

Abstract Submittal Form

JANNAF
62nd JPM / 10th MSS / 8th LPS / 7th SPS
Joint Subcommittee Meeting
Nashville, TN • June 1 – 4, 2015

Abstract Due Date: Friday, January 16, 2015

Fields with an asterisk (*) are required.

* **Title:** Replacement of HCFC-225 Solvent for Cleaning NASA Propulsion Oxygen Systems

* Submitted to: JPM MSS LPS SPS

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* Mission Area : 1 2 3 4 5 6 7

* Updated Paper? Yes No * Student Paper? Yes No

Sponsoring organization if SBIR-funded:

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* Approval

Approved by Management (indicates required resources are available to prepare, submit, and present this paper at the above subject JANNAF Meeting)

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Unclassified Abstract (250 – 300 words; do not include figures or tables)

Since the 1990's, when the Class I Ozone Depleting Substance (ODS) chlorofluorocarbon-113 (CFC-113) was banned, NASA's rocket propulsion test facilities at Marshall Space Flight Center (MSFC) and Stennis Space Center (SSC) have relied upon hydrochlorofluorocarbon-225 (HCFC-225) to safely clean and verify the cleanliness of large scale propulsion oxygen systems. Effective January 1, 2015, the production, import, export, and new use of HCFC-225, a Class II ODS, was prohibited by the Clean Air Act. In 2012 through 2014, leveraging resources from both the NASA Rocket Propulsion Test Program and the Defense Logistics Agency - Aviation Hazardous Minimization and Green Products Branch, test labs at MSFC, SSC, and Johnson Space Center's White Sands Test Facility (WSTF) collaborated to seek out, test, and qualify a replacement for HCFC-225 that is both an effective cleaner and safe for use with oxygen systems. Candidate solvents were selected and a test plan was developed following the guidelines of ASTM G127, Standard Guide for the Selection of Cleaning Agents for Oxygen Systems. Solvents were evaluated for materials compatibility, oxygen compatibility, cleaning effectiveness, and suitability for use in cleanliness verification and field cleaning operations. Two solvents were determined to be acceptable for cleaning oxygen systems and one was chosen for implementation at NASA's rocket propulsion test facilities. The test program and results are summarized. This project also demonstrated the benefits of cross-agency collaboration in a time of limited resources.

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- By submitting an abstract, you agree to both complete a final paper for publication and to attend the meeting to present this information.
- Direct questions to Shelley Cohen, by phone at 410.992.7302 x 215, or email to scohen@cpiac.jhu.edu.