

## PREFACE

The subject matter presented in this text is not, in most cases, new theories or methods, but rather a new approach to an old problem using existing methodologies and techniques. The probabilistic approach to long range planning was first presented by Dr. A.W. Wortham in a graduate course to students at Southern Methodist University, Dallas, Texas, in 1960. Mr. H.J. Kauffman, one of these students, wrote his thesis in the area [12]\*. This course was again given by Dr. Wortham at Southern Methodist with Mr. C.M. Bush as a student. As a result, Mr. Bush co-authored a paper with Mr. L.B. Wadel [24]. Mr. K.S. Packard, in turn, extended the work of Bush and Wadel in an article which appeared in the same publication [18]. This area of probabilistic long range planning then apparently remained dormant for several years.

In the spring of 1965, a research group consisting of graduate students of the Department of Industrial Engineering and Institute of Statistics, Texas A&M University, was formed in support of the National Aeronautics and Space Administration (NASA) Contract NAS9-4317. The goal of the research group, under the direction of its chief investigator, Dr. A.W. Wortham, who was now the Head of the Industrial Engineering Department, was to investigate and develop techniques to be used in probabilistic long range planning as it applies to manpower and other related elements. Several members of the group have prepared reports which represent their work in support of this contract

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\* Bracketed [ ] numbers are keyed to the publications contained in the section entitled REFERENCES.

[4], [7], [11], [14], [19], and [22]. This text not only incorporates the principles developed by them but, in some cases, also extends and modifies their results. In addition, the areas of the long range planning cycle not covered by the referenced authors are developed and presented in this text.

I wish to express my sincerest appreciation to Dr. Wortham for initially proposing this topic to me. Without his counseling, advice, encouragement, and occasional prodding, this text would never have been completed. I also wish to express my gratitude to Dr. H.O. Hartley for his suggestions and extremely helpful criticisms; to Dr. James M. Nash, for his recommendations regarding the notations used in the text; to Dr. Ronald R. Hocking, for his assistance in developing the cumulative distribution functions; and to Dr. R. J. Freund, for his guidance in the area of regression analysis.

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And finally, to my wife, Abbey, I owe more than can ever be expressed in words.