International Council of Scientific Unions

SPECIAL COMMITTEE
ON
SOLAR-TERRESTRIAL PHYSICS

76-10

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INTERNATIONAL MAGNETOSPHERIC STUDY
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IMS NEWSLETTER

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TIMSCIE Office business and competing time demands have both increased with summer's end. Many respondents have provided information about 1977 campaigns which are now being introduced in the IMS Newsletter through the Planning Calendar for First-Half 1977. Meetings are scheduled this month with P. Simon, J. Vette, N. Dyer, J. Roederer, A. Shapley and others to discuss the continuing, growing role of the TIMSCIE Office and how we may better assist IMS participants through these NLs. Suggestions are always welcome. ---JHA

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PROGRAM PLANS FOR OCTOBER 1976

SPECIAL IMS PERIODS None selected in October, 1976 International Geophysical Calendar gives other days.

GBR Campaigns: (numbers refer to program details in IMS Bulletin No 2 or in references in these NLs)

----------Phenomena-related Campaigns----------

--- to Oct 2; A-24; Goldberg; Poker Flat; Rockets (3) - High altitude launches, complex program
--- to Oct 2; A-25; Hilsenrath; Poker Flat; Rockets (3) - Low alt, coordinated with A-24 above
--- to Oct 2; A-26; Barcus; Poker Flat; Balloons (4) - Coordinated with A-24 above
*Oct 1 to Nov 30; #0400; Fitz; Poker Flat; Rocket - Talos-Castor ballistic test
Oct 1 to Dec 31; #0531, et al; Lazutin, et al; Kiruna (ESRANGE); Balloons-Possible rescheduled SAMBO 1B
Oct 1 to Dec 31; #0332; DeMendonca; Sao Paulo; Balloons (13) - X-rays, gamma rays, UV, joint program

------Quasi-synoptic Observations involving Balloons, Rockets, Aircraft, Selected Surface Campaigns------

Oct 1...31; #0458; Charakchyan; Mirny, Murmansk, Moscow, Alma Ata; Balloons - daily launch, cosmic rays

----------Observing Plans for Temporary Surface Stations----------

--- to Oct 31; See NL's 76-8 & 9 for lists of Japanese Ground Based IMS Observations, July to Oct 1976 (we have not received full information on Surface campaigns)

Notes on Program Plans for October 1976
* marks new or changed information from NL 76-9
Information on launch schedules may come directly from participants, from national reports supplied by IMS Coordinators, from the European Regional Office or range lists, we use the most recent information in case of conflicts. Programs are referred to by IMS # or TIMSCIE # and/or project name/#. See planning calendar for 2nd half 1976 on page 7.

SAMBO-1B: a note distributed by the Secretariat of ESA's Programme Advisory Committee on the Special Project Concerning the Launching of Sounding Rockets lists a multi-country balloon program from Kiruna (ESRANGE) during Oct-Dec 1976, as "Under Consideration". Countries/agencies planning this program are: USSR/IZMIRAN; Austria/THG; France/CESR; and Sweden/KTH,SSC. Earlier SAMBO program was in NL 76-2 (pg 2), new details will be given as available.

PROGRAM PLANS FOR NOVEMBER 1976

SPECIAL IMS PERIODS --- Nov 26, 1100 UT to Nov 26, 2300 UT IMP-H, Hawkeye 1 - Magnetopause

GBR Campaigns: (numbers refer to program details in IMS Bulletin No 2 or in references in these NLs)

----------Phenomena-related Campaigns----------

--- to Dec 31; #0531, et al; Lazutin, et al; Kiruna (ESRANGE); Balloons (14) - Rescheduled SAMBO 1B
--- to Dec 31; #0332; DeMendonca; Sao Paulo; Balloons (13) - X-rays, gamma rays, UV, joint program
--- to Nov 30; #0400; Fitz; Poker Flat; Rocket- Talos-Castor ballistic test
Nov 5 to Nov 30; #0400; Fitz; Poker Flat; Rockets (4)- high latitude scintillation studies coord satel.
Nov 10 to Dec 20; #0474; Rees, et al; Andoya; Rockets (2) - Coordinated launches and ground, see below
Nov 10 to Dec 20; #0152; Bryant, et al; Andoya; Rockets (2) - Coordinated launches, see below
Nov 26 to Dec 6; #0522; Truttse; Moscow Region; Aircraft - Oxygen emissions, H- , Nitrogen, other spectra

------Quasi-synoptic Observations involving Balloons, Rockets, Aircraft, Selected Surface Campaigns------

Nov 1...30; #0458; Charakchyan; Mirny, Murmansk, Moscow, Alma Ata; Balloons - daily launch, cosmic rays

----------Observing Plans for Temporary Surface Stations----------

No Ground-based Campaign announcements for November 1976; however, see NL 76-8, p. 5 and 76-9, p. 3.

Notes on Program Plans for November 1976
* marks new or changed information from NL 76-9
Refined Times of Special IMS Periods for November. Start and end times of the periods listed above and in the SCOSTEP Special Announcement shift a few hours as a result of recomputations given in the IMS Satellite Situation Center Report No. 6 (pg 14) by Vette. Refined UT times are (changed times are underlined): Nov 26 1100 to Nov 26 2400.

#0400; Fitz, DNA, will launch 4 rockets from Poker Flat to measure $\Delta N\bar{e}/N\bar{e}$ in scintillation study at high latitude. Coordinated with "Wideband" satellite/Fremouw, SRI, (see IMS NL 76-7, pg 4).

#0474; Rees is Project Scientist for launches SL 1425 and F5, both part of the 1st High Latitude Campaign. They are a Skylark 12 to 700 km alt and a Fulmar to 260 km. Purpose of the coordinated launches is to study the energetic input to the thermosphere during a geomag. substorm and subsequent thermal and dynamic response of the thermosphere. Experimenters and their projects on the Skylark are: Rees (0474), vector magnetic field in auroral ionosphere; Rees/Maynard (0025), DC to 100 khz electric field; Rees/Thomas (0449), neutral wind profile; Maehlum, e- and p+ @ 20ev - 1 kev; Bryant (0152), e- @ 0.5-25 kev; and Johnstone (0450), e- dens and temp. For the Fulmar they are: Rees, interferometer meas of wind velocity by laser illuminated Na Li release; Theile (0308)/Rees, vector mag fields. Launch conditions will be at night, clear sky, new moon, negative bay magnetic disturbance of greater than 500 . F5 to be launched 1-2 hrs after SL 1425. Ground instrumentation includes magnetometer, riometer, photometer, all-sky cam, TV system, Fabry-Perot interfer (wind and temp).

#0152; Bryant is Project Scientist for "Local Acceleration of Particles" project. Two launches will coordinate observations from Skylark SL 1422 and Flamenco (Fulmar) F2, high-alt, low-alt pair. The objective is to seek direct evidence for local acceleration of auroral particles, and wave-particle interactions in an auroral arc. Experimenters and projects are: Bryant(0152), e- and p+ greater than 500 ev; Johnstone (0450), e- and p+ less than 500 ev, e- dens and temp; Rothwell (0114), energetic + ions; Martelli (A-23), electrostatic waves 20 kHz-4 MHz. Bryant and Martelli will have e- and p+ (>500 ev) and electrostatic wave detectors on the Flamenco. Ground support will include TV and still cameras. Launches will be into single or multiple auroral arcs under the flight trajectory and will coincide with overhead passage of the DMSP satellite, if possible.

#0522; Truttse will resume flights from the Moscow region to cover range from 50-72 deg N. Flight times will be from 2200-0600 LT. Measurements will be of Oxygen emissions at 6300 and 5577 A, H-alpha at 6563 A, Nitrogen at 4278 A and will include several wide spectra.

SPECIAL IMS PERIODS

Dec 3, 0800 UT to Dec 3, 2000 UT	IMP-J, Vela 5B, Vela 6A, Vela 6B - Magnetopause
Dec 6, 0600 UT to Dec 8, 1800 UT	IMP-H, Vela 5B, Vela 6B - Neutral Sheet
Dec 30, 0200 UT to Dec 31, 1300 UT	Hawkeye 1 - Cusp; Vela 5B, Vela 6A - Neutral Sheet

GBR Campaigns: (numbers refer to program details in IMS Bulletin No 2 or in references in these NLs)

----------Phenomena-related Campaigns----------

--- to Dec 6; #0522; Truttse; Moscow Region; Aircraft- Oxygen emissions, H- , Nitrogen, other spectra
--- to Dec 20; #0474; Rees, et al; Andoya; Rockets (2) - Coordinated launches, see Nov note
--- to Dec 20; #0152; Bryant, et al; Andoya; Rockets (2) - Coordinated launches, see Nov note
--- to Dec 31; #0531, et al; Lazutin, et al; Kiruna (ESRANGE); Balloons (14) - Rescheduled SAMBO 1B
--- to Dec 31; #0332; DeMendonca; Sao Paulo; Balloons (13) - X-rays, gamma rays, UV, joint program
Dec 25 to Jan 7; #0522; Truttse; Moscow Region; Aircraft- Oxygen emissions, H- , Nitrogen, other spectra

------Quasi-synoptic observations involving Balloons, Rockets, Aircraft, Selected Surface Campaigns------

Dec 1...31; #0450; Charakchyan; Mirny, Murmansk, Moscow, Alma Ata; Balloons - daily launch, cosmic rays

----------Observing Plans for Temporary Surface Stations----------

No Ground-based Campaign announcements for December 1976 (see NLs 76-8&9.

Notes on Program Plans for December 1976

Refined Times of Special IMS Periods for December. Start and end times of the periods listed above and in the SCOSTEP Special Announcement shift a few hours as a result of recomputations given in the IMS Satellite Situation Center Report No. 6, pg 14, by Vette. Refined UT times are (changed times are underlined): Dec 3 0700 to Dec 3 2300, Dec 6 0600 to Dec 8 1400, Dec 30 0100 to Dec 31 1400.

TIMSCIE/IMSCIE?

A.H. Shapley informs us on behalf WDC-A that it will be possible to continue the basic support of (T)IMSCIE Office through 1979. Approval came as result of request from Dr. F.S. Johnson, Pres SCOSTEP, submitted via the US-IMS Coordination Office to Dr. R.M. White, Administrator NOAA. Approval from Dr. White and Dr. Austin, Dir NOAA Environmental Data Service, stated that every effort would be made to continue the IMSCIE operation through the IMS. It was noted that this continuation depends partly on scientific personnel being supplied by the IMS participating countries and may require some assistance from other US agencies through the ICAS-IMS Panel. Several countries have expressed interest in sending a scientist to IMSCIE and Dr. J. Roederer is following-up this effort. Dr. R.H. Manka is working with US agencies on the possibility of supplying personnel in early 1977 until other scientists arrive.

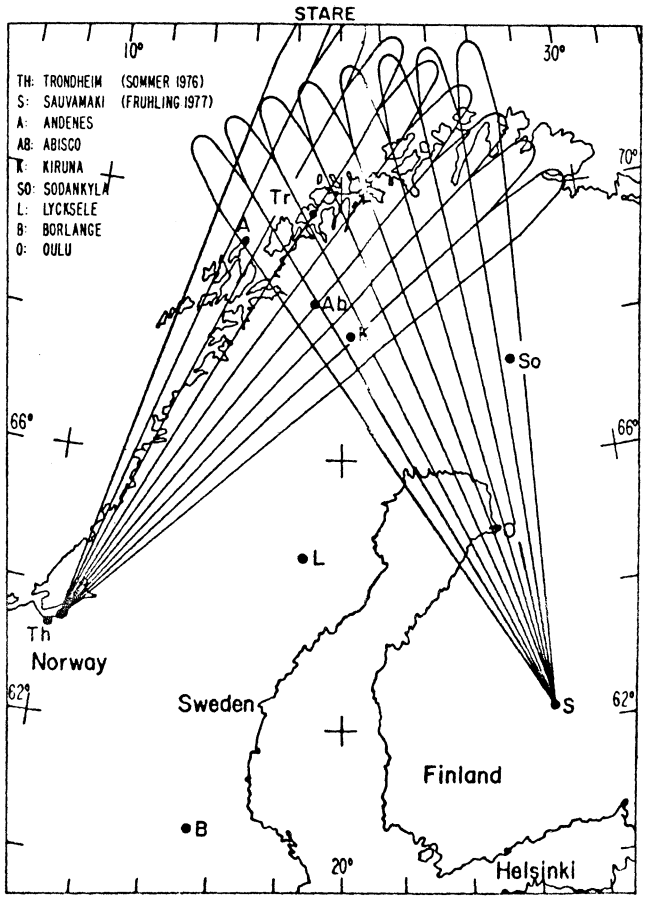
IMS Research Proposal --- Dr Y. Kamide, NOAA, D-64, Boulder, Colorado 80302, USA, has shared with TIMSCIE Office a proposal to utilize IMS Meridian Chain data from US and Canadian magnetometer chains and IMS satellites. Topics of interest are: quiet time variations, field-aligned currents, E-fields, O, j and ground magnetic variations, aurora distribution and electrojets, auroral particle precip, B-changes in magnetotail and particle changes in magnetotail during substorms. He requests correspondence from those interested in these topics, particularly anyone having data from European or Russian meridian chains.

Announcement of European IMS-Workshop. The Finnish Meteorological Inst announces a Regional IMS-Workshop devoted to the Ground Based Observations in N. Europe, to be held May 23-27, 1977 at Hankasalmi, Finland. Suggestions about the scientific programme are to be sent to a member of the organizing committee before Oct 15. Organizing Committee: W. Heikkila, Chairman , R. Greenwald, B. Hultquist. Provisional registration can be sent to the local organizer, R. Pellinen, Finnish Meteorological Inst, Div of Geomagnetism, Box 503, SF-00101 Helsinki 10, Finland.

New Actualities --- IISN programme at St Santin, Nancay, Manpazier and Mende: June 22, 0300 to 24, 1900 UT (gravity waves); July 20, 0300 to 22, 1900 UT (E-field on 20th, Tide on 21st, gravity waves on 22nd); August 10, 0300 to 12, 1900 UT (10, E-fields, high resolution; 11, F1 layer; 12, Plasma lines). No data at Mende from 11 Aug 1600 to end.

New IMS Program Operational

STARE backscatter radar (A-26) began oper 13 Aug at Trondheim, see below. Continuously records amplitude and radial Doppler vel of electrojet current associated e- density irregularities in 3x 10 km area over N. Scandinavia. Coop studies with IMS satellites or rocket experiments from Andenes or ESRANGE of interest. On-line communication of radar aurora conditions in range areas possible via telephone from either STARE site. Finland unit to be operational by end Nov. Contact R. Greenwald, MPI Aeronomie, 3411 Katlenburg/Lindau, FRG.



SOLRAD 11 A&B Orbit Information --- The tables of values below and continued on page 6 were supplied by Dr. J. Vette, IMS Satellite Situation Center. They provide times of magnetospheric boundary crossings and intervals within specified magnetospheric regions for the SOLRAD 11 A&B satellites during the rest of 1976. Days marked by an * are those designated as Special IMS Intervals by the IMS Steering Committee.

Tables such as the following and plots of satellite orbits relative to regions of the magnetosphere, as discussed below and shown on page 5, provide a basis for the identification of observational intervals when the quality of satellite data coverage will be optimal. The SSC is preparing such information for satellites of interest to 7 during 1977 so that special intervals may selected in the near future. For further information, contact J. Vette, WDC-A Rockets & Satellites Goddard Space Flight Center Code 601, Greenbelt, Maryland 20771, USA.

SOLRAD 11A & 11B
TIMES OF INTEREST FOR MAGNETOSPHERIC OBSERVATIONS
DURING OCTOBER - DECEMBER 1976

Bow Shock Crossings Day 275 (Oct 1) - Day 366 (Dec 31), 1976				Magnetopause Crossings Day 275 (Oct 1) - Day 366 (Dec 31), 1976			
SOLRAD 11A		SOLRAD 11B		SOLRAD 11A		SOLRAD 11B	
Day/Hr	Day/Hr	Day/Hr	Day/Hr	Day/Hr	Day/Hr	Day/Hr	Day/Hr
	321/10.49	275/11.58	322/00.48	275/13.30	322/01.80	275/00.09	321/13.06
278/01.39	324/13.71	277/12.25	324/01.70	277/13.83	324/02.21	278/03.74	324/17.00
280/01.88	326/14.65	280/15.66	327/04.50	280/17.36	327/06.05	280/04.15	326/17.11
283/05.86	329/17.75	282/16.31	329/05.78	282/17.81	329/06.35	283/07.84	329/21.15
285/05.89	331/18.69*	285/19.68	332/08.75	285/21.35	332/10.05	285/08.21	331/21.40*
288/09.35	334/21.91	287/20.46	334/09.98	287/21.85	334/10.48	288/11.92	335/01.26
290/10.00	336/22.79	290/23.80	337/12.91	291/01.39	337/14.12	290/12.34	337/01.52
293/13.42	340/01.96	293/00.70	339/14.10	293/01.88	339/14.50	293/16.09	340/05.41
295/14.17	342/02.81*	296/03.86	342/16.99*	296/05.57	342/18.19*	295/16.39	342/05.59*
298/17.36	345/05.95	298/04.86	344/18.20	298/05.89	344/18.53	298/20.35	345/09.51
300/18.15	347/06.89	301/08.00	347/21.09	301/09.60	347/22.21	300/20.62	347/09.73
303/21.56	350/10.05	303/09.01	349/22.42	303/10.09	349/22.62	304/00.41	350/13.64
305/22.26	352/11.12	306/12.21	352/01.26	306/13.64	353/02.39	306/00.78	352/13.83
309/01.63	355/14.05	308/13.15	355/02.70	308/14.12	355/02.61	309/04.55	355/17.97
311/02.28	357/15.17	311/16.28	358/05.33	311/17.71	358/06.54	311/04.84	357/17.98
314/05.61	360/18.20	313/17.24	360/06.79	313/18.13	360/06.80	314/08.65	360/22.07
316/06.32	362/19.32	316/20.33	363/09.58	316/21.72	363/10.57	316/08.93	362/22.21
319/09.65	365/23.34*	318/21.42	365/10.97*	318/22.20	365/10.90*	319/12.75	366/02.20*

IMS Satellite Situation Centre Services --- Plots of satellite orbits relative to magnetospheric features. The SSC can provide, on request, 7 types of graphs giving information about the orbit positions of high-altitude satellites in relation to such magnetospheric features as: bow shock, magnetopause and neutral sheet. An example of the type (1), showing the bow shock, magnetopause and SOLRAD 11-A&B orbits in the geocentric solar ecliptic in an X-Y projection was printed in IMS NL 76-6, pg 5. Such a plot will be for different intervals of time depending upon the satellites displayed. Graphs of satellites relative to these boundaries (S = distance from bow shock, P = distance from magnetopause) are also shown in figures (2) and (3) for the Moon and IMPs J & H. These standard plots always cover a 1-day interval. In (2) the satellite moves along the zero-distance abscissa and distance to either boundary at a given time is measured to the appropriate S or P curve. Negative distances are on the convex side of the surface, e.g. the satellite is outside the shock or magnetopause. Type (3) shows the solar ecliptic longitude and latitude of each satellite and, taken with the other two graphs, completes a 3-dimensional display of satellite/boundary information.

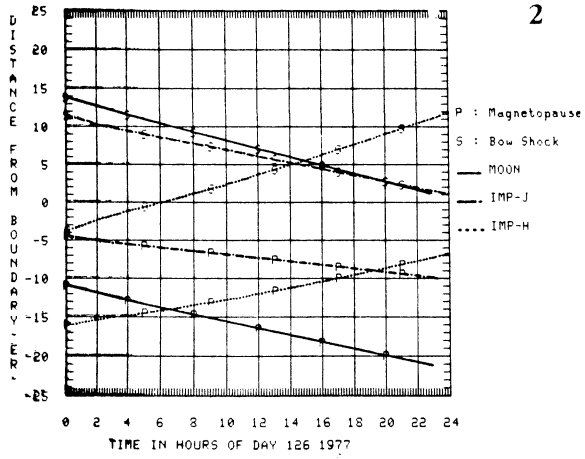
Neutral Sheet Plots (graphs (4) and (5)) are similar to the Boundary Plots just described and also cover 1-day periods. The Neutral Sheet region is defined as within ± 2 earth radii (Re) of the nominal neutral sheet, while the Mid-Latitude Tail region is 2 to 6 Re above and below the neutral sheet position. The High-Latitude Tail region is greater than 6 Re above and below the neutral sheet position. Only the upper Mid- and High-Latitude regions are labelled. The geocentric solar magnetospheric (GSM) X and Y coordinates are given in (5); however, the X coordinate for the moon is not shown since the scale only covered between ± 40 Re. The scale range could have been extended to 65 Re if required.

High-latitude satellites such as Hawkeye 1 and Prognoz 4 are also shown in a magnetic latitude - magnetic local time rectangular coordinate system as given in (6). The nominal cusp or cleft is shown by the dotted lines. The time covered by a single plot depends on the satellites displayed; for Hawkeye 1 it is approximately 2 days.

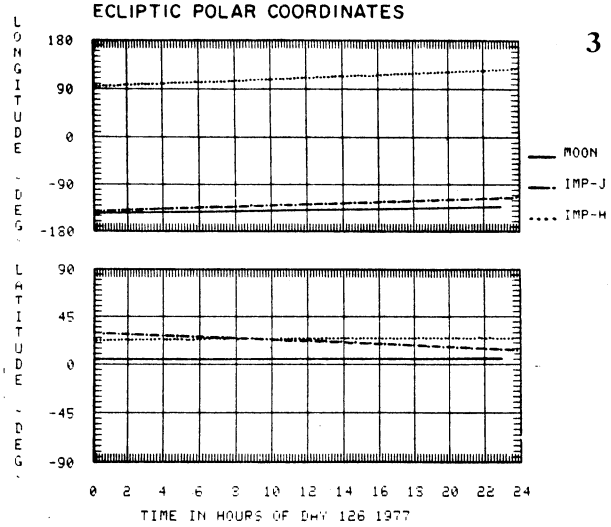
The final type of standard plot is the bar chart shown in (7). The 3-letter mnemonics used for different regions of space are: INP = interplanetary, SHE = magnetosheath, SPH = magnetosphere and TAL = magnetotail. For satellites in INP, the distance from the bow shock is given with a negative distance denoted by r. Distances are also given in the TAL as distances from the neutral sheet. The next line of numbers give the solar ecliptic latitude except when a high-latitude satellite such as Hawkeye 1 is shown, the solar magnetic (geomagnetic) latitude is used. The bottom line is the solar ecliptic local time except for Hawkeye where magnetic local time is employed. A bow shock or magnetopause crossing is indicated by an S or P above the box for the satellite at the crossing time.

For the first 6 months of 1977 all the standard plots for the Moon, IMPs H&J, Vela 5B, Hawkeye 1 and SOLRAD 11-A&B are available on 35mm film. For all plots which have time for the abscissa (all but (6) shown here), the image size on 35mm film is 1 1/3 cm/day or 0.555 mm/hour which conforms to the IMS standard of a magnification of 1/18 and a hard copy scale 1 cm/hr. We make no distinction between copies made with lenses having 1:18 or 1:18.25 magnifications.

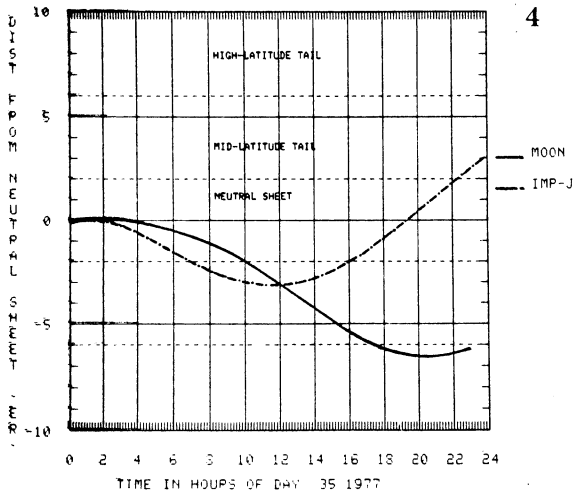
BOUNDARY PLOT
SAT ID: MOON IMP-J IMP-H



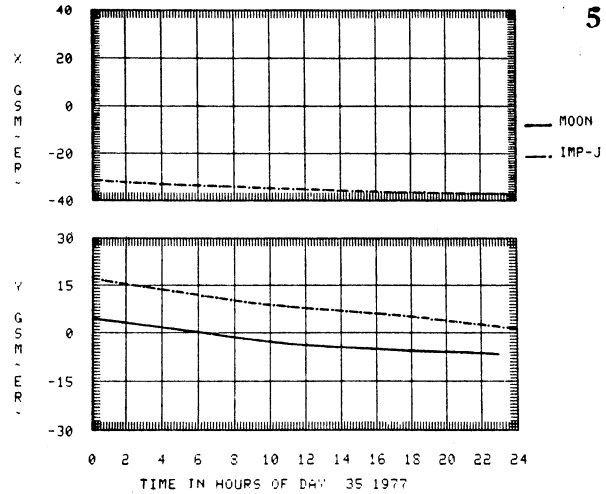
BOUNDARY PLOT
SAT ID: MOON IMP-J IMP-H
ECLIPTIC POLAR COORDINATES



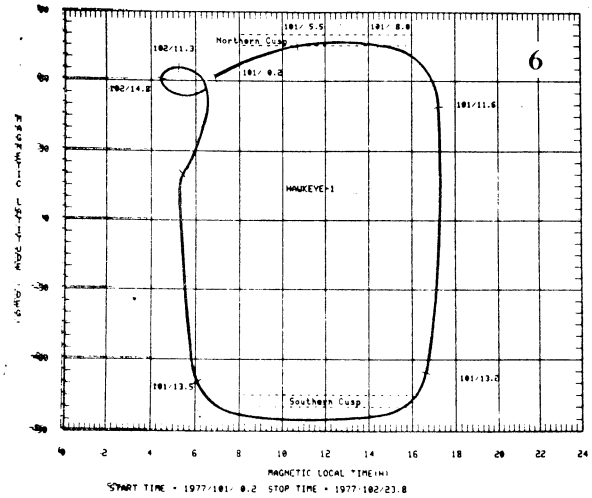
NEUTRAL SHEET PLOT
SAT ID: MOON IMP-J



NEUTRAL SHEET PLOT
SAT ID: MOON IMP-J
GSM CARTESIAN COORDINATES



MAGNETIC LATITUDE-MAGNETIC LOCAL TIME PROJECTION



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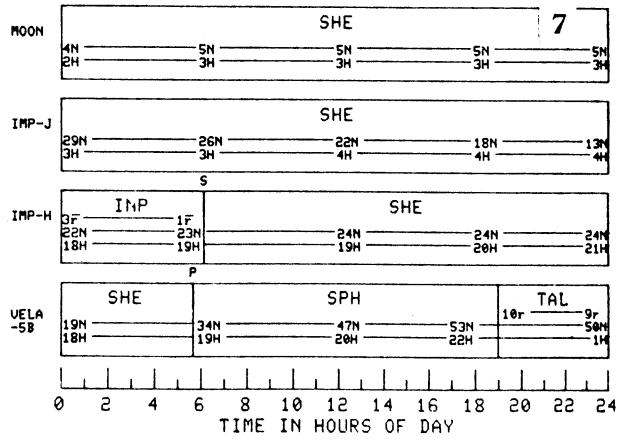


(GOLRAD 11 nab tables continued from page 4)

High-Latitude Magnetotail Passes
Day 275 (Oct 1) - Day 366 (Dec 31), 1976

SOLRAD 11A				SOLRAD 11B			
ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr
275/18.00	275/20.18	318/03.72	318/17.07	278/07.97	278/18.09	316/00.42	316/05.03
277/03.34	277/10.03	323/05.85	323/14.62	283/11.98	283/18.69	321/01.15	321/09.04
282/04.40	282/14.02	329/00.42	329/02.06	285/01.34	285/04.05	326/01.89	326/13.04
286/08.14	286/13.15	334/01.06	334/06.07	288/15.99	288/18.95	331/02.78	331/16.68*
287/06.26	287/15.22	339/01.59	339/11.00	290/02.05	290/08.06	336/04.00	336/14.92
291/06.33	291/15.69	344/02.07	344/15.00	295/02.94	295/12.06	342/01.42	342/02.00*
296/09.97	296/16.76	349/02.33	349/14.88	300/04.32	300/17.00	347/01.97	347/06.01
298/00.16	298/02.02	354/01.87	354/13.25	304/09.79	304/11.92	352/02.38	352/10.02
301/13.97	301/17.22	358/23.16	359/09.20	305/06.76	305/14.70	355/22.92	356/03.04
303/00.86	303/06.04	363/21.23	364/06.08	309/08.96	309/14.47	357/02.63	357/14.03
308/01.60	308/10.05	365/03.94	365/07.03*	310/23.70	311/01.02	361/02.93	361/03.93
313/02.50	313/14.05			314/12.97	314/15.26	362/02.35	362/13.55

Mid-Latitude Magnetotail Passes
Day 275 (Oct 1) - Day 366 (Dec 31), 1976

SOLRAD 11A				SOLRAD 11B			
ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr
275/20.18	276/15.86	318/17.07	318/18.05			315/02.14	316/00.42
276/23.48	277/03.34	322/05.99	322/16.70			319/16.98	319/19.32
280/21.94	281/18.71	322/21.98	323/05.85			320/17.37	321/01.15
282/00.23	282/04.40	323/14.62	323/22.06	278/18.09	278/22.88	325/19.39	326/01.89
286/01.95	286/08.14	327/10.92	327/17.16	279/06.09	280/00.05	330/01.93	330/02.32
286/13.15	286/19.00	327/21.87	329/00.42	283/18.69	283/23.55	330/20.01	331/02.78
287/01.12	287/06.26	332/14.92	332/17.16	284/20.37	285/01.34	331/16.68	331/17.06*
287/15.22	287/18.03	332/21.38	334/01.06	288/18.95	289/00.11	335/08.19	335/13.97
291/05.96	291/06.33	337/20.73	338/10.34*	289/21.67	290/02.05	335/20.02	336/04.00
291/15.69	291/20.67	338/12.09	339/01.59*	293/20.93	294/00.52	336/14.92	336/21.0[illegible]
292/02.27	292/22.03	342/22.94	343/06.50*	294/03.19	294/15.12	340/09.96	340/14.77
296/16.76	296/21.14	343/17.03	344/02.07	294/22.50	295/02.94	340/19.73	342/01.42*
297/04.46	298/00.16	348/02.94	348/06.20	299/01.84	299/17.76	345/13.96	345/14.89
301/17.22	301/21.34	348/17.51	349/02.33	299/23.44	300/04.32	345/19.25	347/01.97
302/17.74	303/00.86	349/14.88	349/19.00	304/04.95	304/09.79	350/18.70	352/02.38
306/17.97	306/21.21	353/17.39	354/01.87	304/11.92	304/18.78	356/03.04	357/02.63
307/20.23	308/01.60	354/13.25	354/23.00	305/00.19	305/06.76	361/03.93	361/09.37
312/07.97	312/12.16	358/17.03	358/23.16	305/14.70	305/21.01	361/14.73	362/02.35
312/21.23	313/02.50	359/09.20	360/03.02	309/14.47	309/19.30	362/13.55	362/18.05
317/05.76	317/05.63	363/16.56	363/21.23	310/00.96	310/23.70	366/06.94	366/08.98*
317/21.80	318/03.72	364/06.08	365/03.94*	314/15.26	314/19.46	366/14.96	366/24.00

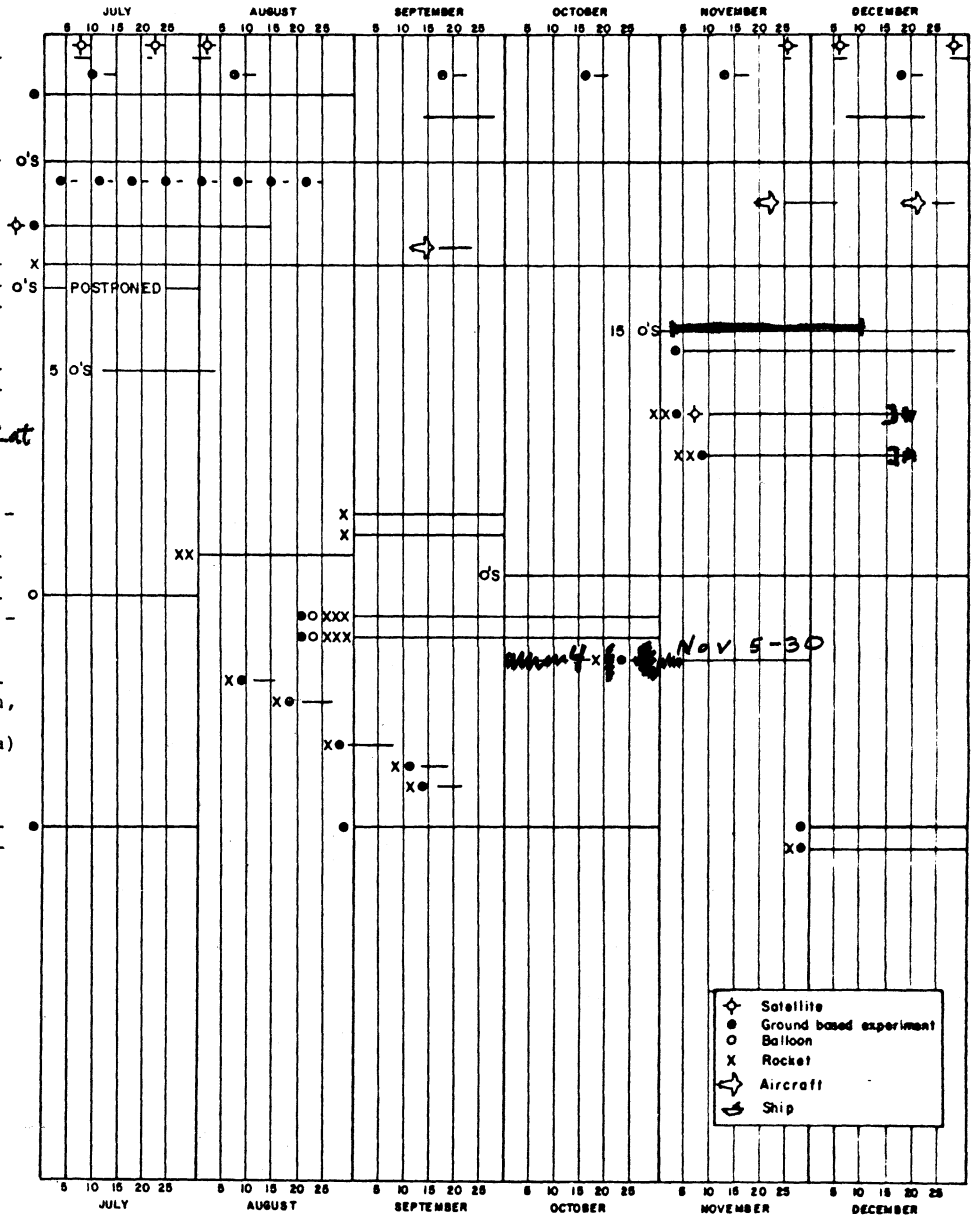
Neutral Sheet Passes
Day 275 (Oct 1) - Day 366 (Dec 31), 1976

SOLRAD 11A				SOLRAD 11B			
ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr	ENTRY Day/Hr	EXIT Day/Hr
276/15.86	276/23.48	322/16.70	322/21.98			319/19.32	320/17.37
281/18.71	282/00.23	327/17.16	327/21.87	278/22.88	279/06.09	324/21.97	325/19.39
286/19.00	287/01.12	332/17.16	332/21.38	283/23.55	284/20.37	330/02.32	330/20.01
291/20.67	292/02.27	337/18.93	337/20.73	289/00.11	289/21.67	335/05.94	335/08.19
296/21.14	297/04.46	338/10.34	338/12.09*	294/00.52	294/03.19	335/13.97	335/20.02
301/21.34	302/17.74	343/06.50	343/17.03*	294/15.12	294/22.50	340/14.77	340/19.73
306/21.21	307/20.23	348/06.20	348/17.51	299/00.94	299/01.84	345/14.89	345/19.25
311/21.98	312/07.97	353/06.96	353/17.39	299/17.76	299/23.44	350/17.97	350/18.70
312/12.16	312/21.23	358/10.96	358/17.03	304/18.78	305/00.19	361/09.37	361/14.73
317/01.98	317/05.76	363/14.97	363/16.56	309/19.30	310/00.96	366/08.98	366/14.96*
317/05.63	317/21.80			314/19.46	315/02.14		

Who's Who Around Boulder? Timscie is a small part of the Boulder science scene. The alphabet soup of acronyms may confuse readers as some staff wear several "hats" and their names are associated with different roles. NGSDC is NOAA's National Geophysical & Solar-Terrestrial Data Center which includes staff and facilities of WDC-A for STP. Alan Shapley, an old IGY hand, is our Director. J. Virginia Lincoln heades WDC-A for STP with its many publications and services. For special WDC activities (TIMSCIE and IMS data) our Data Studies Div takes responsibility (under JHA). More later.

IMS CALENDAR OF GBR CAMPAIGNS JULY - DECEMBER 1976
(As of 29 September 1976)

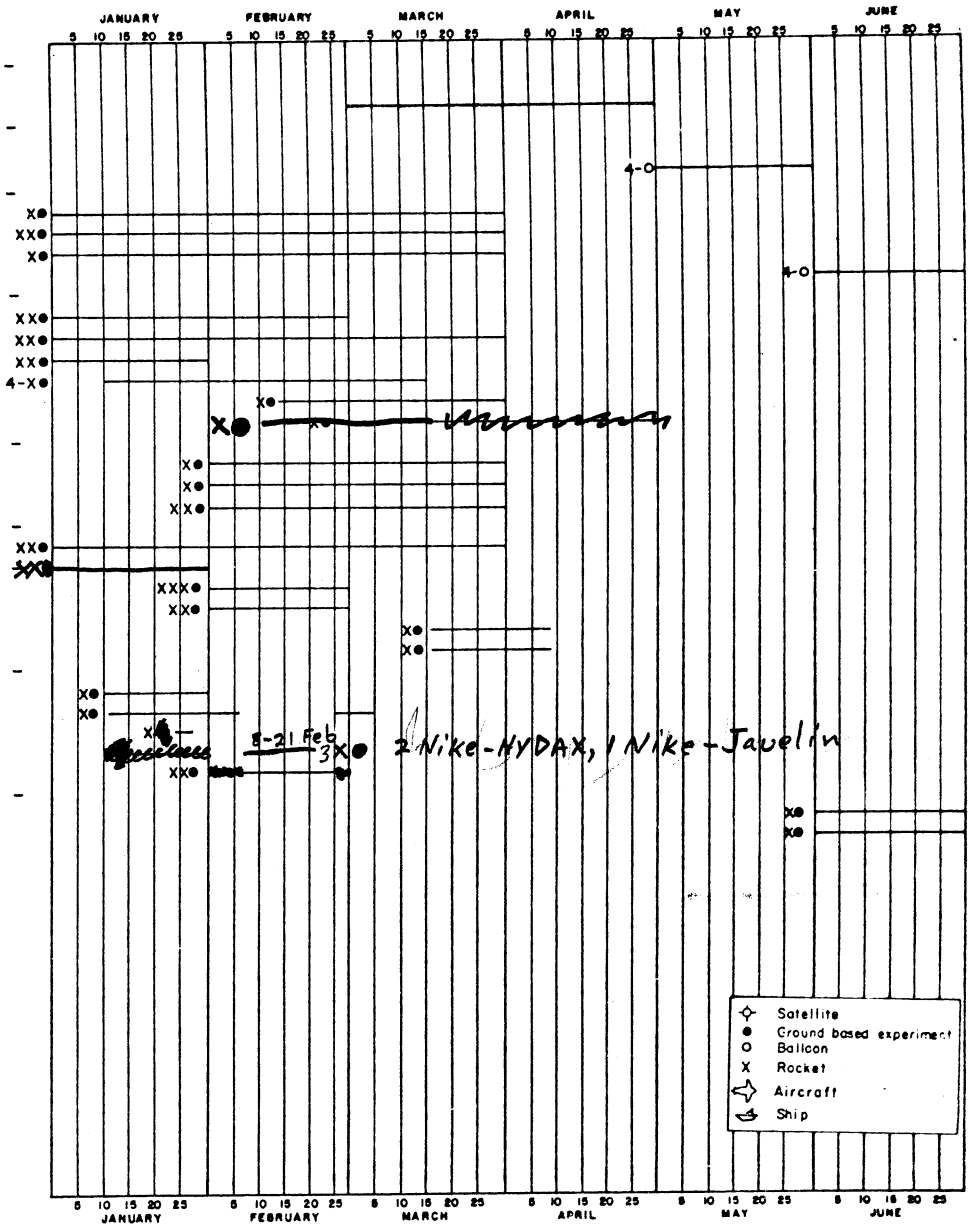
WORLD-WIDE Special IMS Periods (SSC, Vette)- - - - - - - - -
IISN (Bauer, et al)
IPPDYP (Carpenter, et al)
ASHAY (Radicella, et al)
MULTIPLE SITES
#0458 (Charakchyan) Mirny, Murmansk, Moscow, Alma Ata - - - o's
#0162 (Corcuff et al)
#0522 (Truttse) Moscow, 50-79 deg N.
A-20 (Koons et al)
A-30 (CSIR, ASHAY)
USSR #0019 (Jakimiec)- x
SODANKYLA #0069 (Tanskanen)- - - - - - - - - - - - - - - - - - - o's
KIRUNA (ESRANGE)- -
#0531 (Lazutin, SAMBO 1B)
SKIBOTN (NORWAY) #0109 (Perraut)
KARASJOK (NORWAY) A-26 (Ullaland) - - - - - - - - - - - - - - -
ANDOYA (ANDENES)- - - - - - - - - - - - - - - - Loc. Accel. Part. -
#0152, 0450, 0114, A-23 (Bryant, Johnstone, Rothwell, Martelli)
High Lat
#0474, 0025, 0449, 0152, 0450, 0308(Rees, Maynard, Thomas, Bryant, Johnstone, Theile, Maehlum)
SOUTH UIST A-18 (Woolliscroft)- - - - - - - - - - - - - - - - -
A-19 (Williams)
SONDRE STROMFJORD #0263, 0311 (Olesen, Ungstrup)- - - - - - -
SAO PAULO #0332 (DeMendonca) - - - - - - - - - - - - - - - - -
FORT CHURCHILL #0005 (Bland) - - - - - - - - - - - - - - - - - o
POKER FLAT A-24 (Goldberg) - - - - - - - - - - - - - - - - - - -
A-25 (Hilsenrath)
#0400 (Fitz) Change → "wideband"
KAGOSHIMA #0258, 0193 (Obayashi, Hirao, Mambo, Watanabe)- -
#0258, 0193, 0255 (Obayashi, Hirao, Nakamura, Itoh, Dote, Toyoda)
#0416, 0193 (Matsumoto, Hirao, Kawashima, Nakamura)
#0259, 0193 (Ogawa, Hirao, Mori)
#0429, 0217, 0193, 0259 (Tohmatsu, Oya, Hirao, Ogawa, Ozio)
ADDIS ABABA A-12 (Crochet) - - - - - - - - - - - - - - - - - - -
WALLOPS ISLAND A-31 (Smith)- - - - - - - - - - - - - - - - - - -



JOE HASKELL ALLEN OCT 19 '76

IMS CALENDAR OF GBR CAMPAIGNS JANUARY - JUNE 1977
(As of 29 September 1976)

WORLD-WIDE- -
Special IMS Periods not yet selected
ASHAY (Radicella, et al)
MULTIPLE SITES- -
#0522 (Truttse) Moscow region, 50-79 deg N.
#0139 (Berthellier) Pretoria region
KIRUNA (ESRANGE)- -
B-1 (Witt, et al; "Aurora")
B-2 (Holmgren, et al; "Trigger")
B-3 (Bjorn, et al; "D-Layer")
B-4 (? , Nagoya Univ.)
ANDOYA (ANDENES)- -
B-5 (Egeland & Johnstone, et al; "Harang Pair I")
B-6 (? ; EUV - 1 & 2)
#0131 (Arnoldy, Cahill)
#0308 (Theile; "Polar High Atmosphere")
B-7 (Matthews; 18.211 UE/IE)
B-8 (Madlung Maynard "Composition")
SOUTH UIST- -
A-19 (Williams; P112H)
#0085 (Dickinson; P189H, P192H)
A-18 (Woolliscroft; P139, P140H)
WALLOPS ISLAND- -
A-32 (Smith; 14.533UE, 14.534UE)
FORT CHURCHILL- B-14 (Whalen) -
B-9 (Zipf; 31.001UA, 31.002UA)
B-10 (Mentall; 18.1013GA, 18.1014GA)
B-11 (Bernstein, et al; 21.035AE)
B-12 (Hays/Sharp; 13.132UE)
POKER FLAT- -
#0064 (Scherb; 29.004UE)
#0170 A-7 (Evans; 29.003AE)
#0400 (Fitz; "SPIRE") change → "ICECAP"
#0400 (Fitz, ~~Owens~~)
#0164 (Davis; 18.1011UE, 18.1012UE)
WHITE SANDS -
B-10 (Mentall; 31.004GA)
#0356 (Sheldon; 23.009UE, 23.010UE)



As per C. Blank

Σ = 76

8