



NASA SBIR 2017 Phase I Solicitation

H10.03 Cryogenic Purge Gas Recovery and Reclamation

Lead Center: SSC

Participating Center(s): GRC, KSC

Technology Area: TA13 Ground and Launch Systems Processing

Helium is becoming a major issue for NASA and the country. Helium is used as a purge gas to reduce the concentration of hydrogen below the flammable threshold at test and launch complexes. Most of the Nation's helium comes from the National Helium Reserve operated by the Bureau of Land Management (BLM). The statutory authority for BLM to operate is expiring and responsibility is being transferred to the commercial sector. Helium is a non-renewable gas that is in limited supply. There are already helium supply constrictions and prices are going up. Conservation and/or reuse of this non-renewable resource would substantially reduce the cost of operating NASA's test and launch facilities.

Specific areas of interest include the following technologies:

- Development of non-proton exchange helium/hydrogen gas separation technologies.
- Technologies for the rapid capture and safe storage of high volumes of mixed helium/hydrogen gas mixtures.
- Development of zero trapped gas system technologies to improve purge effectiveness.
- Development of sensor technologies that can validate that recycled gases meet stringent cleanliness levels of Table 2 of MSFC-STD-3535. _