

**Solid State Recorder Data Management Strategy
for the *Cassini-Huygens* mission**

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ABSTRACT: The Cassini-Huygens project is currently planning an ambitious four-year orbital survey of the Saturnian system. The Cassini orbiter spacecraft carries twelve scientific instruments that will perform a wide range of observations on a multitude of designated targets, while the Huygens probe holds six more instruments that will operate during its descent into Titan's atmosphere and eventual soft-landing. Return of the recorded science and engineering data from the two Solid State Recorders (SSRs) is one of the main operational challenges facing the Cassini mission. The volume of requested observation data from each of the instruments must be balanced against the amount of data that can be brought back with the scheduled Deep Space Network antenna tracks and the requirement to keep recorded engineering data for use during anomaly resolution. Automation in the form of an SSR Management Tool (SMT) for calculating the amount of recorded data for each instrument per observation period and the resultant total data volume will be required to enable the Cassini sequencing teams to minimize the number of manual estimations needed to generate a flyable data management strategy and facilitate rapid and efficient responses to needed changes in instrument data allocations. Compatibility with the sequence planning processes for the Saturn phase of the mission and its associated software tools and databases must also be accounted for in the design of the SSR management strategy and the SMT software. Competition for Deep Space Network tracks are expected to increase steadily as the Cassini project enters its Approach Science and Saturn Tour phases, which could result in late changes and reduced data return. This paper will discuss how the Solid State Recorder data management strategy will account for these various factors and provide flexibility and simplicity in implementing a workable data return plan.