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NAVSO P-3641: Navy Power Supply Reliability Design & Mfg Guidelines (NAVMAT P4855-1)

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1: INTRODUCTION

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Navy program reviews and fleet experience throughout the 1970s consistently revealed that the most serious and prevalent reliability problem with electronic systems was power supplies. In late 1979, the Deputy Chief of Naval Material for Reliability, Maintainability, and Quality Assurance requested from each Systems Command a list of power supply manufacturers among its contractors and their suppliers. A subsequent letter to some 170 companies in 1980 highlighted the Navy's concern and sought assurance that adequate attention was being given to power supply reliability in accordance with the Navy's then-new reliability initiatives.

The industry replies to that letter pointed up four major problem areas: inadequate design analysis and derating; inadequate manufacturing screening; late design specification; and unqualified low bidders. The Navy responded by convening a Navy/Industry Power Supply Conference in Washington on 2 April 1981 to discuss these problems and their potential solutions. The proceedings of this conference made it clear that the power supply problem was not a simple one and would require continuing effort to resolve.

Following the April 1981 conference, the Navy chartered a Navy/Industry Power Supply Ad Hoc Committee staffed by technical experts to identify the best design practices and manufacturing processes for low-voltage switching-mode power supplies. This committee met several times over the course of a year, and provided the information contained in the 1982 publication. As the technology of both power supplies and electronics in general continued to advance, it became necessary to update the guidelines of the original publication. This also provided an opportunity to address the problems of high-voltage switching-mode power supplies, whose unique design and manufacturing requirements are not fully addressed by the guidelines of low-voltage systems. The original Navy/Industry Power Supply Ad Hoc Committee was reconvened and augmented by consultants in high-voltage technology. This revised and expanded publication is the result of the work by this enlarged committee over a two-year period.

The Navy wishes to acknowledge both the original and the new committee members and to express appreciation to them and their affiliation for their extensive contributions. Chairman of both committees is Donald Hornbeck. Industry members of the original committee included Gwinn Almond, Anthony

Annunziato, Dwayne Attaway, Richard Blake, Gerald Brode, Joseph Craddock, John Donnelly, Jerrold Foutz, Myron Pogue, and Tony Wilson. Navy members included Randy Collins, Bud Gibson, John Jentz, and Douglas Patterson. The committee secretary and editor was Elwood Padgett.

This new edition is the work of the following:

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