

- *Calvin*
- *Paggett*


**ISEE / ICE / IMP
NEWSLETTER**


APRIL, MAY, JUNE 1994

PROLOGUE

First, I apologize for the tardiness of this issue of the "NEWSLETTER". I started late, then went on vacation for two weeks. That's not an excuse, simply an explanation. Second, this is to advise all recipients of the fact that this is my next-to-last (penultimate, if you prefer) issue. I will retire on November 3. At this writing, I have no idea who, if anyone, will continue the publication.

I. HIGHLIGHTS

Experiments on the ICE Spacecraft were turned off as scheduled due to power constraints as the spacecraft was beyond 1 AU from the Sun, limiting available power. A request from the Steinberg experiment (SBH) was received to turn their experiment back on. The ICE project scientist was contacted requesting other experiments be turned off to allow the SBH experiment to be turned on. The experimenters were polled and the Ogilvie experimenter and the Tycho experimenter agreed to turn off all and part of their experiments respectively. After monitoring the available power, it was determined that only the OGH experiment needed to be turned off to allow the SBH experiment to be turned back on. On June 17, at the ICE Project request, the Ogilvie experiment (OGH) was turned off and the Steinberg experiment (SBH) was turned on.

The IMP Flight Operations Team (FOT) arranged for maximum IMP-8 support on July 5 starting at 1000z thru July 6 at 1800z to coincide with the Geospace Environment Model (GEM) campaigns. 100% coverage of IMP was recorded during this time period.

II. OPERATIONS

ICE

There were 28 real time passes with 13 commands transmitted to the ICE spacecraft with a 5.43 Percent coverage rate during this period.

A Command and Telemetry data flow with DTF-93 at JPL was completed successfully on May 25. The test was to check present and future GCF configurations.

A ICE telemetry data flow with the Goldstone station D14 to exercise the new Telemetry Group Controller (TGC-5) was completed successfully on June 9, and with the Canberra station D43 on June 11, 1994.

IMP-8

There were 90 real time passes with 400 commands transmitted to the IMP-8 spacecraft with a 70.41 Percent coverage rate during this period.

III. DATA RECOVERY

THE OVERALL TELEMETRY COVERAGES FOR THIS PERIOD WERE:

	April	May	June	1994
ICE	7.81%	4.25%	5.24%	
IMP-8	68.12%	75.39%	67.72%	

DETAILS OF THE COVERAGES FOR ICE AND IMP-8 ARE LISTED IN ATTACHMENT "A".

IV. DATA PROCESSING

A. Most current data shipped as of JULY 14, 1994

(GROUP # - DAY/YEAR)

	IMP-8	ICE
DECOM	1857 - 152/94830	190/94
MCE	1857 - 152/94	n/a

B. Whole groups not shipped which precede those above:

none

C. Requested redo's in progress:

III. FUTURE PLANS

The ICE spacecraft configuration will change several times between now and October 1, 1995. As the spacecraft moves closer to the Sun more power is generated, hence the changes for 06/17, 07/30 and 08/20. At the time of the first radial alignments of the Sun, ICE and Ulysses, only those experiments common to both spacecraft will be turned on. The spacecraft will remain in that configuration until approximately October, 1995 the spacecraft will be reconfigured for radio science and all experiments will be turned off. The various configurations are tabulated in Table 1.

TABLE 1

ICE EXPERIMENT CONFIGURATION

SENSOR			ID	STATUS AS OF 06/17	STATUS AS OF 07/30	STATUS AS OF 08/20	STATUS AS OF 09/10	RADIAL ALIGN APR 95	RADIAL ALIGN JUL,AUG SEPT 95	XMTR ONLY
SOLAR WIND		Bame	BAH							
ELECTRONS SENSOR	*	Bame	BAE	ON	ON	ON	ON	ON	ON	OFF
IONS SENSOR		Bame	BAI	OFF	OFF	OFF	OFF	OFF	OFF	OFF
PLASMA COMPOSITION	*	Ogilvie	OGH	OFF	OFF	ON	ON	ON	ON	OFF
MAGNETOMETER	*	Smith	SMH	ON	ON	ON	ON	ON	ON	OFF
PLASMA WAVES	*	Greenstadt	SCH	ON	ON	ON	ON	ON	ON	OFF
ENERGETIC PROTONS	*	Wenzel	DFH	ON	ON	ON	ON	ON	ON	OFF
RADIO WAVES	*	Steinberg	SBH	ON	ON	ON	ON	ON	ON	OFF
X-RAYS		Anderson	ANX	OFF	OFF	OFF	OFF	OFF	OFF	OFF
LOW ENERGY ELECTRONS		Anderson	ANE	OFF	OFF	OFF	OFF	OFF	OFF	OFF
LOW ENERGY COSMIC RAYS	*	Hovestadt	HOH	OFF	ON	ON	ON	ON	ON	OFF
MED ENERGY COSMIC RAYS		von Rosenvinge	TYH	ON	ON	ON	ON	OFF	OFF	OFF
HIGH ENERGY COSMIC RAYS		Stone	STH	OFF	OFF	OFF	OFF	OFF	OFF	OFF
HIGH ENERGY COSMIC RAYS		Heckman	HKH	OFF	OFF	OFF	ON	OFF	OFF	OFF
COSMIC RAY ELECTRONS		Meyer	MEH	ON	ON	ON	ON	OFF	OFF	OFF
GAMMA RAY BURSTS		Teegarden	TEH	OFF	OFF	OFF	OFF	OFF	OFF	OFF

* Common to Ulysses and ICE

ATTACHMENT A

DATA COVERAGE FOR APRIL 1,1994 (091) THROUGH JUNE 31,1994 (181).

	DDD	HH MM	IN UT
	ICE		IMP
091	0045-0445		0000-2400
092	1900-2225		0000-0832 1225-2400
093	NONE		0000-0836 1641-2400
094	0906-1525		0000-0817 2214-2345
095	NONE		0306-0649
096	NONE		1442-1630
097	NONE		0019-0530 1755-2223 2245-2400
098	0010-0425 0630-1145		0000-0540 0824-0915 1041-2400
099	NONE		0000-0055 0522-2035
100	NONE		0429-2253
101	NONE		0350-2400
102	NONE		0000-0157 0258-2400
103	NONE		0000-2400
104	0626-1031		0000-2400
105	1658-2250		0000-0744 1413-2400
106	NONE		0000-0737 0934-1703 1818-2400
107	NONE		0000-0700 2218-2330

108	NONE	1315-1345
109	NONE	1625-1655 1800-2016
110	1631-1644 1657-2030	1004-2334
111	NONE	0447-2400
112	0910-1107 1111-1257 1300-1540	0000-0123 0348-2400
113	NONE	0000-0130 0309-2400
114	NONE	0000-0007 0229-2400
115	NONE	0000-2400
116	0730-1137	0000-2400
117	NONE	0000-2400
118	NONE	0000-0733 1539-2400
119	NONE	0000-1253 2041-2330
120	0923-1318	1151-1922
121	NONE	1300-1705 1840-2400
122	NONE	0000-0205 0210-0350 0935-2219
123	1640-2055	0411-2400
124	NONE	0000-0020 0303-2400
125	NONE	0000-0130 0222-2400
126	NONE	0000-0130 0143-2400
127	2015-2315	0000-2400

128	NONE	0000-2400
129	NONE	0000-0558 0951-2400
130	1640-2057	0000-1132 1357-2400
131	NONE	0000-1158 1946-2345
132	NONE	0136-0334 0555-1220
133	NONE	1300-1615 1830-2400
134	NONE	0000-0057 0843-1710
135	0117-0426	0319-1719 1815-2400
136	NONE	0000-2400
137	1542-2115	0000-0106 0134-2400
138	NONE	0000-2400
139	NONE	0000-2400
140	NONE	0000-2400
141	NONE	0000-0507 0851-2400
142	0029-0438	0000-0513 0540-0911 1308-2400
143	NONE	0000-0455 1900-2345
144	1930-2345	2135-2345
145	NONE	1128-1707
146	NONE	0740-2100
147	NONE	0221-1638 1800-2250

148	NONE	0121-1844
149	2015-2315	0044-2104
150	NONE	0007-2400
151	NONE	0000-2400
152	1946-2400	0000-2400
153	0000-0110	0000-0417 0823-2400
154	NONE	0000-0845 1243-2400
155	2030-2400	0000-0402 1813-2330
156	0000-0040	0308-1010 2033-2330
157	NONE	1315-1450
158	NONE	0652-1237 1315-1534 1800-2005
159	NONE	0135-2154
160	1335-1625	0034-1747 1808-2324
161	NONE	0007-2400
162	2300-2400	0000-2400
163	0000-0430 1953-2400	0000-2400
164	0000-0030	0000-2400
165	0553-0915	0000-0328 0747-2400
166	NONE	0000-0908 1213-2400
167	NONE	0000-0934 1724-2345
168	0558-1045	0359-0619

		1934-2330
169	NONE	1200-1740
170	NONE	0617-1111 1300-1443
171	NONE	0100-1428 1800-2049 2351-2400
172	NONE	0000-2220 2311-2400
173	NONE	0000-2400
174	NONE	0000-2400
175	NONE	0000-2400
176	NONE	0000-0148 1007-2400
177	2043-2400	0000-0239 0659-2400
178	0000-0045	0000-0243 1708-2400
179	NONE	0000-0223 1631-2345
180	2243-2400	0253-0905 1806-2345
181	0000-0145	0851-1252 2254-2345

TASMANIA COVERAGE REPORTED ONLY THROUGH JUNE 18, 1994.
(DAY 169) FOR IMP-8.

I've been talking to Mike Comberiate about "installing" a new ground station for IMP-8 in Antarctica. He believes it can be done fairly cheaply, at a place where he is already involved in NASA-NSF programs. He believes he can do it with a small antenna and with "new technology" RF equipment which will have much better S/N discrimination than what's presently deployed at our sites.

There'd be a need to an A-to-D conversion of the data at the new station, and to "E-mail" the data back to GSFC. The newly delivered UNH "box" might be used for this. I recognize that some IPD mods would be needed to accommodate an inflowing digital signal.

Mike would need a few \$10K's to make this happen - perhaps an upfront \$10K for an initial build/test phase locally, and then \$20K more to have someone go to the station in August to set it up.

Note that a station right at the south pole (which is not where Mike's place is) could see IMP continuously for 4-5 days. Our dependence on TAS and AGO would be diminished if this works. Our overall data coverage could climb from 65% to maybe 85-90%.

I'd like to get a few of us together to discuss this. How about 2PM Friday afternoon the 27th in room 105, B.26. I'll invite John Spohr also. Gil, could you review with C.J. our FY94 budget situation. Do we have \$10-30K not yet obligated?

We have two newsletter-relevant things going on. As you may know, we're currently doing some testing of our ability to acquire IMP data using relatively small IAGI antennas and low noise receivers, in anticipation of possibly shipping this stuff to McMurdo, Antarctica in August. Testing at GSFC is underway, and should be done in 2-3 weeks?

I'd rather give you a writeup on this item at that time rather than today, if that's consistent with your intended schedule.

The other item is Code 560's assessment of sending the IMP data to PI's electronically rather than on tape. We'd have to ask Ed Nace or Ken Lehtonen for a status report on that.

Maybe we could also report that we got 100% coverage for a July 5-6 GEM period (once we verify that with John Spohr, which could be waiting for me on GSFCMAIL now).

Based on discussions with Ken Lehtonen two months ago, based on

responses from PI teams to a set of relevant Lehtonen questions, and especially based on discussions at the IMP Science Working Team meeting today, we want to press forward to implement a scenario whereby IMP decom data and MCE data, now sent on tape to PI sites, would be electronically transmitted to those sites.

I recognize there are numerous issues to be resolved in detail. The general outline would be that data files which would otherwise be written to tape would be stored temporarily online for IPD to push, or the PIs to pull, to PI sites. Companion files (detached SFDU labels?) would be created and transmitted also to serve the function of the shipping letters. Appropriate E-mail handshakes would be implemented between IPD and the PI teams to assure successful transmissions.

At the SWT meeting today, one person at each of the 9 active PI sites was identified to work with GSFC/IPD in finalizing and implementing the new scenario. I hope that IPD will be able to identify one key person to be the chief interface to these 9 technical people and to me. I'll set a meeting including Ken Lehtonen, Darnell Tabb, Ed Nace, Bill Mish (for ISTP/CDHF), and others(?) to discuss. I think the next thing is for IPD to develop a straw man scenario and schedule with which it would be comfortable and which it thought would satisfy PI Team needs. Then we'd get the key technical people at the PI sites involved in reviewing. I note that at the SWT meeting today, Jim Willett (NASA/HQ) indicated the present prognosis for IMP operations is "into the indefinite future." The potential savings to IPD in just tape and mailing costs over an activity extending "into the indefinite future" should far more than offset any IPD initial "capital costs" in defining and establishing a new dataflow procedure.

I'll note for the record that we also discussed today reviewing the feasibility of doing the A-to-D conversion and convolutional decoding at the ground stations using clones of the "UNH box," and the possibility of emplacing a ground station at/near the south pole. The latter would require electronic transmission from the ground station to GSFC.

Gil

Here are the inputs for the quarterly report (April, May and June 1994)

OPERATIONS

DATA PROCESSING

South Pole Station

Joe King has been talking to the appropriate people about "installing" a new ground station for IMP-8 in Antarctica. The current opinion is it can be done fairly cheaply, at a location which is already involved in NASA-NSF programs. It is also believed it can be done with a small antenna and with "new technology" RF equipment which will have much better S/N discrimination than what's presently deployed at our sites.

There would be a need for an A-to-D conversion of the data at the new station, and to "E-mail" the data back to GSFC. The newly delivered UNH "box" might be used for this. Some IPD mods would be needed to accommodate an inflowing digital signal.

Electronic Transmission of Data to IMP PI's