Newmark Talking Points

Thank you. I am extremely pleased to be here today to introduce the High Resolution Coronal Imager (known as Hi-C) and the overall NASA Low Cost Access to Space Program, (known as LCAS). This program consists of payloads flown on aircraft, balloons, and sounding rockets, together known as suborbital payloads. Additionally, newly enabled elements to the LCAS program include payloads flown as secondary, rocket-class payloads, as well as CubeSats and International Space Station payloads. LCAS missions play vital and necessary strategic roles in NASA's research, innovation, education, employee development, and spaceflight mission success, thus providing the foundation for achievement of agency goals. Specifically, the LCAS program rests on three key pillars: 1) intrinsically meritorious science investigations, 2) advancing the technology readiness levels of future space flight detectors and supporting technologies, and 3) preparing future leaders of NASA space flight missions such as junior researchers, students, and engineers.

The exciting results we are discussing today were obtained using a sounding rocket. Sounding rockets are suborbital missions, following elliptical trajectories, typically lasting ~15 minutes. NASA currently conducts approximately twenty research-related sounding rocket launches each year, using a variety of rockets capable of carrying payloads ranging from a hundred to several hundred kilograms, from altitudes of one hundred to over a thousand kilometers. These rockets are launched from several locations around the globe depending upon the mission requirements. Their payloads can sometimes be recovered, refurbished, enhanced, and used again. While I am discussing the larger LCAS program, the movie playing shows an overview of the sounding rocket program. The sounding rocket program is led by the NASA Goddard Space Flight Center Wallops Flight Facility. This video shows some background on the program and then exciting footage of the final preparations and launch of the Hi-C.

The LCAS missions enable important discovery science, rapid response to unexpected, episodic phenomena, and a range of specialized capabilities that enable a wide variety of cutting edge research in areas such as Earth remote sensing and observation, climate, atmospheric remote sensing and sampling, astrophysics, heliophysics, planetary sciences, microgravity, special projects (for example aerobraking tests), as well as calibration and validation of satellite mission instruments and data.

Secondly, due to the low cost and rapid timescale, the LCAS program provides an ideal platform for technology development. A number of instrument technologies that are being used in currently flying orbital missions were first tested in the suborbital environment. These initial tests provide the necessary validation of the technology in the operating environment prior to their inclusion on the significantly more expensive orbital missions.

Third, LCAS research programs are an important part of training for NASA and academic engineers and researchers. These smaller programs allow those working on them to gain knowledge of many aspects of a project from start to finish, as such they are valuable in enabling their workforce to acquire systems engineering and program

management skills, possibly including those necessary for NASA's human spaceflight program. Small- scale experiments in LCAS research often serve as precursors to larger orbital missions. Over 350 Ph.D's have completed thesis-based LCAS research and there are dedicated high school and undergraduate student launch programs.

I am extremely pleased to introduce the Principal Investigator of the High Resolution Coronal Imager (known as Hi-C), Dr. Jonathan Cirtain, a solar physicist with the NASA Marshall Space Flight Center. As you will hear, this mission exemplifies all three pillars of the LCAS program, world class science, a breakthrough technology demonstration, and the training of the next generation of space scientists. Jonathan,