

STATUS OF GEOSTATIONARY METEOROLOGICAL SATELLITE

This document reports on the status of Geostationary Meteorological Satellite-5 (GMS-5).

CGMS Members are invited to take note the status of GMS-5.

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1. Introduction

The Geostationary Meteorological Satellite-5 (GMS-5), launched on 18 March 1995, has been operated at 140E degrees of the geostationary orbit. Although GMS-5 is beyond its designed lifetime of 5 years, it is to be operated until the Multi-functional Transport Satellite-1 Replacement (MTSAT-1R) will take over the meteorological mission of GMS-5 in the summer of 2003.

2. Current Status of GMS-5

All of the onboard instruments of GMS-5 have been functioning satisfactorily. The performance of the operational services including the dissemination of S-VISSR and WEFAX in the period from April to August 2001 is shown in the following table.

Table GMS-5 Service Performance (April – August 2001)

	April	May	June	July	August
Image Acquisition (S-VISSR)	100.0	99.9	100.0	99.6	99.2
Dissemination (WEFAX)	99.8	99.5	99.9	99.2	98.9

unit: percentage

In order to reduce the degradation to the onboard instruments, the following operational changes were carried out and the monitoring of the GMS-5 system has been continued carefully.

2.1 Visible and Infrared Spin Scan Radiometer (VISSR)

The motor torque of the VISSR scan mirror unit increased gradually and reached the criterion for the operation change due to the lubricant build-up. Because the lubricant build-up was remarkable for scanning the southernmost portion of the Earth, the observation area was cut off from 5 June 2000.

Even after the cut off, the motor torque around the south end of the observation increased steadily. And as the torque reached the said criterion again, the further reduction of the VISSR observation of the GMS-5 was carried out on 4 July 2001 for the continuous operation until the commencement of MTSAT-1R services.

In the operational change on 4 July 2001, the south end of full-disk observation was changed up to around latitude 49S degrees. The frequency of the full-disk observation was reduced from 28 times to 16 times a day, i.e. the observations of 3-hourly basis and those for wind vector derivation. The other observations, i.e. 12 times a day, were changed from the full-disk observation to the Northern Hemisphere observation up to the south end of latitude 10S degrees.

The change of the observation area and the frequency was decided in order to keep

the continuous observation for 3-hourly basis and the wind vector derivations and the non-influence for the WEFAX dissemination schedule.

In addition, the range of mirror scanning is slightly changed in each observation in order to avoid the increase of the lubricant build-up due to the observations at the same mirror position.

2.2 Remaining Propellant

Since November 2000, the North-South maneuver for GMS-5 was carried out on 15 January 2001, 16 July 2001 and 23 October 2001. Because of the shortage of the remaining propellant, the N-S maneuver will not be scheduled thereafter. Therefore, the orbit inclination of GMS-5 is expected to be over 1.0 degree around April 2002 and 2.0 degrees around the summer of 2003. On the other hand, the East-West maneuver and the attitude control maneuver can be scheduled.

2.3 Solar Battery

Although the power level of solar battery of GMS-5 decreased by approximately 2% in July 2000, 1.7% in December 2000 and 0.8% in September 2001 due to the solar flare, no influence was made for the operation of GMS-5.

The solar supplied power was measured 311 (W) at the summer solstice of 2000, that is the designated End of Lifetime (EOL). It was better than the pre-launch estimation of 290 (W). And the supplied power measured at summer solstice of 2001 was 298 (W) and exceeded 257 (W) of the required load power for normal operation except for the maneuver.

3. Future Operation

The operation rescheduled on 4 July 2001 will be continued. At the same time, the housekeeping monitoring for GMS-5 will be carefully maintained through the GMS-5 operation, taking into account the possibility of unexpected increase of the motor torque.