

# **Cassini Risk Management During Mission Operations & Data Analysis – Application & Lessons Learned**

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Cassini/Huygens is a planetary mission to Saturn, that was jointly developed by the National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA). It was launched on October 15, 1997 from the Kennedy Space Center and is scheduled to arrive at Saturn on July 1, 2004. In December 2004, Cassini will release the Huygens Probe at Saturn's largest moon Titan and continue on a four-year orbital tour of the Saturnian System.

While a Risk Management Process was conducted on Cassini during the Development Phase of the Program, this process did not continue when the mission transitioned into the Mission Operations and Data Analysis (MO&DA) Phase. As a NASA required discipline, Risk Management was re-introduced to the Program after three years of successful mission operations. The Cassini Risk Management Process development began in the fall of 2000, with a series of workshops and tutorials. A Significant Risk List (SRL) was developed by the fall of 2001 and implementation of the process is on going. Risk Management on the Cassini Program is a team effort, conducted under direction of the Mission Assurance Manager.

By introducing the process of Risk Management to an established and functioning Flight Operations Team, the Mission Assurance Manager faced some unique challenges. Risk Management is a well understood and disciplined process for NASA and JPL missions in the Development Phase; however, the concept remains relatively new to missions in the MO&DA Phase. This initial challenge represented the first of several to be faced by the Mission Assurance Manager during the development and implementation of the Risk Management Process.

Cassini successfully implemented a Risk Management Process during MO&DA and it's working. The Flight Operations Team has been trained, risks have been identified and a Risk Team meets quarterly to assess and re-assess the Program's Risk Posture. Risk is at the forefront of Flight Team's minds as risks continue to be identified and refined. An on-line tool has been tailored for Cassini, to track and control risk items and metrics have been established to measure the effectiveness of the process.

Risk Management is working well on Cassini during MO&DA; however, there are lessons that can be learned from the implementation. The Cassini Risk Management

Process development presented challenges that if not aggressively addressed, could increase the risk of failure to others who try to introduce a new process during MO&DA. It is critical that Risk Management be embedded into Programs and Projects early and continue on into MO&DA, to maintain it's momentum and effectiveness. Future missions must address MO&DA risks and issues in their Risk Management Process early, during the Development Phase, to ensure that the process continues into operations.

This paper will describe the Risk Management Process as it has been implemented on Cassini during Mission Operations and the lessons that have been learned during the first year. The Risk Management effort, described in this abstract, was carried out by the Jet Propulsion Laboratory, California Institute of Technology, under contract with the National Aeronautics and Space Administration.