

**Minutes of the 8<sup>th</sup> INSAT DRT-users meeting held on 08/07/2011 at India Meteorological Department (IMD), New Delhi.**

Eighth INSAT DRT- users meeting was held on 8<sup>th</sup> July, 2011 in the Conference Hall 6<sup>th</sup> floor of Mausam Bhawan, IMD, Lodi Road, New Delhi-3 under the Chairmanship of AVM (Dr.) Ajit Tyagi , Director General of Meteorology. The meeting was attended by the following Members/ Representatives of various organizations :-

1. AVM ( Dr.) Ajit Tyagi, DGM , IMD, New Delhi - Chairman
2. Shri A. K. Sharma , DDGM ( Sat. Met.) Sc.'F' ,  
IMD , New Delhi . - Member Secretary
3. Ms. Anjali Naik, Scientist 'SF', ISRO HQs, Bangalore. - Member
4. Shri Kamaraju, Scientist 'SF', ISRO HQs, Bangalore. - Member
5. Shri D.R.Mistry , Sci./Engr'SF', SAC-ISRO Ahmedabad  
Dy. Project Director INSAT\_3DR - Member
6. Shri K.S. Parikh , Scientist/Engineer 'G', Dy. Director ,  
SAC-ISRO , Ahmedabad. - Member
7. Shri A. K. Sinha, Director(Telemetry),  
Narmada Control Authority ,Indore. - Member
8. Shri. A. K. Srivastava, Dy Director,CWC ,  
R.K. Puram New Delhi - Member
9. Shri J. K. Arora , Assistant Engineer. ( Communication.)  
CWC , R.K. Puram New Delhi. - Member
- 10.Shri Arvind Sharma Sr. Executive Engineer,  
Bhakra Beas Management Board, Chandigarh. -Member
- 11.Shri Anil Dhawan , Assistant. Design Engineer,  
Bhakra Beas Management Board, Chandigarh. -Member
- 12 Shri R. K. Das, Scientist 'D', SASE , Chandigarh. - Member
- 13 Shri M.K, Gupta , Scientist 'E' , IMD, Pune. - Member
- 14.Dr. V. R. Rao , Scientist. 'E', IMD, New Delhi. -Invited Member
- 15.Ms. Suman Goel , Scientist. 'E', IMD, New Delhi. -Invited Member
- 16.Shri D. K. Malik , Scientist. 'E', IMD, New Delhi. -Invited Member
- 17.Shri G. N. Saha , Director (CWDS), IMD, New Delhi. -Invited Member

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| 18. Shri Virendra Singh, Director (HW), IMD, New Delhi.  | -Invited Member |
| 19. Shri Ram Babu Verma, Director (ESU), IMD, New Delhi. | -Invited Member |
| 20. Shri S. K. Mishra, Asstt. Met-I, IMD, New Delhi.     | -Invited Member |
| 21. Shri. Viri Singh, Asstt. Met-I, IMD, New Delhi.      | -Invited Member |
| 22. Shri. K.D. Prasad, Asstt. Met-I, IMD, New Delhi.     | -Invited Member |

The minutes of the meeting are given below :-

**Agenda item No1 :-**

Shri A. K. Sharma, DDGM/ Scientist 'F' ( Sat. Met.) , Member Secretary, welcomed the members / representatives of INSAT - DRT users' organization and briefed them about the set up and the purpose of this group constituted in 2002 with a Secretariat Office at IMD, New Delhi. He briefed the members about duties and responsibilities of all the INSAT-DRT Users . He stressed once again that all Meteorological Data collected through INSAT-DRT should be supplied free of cost to IMD on real time basis for use in National Weather forecasting and also for archival in Data Bank in IMD HQ , New Delhi & IMD , Pune. The users were advised to keep the data on their websites also. He emphasized that the RF uplink equipments being used should be of standard make and follow strict power and frequency assignments. No transmitter should be kept on for more than one second in a continuous mode. All user agencies who have established their own Earth Stations for reception of AWS data should continuously monitor the spectrum of DRT over the entire range of frequencies and record all cases of interference in the network. Suitable changes in the existing processing software may also have to be done to process data in the TDMA scheme of transmission and also handle changed number of platform ID bits when a large number of AWS stations are to be handled.

He then invited Shri A. K. Srivastava, Dy. Director, CWC , R.K. Puram, New Delhi to deliver his lecture .

### **Agenda item No 2 :-**

Shri A.K.Srivastava , Dy. Director , CWC , R.K.Puram , New Delhi - in his lecture informed that they have installed 223 AWS ( in IXth and Xth Plan ) which work in PRBS mode and they will install 222 AWS stations more in XI th plan ( 2007-2012 ) in TDMA mode. Total network is expected to be of 445 AWS stations . They have also planned to add 1200 more AWS in XII th plan.

### **Agenda item no 3 :-**

Shri Arvind Sharma, Senior Executive Engineer from Bhakra Beas Management Board (BBMB) , Chandigarh - in his lecture informed that Ministry of Water Resources (Govt. of India) has initiated HP-II, a 632 Crore World Bank funded project, which is a follow up to the completed HP-I project. The overall objective of the project is integrated water resources management in India. The following States & Central Agencies are participating in the project :-

**States** – Andhra Pradesh , Gujarat , Karnataka , Kerala , Madhya Pradesh ,  
Chattisgarh, Maharashtra, Orissa, & Tamilnadu (States in HP-I) and Punjab,  
Himachal Pradesh, Goa & Pondicherry (New States).

**Central Agencies** – MoWR, CWC, CGWB, CP&WRS, NIH & IMD (in HP-I) and  
BBMB & CPCB (New Agencies).

For the development of RT-DSS, consultancy was procured through ICB (as per World Bank guidelines).

The contract between DHI, Denmark (the consultant) and BBMB was signed in November 2008.

The objective of this Consultancy is to equip BBMB with a real-time operational Decision Support System strengthened with State of the art Data Acquisition and Advanced Communication System for real-time operational management of its reservoirs in an integrated manner .

The consultant has completed task of Needs assessment, DSS hardware specifications, database specifications, Modeling Software Specifications & DSS

Software Development Specifications and Data Acquisition Specifications as deliverables.

#### STATION CATEGORIES

- I Cooperator Stations for Data Reception (IMD)– 70 Nos
- II Cooperator stations with additional sensor(s) (IMD) – 10 Nos
- III Automated Rain Gauges (ARGs) – 16 Nos
- IV Automated Full Climatic Stations (AFCS) – 12 Nos
- V Snow-Water Equivalent Stations (SWES)– 09 Nos
- VI Automatic Water Level Recording Gauges – 42 Nos
- VII Data Collection from Powerhouses – 06 Nos

Total Stations – 165 Nos

For Real Time DAS, the stations will be equipped with following :-

- Automatic rain gauge (tipping bucket type),
- Precipitation Gauge (Rain & Snow),
- Water Level (Bubbler, Radar, Stilling Well/Float/Encoder)
- Temperature Sensors
- Relative Humidity Sensors
- Wind Speed/Wind Direction Sensors
- Atmospheric Pressure Sensors
- Solar Radiation Sensors
- Snow Depth Sensors
- Snow-Water Equivalent (SWE) – Snow Pillow
- Automatic Cableway Gauging System
- ADCP River Discharge Measurement
- ADV Velocity Measurement
- Electronic Current Meters
- The antenna (pedestal Type - Fixed EL/AZ antenna mount) shall be large enough in size to accommodate the entire range of expected signal strength.
- No uplink DRT frequency has been allocated yet.
- No DCPs/AWSs/ARGs are operational at present and are expected to be installed in 2012 .

- Single carrier is proposed.
- Mode of transmission shall be TDMA.
- Operational Life of DCPs/AWSs/ARGs is expected between 10 to 15 years.
- Time slot for transmission is still to be allocated by IMD.  
( BBMB/IMD will take action )
- Precipitation measurements will be taken every 15 minutes and other measurements every 60 minutes. These will be transmitted in a self timed manner in its prescribed time slot every hour.
- WPC clearance has not been obtained till now.

Shri Sharma , SEE , has requested that WPC may be requested to issue Frequency clearnces etc. at free of cost for Govt. Organisations .

The representative of ISRO informed that as per the present policy of the Govt. no organization , including Govt. , are exempted from such charges .

**Agenda item no 4 : -**

Shri A. K. Sinha, Director(Telemetry), Narmada Control Authority ,Indore, in his lecture stressed on the quality of data , its accuracy and its timely availability on which the future of the project depends . He stated that there is a need for devising the norms of field accuracy of data in dynamic condition when compared between the manually observed data of water level and rainfall and the respective sensors data by the pioneer Departments like CWC and IMD . NCA will install 40 nos. of AWS in future using GSM technology .

**Agenda item no 5 : -**

Ms. Anjali Naik , Scientist ‘ SF ‘ , ISRO HQ SCNP , Bangalore , in her lecture informed that INSAT 3D will be launched soon and will be parked at 82 degree East , the satellite will have the same polarisation as INSAT 3A. . She suggested to have a mid term meeting to discuss about the frequency requirement of the members . She also suggested that all members should modify their equipments from PRBS mode to TDMA mode as the former is going to be obsolete .

**Agenda item no 6 :-**

Shri D.R.Mistry , Scientist / Engineer 'SF' , SAC , ISRO , Ahmedabad , had presented the status & working of INSAT DRT transponder , with electrical specification .

• DRT/SAS&R transponder consists of following Subsystems

1. Rx & Tx Antenna

2. DRT/SAS&R Transponder.

• DRT consist of Receiver, Up Conv. , LO .

• SAS&R consist of Receiver , Down Conv. Phase modulator. EPC.

• 15 W SSPA.

3. MET Transmitter

BPSK modu. ,QPSK Modulators, LO , EPC , SSPA.

4. OMUX ,Switches .

He informed the members that all electrical parameters remain same as- INSAT-3A ,METSAT & INSAT-3D , except improved G/T by 1dB in 3D/DR .

INSAT-3DR uplink frequency will change.

**Agenda item no 7:-**

Shri R. K. Das , Scientist 'D' from SASE Chandigarh gave the presentation. He informed that total 43 nos. of AWS have been installed by them and all of them are functional . Their details are as follows :-

JK Region-28

HP Region-6

Siachin-5

Gangotri-3

RDC SASE, Chandigarh-1

Life span of many of them has expired and for remaining it is expected to be upto 2014-15 .

Their future plan to install AWS is as follows:-

- 20 AWS (TDMA) from ISRO – Being Installed
  - M/s Astra, Hyderabad
- 17 AWS (PRBS) – SO Awarded to M/s Info Electronics.
  - Delivery in August 2011.
- 01 AWS: Jammu University under DST project.
  - To be installed at Durungdurung Glacier
- 01 TDMA ERS: From Antariksh (ISRO)
  - SO being released.

He also informed that -

Data Reception Consistent at ERS.

Data is used on daily basis for operational avalanche forecasting.

Earth Receiving Station operational at Chandigarh.

Network being maintained regularly on yearly basis (AMC).

Maintenance by private firm owing to the size of the network.

ISRO/IMD certified hardware is being put in the network.

All members requested SASE , Chandigarh representative to change over their systems from PRBS mode to the latest TDMA mode for which SO has been awarded .

**Agenda item no 8 : -**

Shri M.K. Gupta , Scientist ‘E’ , from DDGM(SI) Pune gave the presentation. He informed the DRT users about IMD Network:-

No	AWS/ARG	No of AWS/ ARG	Transmission Technique	DRT	Polarization
1	AWS	125	PRBS	KALPANA	LHCP
2	AWS	550*	TDMA	INSAT-3A	RHCP
3	ARG	1350*	TDMA	INSAT-3A	RHCP

\* Planned for installation. Till date 498 AWS and 399ARGs have been installed.

He explained the performance of Earth Station :-

PRBS type Data Receiving Earth Station became operational from 4th July 2006 at the INSAT AWS Lab, IMD Pune.

TDMA type data receiving Earth Station has been established under modernization project phase-I. The Earth Station became operational in Apr. 2009.

Both are operational with data dissemination over GTS.

The quality of the data reception at both the Earth Stations is satisfactory.

He also informed that as discussed during the DRT meeting held on 17th Nov. 2009 all DRT users were required to switch over the networks operated by them from KALPANA-1 to INSAT-3A as KALPANA-1 had reached its EoL and was in inclined orbit.

Accordingly, IMD network of 125 AWS (PRBS type) has been switched over to INSAT-3A during June 2010 to Oct. 2010.

New AWS and ARG Networks of IMD have already been operated through INSAT-3A in TDMA mode.

He requested that the information gathered through pro forma circulated by ISRO to all DRT users may also be made available to IMD.

Satellite IDs and Carriers used and allocated by ISRO may also be informed to IMD .

**Agenda item no 11 :-**

**Recommendations :-**

1. It is essential for all DRT users to provide full details of present AWS network and future expansion plans to the DRT Sectt at IMD New Delhi. It is also necessary for all users to observe strict network discipline.  
(Action by all users)
2. Discontinue use of PRBS mode of transmission of data in future.  
(Action by all users)
3. All users should give report on the usefulness of AWS/DRT data during actual operations citing specific important cases.  
(Action by all users)



4. All users should provide the data received by them through DRT in WMO format to IMD. The format details will be provided by IMD . (Action by all users/IMD)
5. Close monitoring of DRT spectrum by all users for any sweeping carrier/fixed carrier interference. Report on interference, if observed, to be shared in real time with IMD & MCF/ISRO. Details of duration of spurious interference and its reception to be conveyed to WPC, MCF/ ISRO & IMD immediately.

(Action by all users)

6. SASE ,Chandigarh may modify their SO of 17 AWS from PRBS to TDMA type .

( Action by SASE , Chandigarh )

( Response received from SASE –

QUOTE :- “ The Qty – 17 PRBS type of AWSs that SASE is in the process of procuring are to be delivered shortly and will be installed after delivery . At present SASE do not have TDMA type Earth Receiving Station ( ERS ) and converting the PRBS AWSs to TDMA type mode of transmission will restrict SASE from real time access to the data of these AWSs . SASE is in the process of procuring Qty- 01 TDMA ERS from M/s Antrix Corp. Ltd. , Bangalore , and once the ERS is installed , SASE will initiate exercise to convert the existing PRBS AWSs to TDMA type . :- UNQUOTE .

The meeting was concluded by the Chairman , AVM (Dr.) Ajit Tyagi , Director General of Meteorology . He instructed that all developments regarding DRT may be given in IMD web site . He advised IMD to have a Webpage of DRT on which all relevant information is posted .

He thanked all the members for participating in the meeting and interacting among themselves and intimating their progress to the rest of the members . He appreciated that such interaction should be done regularly to benefit INSAT DRT users.

