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## Resources for NASA Managers

### THE 'MANAGERS' ONLINE SERVICE (REVISED)

A current awareness service entitled MANAGERS is available online through the NASA/RECON system. Twenty citations and abstracts of books, journal articles, and reports are selected each week as those recent additions to the STI Database most likely to be of particular interest to NASA managers. The items included are updated every Monday morning.

These items are selected for their timeliness and pertinence to NASA's mission, management, and foreign technology exchange. Use of this service allows NASA managers and other interested individuals to stay abreast of new developments in a wide variety of subject areas covering the interests of managers in various fields.

Those who are interested in reviewing these weekly selections may execute the MANAGERS stored search from within File Collections A, B, D, N, O, or P in NASA/RECON. For those who do not have individual RECON passwords, the service is available through the local technical libraries at all NASA Centers and many NASA contractors, as well as through the libraries of some other government agencies and their contractors.

To see the selected citations and abstracts, the reviewer can sign into RECON and follow these steps:

STEP 1: Type BB A/E (press enter)

STEP 2: Type QUERY EXECUTE MANAGERS (NAHQ) (press enter)

The system will respond: MANAGERS EXECUTION BEGINS. This stored search will then retrieve from the STI Database those 20 accessions which are that week's selections, and place them into Set 1. Once execution is completed, the system will respond: END SEQUENCE MANAGERS EXECUTION.

STEP 3: Type DISPLAY 1 (press enter)

This allows review of the first citation in the set. Subsequent citations may be shown by typing DISPLAY and pressing the enter key. (Dial-up users may also use either the TYPE or BROWSE command instead of DISPLAY.)

Some of the subject areas covered by the weekly service are:

- Current aerospace technology on present and future NASA space missions, including aerospace medicine.
- Technologies of the European space program as well as those of the U.S.S.R. and Japan.
- New management methods, business trends, and policies concerning procurement, financial, contract, personnel, and research management.
- Congressional and legislative reports, federal budgets, and appropriations of the NASA program.

- New developments in database management systems and software.
- Current reports on international trade, market research, and economics.
- Current technology transfer, assessments, and utilization.
- Current reports on international relations, cooperation, and space law.

Some sample titles included in the MANAGERS service have been:

- The Three R's of Training: Recording, Retaining, and Reporting -- the Training Management that Synergizes
- The NASA Information Life-Cycle Transition Management within the Software Project
- U.S.-Soviet Space Relationships in the 1990's -- A U.S. Perspective on Policy Alternatives
- NASA's New University Engineering Space Research Programs
- The Law and Regulation of International Space Communication (book)

Copies of reports or articles found in MANAGERS may be ordered from your local technical library.

Citations entered weekly are among those included in the annual publication Management: A Bibliography for NASA Managers (NASA SP-7500). For additional information, contact RECON/Reference Services, (301) 621-0150.

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## BOOK REVIEWS

**Effective Project Planning and Management: Getting the Job Done**, by W. Glen Randolph and Barry Z. Posner, 1988. Prentice-Hall, Englewood Cliffs, N.J.

A self-help book for project managers? After eight years of leading seminars on effective project planning and management, these two professors with doctorates in business administration from University of Massachusetts wrote this book for managers in the broadest sense, from housekeepers to engineers. It begins with a self-scoring inventory and ends with inspirational advice to follow 10 simple rules.

The "planning" section consists of a catchy acronym for management by objectives: **GO-CARTS**. First, set a clear Goal. Then determine your Objectives. Establish Checkpoints (milestones), Activities (tasks), Relationships (among activities) and Time estimates. The S stands for Schedule, pictured in a bar or flow chart. Simple enough, and the authors apply the GO-CARTS to Noah's Ark, suggesting perhaps a better way to get ready for The Flood.

The "managing" section consists of another acronym: **DRIVER**. Direct people individually and as team members. Reinforce their commitment and Inform everyone of everything. Then build agreements (conflict resolution) that Vitalize team members, and Empower yourself and others with a greater sense of purpose in the project. Finally, Rule 10, encourage Risk-taking (creativity).

The rules and acronyms may seem contrived and overly simplistic, but the authors provide several lively anecdotes, cartoons and even comic strips.

**The Leadership Factor**, by John P. Kotter, 1988. The Free Press, New York.

Armed with questionnaires, interviews and case studies, Harvard Business School professor John Kotter identifies and validates four consecutive factors that create outstanding leadership: inborn capacity, early childhood experiences, formal education and career experiences. These factors seem to determine a great leader's keen mind, strong interpersonal skills, lofty integrity and high energy drives.

While such information is not exactly earth-shaking, Kotter's observation -- based upon empirical data -- is that "very few firms have sufficient people with those skills and assets." He describes this as an "increasingly serious problem." Lee Iacocca is the only leader singled out, and Johnson & Johnson the only management team that measures up to such leadership standards. Most of the failures are disguised by fictitious names.

To attract and keep better leaders, Kotter suggests a sophisticated recruiting effort (not based on "personnel" trivialities) to seek out the leaders of tomorrow; an attractive ("fun") work environment, free of games, politics and bureaucracy; challenging, decentralized opportunities; systematic, early identification of potential and development needs; and planned, formal development opportunities. The burden, he says, is on the shoulders of human resource professionals to look for and cultivate those who show innate and earned leadership potential, instead of being technically competent.

Thus, **The Leadership Factor** is more global and analytical than practical, a follow-on to his more popular **The General Managers** (1982) and **Power and Influence** (1985).

**Kelly: More Than My Share of It All**, by Clarence L. "Kelly" Johnson, 1985. The Smithsonian Press, Washington, D. C.

Kelly Johnson, perhaps the most honored aeronautical engineer alive today, is best known for his "Skunk Works" at Lockheed -- an innovative project management concept that produced the U-2 and SR-71 "Black Bird" on schedule and under budget.

**More Than My Share** is the personal reflection of Kelly Johnson, edited by Maggie Smith. The seventh of nine children of a stern but not severe Swedish bricklayer who took the wrong train to Nebraska and ended up in Wisconsin, Kelly invented his nickname in grammar school after busting the leg of the school bully who called him "Clara." "Kelly", taken from an Irish fighting song popular at the time, stuck.

"I have known what I wanted to do since I was 12," recalls Kelly. But to get an aeronautical engineering degree at the University of Michigan during the Depression, he had to study civil, chemical, electrical and mechanical engineering -- "an excellent curriculum because it provided a very good basic education in everything it took to design and build an airplane," he recalls. He had only two dates in college and had to feed an ulcer with doughnuts and milk constantly. Unable to find a job after graduation, and with eyesight too poor for the Army Air Corps, Kelly returned to Ann Arbor for graduate study in aerodynamics until he was hired by Lockheed for \$83 a month in 1933.

During that time Kelly proved his aeronautical expertise, and was sought out by Amelia Earhart, Howard Hughes, and the Lindbergs. With Anne Lindberg's approval, he fashioned his guiding principles of life: belief in God, good health, purpose in life, a spouse who loves and understands you, and respect for superiors and subordinates.

Ten years later, Kelly promised the Army Air Corps that Lockheed would build, in 180 days, a match for the jet-powered Messerschmitt 262. But Lockheed was booked up, already

running three shifts six days a week for the war effort. Kelly, given a free rein, "stole" 22 trusted Lockheed engineers from the main factory, and retrofitted an old machine shop with spares, scrap lumber and a rented circus tent. The YP-80A, the nation's first tactical jet fighter, also the first to break 500 mph, was accepted by the Air Corps 143 days later. His secret, ragtag, makeshift, independent operation was known as "Skunk Works", reminiscent of Li'l Abner's kickapoo joy juice, a hasty brew that included skunks.

Chapter 16, "It's No Secret," is chock full of management techniques used in the dozen or so "Skunk Works" operations Kelly conducted. Early on at Lockheed he learned two lessons from chief engineer Hale Hibbard which contributed to the success of "Skunk Works": excellent labor relations, and "it is much better to lead people, not to drive them." He also believed that those who design aircraft should also fly them, and Kelly insisted on inviting employee families to aircraft christenings. He carried quarters around with him for anyone who could prove him wrong on anything.

Throughout the years, Kelly's first two wives suffered and died. Recently he was funding a hospice at a Burbank hospital for family members, and because "life is too short," he married Nancy Johnson. "The final chapter of my life is not yet written," Kelly concludes. "But if God should call me tonight, I will have had more than my share of it..."

**Engineering Management**, by David I. Cleland and Dunder F. Kocaoglu, 1981. McGraw-Hill, New York.

Believing "the time has come" for engineering management to be recognized as a distinct discipline, the two founders of the U. of Pittsburgh's engineering management program set out to define, describe and explain what engineers need to know when they become managers. To do this, they concentrate on manage-

ment theory as applied to engineering, skill in linear programming, and the "values and aspirations" in the attitudes of an engineering manager.

While the 469-page book does not deal with finances nor economics, it does attempt to quantify the subjective values of decision-making. A "hierarchical decision model" in the appendix pulls together much of the probability theory of earlier chapters for use in project planning, evaluation and resource allocations. The book winds down with environmental concerns and legal implications of engineering management.

Cleland had authored a standard textbook earlier, called Systems Analysis and Project Management, and later co-edited the Project Management Handbook (reviewed in NASA SP-6101). Kocaoglu used a systems approach in his 1976 doctoral dissertation at Pitt. Here, however, the emphasis is not on systems analysis but rather upon engineering. The engineer who has little knowledge of management will find more of interest than the manager with little skill in engineering. Using the mathematical models of engineering, the technical specialist is introduced to management responsibilities.

Engineering Management is a bit dated but useful as a graduate-level textbook and as an orientation for engineers who find themselves as managers of projects and people.

**The Implementation of Project Management: The Professional's Handbook**, edited by Linn C. Struckenbruck, 1987. Addison-Wesley, Reading, Mass.

The Southern California chapter of the Project Management Institute spent two years producing this how-to manual for executives who find themselves in the role of project management. Dr. Linn Struckenbruck, professor of safety and systems management at USC,

served as coordinator and provided about half the material in this oversize (9 by 12) handbook.

"This book will discuss the methods and procedures used by successful project managers, and will point out the pitfalls to be avoided in implementing a project," the editor proclaims at the outset. The project manager is an executive who assumes an additional role -- integration -- and becomes ultimately responsible for a large, well-defined but complex project. Hence, the emphasis here is upon the matrix.

Matrix is defined as a dual-authority relationship between the project manager and the functional line manager. The balance of power is in the hands of the former in a tight or strong matrix and with the latter in a weak or loose matrix organization. The ideal is either a balance of power by dividing the responsibilities into overall integration and technical direction, or to shift the balance depending on budget and schedule. In either case, top management support of the matrix concept is fundamental.

More traditional management theories are presented, such as management by objectives (MBO). Fred Peters, chief of programs, scheduling and analysis at Johnson Space Center, co-authors one chapter on MBO in project management. MBO is described as an emphasis on results instead of activities in a goal-oriented project. Yet even the MBO can be incorporated into a matrix when the project manager obtains specific objectives in writing from functional personnel as a way of firming

up positive commitments. These concrete objectives then become useful yardsticks in performance evaluation. Pitfalls are listed, but if the objectives are achievable and verifiable, MBO can be a useful tool, for the project manager, even in a matrix organization.

Eight appendices with sample charts add to the value of this handbook. While style and approach vary among the dozen or so writers, with considerable overlap, The Implementation of Project Management is quite readable. Three case histories in the back show applied theory and underscore the lessons learned.

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**Management: A Bibliography for NASA Managers** (NASA SP-7500)

Scientific and Technical Information Division, annual. This bibliography is a collection of references selected from the unclassified reports and journal articles announced in the NASA STI Database. The references are selected based on their timeliness and pertinence to NASA's mission, management and foreign technology exchange. The items are grouped into 10 categories, especially chosen for this bibliography, ranging from Human Factors and Personnel Issues to Management Theory and Techniques. Seven indexes are included: subject, personal author, corporate source, foreign technology, contract number, report number, and accession number. Available from the National Technical Information Service.