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## Paper Session I-C - Innovative Technology Reduces Power Plant Emissions: Commercialization Success

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## 1C - Commercial Use of Spaceport Technologies

### Innovative Technology Reduces Power Plant Emissions – Commercialization Success

Landy Chung, Phoenix Systems International Inc.; Clyde Parrish, NASA

A new Scrubber Emission Control System is under development based on NASA's Oxidizer ( $N_2O_4$ ) Scrubber Technology, which eliminated the second largest hazardous waste stream at Kennedy Space Center by producing a useful fertilizer (U.S. Patents 6,039,738 and 6,641,638). Continued development of this technology by NASA and Phoenix Systems International, Inc., which licensed the technology, has led to expanded scrubbing capabilities. Phoenix has built and operated a 1 MW equivalent slipstream off of a coal-fired power plant for over 18 months. The results of that testing show impressive, order of magnitude reductions of nitrogen and sulfur oxides ( $NO_x$  and  $SO_x$ ), as well as reductions in the concentration of other pollutants, such as mercury and chromium. This integrated system is capable of separating nitric and sulfuric acids for the production of fertilizers or other useful applications. Because  $NO_x$  and  $SO_x$  contribute to ozone and particulate pollution, the Environmental Protection Agency is expected to adopt more stringent regulations for power plants, resulting in an estimated annual cost impact of \$3 billion. NASA and Phoenix are continuing development, and the current results will be presented.