**ENGINEERING PRACTICE STUDY**

# TITLE: Proposed Changes to MIL-PRF-38535 Concerning Addition of Requirements for Internal Gas Analysis as a Process Monitor

**February 23, 2010**

**STUDY PROJECT 5962-2009-003**

**FINAL REPORT**

**Study Conducted by DSCC**

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I. OBJECTIVE: The purpose of this Engineering Practice (EP) Study was to evaluate the requested changes concerning implementation of Internal Gas Analysis (IGA) as a process monitor requirement to MIL-PRF-38535, and to determine the DoD position regarding these requested changes.

II. BACKGROUND: Changes to MIL-PRF-38535 were requested to add requirements that manufacturers shall establish an Internal gas analysis monitoring program (previously referred to as residual gas analysis, RGA) that assesses the gas content and moisture of sealed devices. This EP Study was requested by JC-13.2 committee when the G-12 members raised these issues during the joint G-12 and JC-13.2 sessions in the JEDEC meeting.

III. RESULTS: The EP Study project was opened and an initial draft was posted on the web and distributed to JC-13.2, G-12 and space community members on September 15, 2009 for review and comments. Inputs were solicited from all interested parties, including the military services, microcircuit manufacturers, microcircuit distributors, original equipment manufacturers (OEM), and user communities regarding the requested changes. Comments were received and compiled for review at the joint JC-13.2 and G-12 meeting on January 13, 2010 of the JEDEC conference at San Antonio, TX.

There were five responses received, of which four responses were from the OEM and military services, and one response was from test Lab. Two responses concurred to add proposed changes to MIL-PRF-38535, and three responses were requested to change/modification of proposed paragraphs such as:

a) To delete footnote 1/ "IGA monitor may be used in lieu of performing table V group D, subgroup 6" of table V;
b) To defy process monitor data will be insufficient in QML V product lots;
c) To difficult to implement 10% tolerance of deviation.

After discussion of the EP Study results and received comments at the joint JC-13.2/G-12 meeting, the committee members raised concerns about the governing specifications requirement of seal environment monitor and the 10 percent tolerance is not acceptable. A straw poll on desirability of some type of seal monitor requirement was taken wherein 4 members voted in favor of new requirements, 4 members voted against i.e. maintaining the current requirements and 6 members voted to abstain. The consensus was that a meaningful defined seal monitor is desired and the committee announced a new JC-13.2 task group called TG-2010-01 title "Sealing Atmosphere Monitor" to further investigate MIL-STD-976 for sealing environment monitor requirements and also requested to terminate this EP study.

IV. CONCLUSIONS: The results of this EP Study was not sufficient to support making the proposed changes to MIL-PRF-38535. A new JC-13.2 task group (TG-2010-01) has been formed to further investigate of MIL-STD-976 regarding sealed environment monitor requirement.

V. RECOMMENDATION: DSCC recommends that the proposed changes of this EP Study not be incorporated to the MIL-PRF-38535 revision J. DSCC will monitor the JC-13.2 Task Group and the results will be coordinated with the military services for the next spec action.