	USSR	26 NOV	1432.1	1.3	35791	35624		
1987 097A		18583	US	29 NOV	ELEMENTS NOT AVAILABLE					
1987 097B		18584	US	29 NOV	ELEMENTS NOT AVAILABLE					
1987 098A	COSMOS 1898	18585	USSR	1 DEC	100.6	74.0	804	772		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1987 LAUNCHES (CONT.)										
1987 098B		18586	USSR	1 DEC	100.5	74.0	799	765		
1987 098C		18697	USSR	1 DEC	100.6	74.0	792	780		
1987 098D		18698	USSR	1 DEC	100.9	74.0	816	788		
1987 100A	RADUGA 21	18631	USSR	10 DEC	1436.4	1.4	35804	35779		
1987 100D		18634	USSR	10 DEC	1392.7	1.3	34995	34868		
1987 100E		18635	USSR	10 DEC	199.0	46.8	9672	154		
1987 101A	COSMOS 1900	18665	USSR	12 DEC	99.3	66.1	752	693		
1987 105A	COSMOS 1903	18701	USSR	21 DEC	717.7	63.5	39138	1211		
1987 105D		18704	USSR	21 DEC	705.1	64.2	38459	1269		
1987 106A	COSMOS 1904	18709	USSR	23 DEC	104.8	82.9	1004	965		
1987 106B		18710	USSR	23 DEC	104.7	82.9	998	960		
1987 109A	EKRAN 17	18715	USSR	27 DEC	1436.1	1.1	35806	35767		
1987 109D		18718	USSR	27 DEC	1428.0	1.0	35869	35386		
1987 109E		18719	USSR	27 DEC	498.2	47.0	28584	295		
1988 LAUNCHES										
1988 001A	COSMOS 1908	18748	USSR	6 JAN	97.3	82.5	646	614		
1988 001B		18749	USSR	6 JAN	97.5	82.5	654	623		
1988 002A	COSMOS 1909	18788	USSR	15 JAN	114.0	82.6	1411	1408		
1988 002B	COSMOS 1910	18789	USSR	15 JAN	113.9	82.6	1409	1404		
1988 002C	COSMOS 1911	18790	USSR	15 JAN	113.9	82.6	1409	1397		
1988 002D	COSMOS 1912	18791	USSR	15 JAN	113.8	82.6	1408	1392		
1988 002E	COSMOS 1913	18792	USSR	15 JAN	113.7	82.6	1408	1388		
1988 002F	COSMOS 1914	18793	USSR	15 JAN	113.7	82.6	1408	1381		
1988 002G		18794	USSR	15 JAN	114.6	82.6	1470	1408		
1988 005A	METEOR 2-17	18820	USSR	30 JAN	104.0	82.5	956	934		
1988 005B		18821	USSR	30 JAN	103.9	82.5	954	934		
1988 006A		18822	US	3 FEB	101.2	98.6	821	812		
1988 006B		18845	US	3 FEB	99.8	98.7	751	742		
1988 006C		18846	US	3 FEB	99.5	98.7	738	730		
1988 006D		18955	US	3 FEB	99.9	98.7	758	752		
1988 006F		18984	US	3 FEB	100.3	98.7	775	768		
1988 012A	CS-3A	18877	JAPAN	19 FEB	1436.1	0.0	35789	35782		
1988 012C		18879	JAPAN	19 FEB	527.0	27.3	29882	588		
1988 012D		20760	JAPAN	19 FEB	494.7	27.8	28469	215		
1988 013A	COSMOS 1922	18881	USSR	26 FEB	718.9	62.8	38182	2225		
1988 013C		18883	USSR	26 FEB	705.8	63.3	37590	2168		
1988 014A	PRC 22	18922	PRC	7 MAR	1436.2	0.1	35796	35779		
1988 016A	COSMOS 1924	18937	USSR	11 MAR	115.7	74.0	1513	1458		
1988 016B	COSMOS 1925	18938	USSR	11 MAR	115.5	74.0	1495	1456		
1988 016C	COSMOS 1926	18939	USSR	11 MAR	115.3	74.0	1478	1457		
1988 016D	COSMOS 1927	18940	USSR	11 MAR	115.1	74.0	1465	1453		
1988 016E	COSMOS 1928	18941	USSR	11 MAR	114.9	74.0	1459	1442		
1988 016F	COSMOS 1929	18942	USSR	11 MAR	114.7	74.0	1458	1427		
1988 016G	COSMOS 1930	18943	USSR	11 MAR	114.6	74.0	1458	1413		
1988 016H	COSMOS 1931	18944	USSR	11 MAR	114.4	74.0	1458	1396		
1988 016J		18945	USSR	11 MAR	117.6	74.0	1685	1462		
1988 016K		19451	USSR	11 MAR	117.6	74.0	1686	1455		
1988 017A	MOLNIYA 1-71	18946	USSR	11 MAR	717.8	63.2	38554	1803		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1988 LAUNCHES (CONT.)										
1988 017D		18949	USSR	11 MAR	695.6	63.2	37554	1699		
1988 018A	SPACENET 3R	18951	US	11 MAR	1436.1	0.0	35790	35784		
1988 018B	TELECOM 1C	18952	FRANCE	11 MAR	1436.1	0.1	35800	35771		
1988 018C		18953	ESA	11 MAR	570.3	7.0	32539	266		
1988 019A	COSMOS 1932	18957	USSR	14 MAR	104.4	65.0	1008	921		
1988 019D		19162	USSR	14 MAR	104.0	65.0	977	921		
1988 020A	COSMOS 1933	18958	USSR	15 MAR	97.3	82.5	644	618		
1988 020B		18959	USSR	15 MAR	97.5	82.5	650	624		
1988 021A	IRS-1A	18960	INDIA	17 MAR	103.1	99.0	913	894		
1988 021B		18961	USSR	17 MAR	102.8	98.9	927	854		
1988 022A	MOLNIYA 1-72	18980	USSR	17 MAR	717.8	64.6	39428	928		
1988 022D		18983	USSR	17 MAR	731.7	64.7	40125	911		
1988 023A	COSMOS 1934	18985	USSR	22 MAR	104.6	83.0	1006	946		
1988 023B		18986	USSR	22 MAR	104.5	83.0	994	947		
1988 028A	GORIZONT 15	19017	USSR	31 MAR	1436.2	1.1	35809	35766		
1988 028D		19020	USSR	31 MAR	1472.7	1.1	36602	36396		
1988 028E		19036	USSR	31 MAR	640.4	46.4	36344	122		
1988 028F		19037	USSR	31 MAR	621.6	46.4	35148	346		
1988 029A	COSMOS 1937	19038	USSR	5 APR	100.5	74.0	801	764		
1988 029B		19039	USSR	5 APR	100.4	74.0	799	756		
1988 032A	COSMOS 1939	19045	USSR	20 APR	96.9	97.8	630	594		
1988 032B		19046	USSR	20 APR	97.4	97.9	670	594		
1988 033A		19070	US	26 APR	108.5	90.3	1303	1013		
1988 033B		19071	US	26 APR	108.5	90.3	1301	1013		
1988 033C		19072	US	26 APR	108.5	90.3	1303	1014		
1988 033D		19077	US	26 APR	108.2	90.3	1283	1007		
1988 033E		19078	US	26 APR	107.6	90.6	1239	995		
1988 033F		19140	US	26 APR	108.2	90.3	1277	1007		
1988 033G		19181	US	26 APR	109.2	90.2	1384	993		
1988 034A	COSMOS 1940	19073	USSR	26 APR	1430.3	1.1	35761	35586		
1988 034D		19076	USSR	26 APR	1438.2	1.1	35951	35703		
1988 034E		19082	USSR	26 APR	639.3	48.6	36022	387		
1988 034F		19083	USSR	26 APR	649.6	47.3	36714	223		
1988 036A	EKRAN 18	19090	USSR	6 MAY	1436.1	1.9	35798	35775		
1988 036D		19093	USSR	6 MAY	608.3	46.3	34696	109		
1988 036E		19094	USSR	6 MAY	1424.1	1.9	35655	35447		
1988 039A	COSMOS 1943	19119	USSR	15 MAY	101.9	71.0	854	838		
1988 039B		19120	USSR	15 MAY	101.6	71.0	850	814		
1988 039C		19125	USSR	15 MAY	104.6	71.0	1113	838		
1988 039D		19126	USSR	15 MAY	104.7	71.0	1121	840		
1988 039E		19127	USSR	15 MAY	105.1	71.0	1158	840		
1988 039F		19128	USSR	15 MAY	105.1	71.0	1154	842		
1988 040A	INTELSAT 5A F-13	19121	ITSO	17 MAY	1436.0	0.0	35793	35779		
1988 040B		19122	ESA	17 MAY	635.2	7.5	35715	481		
1988 043A	COSMOS 1946	19163	USSR	21 MAY	675.7	64.9	19147	19111		
1988 043B	COSMOS 1947	19164	USSR	21 MAY	675.7	64.9	19149	19109		
1988 043C	COSMOS 1948	19165	USSR	21 MAY	675.7	64.9	19138	19120		
1988 043F		19168	USSR	21 MAY	674.5	64.9	19113	19082		
1988 043G		19169	USSR	21 MAY	339.9	65.4	18835	672		
1988 043H		19170	USSR	21 MAY	339.9	65.3	18833	677		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1988 LAUNCHES (CONT.)										
1988 044A	MOLNIYA 3-32	19189	USSR	26 MAY	717.7	64.4	39385	965		
1988 044B		19190	USSR	26 MAY	733.0	64.6	40158	942		
1988 046A	COSMOS 1950	19195	USSR	30 MAY	116.0	73.6	1519	1483		
1988 046B		19196	USSR	30 MAY	116.0	73.6	1514	1482		
1988 050A	COSMOS 1953	19210	USSR	14 JUN	97.4	82.5	649	618		
1988 050B		19211	USSR	14 JUN	97.5	82.5	655	622		
1988 051A	METEOSAT	19215	ESA	15 JUN	1436.2	0.6	35792	35786		
1988 051B	OSCAR 13	19216	US	15 JUN	686.7	56.9	37618	1190		
1988 051C	PAS-1	19217	US	15 JUN	1436.2	0.1	35795	35783		
1988 051D		19218	ESA	15 JUN	457.7	10.0	26366	222		
1988 051E		19219	ESA	15 JUN	615.9	10.1	34948	253		
1988 051F		19220	ESA	15 JUN	520.0	9.9	29832	252		
1988 051G		19857	ESA	15 JUN	633.2	7.0	35438	656		
1988 051H		19951	ESA	15 JUN	632.1	8.0	35201	840		
1988 052A		19223	US	16 JUN	108.9	90.0	1198	1150		
1988 053A	COSMOS 1954	19256	USSR	21 JUN	100.6	74.1	800	774		
1988 053B		19257	USSR	21 JUN	100.5	74.1	798	764		
1988 053C		19260	USSR	21 JUN	100.7	74.1	795	782		
1988 053D		19261	USSR	21 JUN	100.7	74.1	800	780		
1988 056A	OKEAN 1	19274	USSR	5 JUL	97.4	82.5	648	618		
1988 056B		19275	USSR	5 JUL	97.5	82.5	656	624		
1988 058A	PHOBOS 1	19281	USSR	7 JUL	TRANS-MARS TRAJECTORY					
1988 058B		19282	USSR	7 JUL	HELIOCENTRIC ORBIT					
1988 059A	PHOBOS 2	19287	USSR	12 JUL	TRANS-MARS TRAJECTORY					
1988 059B		19288	USSR	12 JUL	HELIOCENTRIC ORBIT					
1988 062A	COSMOS 1959	19324	USSR	18 JUL	104.7	83.0	1004	951		
1988 062B		19325	USSR	18 JUL	104.6	83.0	998	949		
1988 063A	INSAT 1C	19330	INDIA	21 JUL	1436.6	0.9	35829	35761		
1988 063B	ECS 5	19331	ESA	21 JUL	1436.1	0.9	39717	31854		
1988 063C		19332	ESA	21 JUL	532.6	7.3	30519	256		
1988 063E		20127	ESA	21 JUL	633.9	7.2	35757	376		
1988 063F		20488	ESA	21 JUL	369.7	7.5	21128	241		
1988 064A	METEOR 3-2	19336	USSR	26 JUL	109.3	82.5	1206	1181		
1988 064B		19337	USSR	26 JUL	109.3	82.5	1205	1181		
1988 065B	065AF		USSR	28 JUL	SEE NOTE	50*				50*
1988 066A	COSMOS 1961	19344	USSR	1 AUG	1436.1	0.7	35810	35763		
1988 066D		19347	USSR	1 AUG	1459.7	0.7	36396	36096		
1988 066E		19348	USSR	1 AUG	465.3	47.0	26752	271		
1988 069A	MOLNIYA 1-73	19377	USSR	12 AUG	717.6	64.5	39850	493		
1988 069D		19380	USSR	12 AUG	731.1	64.7	40612	397		
1988 071A	GORIZONT 16	19397	USSR	18 AUG	1436.1	0.7	35808	35766		
1988 071D		19400	USSR	18 AUG	1432.4	0.6	35786	35641		
1988 071E		19401	USSR	18 AUG	600.1	46.7	34244	131		
1988 071F		19402	USSR	18 AUG	365.0	46.8	20872	205		
1988 074A		19419	US	25 AUG	107.4	89.9	1178	1029		
1988 074B		19420	US	25 AUG	107.3	89.9	1176	1030		
1988 074C		19421	US	25 AUG	107.4	89.9	1177	1032		
1988 074D		19515	US	25 AUG	107.3	89.9	1175	1024		
1988 074E		19516	US	25 AUG	107.2	89.9	1167	1026		
1988 074F		19559	US	25 AUG	107.2	89.4	1172	1025		

OBJECTS IN ORBIT

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1988 LAUNCHES (CONT.)										
1988 074G		19577	US	25 AUG	107.3	90.5	1170	1030		
1988 076A	COSMOS 1966	19445	USSR	30 AUG	717.8	64.9	38893	1463		
1988 076D		19448	USSR	30 AUG	705.5	65.3	38342	1405		
1988 077A		19458	US	2 SEP	ELEMENTS NOT AVAILABLE					
1988 077B		19459	US	2 SEP	ELEMENTS NOT AVAILABLE					
1988 077C		19490	US	2 SEP	ELEMENTS NOT AVAILABLE					
1988 078A		19460	US	5 SEP	ELEMENTS NOT AVAILABLE					
1988 078B		19461	US	5 SEP	ELEMENTS NOT AVAILABLE					
1988 080A	FENGYUN 1	19467	PRC	6 SEP	102.7	99.2	941	831		
1988 080B		19468	PRC	6 SEP	102.7	99.2	897	875		
1988 081A	GSTAR 3	19483	US	8 SEP	1436.0	2.6	35798	35774		
1988 081B	SBS 5	19484	US	8 SEP	1436.1	0.0	35790	35784		
1988 081C		19485	ESA	8 SEP	524.3	7.0	30033	285		
1988 085A	COSMOS 1970	19501	USSR	16 SEP	675.7	65.4	19159	19099		
1988 085B	COSMOS 1971	19502	USSR	16 SEP	675.7	65.3	19161	19097		
1988 085C	COSMOS 1972	19503	USSR	16 SEP	675.7	65.4	19145	19112		
1988 085E		19505	USSR	16 SEP	674.9	65.3	19122	19094		
1988 085F		19535	USSR	16 SEP	339.3	65.0	18911	560		
1988 085G		19537	USSR	16 SEP	339.3	64.9	18921	552		
1988 086A	CS-33	19508	JAPAN	16 SEP	1436.1	0.0	35789	35782		
1988 086C		19558	JAPAN	16 SEP	629.3	27.9	35800	95		
1988 089A	NOAA 11	19531	US	24 SEP	102.0	98.9	862	844		
1988 089B		19532	US	24 SEP	100.6	98.9	791	784		
1988 089C		19534	US	24 SEP	100.1	98.9	768	755		
1988 090A	MOLNIYA 3-33	19541	USSR	29 SEP	717.6	64.5	39806	538		
1988 090D		19544	USSR	29 SEP	698.2	64.4	38805	577		
1988 091B	TDRS 3	19548	US	29 SEP	1436.0	0.3	35799	35773		35*
1988 091C		19549	US	29 SEP	616.7	26.2	34986	257		
1988 091D		19550	US	29 SEP	1433.3	0.4	35803	35660		
1988 092A	COSMOS 1974	19554	USSR	3 OCT	717.9	62.7	39074	1288		
1988 092D		19557	USSR	3 OCT	705.4	63.2	38426	1318		
1988 093A	COSMOS 1975	19573	USSR	11 OCT	97.4	82.5	649	617		
1988 093B		19574	USSR	11 OCT	97.5	82.5	655	622		
1988 093C		20471	USSR	11 OCT	97.1	82.5	636	607		
1988 095A	RADUGA 22	19596	USSR	20 OCT	1436.0	0.4	35788	35779		
1988 095E		19600	USSR	20 OCT	602.6	46.6	34363	144		
1988 095F		19601	USSR	20 OCT	545.2	46.6	31321	138		
1988 095F		19777	USSR	20 OCT	1470.3	0.5	36506	36402		
1988 096A	COSMOS 1977	19608	USSR	25 OCT	718.9	62.7	38657	1752		
1988 096D		19611	USSR	25 OCT	704.9	63.1	37982	1736		
1988 098A	TDF-1	19621	FRANCE	28 OCT	1436.2	0.0	35803	35772		
1988 098B		19622	ESA	28 OCT	594.7	4.2	33800	294		
1988 098C		20132	ESA	26 OCT	489.6	3.9	28178	220		
1988 099A		19625	US	6 NOV	ELEMENTS NOT AVAILABLE					
1988 099B		19626	US	6 NOV	ELEMENTS NOT AVAILABLE					
1988 102A	COSMOS 1980	19649	USSR	23 NOV	101.9	71.0	850	845		
1988 102B		19650	USSR	23 NOV	101.8	71.0	853	830		
1988 102C		19656	USSR	23 NOV	105.2	71.0	1162	842		
1988 102D		19657	USSR	23 NOV	105.1	71.0	1160	841		
1988 102E		19658	USSR	23 NOV	104.9	71.0	1140	842		

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INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1988 LAUNCHES (CONT.)										
1988 102F		19659	USSR	23 NOV	104.7	71.0	1122	842		
1988 102G		19811	USSR	23 NOV	104.9	71.0	1141	840		
1988 102H		19813	USSR	23 NOV	105.1	71.0	1162	839		
1988 102J		20301	USSR	23 NOV	101.9	71.0	851	844		
1988 106B		19671	US	2 DEC	ELEMENTS NOT AVAILABLE					
1988 108A	EKRAN 19	19683	USSR	8 DEC	1436.0	0.4	35792	35777		
1988 108D		19686	USSR	8 DEC	1418.5	0.3	35620	35364		
1988 108E		19691	USSR	8 DEC	237.1	46.6	12479	143		
1988 108F		19699	USSR	10 DEC	572.2	46.7	32759	145		
1988 109A	SKYNET 4B	19687	UK	11 DEC	1436.0	1.5	37809	33761		
1988 109B	ASTRA 1A	19688	LUXBRG	11 DEC	1436.1	0.1	35970	35602		
1988 109C		19689	ESA	11 DEC	642.0	7.3	36070	475		
1988 109D		19690	ESA	11 DEC	448.9	6.9	25841	241		
1988 111A	PRC 25	19710	PRC	22 DEC	1436.3	0.1	35793	35786		
1988 112A	MOLNIYA 3-34	19713	USSR	22 DEC	717.8	62.8	39066	1287		
1988 112D		19716	USSR	22 DEC	696.2	62.9	38057	1224		
1988 113A	COSMOS 1985	19720	USSR	23 DEC	93.9	73.5	470	462		
1988 113H		19764	USSR	23 DEC	94.7	73.5	507	497		
1988 115A	MOLNIYA 1-74	19730	USSR	28 DEC	717.7	64.1	39982	367		
1988 115D		19733	USSR	28 DEC	696.3	64.1	38899	392		
1989 LAUNCHES										
1989 001A	COSMOS 1987	19749	USSR	10 JAN	675.7	64.9	19141	19117		
1989 001B	COSMOS 1988	19750	USSR	10 JAN	675.7	64.9	19141	19117		
1989 001C	COSMOS 1989	19751	USSR	10 JAN	675.5	64.9	19150	19100		
1989 001E		19753	USSR	10 JAN	675.5	64.9	19147	19101		
1989 001F		19754	USSR	10 JAN	674.7	64.9	19142	19066		
1989 001G		19755	USSR	10 JAN	339.7	65.2	18901	594		
1989 001H		19856	USSR	10 JAN	339.6	65.3	18896	597		
1989 004A	GORIZONT 17	19765	USSR	26 JAN	1436.1	0.3	35786	35785		
1989 004D		19768	USSR	26 JAN	635.8	46.3	36005	225		
1989 004E		19771	USSR	26 JAN	392.4	46.9	22546	205		
1989 004F		19776	USSR	26 JAN	1469.5	0.3	36552	36324		
1989 005A	COSMOS 1992	19769	USSR	26 JAN	100.5	74.1	800	768		
1989 005B		19770	USSR	26 JAN	100.4	74.0	781	771		
1989 005C		19831	USSR	26 JAN	100.6	74.1	800	772		
1989 005D		19945	USSR	26 JAN	100.8	74.0	999	595		
1989 006A	INTELSAT 5A F-15	19772	ITSO	27 JAN	1436.1	0.0	35799	35777		
1989 006B		19773	ESA	27 JAN	637.9	8.3	35803	531		
1989 009A	COSMOS 1994	19785	USSR	10 FEB	113.9	82.6	1414	1392		
1989 009B	COSMOS 1995	19786	USSR	10 FEB	114.1	82.6	1415	1410		
1989 009C	COSMOS 1996	19787	USSR	10 FEB	114.0	82.6	1414	1404		
1989 009D	COSMOS 1997	19788	USSR	10 FEB	113.9	82.6	1414	1398		
1989 009E	COSMOS 1998	19789	USSR	10 FEB	113.8	82.6	1414	1388		
1989 009F	COSMOS 1999	19790	USSR	10 FEB	113.7	82.6	1413	1382		
1989 009G		19791	USSR	10 FEB	114.7	82.6	1469	1414		
1989 011A	COSMOS 2000	19796	USSR	14 FEB	717.6	63.7	38823	1520		
1989 011D		19799	USSR	14 FEB	705.7	64.7	37664	2090		
1989 013A		19802	US	14 FEB	718.0	55.0	20322	20044		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1989 LAUNCHES (CONT.)										
1989 014A	MOLNIYA 1-75	19807	USSR	15 FEB	717.7	63.2	39149	1199		
1989 014D		19810	USSR	15 FEB	694.4	63.2	38041	1154		
1989 016A	EXOS-D	19822	JAPAN	21 FEB	200.5	75.1	9661	274		
1989 016C		19824	JAPAN	21 FEB	193.8	75.1	9155	275		
1989 016K		19952	JAPAN	21 FEB	152.7	75.0	5916	255		
1989 016L		19962	JAPAN	21 FEB	179.0	75.7	8028	260		
1989 016M		19963	JAPAN	21 FEB	189.1	75.2	8791	276		
1989 016P		20034	JAPAN	21 FEB	142.2	75.0	5039	249		
1989 017A	COSMOS 2004	19826	USSR	22 FEB	105.0	82.9	1014	970		
1989 018A	METEOR 2-18	19851	USSR	28 FEB	104.0	82.5	957	936		
1989 018B		19852	USSR	28 FEB	104.0	82.5	960	936		
1989 020A	JCSAT-1	19874	JAPAN	6 MAR	1436.0	0.2	35792	35780		
1989 020B	MOP-1	19876	ESA	6 MAR	1436.1	0.1	35802	35770		
1989 020C		19877	ESA	6 MAR	390.3	6.6	22391	231		
1989 020D		19878	ESA	6 MAR	387.2	6.7	22166	274		
1989 020E		20800	UK	6 MAR	1433.9	0.8	36228	35256		
1989 021B	TDRS-D	19883	US	13 MAR	1436.2	0.3	35804	35775		
1989 021C		19884	US	13 MAR	587.6	26.8	33466	252		
1989 021D		19913	US	13 MAR	1431.3	3.5	35807	35577		
1989 025A	COSMOS 2008	19902	USSR	24 MAR	114.5	74.0	1470	1390		
1989 025B	COSMOS 2009	19903	USSR	24 MAR	114.6	74.0	1471	1405		
1989 025C	COSMOS 2010	19904	USSR	24 MAR	114.8	74.0	1470	1421		
1989 025D	COSMOS 2011	19905	USSR	24 MAR	115.0	74.0	1470	1437		
1989 025E	COSMOS 2012	19906	USSR	24 MAR	115.1	74.0	1470	1453		
1989 025F	COSMOS 2013	19907	USSR	24 MAR	115.3	74.0	1478	1463		
1989 025G	COSMOS 2014	19908	USSR	24 MAR	115.5	74.0	1488	1469		
1989 025H	COSMOS 2015	19909	USSR	24 MAR	115.7	74.0	1507	1468		
1989 025J		19910	USSR	24 MAR	117.7	74.0	1682	1472		
1989 026A		19911	US	24 MAR	93.9	47.7	468	459		
1989 027A	TELE-X	19919	SWEDEN	2 APR	1436.1	0.0	35800	35774		
1989 027B		19920	ESA	2 APR	491.6	4.0	28292	218		
1989 028A	COSMOS 2016	19921	USSR	4 APR	104.7	83.0	1012	951		
1989 028B		19922	USSR	4 APR	104.6	83.0	1002	948		
1989 030A	RADUGA 23	19928	USSR	14 APR	1436.1	0.1	35787	35783		
1989 030D		19931	USSR	14 APR	1470.5	0.2	36537	36378		
1989 030F		19933	USSR	14 APR	597.5	46.8	34087	154		
1989 033B	MAGELLAN	19969	US	4 MAY	TRANS-VENUS TRAJECTORY					
1989 033C		19970	US	4 MAY	438.0	28.0	25158	293		
1989 033D		19971	US	4 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1989 035A		19976	US	10 MAY	ELEMENTS NOT AVAILABLE					
1989 035B		19977	US	10 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1989 035C		19983	US	10 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1989 039A	COSMOS 2022	20024	USSR	31 MAY	675.7	65.1	19139	19119		
1989 039B	COSMOS 2023	20025	USSR	31 MAY	675.7	65.1	19165	19093		
1989 039C	COSMOS 2024	20026	USSR	31 MAY	675.4	65.1	19145	19097		
1989 039E		20028	USSR	31 MAY	674.5	65.1	19140	19057		
1989 039F		20044	USSR	31 MAY	675.4	65.1	19145	19096		
1989 039G		20081	USSR	31 MAY	339.6	64.8	19042	447		
1989 039H		20082	USSR	31 MAY	339.6	65.0	19039	450		
1989 041A	SUPERBIRD A	20040	JAPAN	5 JUN	1436.2	0.0	35799	35776		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1989 LAUNCHES (CONT.)										
1989 041B		20041	FRG	5 JUN	1436.1	0.0	35865	35707		
1989 041C		20042	ESA	5 JUN	546.5	6.3	31311	218		
1989 041D		20043	ESA	5 JUN	286.0	6.8	15801	202		
1989 042A	COSMOS 2026	20045	USSR	7 JUN	104.7	82.9	1006	949		
1989 042B		20046	USSR	7 JUN	104.5	82.9	998	947		
1989 043A	MOLNIYA 3-35	20052	USSR	8 JUN	717.4	63.9	39934	403		
1989 043D		20055	USSR	8 JUN	734.2	64.0	40779	380		
1989 044A		20061	US	10 JUN	718.3	54.8	20432	19946		
1989 044C		20063	US	10 JUN	176.4	37.4	7931	146		
1989 045A	COSMOS 2027	20064	USSR	14 JUN	93.6	65.8	455	442		
1989 045B		20065	USSR	14 JUN	92.3	65.8	389	385		
1989 046A		20066	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 046B		20067	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 046C		20068	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 046D		20069	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 046E		20319	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 048A	RADUGA 1-1	20083	USSR	21 JUN	1435.9	0.2	35798	35767		
1989 048D		20086	USSR	21 JUN	1471.1	0.2	36580	36357		
1989 048F		20094	USSR	21 JUN	485.6	46.7	27933	241		
1989 050A	NADEZHDA	20103	USSR	4 JUL	104.8	83.0	1011	955		
1989 050B		20104	USSR	4 JUL	104.7	83.0	1002	955		
1989 052A	GORIZONT 18	20107	USSR	5 JUL	1436.2	0.3	35795	35782		
1989 052D		20110	USSR	5 JUL	1397.3	0.4	35141	34903		
1989 052E		20115	USSR	5 JUL	252.6	46.7	13572	145		
1989 052F		20116	USSR	5 JUL	542.3	46.8	31024	277		
1989 053A	OLYMPUS	20122	ESA	12 JUL	1436.2	0.1	35803	35773		
1989 053B		20123	ESA	12 JUL	480.4	6.3	27624	258		
1989 053C		20229	ESA	12 JUN	640.6	6.4	36058	416		
1989 058A	COSMOS 2033	20147	USSR	24 JUL	92.8	55.0	416	401		
1989 059A	COSMOS 2034	20149	USSR	25 JUL	104.9	82.9	1011	963		
1989 059B		20150	USSR	25 JUL	104.7	82.9	1002	957		
1989 061B		20167	US	8 AUG	ELEMENTS NOT AVAILABLE					
1989 061C		20172	US	8 AUG	ELEMENTS NOT AVAILABLE					
1989 061D		20344	US	8 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1989 062A	TV-SAT 2	20168	FRG	8 AUG	1436.2	0.1	35803	35772		
1989 062B	HIPPARCOS	20169	ESA	8 AUG	639.4	7.1	35898	513		
1989 062C		20170	ESA	8 AUG	631.0	7.6	35604	376		
1989 062D		20171	ESA	8 AUG	302.3	7.3	16887	200		
1989 064A		20195	US	18 AUG	717.9	54.9	20242	20118		
1989 067A	BSB-R1	20193	UK	27 AUG	1436.2	0.0	35795	35781		
1989 067C		20195	US	27 AUG	644.7	23.3	36412	272		
1989 068A	COSMOS 2037	20196	USSR	28 AUG	116.0	73.6	1522	1482		
1989 068B		20197	USSR	28 AUG	116.0	73.6	1520	1482		
1989 069A		202[illegible]2	US	4 SEP	ELEMENTS NOT AVAILABLE					
1989 069B		202[illegible]3	US	4 SEP	ELEMENTS NOT AVAILABLE					
1989 069D		202[illegible]5	US	4 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1989 070A	GMS-4	20217	JAPAN	5 SEP	1436.1	0.7	35788	35784		
1989 070B		20230	JAPAN	5 SEP	632.3	27.8	35865	182		
1989 070C		20317	JAPAN	5 SEP	1458.1	0.8	37202	35228		
1989 072A		202[illegible]	US	6 SEP	CURRENT ELEMENTS NOT MAINTAINED					

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1989 LAUNCHES (CONT.)										
1989 074A	COSMOS 2038	20232	USSR	14 SEP	113.8	82.6	1408	1389		
1989 074B	COSMOS 2039	20233	USSR	14 SEP	113.7	82.6	1408	1383		
1989 074C	COSMOS 2040	20234	USSR	14 SEP	114.0	82.6	1412	1408		
1989 074D	COSMOS 2041	20235	USSR	14 SEP	113.8	82.6	1408	1394		
1989 074E	COSMOS 2042	20236	USSR	14 SEP	113.9	82.6	1408	1399		
1989 074F	COSMOS 2043	20237	USSR	14 SEP	113.9	82.6	1408	1406		
1989 074G		20238	USSR	14 SEP	114.7	82.6	1471	1408		
1989 077A		20253	US	25 SEP	1436.0	4.2	35794	35774		
1989 077B		20254	US	25 SEP	406.6	28.0	23471	135		
1989 078A	MOLNIYA 1-76	20255	USSR	27 SEP	717.7	63.0	39552	797		
1989 078D		20258	USSR	27 SEP	698.4	62.9	38623	769		
1989 079A	COSMOS 2046	20259	USSR	27 SEP	92.7	65.0	415	402		
1989 080A	INTER-COSMOS 24	20261	USSR	28 SEP	115.7	82.6	2474	498		
1989 080B		20281	USSR	28 SEP	115.7	82.6	2472	497		
1989 080C		20262	USSR	28 SEP	115.8	82.6	2481	497		
1989 081A	GORIZANT 19	20263	USSR	28 SEP	1436.2	0.4	35791	35785		
1989 081D		20266	USSR	28 SEP	1431.2	0.4	35822	35560		
1989 081E		20270	USSR	28 SEP	490.2	46.7	28315	116		
1989 081F		20271	USSR	28 SEP	551.0	46.5	31649	120		
1989 084B	GALILEO	20298	US	18 OCT	ELEMENTS NOT AVAILABLE					
1989 084C		20299	US	18 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1989 084D		20300	US	18 OCT	ELEMENTS NOT AVAILABLE					
1989 085A		20302	US	21 OCT	718.7	54.5	20289	20110		
1989 085B		20303	US	21 OCT	99.2	35.7	950	494		
1989 085C		20304	US	21 OCT	261.0	37.7	14144	154		
1989 086A	METEOR 3-3	20305	USSR	24 OCT	109.4	82.6	1209	1185		
1989 086B		20306	USSR	24 OCT	109.4	82.6	1209	1185		
1989 087A	INTELSAT 6A	20315	ITSO	27 OCT	1436.2	0.0	35791	35785		
1989 087B		20316	ESA	27 OCT	615.3	7.5	34856	313		
1989 089A	COBE	20322	US	18 NOV	102.6	99.0	891	876		
1989 089B		20323	US	18 NOV	99.9	97.1	808	695		
1989 089C		20324	US	18 NOV	102.5	99.0	888	867		
1989 089D		20328	US	18 NOV	102.7	99.0	891	882		
1989 090B		20355	US	23 NOV	ELEMENTS NOT AVAILABLE					
1989 090C		20356	US	23 NOV	ELEMENTS NOT AVAILABLE					
1989 090D		20357	US	23 NOV	ELEMENTS NOT AVAILABLE					
1989 091A	COSMOS 2050	20330	USSR	23 NOV	717.6	63.0	39541	802		
1989 091D		20333	USSR	23 NOV	705.1	63.2	38931	798		
1989 092A	COSMOS 2051	20334	USSR	24 NOV	91.6	64.9	361	345		
1989 093A	KVANT -2	20335	USSR	26 NOV	92.3	51.6	406	364		
1989 094A	MOLNIYA 3-36	20338	USSR	28 NOV	717.7	63.0	39600	749		
1989 094B		20339	USSR	28 NOV	732.3	63.0	40314	754		
1989 096A	GRANAT	20352	USSR	1 DEC	5892.0	70.8	196036	7328		
1989 096B		20353	USSR	1 DEC	97.2	51.5	1043	208		
1989 096C		20354	USSR	1 DEC	5778.3	70.1	193307	7268		
1989 096D		20358	USSR	1 DEC	98.5	51.5	1164	211		
1989 097A		20361	US	11 DEC	717.9	55.0	20347	20012		
1989 097B		20362	US	11 DEC	99.1	35.6	941	490		
1989 098A	RADUGA 24	20367	USSR	15 DEC	1436.2	0.7	35795	35781		
1989 098D		20370	USSR	15 DEC	1471.6	0.7	36549	36407		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1989 LAUNCHES (CONT.)										
1989 098E		20371	USSR	15 DEC	577.0	46.3	33014	147		
1989 098F		20372	USSR	15 DEC	613.8	46.7	34952	142		
1989 100A	COSMOS 2053	20389	USSR	27 DEC	94.7	73.5	514	497		
1989 100B		20390	USSR	27 DEC	94.9	73.5	526	504		
1989 100B - 100T			USSR	31 DEC	SEE NOTE	51*				51*
1989 101A	COSMOS 2054	20391	USSR	27 DEC	1436.2	0.7	35808	35769		
1989 101D		20394	USSR	27 DEC	1465.7	0.7	36409	36319		
1989 101E		20399	USSR	27 DEC	552.7	46.4	31711	148		
1989 101F		20400	USSR	27 DEC	335.6	45.2	19021	214		
1990 LAUNCHES										
1990 001A	SKYNET 4A	20401	UK	1 JAN	1436.1	2.8	35911	35661		
1990 001B	JCSAT	20402	JAPAN	1 JAN	1436.2	0.0	35797	35779		
1990 001D		20404	US	1 JAN	611.9	21.2	34629	362		
1990 001F		20406	US	1 JAN	338.3	26.8	19106	301		
1990 002B	LEASAT 5	20410	US	9 JAN	1436.2	3.0	35803	35773		
1990 002C		20411	US	9 JAN	274.7	27.2	14894	343		
1990 004A	COSMOS 2056	20432	USSR	18 JAN	100.7	74.0	806	772		
1990 004B		20433	USSR	18 JAN	100.5	74.0	809	758		
1990 004C		20434	USSR	18 JAN	101.0	74.0	819	792		
1990 004D		20435	USSR	18 JAN	100.5	74.0	801	767		
1990 005A	SPOT-2	20436	FRANCE	22 JAN	101.3	98.7	822	821		
1990 005B	OSCAR 14	20437	UK	22 JAN	100.7	98.7	801	784		
1990 005C	OSCAR 15	20438	UK	22 JAN	100.7	98.7	801	785		
1990 005D	OSCAR 16	20439	US	22 JAN	100.7	98.7	801	783		
1990 005E	OSCAR 17	20440	BRAZIL	22 JAN	100.7	98.7	801	783		
1990 005F	OSCAR 18	20441	US	22 JAN	100.7	98.7	801	782		
1990 005G	OSCAR 19	20442	ARGNT	22 JAN	100.7	98.7	801	782		
1990 005H		20443	ESA	22 JAN	100.6	98.6	795	778		
1990 006A	MOLNIYA 3	20444	USSR	23 JAN	717.7	63.2	39881	467		
1990 006C		20446	USSR	23 JAN	697.6	63.2	38871	482		
1990 007A	MUSES A	20448	JAPAN	24 JAN	ELEMENTS NOT AVAILABLE					
1990 007B	HAGOROMO	20618	JAPAN	24 JAN	SELENOCENTRIC ORBIT					
1990 007D		20451	JAPAN	24 JAN	ELEMENTS NOT AVAILABLE					
1990 008A		20452	US	24 JAN	716.9	54.5	20238	20070		
1990 008B		20453	US	24 JAN	102.3	35.6	1283	451		
1990 008C		20456	US		292.3	37.7	16232	193		
1990 010A	COSMOS 2058	20465	USSR	30 JAN	ELEMENTS NOT AVAILABLE					
1990 010B		20466	USSR	30 JAN	97.6	82.5	661	625		
1990 011A	PRC-25	20473	PRC	4 FEB	1436.2	0.1	35792	35783		
1990 011B		20474	PRC	4 FEB	620.6	30.2	35080	365		
1990 012A	COSMOS 2059	20476	USSR	6 FEB	90.7	65.7	467	151		
1990 013A	MOS 1B	20478	JAPAN	7 FEB	103.2	99.2	909	908		
1990 013B	DEBUT	20479	JAPAN	7 FEB	112.2	99.0	1743	908		
1990 013C	JAS 1-B	20480	JAPAN	7 FEB	112.2	99.0	1743	908		
1990 013D		20481	JAPAN	7 FEB	110.5	99.0	1607	889		
1990 015A		20496	US	14 FEB	95.2	43.1	541	517		
1990 015B		20497	US	14 FEB	93.5	43.1	460	434		
1990 015C		20498	US	14 FEB	90.5	41.6	314	282		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 016A	RADUGA 25	20499	USSR	15 FEB	1436.1	0.8	35789	35783		
1990 016D		20502	USSR	15 FEB	1439.6	0.8	36015	35695		
1990 016E		20506	USSR	15 FEB	568.7	46.7	32590	128		
1990 016F		20507	USSR	15 FEB	491.2	46.6	28264	224		
1990 017A	NADEZHDA-2	20508	USSR	27 FEB	104.8	82.9	1016	953		
1990 017B		20509	USSR	27 FEB	104.7	83.0	1011	949		
1990 018A	OKEAN-2	20510	USSR	28 FEB	97.6	82.5	660	631		
1990 018B		20511	USSR	28 FEB	97.7	82.5	662	632		
1990 019B		20516	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019C		20517	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019D		20518	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019E		20519	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019F		20520	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019G		20521	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 021A	INTELSAT-6	20523	ITSO	14 MAR	95.9	28.3	572	550		
1990 022A	COSMOS 2060	20525	USSR	14 MAR	92.7	65.0	415	402		
1990 023A	COSMOS 2061	20527	USSR	20 MAR	105.0	82.9	1014	969		
1990 023B		20528	USSR	20 MAR	104.8	82.9	1005	969		
1990 025A		20533	US	26 MAR	718.0	55.1	20273	20091		
1990 025C		20535	US	26 MAR	282.8	37.4	15630	158		
1990 026A	COSMOS 2063	20536	USSR	27 MAR	717.5	63.5	39569	770		
1990 026D		20539	USSR	27 MAR	709.3	63.8	39163	772		
1990 028A	PEGSAT	20546	US	5 APR	95.7	94.1	655	452		
1990 028B		20547	US	5 APR	96.2	94.1	664	485		
1990 029A	COSMOS 2064	20549	USSR	6 APR	115.4	74.0	1488	1460		
1990 029B	COSMOS 2065	20550	USSR	6 APR	115.2	74.0	1473	1459		
1990 029C	COSMOS 2066	20551	USSR	6 APR	114.3	74.0	1461	1384		
1990 029D	COSMOS 2067	20552	USSR	6 APR	114.4	74.0	1461	1399		
1990 029E	COSMOS 2068	20553	USSR	6 APR	114.6	74.0	1461	1413		
1990 029F	COSMOS 2069	20554	USSR	6 APR	114.8	74.0	1461	1427		
1990 029G	COSMOS 2070	20555	USSR	6 APR	114.9	74.0	1461	1441		
1990 029H	COSMOS 2071	20556	USSR	6 APR	115.1	74.0	1461	1457		
1990 029J		20557	USSR	6 APR	117.7	74.0	1696	1461		
1990 030A	ASIASAT 1	20558	UK	7 APR	1436.2	0.0	35800	35775		
1990 030B		20559	PRC	7 APR	640.1	31.3	36191	257		
1990 031A		20560	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031B		20561	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031C		20562	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031D		20563	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031E		20564	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031F		20565	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031G		20575	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031H		20576	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 033A	COSMOS 2072	20568	USSR	13 APR	89.0	64.7	243	209		
1990 034A	PALAPA B2R	20570	INDO	13 APR	1436.2	0.1	35790	35786		
1990 034B		20571	US	13 APR	104.2	22.7	1412	500		
1990 034C		20572	US	13 APR	629.8	16.8	35736	182		
1990 036A	COSMOS 2074	20577	USSR	20 APR	104.8	82.9	1004	962		
1990 036B		20578	USSR	20 APR	104.7	82.9	994	963		
1990 037B	HST	20580	US	24 APR	97.0	28.5	620	611		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 038A	COSMOS 2075	20581	USSR	25 APR	94.1	74.0	490	462		
1990 038B		20582	USSR	25 APR	94.0	74.0	489	451		
1990 038D		20746	USSR	25 APR	93.7	74.0	462	445		
1990 039A	MOLNIYA 1-77	20583	USSR	26 APR	717.7	62.8	39510	841		
1990 039D		20586	USSR	26 APR	733.1	62.9	40279	825		
1990 040A	COSMOS 2076	20596	USSR	28 APR	717.9	63.2	39669	692		
1990 040D		20599	USSR	28 APR	707.6	63.4	39158	693		
1990 043A	SCOUT M-1	20607	US	9 MAY	98.5	89.9	765	606		
1990 043B		20608	US	9 MAY	98.5	89.9	765	606		
1990 043C		20609	US	9 MAY	98.4	89.9	762	604		
1990 043D		20610	US	9 MAY	98.4	89.9	766	599		
1990 043E		20611	US	9 MAY	98.4	89.9	763	598		
1990 043F		20612	US	9 MAY	98.3	89.9	746	605		
1990 043G		20613	US	9 MAY	98.1	89.9	739	595		
1990 043H		20614	US	9 MAY	98.3	89.9	746	604		
1990 043J		20634	US	9 MAY	98.1	89.9	743	593		
1990 043K		20651	US	9 MAY	98.9	90.1	836	580		
1990 043L		20759	US	9 MAY	97.7	89.7	692	605		
1990 045A	COSMOS 2079	20619	USSR	19 MAY	675.7	65.0	19190	19067		
1990 045B	COSMOS 2080	20620	USSR	19 MAY	675.7	65.0	19144	19114		
1990 045C	COSMOS 2081	20621	USSR	19 MAY	675.7	65.0	19166	19092		
1990 045E		20623	USSR	19 MAY	674.7	65.0	19154	19055		
1990 045F		20630	USSR	19 MAY	340.1	65.0	19089	431		
1990 045G		20631	USSR	19 MAY	340.1	64.9	19088	432		
1990 046A	COSMOS 2082	20624	USSR	22 MAY	101.9	71.0	853	844		
1990 046B		20625	USSR	22 MAY	101.8	71.0	855	836		
1990 046C		20626	USSR	22 MAY	105.1	71.0	1156	841		
1990 046D		20627	USSR	22 MAY	105.2	71.0	1167	842		
1990 046E		20628	USSR	22 MAY	105.1	71.0	1160	840		
1990 046F		20629	USSR	22 MAY	105.0	71.0	1145	842		
1990 048A	KRISTALL	20635	USSR	31 MAY	92.3	51.6	408	363		
1990 049A	ROSAT	20638	FRG	1 JUN	96.1	53.0	582	559		
1990 049B		20639	US	1 JUN	94.4	52.5	536	441		
1990 050A		20641	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050B		20682	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050C		20691	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050D		20692	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050E		20642	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 051A	INSAT-1D	20643	INDIA	12 JUN	1436.2	0.0	35799	35776		
1990 051C		20645	US	12 JUN	703.0	27.2	39517	103		
1990 052A	MOLNIYA 3-38	20646	USSR	13 JUN	717.7	62.9	39667	683		
1990 052D		20649	USSR	13 JUN	733.6	62.9	40449	683		
1990 054A	GORIZONT 20	20659	USSR	20 JUN	1436.3	1.2	35851	35727		
1990 054D		20662	USSR	20 JUN	1432.8	1.2	35789	35654		
1990 054E		20704	USSR	20 JUN	629.5	46.8	35687	220		
1990 054F		20711	USSR	20 JUN	620.6	46.7	35278	167		
1990 055A	COSMOS 2084	20663	USSR	21 JUN	98.1	62.8	766	568		
1990 055D		20666	USSR	21 JUN	97.9	62.8	755	563		
1990 056A	INTELSAT	20667	ITSO	23 JUN	1436.0	0.1	35842	35727		
1990 056C		20669	US	23 JUN	678.6	23.7	38137	269		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 057A	METEOR 2-19	20670	USSR	27 JUN	104.0	82.5	957	936		
1990 057B		20671	USSR	27 JUN	104.0	82.5	956	936		
1990 058A	GAMMA	20683	USSR	11 JUL	92.8	51.6	410	408		
1990 059A	BADR-A	20685	PAKI	16 JUL	91.2	28.5	483	184		
1990 059B		20686	PRC	16 JUL	93.6	28.5	699	199		
1990 061A	COSMOS 2085	20693	USSR	18 JUL	1436.1	1.2	35804	35768		
1990 061D		20696	USSR	18 JUL	1437.3	1.2	35938	35681		
1990 061E		20697	USSR	18 JUL	630.7	46.8	35764	201		
1990 061F		20698	USSR	18 JUL	634.5	46.9	35908	253		
1990 063A	TDF-2	20705	FRANCE	24 JUL	1436.2	0.0	35790	35785		
1990 063B	DFS-2	20706	FRG	24 JUL	1436.1	0.0	35811	35761		
1990 063C		20717	ESA	24 JUL	639.3	4.3	35980	428		
1990 063D		20718	ESA	24 JUL	628.7	4.3	35519	347		
1990 064A	COSMOS 2087	20707	USSR	25 JUL	718.0	62.9	39544	822		
1990 064D		20710	USSR	25 JUL	703.9	63.0	38858	810		
1990 065A	CRRES	20712	US	25 JUL	591.5	18.3	33584	339		
1990 065B		20713	US	25 JUL	592.8	18.2	33665	329		
1990 065C		20811	US	25 JUL	591.4	18.3	33585	336		
1990 066A	COSMOS 2088	20720	USSR	30 JUL	116.0	73.6	1521	1482		
1990 066B		20721	USSR	30 JUL	116.0	73.6	1518	1481		
1990 067A	SOYUZ TM-10	20722	USSR	1 AUG	92.3	51.6	407	363		
1990 068A		20724	US	2 AUG	718.0	54.7	20436	19927		
1990 068C		20726	US	2 AUG	258.1	37.7	13976	123		
1990 069A	COSMOS 2089	20732	USSR	3 AUG	89.2	62.8	292	181		
1990 070A	COSMOS 2090	20735	USSR	8 AUG	113.8	82.6	1411	1388		
1990 070B	COSMOS 2091	20736	USSR	8 AUG	114.0	82.6	1413	1409		
1990 070C	COSMOS 2092	20737	USSR	8 AUG	114.0	82.6	1411	1403		
1990 070D	COSMOS 2093	20738	USSR	8 AUG	113.9	82.6	1412	1397		
1990 070E	COSMOS 2094	20739	USSR	8 AUG	113.8	82.6	1411	1392		
1990 070F	COSMOS 2095	20740	USSR	8 AUG	113.7	82.6	1411	1381		
1990 070G		20741	USSR	8 AUG	114.6	82.6	1466	1410		
1990 071A	MOLNIYA 1-78	20742	USSR	10 AUG	717.8	62.9	39557	795		
1990 071D		20745	USSR	10 AUG	732.7	62.9	40296	791		
1990 072C		20812	USSR	15 AUG	91.1	51.6	341	317		
1990 074A	BSB-R2	20762	UK	18 AUG	1435.8	0.2	35866	35693		
1990 074B		20763	US	18 AUG	102.8	24.8	1306	479		
1990 074C		20764	US	18 AUG	672.8	20.8	37610	500		
1990 075A	COSMOS 2096	20765	USSR	23 AUG	92.8	65.0	415	402		
1990 076A	COSMOS 2097	20767	USSR	28 AUG	717.7	63.2	39683	665		
1990 076D		20770	USSR	28 AUG	707.9	63.2	39230	635		
1990 077A	BS-3A	20771	JAPAN	28 AUG	1436.2	0.1	35802	35774		
1990 077C		20773	JAPAN	28 AUG	660.6	28.8	37295	198		
1990 078A	COSMOS 2098	20774	USSR	28 AUG	109.0	83.0	1962	395		
1990 078B		20775	USSR	28 AUG	108.8	83.0	1957	383		
1990 079A	SKYNET 4C	20776	UK	30 AUG	1436.1	4.2	35790	35783		
1990 079B	EUTELSAT II F1	20777	ESA	30 AUG	1382.7	0.4	36912	32556		
1990 079C		20778	ESA	30 AUG	624.8	7.2	35421	240		
1990 079D		20781	ESA	30 AUG	609.4	7.1	34614	251		
1990 081A	FENGYUN 1-2	20788	PRC	3 SEP	102.8	98.9	896	881		
1990 081B	PRC 31	20789	PRC	3 SEP	101.7	99.0	856	818		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 081C	PRC 32	20790	PRC	3 SEP	102.2	99.0	877	849		
1990 081D		20791	PRC	3 SEP	103.4	98.9	960	882		
1990 081E		20792	PRC	3 SEP	102.6	98.9	896	869		
1990 081F		20793	PRC	3 SEP	102.7	98.9	897	873		
1990 081G		20797	PRC	3 SEP	102.7	98.9	894	877		
1990 081H		20798	PRC	3 SEP	102.7	98.9	893	876		
1990 082C		20817	USSR	7 SEP	89.1	82.6	239	224		
1990 083A	COSMOS 2100	20804	USSR	14 SEP	104.8	82.9	1012	956		
1990 083B		20805	USSR	14 SEP	104.7	82.9	1005	952		
1990 084A	MOLNIYA 3-39	20813	USSR	20 SEP	717.7	62.9	39818	534		
1990 084B		20814	USSR	20 SEP	88.6	62.8	243	170		
1990 084C		20815	USSR	20 SEP	86.7	62.8	134	112		
1990 084D		20816	USSR	20 SEP	731.7	62.8	40539	501		
1990 085A		20824	USSR	27 SEP	92.3	51.6	408	363		
1990 086A	METEOR 2-20	20826	USSR	28 SEP	104.0	82.5	960	939		
1990 086B		20827	USSR	28 SEP	104.0	82.5	958	938		

INITIAL ELEMENTS OF OBJECTS WHICH WERE LAUNCHED/CATALOGED AND DECAYED WITHIN THE REPORTING PERIOD

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	NOTES
1990 053C		20675	USSR	19 JUN	INITIAL ELEMENTS NOT AVAILABLE				
1990 053E		20677	USSR	19 JUN	88.2	82.6	189	181	
1990 053F		20678	USSR	19 JUN	INITIAL ELEMENTS NOT AVAILABLE				
1990 058B		20684	US	11 JUL	86.2	51.6	113	78	
1990 060B		20688	USSR	17 JUL	86.5	82.3	131	98	
1990 060C		20756	USSR	17 JUL	89.6	82.3	261	246	
1990 060D		20757	USSR	17 JUL	86.2	82.2	111	86	
1990 060E		20758	USSR	17 JUL	85.4	82.2	67	41	
1990 060F		20761	USSR	17 JUL	86.5	82.2	124	97	
1990 061B		20694	USSR	18 JUL	86.2	51.6	106	89	
1990 061C		20695	USSR	18 JUL	88.1	51.6	210	179	
1990 062B		20703	USSR	20 JUL	86.0	82.3	115	73	
1990 062C		20727	USSR	20 JUL	88.5	82.3	230	170	
1990 062D		20728	USSR	20 JUL	87.5	82.3	157	142	
1990 062E		20729	USSR	20 JUL	85.8	82.3	96	57	
1990 062F		20730	USSR	20 JUL	87.9	82.3	173	164	
1990 062G		20731	USSR	20 JUL	86.2	82.3	108	84	
1990 067B		20723	USSR	1 AUG	84.8	51.6	32	14	
1990 068B		20725	US	2 AUG	90.8	30.1	441	181	
1990 069B		20733	USSR	3 AUG	87.3	62.8	149	129	
1990 069C		20734	USSR	3 AUG	85.7	62.8	81	59	
1990 072B		20753	USSR	15 AUG	87.5	51.6	151	147	
1990 073B		20755	USSR	16 AUG	88.5	82.3	220	175	
1990 075B		20766	USSR	23 AUG	89.5	64.9	387	141	
1990 082A	RESURS-F9	20794	USSR	7 SEP	89.8	82.6	268	255	
1990 082B		20795	USSR	7 SEP	85.7	82.5	96	57	
1990 082D		20818	USSR	7 SEP	86.2	82.5	105	75	
1990 082E		20819	USSR	7 SEP	85.1	82.5	54	28	
1990 082F		20820	USSR	7 SEP	85.0	82.5	52	16	
1990 085B		20825	USSR	27 SEP	85.0	51.5	47	29	

OBJECTS DECAYED WITHIN THE REPORTING PERIOD

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	DECAY	NOTES
OMICRON 27		17653	US	29 JUN	11 AUG 90	
1963 022A		594	US	16 JUN	3 AUG 90	
1965 082LW		3359	US	15 OCT	26 SEP 90	
1965 082MS		3380	US	15 OCT	25 SEP 90	
1968 040C		3231	USSR	7 MAY	9 SEP 90	
1968 097EL		18488	USSR	1 NOV	19 JUL 90	
1968 097EN		18490	USSR	1 NOV	25 JUL 90	
1969 082DD		4260	US	30 SEP	29 SEP 90	
1969 082FK		4466	US	30 SEP	13 JUL 90	
1969 082GC		4531	US	30 SEP	31 JUL 90	
1969 082GL		4543	US	30 SEP	3 AUG 90	
1970 025BH		4684	US	8 APR	8 AUG 90	
1970 025CY		4750	US	8 APR	23 AUG 90	
1970 089J		4666	USSR	23 OCT	25 SEP 90	
1970 091AS		14527	USSR	30 OCT	29 AUG 90	
1972 058AN		7866	US	23 JUL	26 AUG 90	
1974 089EL		13130	US	15 NOV	14 SEP 90	
1974 089FF		20681	US	15 NOV	2 AUG 90	
1975 004C		8675	US	22 JAN	18 SEP 90	
1975 004GA		9679	US	22 JAN	20 SEP 90	
1975 004GL		9689	US	22 JAN	12 SEP 90	
1976 120AG		11205	USSR	9 DEC	11 JUL 90	
1977 065BL		10233	US	14 JUL	28 AUG 90	
1977 108C		10950	US	23 NOV	12 AUG 90	
1979 047A	UK 6	11382	UK	2 JUN	23 SEP 90	
1979 048D		11554	USSR	5 JUN	5 AUG 90	
1982 109C		14227	USSR	11 NOV	19 SEP 90	
1983 044AK		15718	USSR	7 MAY	2 SEP 90	
1983 044AW		15729	USSR	7 MAY	18 JUL 90	
1983 044BX		16780	USSR	7 MAY	2 JUL 90	
1983 044EK		18474	USSR	7 MAY	28 AUG 90	
1984 007A	COSMOS 1534	14668	USSR	26 JAN	20 SEP 90	
1985 121D		16437	USSR	28 DEC	8 JUL 90	
1986 017CJ		20689	USSR	19 FEB	27 SEP 90	
1986 017CK		20690	USSR	19 FEB	3 AUG 90	
1986 017CL		20699	USSR	19 FEB	21 AUG 90	
1986 017CM		20700	USSR	19 FEB	21 AUG 90	
1986 017CN		20701	USSR	19 FEB	3 AUG 90	
1986 017CP		20719	USSR	19 FEB	19 SEP 90	
1986 019P		17119	ESA	22 FEB	2 JUL 90	
1986 019EJ		17376	ESA	22 FEB	24 AUG 90	
1986 019EN		17380	ESA	22 FEB	10 SEP 90	
1986 019GG		17445	ESA	22 FEB	24 JUL 90	
1986 019GV		17458	ESA	22 FEB	29 SEP 90	
1986 019TN		18614	ESA	22 FEB	4 JUL 90	
1986 019TR		18676	ESA	22 FEB	16 JUL 90	
1986 019VM		20173	ESA	22 FEB	26 JUL 90	
1987 011C		17397	USSR	1 FEB	29 JUL 90	
1987 020AB		18750	USSR	20 FEB	28 AUG 90	
1987 020CY		20094	USSR	20 FEB	10 JUL 90	
1987 020DD		20130	USSR	20 FEB	13 AUG 90	

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OBJECTS DECAYED WITHIN THE REPORTING PERIOD

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	DECAY	NOTES
1987 020DH		20199	USSR	20 FEB	25 AUG 90	
1987 020DJ		20201	USSR	20 FEB	17 JUL 90	
1987 100F		18636	USSR	10 DEC	5 JUL 90	
1989 097C		20363	US	11 DEC	9 AUG 90	
1989 100M		20637	USSR	31 DEC	16 AUG 90	
1989 100N		20640	USSR	31 DEC	20 AUG 90	
1990 012B		20477	USSR	6 FEB	12 JUL 90	
1990 014A	SOYUZ TM-9	20494	USSR	11 FEB	9 AUG 90	
1990 027A	OFEQ 2	20540	ISRAEL	3 APR	9 JUL 90	
1990 038C		20587	USSR	25 APR	4 JUL 90	
1990 038E		20747	USSR	25 APR	28 SEP 90	
1990 038F		20748	USSR	25 APR	20 SEP 90	
1990 038G		20749	USSR	25 APR	20 SEP 90	
1990 038H		20750	USSR	25 APR	22 SEP 90	
1990 038J		20751	USSR	25 APR	25 SEP 90	
1990 042A	COSMOS 2077	20604	USSR	7 MAY	4 JUL 90	
1990 047D		20654	USSR	29 MAY	7 JUL 90	
1990 051B		20644	US	12 JUN	12 JUL 90	
1990 052B		20647	USSR	13 JUN	3 JUL 90	
1990 053A	COSMOS 2083	20657	USSR	19 JUN	3 JUL 90	
1990 053C		20675	USSR	19 JUN	19 JUL 90	
1990 053D		20676	USSR	19 JUN	30 SEP 90	
1990 053E		20677	USSR	19 JUN	29 JUL 90	
1990 053F		20678	USSR	19 JUN	20 JUL 90	
1990 053G		20679	USSR	19 JUN	9 AUG 90	
1990 055B		20664	USSR	21 JUN	21 JUL 90	
1990 055C		20665	USSR	21 JUN	20 JUL 90	
1990 058B		20684	US	11 JUL	12 JUL 90	
1990 060A	RESURS-F7	20687	USSR	17 JUL	16 AUG 90	
1990 060B		20688	USSR	17 JUL	19 JUL 90	
1990 060C		20756	USSR	17 JUL	19 AUG 90	
1990 060D		20757	USSR	17 JUL	18 AUG 90	
1990 060E		20758	USSR	17 JUL	22 AUG 90	
1990 060F		20761	USSR	17 JUL	18 AUG 90	
1990 061B		20694	USSR	18 JUL	21 JUL 90	
1990 061C		20695	USSR	18 JUL	20 JUL 90	
1990 062A	COSMOS 2086	20702	USSR	20 JUL	3 AUG 90	
1990 062B		20703	USSR	20 JUL	22 JUL 90	
1990 062C		20727	USSR	20 JUL	8 AUG 90	
1990 062D		20728	USSR	20 JUL	16 AUG 90	
1990 062E		20729	USSR	20 JUL	4 AUG 90	
1990 062F		20730	USSR	20 JUL	6 AUG 90	
1990 062G		20731	USSR	20 JUL	4 AUG 90	
1990 064B		20708	USSR	25 JUL	22 AUG 90	
1990 064C		20709	USSR	25 JUL	8 AUG 90	
1990 064E		20714	USSR	25 JUL	14 AUG 90	
1990 064F		20715	USSR	25 JUL	8 AUG 90	
1990 064G		20716	USSR	25 JUL	5 AUG 90	
1990 067B		20723	USSR	1 AUG	2 AUG 90	
1990 068B		20725	US	2 AUG	15 AUG 90	
1990 069B		20733	USSR	3 AUG	9 AUG 90	

OBJECTS DECAYED WITHIN THE REPORTING PERIOD

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	DECAY	NOTES
1990 069C		20734	USSR	3 AUG	4 AUG 90	
1990 071B		20743	USSR	10 AUG	10 SEP 90	
1990 071C		20744	USSR	10 AUG	2 SEP 90	
1990 072A	PROGRESS M-4	20752	USSR	15 AUG	20 SEP 90	
1990 072B		20753	USSR	15 AUG	16 AUG 90	
1990 073A	RESURS-F8	20754	USSR	16 AUG	1 SEP 90	
1990 073B		20755	USSR	16 AUG	18 AUG 90	
1990 073C		20782	USSR	16 AUG	21 SEP 90	
1990 073D		20783	USSR	16 AUG	7 SEP 90	
1990 073E		20784	USSR	16 AUG	5 SEP 90	
1990 073F		20785	USSR	16 AUG	3 SEP 90	
1990 073G		20786	USSR	16 AUG	4 SEP 90	
1990 073H		20787	USSR	16 AUG	3 SEP 90	
1990 075B		20766	USSR	23 AUG	24 AUG 90	
1990 076B		20768	USSR	28 AUG	26 SEP 90	
1990 076C		20769	USSR	28 AUG	11 SEP 90	
1990 077B		20772	JAPAN	28 AUG	5 SEP 90	
1990 080A	COSMOS 2099	20779	USSR	31 AUG	14 SEP 90	
1990 080B		20780	USSR	31 AUG	1 SEP 90	
1990 080C		20796	USSR	31 AUG	10 SEP 90	
1990 080D		20806	USSR	31 AUG	23 SEP 90	
1990 080E		20807	USSR	31 AUG	16 SEP 90	
1990 080F		20808	USSR	31 AUG	15 SEP 90	
1990 080G		20809	USSR	31 AUG	17 SEP 90	
1990 080H		20810	USSR	31 AUG	16 SEP 90	
1990 082A	RESURS-F9	20794	USSR	7 SEP	21 SEP 90	
1990 082B		20795	USSR	7 SEP	9 SEP 90	
1990 082D		20818	USSR	7 SEP	23 SEP 90	
1990 082E		20819	USSR	7 SEP	25 SEP 90	
1990 082F		20820	USSR	7 SEP	25 SEP 90	
1990 085B		20825	USSR	27 SEP	28 SEP 90	

FOOTNOTES

1* 297 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1961 OMICRON 1 AND 1961 OMICRON 2. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

2* 149 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1963 014A, 1963 014B, AND 1963 014C. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

3* 19 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1963 047A. THE OBJECT OF THIS SERIES THAT HAS DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

4* 28 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUCHED WITH 1964 006A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

5* 51 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1965 027A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

6* DEBRIS DISCOVERED IN ORBIT WHICH HAS NOT BEEN IDENTIFIED WITH ANY LAUNCH OR COUNTRY OF ORIGIN.

7* 472 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1965 082A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

8* 110 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1968 091A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

9* A MANNED SPACECRAFT WHICH SUCCESSFULLY LANDED ON THE MOON AND RETURNED TO SELENOCENTRIC ORBIT.

10* 138 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1968 097A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

11* 270 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1969 082A, 1969 082B, 1969 082C, 1969 082D, 1969 082E, 1969 082F, 1969 082G, 1969 082H, 1969 082J, AND 1969 082K. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

12* 368 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1970 025A AND 1970 025B. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

13* 103 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1970 089A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

14* DEBRIS DISCOVERED IN ORBIT WHICH HAS NOT BEEN IDENTIFIED WITH ANY LAUNCH.

FOOTNOTES (CONT)

15* 46 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1970 091A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

16* 118 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1971 015A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

17* 229 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1972 058A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

18* 198 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1973 086A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

19* 150 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1974 089A, 1974 089B, AND 1974 089C. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

20* 208 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1975 004A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

21* 70 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 067A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

22* 159 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 077A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

23* 14 OBJECT HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 105A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

24* 51 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 120A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

25* 79 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 126A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

26* 172 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1977 065A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

27* 70 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1977 121A. THE OBJECT OF THIS SERIES THAT HAS DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

FOOTNOTES (CONT)

28* 21. OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1978 026A AND 1978 026B. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

29* 399 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1978 100A. 1978 100B, AND 1978 100C. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

30* 288 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1979 017A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

31* 47 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1980 030A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

32* 80 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1980 089A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMATY SATELLITE SITUATION REPORT.

33* 69 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1981 028A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

34* 305 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1981 053A OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

35* DEPLOYED FROM SPACE TRANSPORTATION VEHICLE.

36* 33 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1982 115A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

37* 59 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1982 055A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

38* 27 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1983 091A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

39* 164 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1983 044A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

40* 30 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1984 104A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

41* 46 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1984 083A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

FOOTNOTES (CONT)

42* 24 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1985 082A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

43* 25 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1985 030A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

44* 30 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1986 024A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

45* 499 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1986 019A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

46* 30 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1986 067A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

47* 87 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1986 017A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

48* 195 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1987 004A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

49* 112 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1987 020A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

50* 18 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1988 065A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

51* 18 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1989 100A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT.

NNN NO NATIONAL NAME