

Title: RADARSAT-2 Continuing System Operations and Performance

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RADARSAT-2 will soon complete its second year of routine phase operations. The spacecraft and ground segment has been performing well and the operations team have been working to incorporate a number of business driven improvements into the system. This paper provides a status of the system and operations performance, and describes some of the changes implemented over the last year. Performance in the first year of operations was reported at IGARSS 2009 [1].

As a commercial mission, RADARSAT-2 continues to be operated with a keen attention to mission operations cost effectiveness. During system development, the operations concept and planning were devised to lower operations costs yet maintain performance and safeguard satellite health. The system was designed to provide an initial operations capability, meeting requirements, which could be grown with operations experience and business inputs. In the operational phase, mission operations are conducted to maintain spacecraft health and safety, and to maintain and grow system capability and performance to meet business needs, while containing operations costs.

Performance metrics for the overall system and in functional areas are routinely collected, analyzed, and reviewed as part of the system operations management. The status of the RADARSAT-2 spacecraft and ground segment will be reviewed along with system performance metrics and recent history, including Image Quality performance. Status of the system operations functional areas – Operations Management and Mission System Engineering, Order Handling and Mission Planning, Spacecraft Operations, and Data Handling will be summarized.

While problems and anomalies in this period have not been major, and outage totals have been significantly shorter than the budget allowances, the operations team has been able to overcome a number of issues to minimize user impacts. These will be summarized along with the system and operations changes employed for resolution. The recent orbital collision of the Iridium 33 satellite with COSMOS 2251 in Low Earth Orbit (LEO) highlights the need for monitoring and readiness for avoidance actions for all LEO satellites, and the RADARSAT-2 experience will be summarized. The resilience of the operations team continues to be demonstrated. Lessons learned from the handling of particular issues will be discussed.

Over the relatively long duration of a space mission life-cycle, from concept definition through design, development, and operations, user and commercial requirements can change. The RADARSAT-2 system was designed with flexibility for commercially driven changes and enhancements in mind. This flexibility is now being exploited. The system flexibility features will be reviewed, and the flight phase improvements over the commissioned baseline described. These include new beam modes, enhanced beam mode performance from relaxation of regulatory restrictions, additional product formats, improved definitive orbit accuracy determination, and reduced tasking latency.

The expansion of the global network of ground stations receiving RADARSAT-2 data will be described.

Outline planning for further system and operations enhancements will be summarized.

[1] A. Hillman, P. Rolland, R. Périard, T. Luscombe, M. Chabot, C. Chen, N. Martens, "RADARSAT-2 Initial System Operations and Performance", IGARSS 2009.