



STATUS OF THE INTERNATIONAL DATA COLLECTION SYSTEM (IDCS)

IN RESPONSE TO CGMS PERMANENT ACTION 01

NOAA-WP-10 provides a status report on the performance of the International Data Collection System (IDCS). NOAA's DCS Automated Processing System (DAPS) is still running, but a new system is nearing completion, and is expected to deploy for full operation in October 2009. The DCS Administration and Data Distribution System (DADDS) can now be brought online when needed, providing distribution of critically needed data through the Internet, a commercial communications satellite (DOMSAT), and NOAA's National Weather Service Telecommunications Gateway (NWSTG), which feeds the Global Telecommunication System (GTS). In addition, interconnectivity is provided through direct connectivity to the DCS demodulators. DADDS is planned to provide all the functionality of the DAPS system, with improved system monitoring capabilities and better user interface. NOAA has finalized new Certification Standards to allow transmitters to use smaller channels, and plans to begin development of new transmitters within 6 to 12 months. This will allow NOAA to double the number of channels on our system over the long term from approximately 200 channels to 400 channels (estimated 10 years to completion). The transition to high data rate (HDR) continues, with approximately 19,000 of the 26,000 platforms assigned reporting at 300 or 1200 bit/sec. The number of 100 bit/sec transmitters is finally beginning to drop, indicating that users are decommissioning the older transmitters. NOAA is investigating the use of two way communications to better command and control platforms. A phase I analysis was completed, and a Phase II effort which will deliver a prototype receiver and waveform definition has been underway for one year. A prototype is due in approximately 6 months. NOAA is proceeding slowly with this project, since most resources are being committed to DADDS and to the Version 2 HDR transmitter implementation. As previously noted, a conflict in the addressing scheme makes it difficult for the NOAA to include new addresses generated by EUMETSAT. There is no current plan to address this issue, as use of the international channels is minimal. During the last year research has been conducted to prove the concept of commanding DCS platforms using CDMA technology.

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NOAA has been very active in the DCS area in the past several years. The use of the NOAA Regional DCS continues to grow, with approximately 28,000 transmitters operating on the system at the current time. New users, new sites, and more frequent reporting schedules for existing sites are added every week. In the six years since the deployment of our high data rate transmitter, use of the system has more than tripled. The demand continues to grow, so NOAA is focusing on several activities to increase system capacity, and to improve system efficiency.

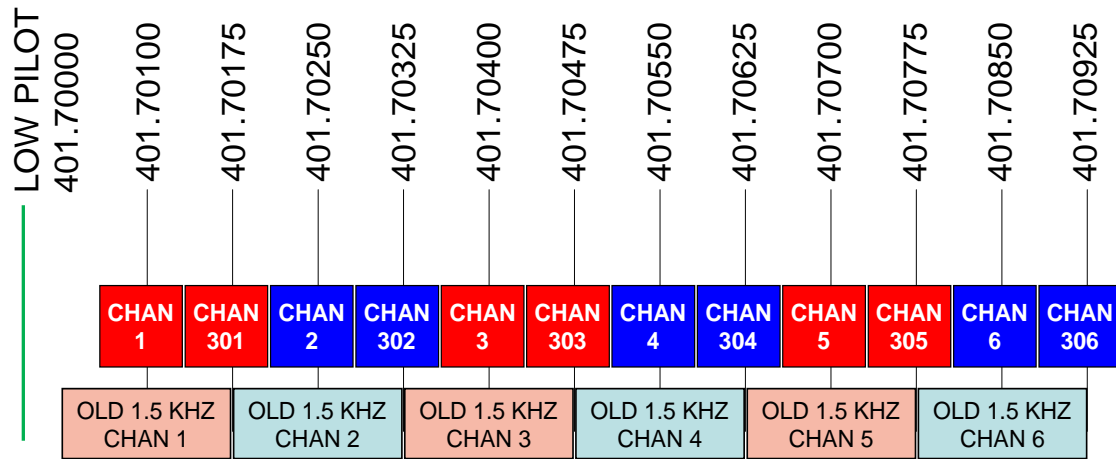
1.1 DADDS Status

NOAA's DADDS project, intended to replace the 19 year old DAPS (DCS Automated Processing System) is reaching implementation phase. After the system goes operational in October 2009, we expect to continue to add new functionality until a complete system has been developed. The digital demodulators, developed under the mostly unsuccessful DAPS II project have revolutionized the performance of NOAA's DCS. These demodulators have allowed flexibility in our use of the system that has not been available in the past. Two immediate advantages are: better monitoring of radio signals for troubleshooting of platform problems, and flexibility to define channels. Some modules of the DADDS are already available, and are being used to disseminate platform data for emergency situations. The system management and monitoring functions are nearing completion and will contribute to the final step of the operational replacement of the DAPS. We will continue to develop new monitoring and reporting tools in an enhancement mode for some time to come.

1.2 Narrow Band Transmitter

NOAA has finalized new Certification Standards to allow transmitters to use smaller channels, and plans to begin certification of new transmitters within 6 to 12 months. This will allow us to double the number of channels on our system over the long term (estimated 10 years to completion) from approximately 200 channels to 400 channels. Because our demodulators and transmitters are all digital systems, most of the changes will take place in software, and are anticipated to be simple changes. The new channels are expected to maintain the same center frequency as the existing channels, but with new smaller bands around those frequencies. Once the existing channels are realigned, we will insert new channels between them, minimizing the impact on users of existing systems. NOAA is finishing new certification test sets and has initiated plans to set up a Version 2 test channel so that vendors may begin certifying transmitters within the next few months, NOAA still needs to modify our ground system somewhat (software only) to allow reception of the new transmitters. The current high data rate transmitters and the new transmitters are expected to be able to operate on the same channels, and the existing demodulators will be able to pick up both signals after some minor modifications, so the impact on the ground system should be minimal.

New NOAA Regional DCS Frequency Plan



ODD NUMBERED (RED) CHANNELS ON EAST SATELLITE
 EVEN NUMBERED (BLUE) CHANNELS ON WEST SATELLITE

1.3 High Data Rate Transition.

The transition to high data rate continues, with approximately 20,000 of the 28,000 platforms assigned reporting at 300 or 1200 baud. A portion of the original 100 bps transmitters remain on the system, but we are seeing larger decreases in those numbers. We have used all of the available channels on the system, and are now in a position to begin using the new IDCS channels allocated to NOAA by the CGMS when we move to the DADDS, as we were unable to integrate them into our existing DAPS. We have implemented a change that will allow transmissions of both 100 and 300 bit per second data rates to be received on a single channel, and NOAA is selectively allowing this to be used to speed up our transition. We have used this successfully for more than a year, and our transition has benefited immensely from the change.

1.4 Data Collection Platform Command (DCPC) development

NOAA is also investigating the use of two way communications to better command and control platforms. A phase I analysis was completed, and a phase II project to develop prototypes has been underway for about two years. Not only will this allow users to reprogram their platforms remotely, but it will allow NOAA to better manage the system by managing such things as power levels and performance (i.e. reset a clock, send a stop command in extreme instances, etc.) This capability would allow such practices as moving all platforms on a single channel to another channel in case of an interference problem. Two rounds of on-site testing have been conducted at the Wallops Command and Data Acquisition Station. The testing validated the concept. NOAA continues to investigate ways to fund this activity, and to manage it in a parallel path to NOAA's other development efforts. NOAA is looking forward to a successful implementation in the next few years, and hopes to devote more resources to the project once other development activities are completed.

1.5 Issues

As previously noted, a conflict in the addressing scheme makes it difficult for the NOAA to include new addresses generated by EUMETSAT. Some of the addresses generated for the IDCS by EUMETSAT already exist in the NOAA database, assigned to US platforms that have been operating for decades. This conflict was not recognized by the NOAA delegation to the CGMS at the time that the scheme was agreed upon, and has been recognized as a serious problem in database coordination among the satellite operators. There is no current plan to address this issue, and as use of the international channels decrease this problem is not expected to have much impact on the system. However, it remains a concern.

2. STATUS OF IDCS

NOAA has obtained use of the International channels I1 through I11 through an agreement with the CGMS to disburse some of the international channels to the three partners in the International Data Collection System. Of the eleven channels, one channel is already being used for tsunami warnings around the hemisphere. International Channel 8 (domestic channels 215 and 216) has been designated for



use by the International Tsunami Warning networks. Two other channels are in testing use, under a plan to deploy them for domestic use. Most transmitters in the US apply a different certification standard for international use than those used for domestic applications. NOAA is working with users and manufacturers to redefine the International Band, and to adapt those transmitters to recognize the new role of the channels assigned to NOAA. NOAA is also releasing new certification standards to redefine a channel as .75 kHz instead of the current 1.5 kHz (Version 2 High Data Rate). While some of these channels are needed right away, NOAA is making an effort to reserve some channels for Version 2 High Data Rate use, expected to begin within the next year.

From October 2008 through September 2009 the total number of platforms assigned to the international channels was as follows:

New International Channels	224	226	228	230	232	234	236	238	240	242	244
Channel #	01	02	03	04	05	06	07	08	09	10	11
# of PLT(s)	0	0	0	1	1	0	0	0	6	0	0

3. INTERFERENCE TO THE IDCS

Several subsystems that were scheduled to be utilized to monitor international channel activity are not available. Therefore, activities associated with monitoring the IDCS for interference are available through the heritage (1989) Data Collection System. However, a new system that will utilize card-based spectrum analyzers is under contract and will be tested at the Wallops CDA Station in the near future.

4. CONSOLIDATED LIST OF IDCS ALLOCATIONS

There have been no new allocations of IDCPs within the past year.

5. CONCLUSION

CGMS members are invited to take note of the status and performance of the IDCS at <http://www.noaasis.noaa.gov/DCS/>.