우주개발동향

1996년도에 발사된 위성의 현황

최 규 홍
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1898년 러시아의 수학자 치올코프스키가 "로켓을 이용한 우주공간 개발"이라는 논문을 발표하여 로켓의 비행원리를 밝혔고, 1926년 미국의 고다드는 세계 최초의 액체 로켓을 제작하였으며, 독일을 폴 브라운은 V-2 라는 로켓 개발에 성공하여 제 2차 대전 말기에 프랑스 해안에서 수백 km 떨어진 영 국의 런던을 공격하는데 사용하였다.

인류 최초의 인공위성은 1957년 10월 4일에 발사된 스푸트니크 1호이다. 이에 놀란 미국은 그로부터 4개월 후인 1958년 1월에 폰 브라운등의 기술진이 개발한 주피터 C 로켓으로 익스플러러 1호를 발사하는데 성공하므로 미소 양국의 치열한 우주개발 경쟁이 시작된 것이다.

우리 나라도 1995년 8월에 무궁화위성 1호, 1996년 1월 무궁화위성 2호를 발사하여 동경 116도 지구정지궤도에 진입시켜 우리별 시리즈 2개의 위성과 더불어 합계 4개의 위성 보유국이 되었다.

이 번호에는 1996년도에 발사된 위성의 현황을 소개하여 보겠다.

● *Ⅰ. 발사된 날짜별로 본 현황과 위성의 궤도상태*
Ⅱ. 위성 제작 회사로 분류
Ⅲ. 기관에 대한 약자 설명
Ⅳ. 발사체로 분류

Ⅰ. 발사된 날짜별로 본 현황과 위성의 궤도상태 (1996년 12월말 현재)

1996년도 위성의 발사현황은 다음과 같다.

국제명칭	위성이름	소유기관	위성용도	발사일	궤도 및 현황
01A	Endeavour STS-72	NASA-JSC	Spaceship	Jan 11	Landed at KSC Jan 20
01A	SLA-1/GAS	NASA-GSFC	Research	Jan 11	Remained attached to OV-105
02A	Panamsat 3R	Panamsat	Comsat	Jan 12	35779x 35796x 0.0 43.0W
02B	Measat 1	Binariang	Comsat	Jan 12	35783x 35792x 0.0 91.4E
03A	Koreasat 2	KTel	Comsat	Jan 12	35782x 35792x 0.0 116.0E
01B	OAST-Flyer	NASA-GSFC	Research	Jan 14	Recovered by OV-105 Jan 16
04A	Kosmos-2327	MO RF	Navsat	Jan 16	949x 1023x 83.0
05A	Gorizont No. 43	MSvyazi	Comsat	Jan 25	35777x 35801x 0.9 39.8E
06A	Palapa C-1	Satelindo	Comsat	Feb 1	35777x 35798x 0.0 150.4E
07A	N-STAR b	NTT	Comsat	Feb 5	35715x 35876x 0.1 128.9E
—	Intelsat 708	Intelsat	Comsat	Feb 14	Destroyed on launch
08A	NEAR	NASA/APL	Probe	Feb 17	En route (253) Mathilde
09A	Gonets-D1 No. 1	NII TP	Comsat	Feb 19	1399x 1414x 82.6
09B	Gonets-D1 No. 2	NII TP	Comsat	Feb 19	1406x 1415x 82.6
09C	Gonets-D1 No. 3	NII TP	Comsat	Feb 19	1410x 1415x 82.6
09D	Kosmos-2328	MO RF	Comsat	Feb 19	1408x 1417x 82.6
09E	Kosmos-2329	MO RF	Comsat	Feb 19	1411x 1421x 82.6
09F	Kosmos-2330	MO RF	Comsat	Feb 19	1412x 1427x 82.6
10A	Raduga	MO RF	Comsat	Feb 19	259x 36582x 47.2
11A	Soyuz TM-23	RKA	Spaceship	Feb 21	Landed in Kazakhstan Sep 2
12A	Columbia STS-75	NASA-JSC	Spaceship	Feb 22	Landed at KSC Mar 9
13A	Polar	NASA-GSFC	Research	Feb 24	5554x 50423x 86.3
12B	TSS	ASI	Research	Feb 26	Reentered Mar 19
14A	REX 2	USAF	Research	Mar 9	799x 835x 90.0
15A	Intelsat 707	Intelsat	Comsat	Mar 14	35774x 35797x 0.0 0.9W
16A	Kosmos-2331	MO RF	Recon	Mar 14	Deorbited Jun 11
17A	IRS-P3	ISRO	Earth Obs	Mar 21	818x 821x 98.8
18A	Atlantis STS-76	NASA-JSC	Spaceship	Mar 22	Landed at Edwards Mar 31
18A	ODS	NASA-JSC	Spaceship	Mar 22	Remained attached to OV-104
18A	Spacehab FU2	NASA-JSC	Lab	Mar 22	Remained attached to OV-104
19A	GPS 33	USAF	Navsat	Mar 28	20106x 20257x 54.6
20A	Inmarsat III F1	Inmarsat	Comsat	Apr 3	35765x 35805x 2.2 64.1E
21A	Astra 1F	SES	Comsat	Apr 8	35778x 35793x 0.1 19.3E
22A	M-SAT 1	TMI	Comsat	Apr 20	35777x 35794x 0.0 106.5W
23A	Priroda	RKA	Spaceship	Apr 23	Docked with Mir Apr 26
24A	MSX	BMDO	Research	Apr 24	897x 907x 99.4
25A	Kosmos-2332	MO RF	Calibrat.	Apr 24	294x 1548x 82.9
26A	USA 118	NRO/USAF	Sigint	Apr 24	30000?x 40000?x 10?
27A	SAX	ASI	Astronomy	Apr 30	584x 601x 4.0
28A	Progress M-31	RKA	Cargo	May 5	Deorbited Aug 1, Pacific
29A	USA 119	NRO	Recon	May 12	Unknown orbit
29B	USA 120	NRO/USN	Recon	May 12	1058x 1157x 63.4
29C	USA 121	NRO/USN	Recon	May 12	1055x 1160x 63.4
29D	USA 122	NRO/USN	Recon	May 12	1060x 1156x 63.4
29E	USA 123/TIPS	NRO/USN	Research	May 12	1010x 1032x 63.4
29F	USA 124/TIPS	NRO/USN	Research	May 12	1010x 1032x 63.4

—	Kosmos	MO RF	Recon	May	14	Destroyed on launch
30A	Palapa C2	Satelindo	Comsat	May	16	35780x 35790x 0.0 113.0E
30B	AMOS	IAI	Comsat	May	16	35770x 35802x 0.0 4.1W
31A	MSTI-3	BMDO	Research	May	17	420x 432x 97.1
32A	Endeavour STS-77	NASA-JSC	Spaceship	May	19	Landed KSC May 29
32A	Spacehab FU1	NASA-JSC	Lab	May	19	Remained attached to OV-105
32A	TEAMS	NASA-GSFC	Research	May	19	Remained attached to OV-105
32A	GBA-9	NASA-GSFC	Research	May	19	Remained attached to OV-105
32B	Spartan 207	NASA-GSFC	Research	May	20	Retrieved May 21
32C	IAE	NASA/JPL	Research	May	20	Reentered May 22
32D	PAMS STU	NASA-GSFC	Research	May	22	Reentered Oct 26
33A	Galaxy 9	HCI	Comsat	May	23	35783x 35789x 0.0 123.0W
34A	Gorizont No. 44	MSvyazi	Comsat	May	25	35718x 35851x 1.1 53.2E
—	Cluster F1	ESA	Research	Jun	4	Destroyed on launch
—	Cluster F2	ESA	Research	Jun	4	Destroyed on launch
—	Cluster F3	ESA	Research	Jun	4	Destroyed on launch
—	Cluster F4	ESA	Research	Jun	4	Destroyed on launch
35A	Intelsat 709	Intelsat	Comsat	Jun	15	35779x 35795x 0.0 50.0W
36A	Columbia STS-78	NASA-JSC	Spaceship	Jun	20	Landed KSC Jul 7
36A	Spacelab LMS-1	NASA-MSFC	Lab	Jun	20	Landed aboard STS-78
—	Kosmos	MO RF	Recon	Jun	20	Destroyed on launch
37A	TOMS-EP	NASA-GSFC	Earth Obs	Jul	2	490x 510x 97.4
38A	USA 125	NRO	Comsat?	Jul	3	Unknown orbit
39A	Apstar 1A	APT	Comsat	Jul	3	35785x 35791x 0.0 133.9E
40A	Arabsat 2A	Arabsat	Comsat	Jul	9	35781x 35792x 0.0 26.0E
40B	Turksat 1C	Turkey	Comsat	Jul	9	35779x 35794x 0.0 42.0E
41A	GPS 40	USAF	Navsat	Jul	16	20127x 20237x 55.1
42A	UHF F/O F7	USN	Comsat	Jul	25	35784x 35791x 4.9 23.2W
43A	Progress M-32	RKA	Cargo	Jul	31	Deorbited Nov 20, Pacific
44A	Italsat F2	Telesp.	Comsat	Aug	8	35771x 35801x 0.0 13.2E
44B	Telecom 2D	FrTel	Comsat	Aug	8	35771x 35803x 0.2 4.9W
45A	Molniya-1T	MO RF	Comsat	Aug	14	645x 39701x 62.9
46A	ADEOS	NASDA	Earth Obs	Aug	17	799x 800x 98.6
46B	Fuji-Oscar 29	JARL	Comsat	Aug	17	801x 1323x 98.6
47A	Soyuz TM-24	RKA	Spaceship	Aug	17	Docked Mir Aug 19
48A	Zhongxing 7	CTBSC	Comsat	Aug	18	21674x 46499x 26.3
49A	FAST	NASA-GSFC	Research	Aug	21	353x 4163x 83.0
50B	Interbol 2	RKA	Research	Aug	29	791x 19186x 62.8
50C	Magion 5	Czech	Research	Aug	29	804x 19176x 62.8
50A	Microsatelite	Cordoba	Research	Aug	29	239x 1093x 62.8
51A	Kosmos-2333	MO RF	Sigint	Sep	4	845x 855x 71.0
52A	Kosmos-2334	MO RF	Navsat	Sep	5	966x 1011x 82.9
52B	Mexico-Oscar 30	UNAM	Research	Sep	5	966x 1010x 82.9
53A	Inmarsat III F2	Inmarsat	Comsat	Sep	6	35766x 35807x 2.5 15.5W
54A	GE 1	Americom	Comsat	Sep	8	35780x 35793x 0.0 103.0W
55A	Echostar II	Echostar	Comsat	Sep	11	35776x 35795x 0.0 119.0W
56A	GPS 30	USAF	Navsat	Sep	12	20042x 20320x 54.7
57A	Atlantis STS-79	NASA-JSC	Spaceship	Sep	16	Landed KSC Sep 26

57A	ODS	NASA-JSC	Spaceship	Sep 16	Remained attached to OV-104
57A	Spacehab-DM	NASA-JSC	Lab	Sep 16	Remained attached to OV-104
58A	Ekspress No. 12	Informk.	Comsat	Sep 26	35778x 35794x 0.1 80.0E
59A	FSW-2	China	Earth Obs	Oct 20	Landed in China Nov 4
60A	Molniya-3	MSvyazi	Comsat	Oct 24	648x 39709x 62.9
61A	SAC-B	CONAE	Astronomy	Nov 4	487x 555x 38.0
61A	HETE	NASA-GSFC	Astronomy	Nov 4	487x 555x 38.0
62A	Mars Global Surv.	NASA/JPL	Mars probe	Nov 7	En route Mars
63A	Arabsat 2B	Arabsat	Comsat	Nov 13	35785x 35788x 0.0 21.9E
63B	Measat 2	Binariang	Comsat	Nov 13	35781x 35792x 0.0 148.0E
64A	Mars-96	RKA	Mars probe	Nov 16	Reentered Nov 17, Bolivia
65A	Columbia STS-80	NASA-JSC	Spaceship	Nov 19	Landed at KSC Dec 7
66A	Progress M-33	RKA	Cargo	Nov 19	Docked with Mir Nov 22
65B	ORFEUS	DLR	Astronomy	Nov 20	Retrieved Dec 4
67A	Hot Bird 2	Eutelsat	Comsat	Nov 21	35768x 35803x 0.0 13.0E
65C	WSF	NASA/SVEC	Materials	Nov 23	Retrieved Nov 26
68A	Mars Pathfinder	NASA/JPL	Mars Probe	Dec 4	En route Mars
69A	Kosmos-2335	MO RF	Recon	Dec 11	403x 418x 65.0
70A	Inmarsat III F3	Inmarsat	Comsat	Dec 18	35698x 35877x 2.6 157.6E
71A	Kosmos-2336	MO RF	Navsat	Dec 20	979x 1012x 82.9
72A	USA 129	NRO/CIA	Recon	Dec 20	153x 949x 97.9
73A	Bion No.11	RKA	Life Sci	Dec 24	216x 375x 62.8

*국제 명칭(International Designation)은 발사 날짜별로 번호를 부여하여, 번호다음의 알파벳을 같은 발사체로 올려진 위성인데 A는 주위성이고, B, C, D,...는 부 위성을 말한다. 6번째 난은 근지점고도, 원지점고도, 궤도 경사각, 정지위성인 경우는 경도상의 위치, 그리고 위성 상태를 말해주고 있다.

Ⅱ. 위성 제작 회사로 분류

국제 명칭	이름	제작사	위성체
01A	OV-105	Boeing NA	Shuttle
02A	Panamsat 3R	Hughes	HS-601
02B	Measat 1	Hughes	HS-376
03A	Koreasat 2	LMT	Series 3000
01B	Spartan 206	NASA-GSFC	Spartan
04A	Kosmos-2327	Polyot	Parus
05A	Gorizont No. 43	NPO PM	Gorizont
06A	Palapa C-1	Hughes	HS-601
07A	N-STAR b	Loral	FS-1300
–	Intelsat 708	Loral	FS-1300
08A	NEAR	APL	NEAR
09A	Gonets-D1	NPO PM	Strela-3
09B	Gonets-D1	NPO PM	Strela-3
09C	Gonets-D1	NPO PM	Strela-3
09D	Kosmos-2328	NPO PM	Strela-3
09E	Kosmos-2329	NPO PM	Strela-3
09F	Kosmos-2330	NPO PM	Strela-3
10A	Raduga	NPO PM	Raduga
11A	7K-STM No. 72	Energiya	7K-STM
12A	OV-102	Boeing NA	Shuttle
13A	Polar	LMT	GGS
12B	TSS	Alenia	TSS
14A	REX 2	CTA	DSI
15A	Intelsat 707	Loral	FS-1300
16A	Kosmos-2331	Progress	Yantar´
17A	IRS-P3	ISRO	IRS
18A	OV-104	Boeing NA	Shuttle
19A	GPS 33	Boeing NA	GPS
20A	Inmarsat III F1	LMT	Series 4000
21A	Astra 1F	Hughes	HS-601
22A	M-SAT 1	Hughes	HS-601
23A	77KSI No. 174-01	Krunichev	TKS/77KS
24A	MSX	APL	MSX
25A	Kosmos-2332	Progress	Zenit SA
26A	USA	TRW?	Adv. VORTEX?

27A	SAX	Alenia	SAX
28A	Progress No. 231	Energiya	7K-TGM
29A	USA 119	LMA?/NRL?	TLD
29B	USA 120	LMA?/NRL?	Adv NOSS
29C	USA 121	LMA?/NRL?	Adv NOSS
29D	USA 122	LMA?/NRL?	Adv NOSS
29E	USA 123/TIPS	NRL	TIPS
29F	USA 124/TIPS	NRL	TIPS
–	Kosmos	Progress	Yantar´/Kometa
30A	Palapa C-2	Hughes	HS-601
30B	AMOS	IAI	AMOS
31A	MSTI-3	SpectrumAstro	MSTI-3
32A	OV-105	Boeing NA	Shuttle
32B	Spartan 207	NASA-GSFC	Spartan
32C	IAE	JPL/L´Garde	IAE
32D	PAMS STU	NASA-GSFC	STU
33A	Galaxy 9	Hughes	HS-376
34A	Gorizont	NPO PM	Gorizont
–	Cluster F1	Dornier	Cluster
–	Cluster F2	Dornier	Cluster
–	Cluster F3	Dornier	Cluster
–	Cluster F4	Dornier	Cluster
35A	Intelsat 709	Loral	FS-1300
36A	OV-102	Boeing NA	Shuttle
36A	Spacelab		Spacelab
–	Kosmos	Progress	Yantar´
37A	TOMS	TRW	STEP/Eagle
38A	USA 125	Hughes?	SDS II?
39A	Apstar 1A	Hughes	HS-376
40A	Arabsat 2A	Aerospatiale	Spacebus 3000
40B	Turksat 1C	Aerospatiale	Spacebus 2000
41A	GPS 40	Boeing NA	GPS
42A	UHF F7	Hughes	HS-601
43A	Progress No. 232	Energia	7K-TGM
44A	Italsat F2	Alenia	Italsat
44B	Telecom 2D	MMS	Eurostar 2000
45A	Molniya-1T	NPO PM	Molniya
46A	ADEOS	Mitsubishi	ADEOS
46B	JAS 2	JARL	Fuji
47A	7K-STM No. 73	Energiya	7K-STM
48A	Zhongxing 7	Hughes	HS-376
49A	FAST	NASA-GSFC	SMEX
50B	Interbol 2	Lavochkin	SO-M2
50C	Magion 5	Czech	Magion
50A	Microsatelite	Cordoba	Musat
51A	Kosmos-2333	Yuzhnoe	Tselina-2
52A	Kosmos-2334	Polyot	Parus
52B	UNAMSat	UNAM	AMSAT Microsat
53A	Inmarsat III F2	LMT	Series 4000
54A	GE 1	LMT	Series A2100
55A	Echostar II	LMT	Series 7000
56A	GPS 30	Boeing NA	GPS
57A	OV-104	Boeing NA	Shuttle
58A	Ekspress No. 12	NPO PM	Ekspress
59A	FSW-2	China	FSW
60A	Molniya-3	NPO PM	Molniya
61A	SAC-B	INVAP	SAC
61A	HETE	AeroAstro	HETE
62A	MGS	LMA	MGS
63A	Arabsat 2B	Aerospatiale	Spacebus 3000
63B	Measat 2	Hughes	HS-376
64A	Mars-96	Lavochkin	Fobos
65A	OV-102	Boeing NA	Shuttle
66A	Progress No. 233	Energiya	7K-TGM
65B	ORFEUS	MBB	ASTRO-SPAS
67A	Hot Bird 2	MMS	Eurostar 2000
65C	WSF	SII	WSF
68A	MPF	JPL	MPF
69A	Kosmos-2335	Arsenal	US-P
70A	Inmarsat III F3	LMT	Series 4000
71A	Kosmos-2336	Polyot	Parus
72A	USA 128?	Lockheed?	Improved CRYSTAL?
73A	Bion	Progress	Zenit

Ⅲ. 기관에 대한 약자 설명

AeroAstro	AeroAstro, Inc.
Aerospatiale	Aerospatiale, Cannes, France
Arsenal	KB Arsenal
Alenia	Alenia Spazio, Italy
Americom	GE American Communications
APL	Applied Physics Lab, Johns Hopkins Univ., Laurel, MD.
APT	Asia Pacific Telecom, Hong Kong
Arabsat	Arab Satellite Communications Organization
ASI	Agenzia Spaziale Italiano
Binariang	Binariang Sdn. Bhd., Malaysia
BMDO	Ballistic Missile Defense Organization
Boeing-NA	Boeing North American (formerly Rockwell)
CIA	Central Intelligence Agency, USA
CONAE	Comisi´on Nacional de Actividadest Espaciales, Buenos Aires,
Cordoba	Instituto Universitario Aeronautico de Cordoba, Argentina

CTBSC	China Telecom and Broadcasting Satellite Corp
Czech	Czech Republic
Dornier	Dornier Satellitensysteme, Daimler-Benz Aerospace
Echostar	Echostar Communications Corp.
Energiya	RKK Energiya, Kaliningrad
FrTel	France Telecom
Hughes	Hughes Space and Communications, El Segundo
IAI	Israel Aircraft Industries
Informk.	AO Informkosmos
Inmarsat	International Maritime Satellite Organization
INVAP	INVAP S.E., Argentina
ISRO	Indian Space Research Organization
JARL	Japanese Amateur Radio League
JPL	Jet Propulsion Laboratory
KTel	Korea Telecom, S Korea
Lavochkin	NPO Lavochkin, Moskva
L'Garde	L'Garde, Inc.
LMA	Lockheed Martin Astronautics
LMT	Lockheed Martin Telecommunications (formerly Astro Space)
Loral	Space Systems/Loral
MBB	Messerschmitt-Bolkow-Blohm GmBh.
MMS	Matra Marconi Space
MO RF	Ministry of Defense of the Russian Federation
MSvyazi	Ministry of Communications of the Russian Federation
NASA	National Aeronautics and Space Administration, USA
NASA-GSFC	NASA Goddard Space Flight Center, Greenbelt MD.
NASA-JSC	NASA Johnson Space Center, Houston TX.
NASDA	National Space Development Agency, Japan
NII TP	NII Tochnikh Priborov, Moskva.
NPO PM	NPO Prikladnoi Mekhaniki, Krasnoyarsk-26.
NRL	Naval Research Lab
NRO	National Reconnaissance Office
NTT	Nippon Telephone and Telegraph
Panamsat	Panamsat Inc. Greenwich, Connecticut
Polyot	AKO Polyot, Omsk
Progress	TsSKB-Progress, Samara
RKA	Russian Space Agency
Satelindo	PT Satelit Palapa Indonesia
SES	Societe Europeene des Satellites, Luxembourg
SII	Space Industries Inc, Houston, Texas
SVEC	Space Vacuum Epitaxy Center, Houston, Texas
SpectrumAstro	Spectrum Astro, Inc
Telesp.	Nuova Telespazio, Italy
Turkey	Turkish Posts and Telecom Ministry
USAF	United States Air Force
USN	United States Navy
Yuzhnoe	KB Yuzhnoe, Dnepropetrovsk, Ukraine

Ⅳ. 발사체로 분류

발사체의 종류를 나라별과 발사체별로 나열하였고, 총 위성 발사수는 1995년도와 비슷하지만 미국의 델타는 갑자기 증가하였고, 러시아의 소유즈는 매년 감소하는 추세이다.

	발사	실패
US vehicles :		
NASA Space Shuttle	7	0
Lockheed Martin Titan	4	0
Lockheed Martin Atlas	7	0
MDSSC Delta	10	0
OSC Pegasus	5	1*
Russian vehicles :		
TsSKB-Progress Soyuz	12	2
Krunichev Proton	8	2*
Polyot Kosmos	4	0
Other vehicles :		
Arianespace Ariane	10	0
Arianespace Ariane-5	1	1
NASDA H-II	1	0
China Long March	4	2 (1*)
Yuzhnoe Tsiklon	2	0
Yuzhnoe Zenit	1	0
ISRO PSLV	1	0
Total	77	8

* : 실패지만 궤도진입 성공

발사체를 날짜별로 자세하게 살펴보면 다음과 같다.

TsSKB-Progress Soyuz (12)

발사일자	발사체명	발사장소와 발사대번호
Feb 21	Soyuz-U	GIK-5 LC1
Mar 14	Soyuz-U	GIK-1 LC43/4

May 5	Soyuz-U	GIK-5 LC1
May 14	Soyuz-U	GIK-5 LC31
Jun 20	Soyuz-U	GIK-1 LC16
Jul 31	Soyuz-U	GIK-5 LC1
Aug 14	Molniya-M/ML	GIK-1 LC43/3
Aug 17	Soyuz-U	GIK-5 LC1
Aug 29	Molniya-M/2BL	GIK-1 LC43/3
Oct 24	Molniya-M/ML	GIK-1 LC43/4
Nov 19	Soyuz-U	GIK-5 LC1
Dec 24	Soyuz-U	GIK-1 LC43/4

McDonnell Douglas Delta (10)

Jan 14 Delta 231	Delta 7925	CC LC17B
Feb 17 Delta 232	Delta 7925-8	CC LC17B
Feb 24 Delta 233	Delta 7925	V SLC2W
Mar 28 Delta 234	Delta 7925	CC LC17A
Apr 24 Delta 235	Delta 7920-10	V SLC2W
May 24 Delta 236	Delta 7925	CC LC17B
Jul 16 Delta 237	Delta 7925A	CC LC17A
Sep 12 Delta 238	Delta 7925A	CC LC17A
Nov 7 Delta 239	Delta 7925A	CC LC17A
Dec 4 Delta 240	Delta 7925A	CC LC17B

Arianespace Ariane (10)

Jan 12 V82	Ariane 44L	CSG ELA2
Feb 5 V83	Ariane 44P	CSG ELA2
Mar 14 V84	Ariane 44LP	CSG ELA2
Apr 20 V85	Ariane 42P	CSG ELA2
May 16 V86	Ariane 44L	CSG ELA2
Jun 15 V87	Ariane 44P	CSG ELA2
Jul 9 V89	Ariane 44L	CSG ELA2
Aug 8 V90	Ariane 44L	CSG ELA2
Sep 11 V91	Ariane 42P	CSG ELA2
Nov 13 V92	Ariane 44L	CSG ELA2

Krunichev Proton (8)

Jan 25	Proton-K/DM2	GIK-5 LC200L
Feb 19	Proton-K/DM2	GIK-5 LC200L
Apr 8 390-01/DM3 1L	Proton-AST/DM3	GIK-5 LC81L
Apr 23	Proton-K	GIK-5 LC81L
May 25 DM2 100L	Proton-K/DM2	GIK-5 LC200L
Sep 6	Proton-K/DM1	GIK-5 LC81L
Sep 26	Proton-K/DM2M	GIK-5 LC200L
Nov 16	Proton-K/D2	GIK-5 LC200L

NASA Space Shuttle (7)

Jan 11 STS-72	Shuttle	KSC LC39B
Feb 22 STS-75	Shuttle	KSC LC39B
Mar 22 STS-76	Shuttle	KSC LC39B
May 19 STS-77	Shuttle	KSC LC39B
Jun 20 STS-78	Shuttle	KSC LC39B
Sep 16 STS-79	Shuttle	KSC LC39A
Nov 19 STS-80	Shuttle	KSC LC39B

Lockheed Martin Atlas (7)

Feb 1 AC-126	Atlas IIAS	CC LC36B
Apr 3 AC-122	Atlas IIA	CC LC36A
Apr 30 AC-78	Atlas I	CC LC36B
Jul 25 AC-125	Atlas II	CC LC36A
Sep 8 AC-123	Atlas IIA	CC LC36B
Nov 21 AC-124	Atlas IIA	CC LC36A
Dec 17 AC-129	Atlas IIA	CC LC36A

Orbital Sciences Pegasus (5)

Mar 9	Pegasus XL	V RW30/12
May 17	Pegasus	V RW30/12
Jul 2	Pegasus XL	V RW30/12
Aug 21	Pegasus XL	V RW30/12
Nov 4	Pegasus XL	WI

Lockheed Martin Titan (4)

Apr 24 K-16	Titan 401	CC LC41
May 12 K-22	Titan 403	V SLC4E
Jul 3 K-2	Titan 404	CC LC40
Dec 20 K-13	TItan 403	V SLC4E

Polyot Kosmos-3M (4)

Jan 16	Kosmos-3M	GIK-1 LC132/1
Apr 24	Kosmos-3M	GIK-1 LC132/1
Sep 5	Kosmos-3M	GIK-1 LC132/1
Dec 20	Kosmos-3M	GIK-1 LC132

Chinese Chang Zheng (4)

Feb 14	CZ-3B	Xichang LC2
Jul 3	CZ-3	Xichang LC1
Aug 18	CZ-3	Xichang LC1
Oct 20	CZ-2D	Jiuquan

Yuzhnoe Tsiklon (2)

Feb 19	Tsiklon-3	GIK-1 LC32/1
Dec 11	Tsiklon-2	GIK-5 LC90L

Arianespace Ariane 5 (1)

jun 4 V88	Ariane 5	CSG ELA3

Yuzhnoe Zenit-2 (1)

Sep 4	Zenit-2	GIK-5 LC45L
ISRO Polar Satellite Launch Vehicle (1)		
Mar 21 PSLV-D3	PSLV	Sriharikota
NASDA H-II (1)		
Aug 17 4F	H-II	Tanegashima

筆者紹介

최 규 홍

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