NENG SRR Review

Action Item (AI)

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Ref. Slide:	**Date:** 07/08/2015

Short Summary:
Trade Study for storage requirements on high-speed missions.

Problem/Comment:
Conduct trade study to determine the impact of the 10TB storage requirement on high-speed missions. Choose a representative mission and data rate, and then determine data volume based on average number of passes.

Proposed Resolution:
Calculate storage requirement.

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Resolution:

Based on the NEN mission forecast, NI-SAC data rate is 4Gsps which is the highest data rate that NEN Alaska Station (AS) Ka-band is required to support. NI-SAC is a joint mission between NASA JPL and Indian Government that the launch date is planned in the 2020 time frame. The signal scheme is SQPSK Rate 7/8 LDPC coding using dual polarization. The 4 Gsps rate will be achieved through two channels, each with 2 Gsps while one channel is RCP and the other is LCP. After decoding at the ground station removing the 7/8 LDPC coding overhead, the science data down link rate including CCSDS overhead will be 1.75 Gbit for each channel. The effective total data rate will be 3.5 Gbps. The AS station will require two high rate 2 Gsps receivers (RT Logic T1200) to support the NI-SAC mission. A coverage analysis has been conducted to determine the total daily volume based on number of passes for the AS station Passes/Day: 12.17 Average Duration: 5.3 min/pass Total Daily Coverage: 64.3 minutes = 3858 seconds Assume a 10 degrees antenna elevation For 3.5Gbps, the total daily volume will be 13503 Gbit or 13.186 Tbyes. Note: 1Tbyes = 1024 Gbit

Based on the NI-SAC mission 4 Gsps requirement and coverage analysis, the NENG storage requirement will be 13.186 Tbyes. As NI-SAC launch date is about 2020, the NENG will implement only a 10 TB storage in the 2016 implementation. It will be expanded to 13.186 TB when the AS station NI-SAC mission support requirement is confirmed and finalized.

Close Authorization:	**Closed Date:**