

# First Images From OrbView-3

## ORBIMAGE Now Faces a Brighter Future

Regular readers of *GeoInformatics* will know from the front cover and the accompanying short article in the July/August 2003 issue of the magazine that the launch of the OrbView-3 satellite had been carried out successfully on 26th June, 2003. After a rather extended period while the commissioning of the satellite; the radiometric and geometric calibration of the imager; and the validation of the operation of the satellite and its pushbroom scanner were carried out, the first set of sample images was released by ORBIMAGE on 18th December, 2003. These comprised high-resolution images of Tokyo, Japan; Baghdad, Iraq; and Sacramento, California and Washington, D.C. in the U.S.A. In fact, these are samples of the OrbView BASIC image product that will be offered by ORBIMAGE. Samples of the geo-referenced and rectified OrbView ORTHO image product will be released in January 2004.

by Gordon Petrie

pany. Up till now, this Japanese station has been used to receive data from the SPOT satellites. Now it is being upgraded to receive OrbView-3 image data, as indeed was planned when the station was being constructed in 2000. Negotiations are also taking place with the Korean Earth Observation Centre (KEOC) located in Seoul, South Korea with a view to it acting as a further receiving and processing facility within the area of East Asia.

### OrbView-3 Imagery of Europe

Since most readers of *GeoInformatics* are based in Europe, the matter of the reception, processing, marketing and distribution of OrbView-3 imagery of Europe is, of course, a matter of high interest. Readers may recall that, back in September 1999, ORBIMAGE and Spot Image signed a five-year agreement to cooperate and form a business partnership. This included SPOT Image downloading the imagery from the OrbView-3 and -4 satellites at its ground station in Toulouse and becoming the exclusive distributor of the images from these two satellites in Europe. [See the discussion on "SPOT Image & ORBIMAGE: a Winning Team?" that appeared in the issue of *GeoInformatics* for March 2000.] However, with the failure of OrbView-4 at launch in September 2001 and the long delays that occurred in launching OrbView-3, this part of the agreement could not be implemented. Now, with the availability of the OrbView-3 imagery, there has been a revival of interest in cooperation between the two companies and indeed discussions are presently under way with a view to re-negotiating and re-activating the agreement. In the meantime, potential buyers of OrbView-3 images of Europe should get in touch directly with ORBIMAGE at its main facility in Dulles, Virginia.

### Data Reception

OrbView-3 is operating in a Sun-synchronous, near-polar orbit with an orbital inclination of 97.29° at an altitude of 470km. With regard to the downlinking of the satellite's telemetry and image data, at present, this is being carried out using ORBIMAGE's own ground receiving stations. One of these stations is located at the company's headquarters in Dulles, Virginia. The second is a high-latitude polar station located at Point Barrow in Alaska (latitude 71.3 N; Longitude 156.5 W). This particular location allows the ground station antenna to receive data during nine of the 14 daily orbits of the Earth made by OrbView-3. These two facilities will be supplemented in the near future by the ground station located at Yorlii in Japan that is operated by the NTT Data Corporation in cooperation with the ImageOne image processing com-

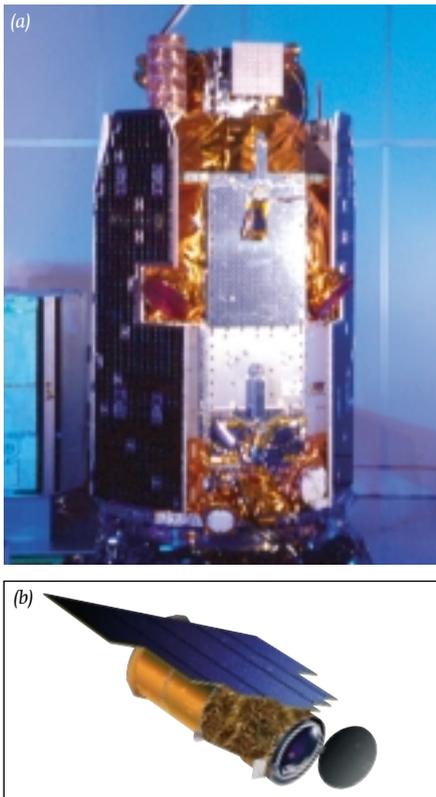


Figure 1:  
(a) The OrbView-3 satellite in the clean room at the Orbital Sciences Corporation facility prior to its launch.  
(b) An artist's impression of the OrbView-3 satellite in operation. (Source: Orbital Sciences Corp.).



Figure 2: The ORBIMAGE facilities at Dulles, Virginia - (a) the headquarters building; (b) the Satellite Operations Center (SOC); and (c) the Image Processing Facility (IPC). (Source: ORBIMAGE).



Figure 3: Part of a high-resolution (1m ground pixel) pan image of Haneda Airport, located on the west side of Tokyo Bay, 16km south of Tokyo, and showing the terminal areas and parked aircraft. (Source: ORBIMAGE).



Figure 4: A multi-spectral (4m ground pixel) image of Baghdad International Airport. (Source: ORBIMAGE).



Figure 5: Part of a pan (1m ground pixel) image of Washington, D.C. covering the city's main downtown area, including the centre of the U.S. government with the Lincoln Memorial, the Washington Monument, the White House, and the Capitol building clearly visible. (Source: ORBIMAGE).

### Image Processing

ORBIMAGE has two Image Processing Centers (IPCs) that can carry out the processing of OrbView-3's pan (1m ground pixel) and multi-spectral (4m ground pixel) images. One of these Centers is located alongside the main Satellite Operations Center (SOC) at the company's headquarters in Dulles, Virginia. The other IPC is located in St.Louis, Missouri and is based on the facilities and expertise of the former TRIFID Corporation which was acquired by ORBIMAGE in May 1998. The staff in this facility carries out the development of the software that is required for processing the images as well as the actual production of high-quality digital image products. A major customer for these products is NIMA (now to be re-named the National Geospatial-intelligence Agency [NGA]) which has one of its major production units based in St.Louis. Besides which, the IPC in St.Louis has also developed ORBIMAGE's OrbNet on-line digital archiving and distribution system.

### ORBIMAGE Re-organisation

With the successful launch and commissioning of the OrbView-3 satellite and the recent re-organisation and financial restructuring of the company,

ORBIMAGE has now emerged from its protection from bankruptcy under Chapter 11 of the U.S. Bankruptcy Code, under which it has operated since April 2002.

Furthermore, with the successful demonstration of the OrbView-3 satellite's ability to generate high-quality space imagery, the company is expected to be awarded a substantial contract under the ClearView programme of NIMA (now NGA). This award will be similar to those awarded earlier this year (2003) to its commercial competitors, Space Imaging and DigitalGlobe. Besides its space imagery, ORBIMAGE will continue its OrbView Cities programme, under which it acquired high-resolution aerial photography of urban areas in collaboration with various commercial air survey companies during the period before the successful launch of the OrbView-3 satellite.

### ORBIMAGE - The Future

Having undergone a rather traumatic financial re-structuring and company re-organisation, ORBIMAGE has now finally cut its ties with its original parent, the Orbital Sciences Corporation, and will now be known as ORBIMAGE Inc. Obviously, like its competitors, Space Imaging and DigitalGlobe, ORBIMAGE is already looking to the future and considering a replacement or supplement to the OrbView-3 satellite. In fact, the company was a minor partner in the consortium led by Space Imaging, Lockheed Martin and Raytheon that bid for an award under NIMA's ClearView programme. However, so far, NIMA has only awarded a single contract under this programme - and this has gone to the rival grouping headed by DigitalGlobe, Ball Aerospace and ITT. For the more long-term future, ORBIMAGE is also considering the possibility of constructing a satellite having both high-resolution and hyperspectral imaging capabilities - along the lines of the OrbView-4 satellite that suffered its launch failure in September 2001. Of course, after the company's difficulties over the last three years, raising the finance for the construction and launch of such a satellite will not be easy. But, for sure, the future for ORBIMAGE now looks much brighter than it did a year or so ago.

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