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**1992 NASA/ASEE SUMMER FACULTY FELLOWSHIP PROGRAM**

**JOHN F. KENNEDY SPACE CENTER  
UNIVERSITY OF CENTRAL FLORIDA**

**NEEDS ASSESSMENT FINAL REPORT**

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NASA/ASEE MANAGEMENT SCIENCE FACULTY FELLOWSHIP PROJECT  
KSC MANAGEMENT TRAINING SYSTEM PROJECT

NEEDS ASSESSMENT: FINAL REPORT  
José A. Sepúlveda, Ph.D., P.E.

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NASA/ASEE MANAGEMENT SCIENCE FACULTY FELLOWSHIP PROJECT  
KSC MANAGEMENT TRAINING SYSTEM PROJECT

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1.0 BACKGROUND

1.1 Purpose

The stated purposes of the Management Science Faculty Fellowship Project were:

- Provide a comprehensive analysis of KSC management training for engineers and other management professionals from project/program lead through executive levels.
- Development of evaluation methodologies which can be used to perform ongoing program-wide course-to-course assessments.

This report will focus primarily in the first stated purpose for the project. Ideally, the analysis of KSC management training will build in the current system and efficiently propose improvements to achieve existing goals and objectives while helping to identify new visions and new outcomes for the Center's Management Training Mission.

Section 2 describes the objectives, approach, and specific tasks used to analyze KSC's Management training System. Section 3 discusses the main conclusions derived from an analysis of the available training data. Section 4 discusses the characteristics and benefits envisioned for a Management training System. Section 5 proposes a Training System as identified by the results of a Needs Assessment exercise conducted at KSC this summer. Section 6 presents a number of recommendations for future work.

1.1 Definitions

The following definitions apply to terms as used in this project:

- Education:** aggregate of all processes by means of which a person develops abilities, attitudes, and other forms of behavior which are transferable and useful to situations not now known.
- Training:** an organized procedure by which people learn knowledge and/or skill and/or attitudes for a definite purpose usually related to a job or task(s) to be performed.
- Training for Competency:** goal is to master skills and knowledge to perform. Engineers are trained to competency.
- Training for Proficiency:** goal is repeated performance without error. Proficiency implies a mentoring period, practice time, and extra study.

- Need:** an observable, measurable, discrepancy between "where we are now" and "where we ought to be". Needs should be justified and documented (including any associated problems).
- Needs Assessment:** the formal process of identifying needs and assigning priorities to their analysis and solution. The process identifies performance gaps - an observable, measurable, discrepancy between actual and required level of performance. Implicit in the assessment is the need for a model to determine "required" level.
- There are three different levels or types of needs assessment: Basic, which looks for gaps at the individual student level of accomplishment; Comprehensive, which focuses at the departmental/project/program level of operation; and Global, which addresses accomplishments at the organizational(NASA) level.
- Needs Analysis:** the process of identifying causes or origins of needs and identifying alternative ways to meet them.
- Methods-Means Analysis:** specify advantages and disadvantages for each possible situation.
- Mission Analysis:** an structured effort to determine where are we going, how will we know we got there, and a plan showing the functions that must be performed along the way.
- Function Analysis:** an analysis of each of the elements (functions) in the mission profile. It includes a determination of the possible methods and means to accomplish each function (with a list of relative advantages and disadvantages) and considers constraints, which would preclude the implementation of certain methods and means.

## 2.0 APPROACH

### 2.1 Objectives

Specific objectives identified for the KSC management training system project were:

- Identify organization-wide needs and concerns in the area of Management Training
- Identify specific knowledge, skills and abilities important for each individual's performance at different levels of managerial responsibility
- Identify short and long term management skills requirements at different managerial levels

### 2.2 Procedure

A system approach was used in the analysis. This approach calls for the identification of NEEDS and the requirements for solutions, including identification of alternatives, and methods and means to implement, evaluate and revise the solutions. The approach requires clear and measurable objectives, and a systematic (formal) procedure to reach and periodically review these objectives. The approach is results oriented and flexible, that is, adaptable to dynamic system changes.

### 2.3 Specific Tasks

#### 2.3.1 The Level of Effort

The first task was to select the level for the Needs Assessment exercise, e.g., basic, comprehensive, or global.<sup>1</sup> A "Comprehensive" level was recommended and adopted for this project: The effort was initially restricted to KSC Management Training.

#### 2.3.2 The Policy Group

A group of people familiar with the situation and with enough "clout" to make decisions was requested. KSC's Policy Group was headed by the Deputy Center Director and included the Directors of the Center' main directorates:

G. Thomas	Deputy Center Director
J. Conway	Director, Payload Management and Operations
J. Honeycutt	Director, Shuttle Management & Operations
M. Jones	Director, Center Support Operations
W. Murphy	Director, Engineering Development
A. Parrish	Director, Safety, Reliability and Quality Assurance
R. Uhrmann	Director, Personnel Office

Alternates:

J. Morgan	Director, Payload Projects Management
R. Sieck	Deputy Director, Payload Management and Operations

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<sup>1</sup> See definitions in Section 1.2

### 2.3.3 The Focus Group

The Policy Group agreed to perform a Needs Assessment at KSC and named twenty managers with vast experience in program and project management at the Center. This group of people is addressed in this report as the "Focus Group". Its composition was the following:

<u>Name</u>	<u>Organization</u>
Earl D. Hopkins	AC-ICO
Thomas E. Clarke, Jr.	AC-RMO-SS
Elliot Zimmerman	CP-PCO
Joe Lackovich	CS-EED-2
Miguel A. Rodríguez	CS-EED-21
Charles McEachern	CS-PPD-2
Floyd Curington	CV-PSD
Saul H. Barton	PM
Dennis Armstrong	PM-TNG
Larry R. Tucci	RM-ENG-1
Terry L. Smith	RO-ORB
Jackie E. Smith	RT
Jim Joyner	RT-ENG
John Dollberg	RT-SOE-1
Doug Polly	SI-IPO
Elgin J. Kirkland	SI-PEC
John Meyer	SI-PEI
Robert Sieck	TM
John C. Van Hooser, Jr.	TP-POD
José García	TV-ETD-2

### 2.3.4. Needs Assessment

The bulk of the summer effort was dedicated to this task. It included the following activities:

- a. Collect internal and external data. Hard data was collected on courses offered since 1965. The analysis focused on two five year periods: January of 1982 through December of 1986 and January of 1986 through December of 1991. A summary of this analysis is included in section 3 of this report.
- b. List identified and documented needs. This step includes to revise data and identify potential training needs. A master list of 464 potential management training topics was developed and trimmed to 178 topics for further consideration. These topics were assessed by the "Focus Group" which rated them with respect to importance for the organization, the most likely trainees, when should the training take place and expectations for results.
- c. Place needs in a priority order according to organizational level. This list, which is the KSC Management Training System as defined through the Needs Assessment exercise is presented in the section 4 of this report.

- d. List and obtain agreement from Policy Group for prioritized needs. The results of the Needs Assessment exercise conducted by the Focus Group were presented to the Policy Group on August 5, 1992. Section 5.4 presents the Policy Group's response.

2.3.5. Mission and Function Analyses<sup>2</sup>

- a. Determine mission, function, and detailed performance requirements.
- b. Identify possible methods and means. Discuss constraints.
- c. Select and implement method-means.

2.3.6. Evaluation:<sup>3</sup>

- a. Formulate a process to generate an effective, performance-based, evaluation instrument for each training effort.
- b. Determine a mechanism to collect and process data on training effectiveness.

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<sup>2</sup> Due to time constraints, this phase was not addressed and is discussed in Section 6, Recommendations.

<sup>3</sup> This topic is the subject of an attached report entitled "Training Evaluation".



### 3.0 INITIAL FINDINGS

After a brief review of the available data on courses offered, dates and attendance, the current training system was described as being mostly "reactive", that is, courses seem to be offered because somebody asks for them specifically, instead of following a specified "curriculum" or planned layout. A system approach is essentially "pro-active", e.g., it identifies needs, seeks a better future response to these needs, and lays a structured foundation to satisfy them.

The current system seems to be focused on an individual's (or his/her supervisor's) unplanned requests. The system approach shifts focus to a global (organizational) concern, developing a training "profile" and helping individuals to go through it, thus preparing them to be successful and contribute to specific organizational ends.

The following are the main conclusions derived from an analysis of the available training data:

From analysis of training database, 1982 through 1991

Number of courses doubled

Number of participants doubled

Average number of participants per session stable

About 20% of all courses account for 80% of all participants

Mostly supervisory courses

Reactive situation

Focused on an individual's (or his/her supervisor's) unplanned requests

Courses keep changing

Data flow does not refer to a "curriculum"

Evaluation limited to federal and local forms

Not used for formal reporting

Not used to assess performance improvement

No cost/benefits considered

Limited access

Geared to engineers and scientists

Not clear who and why selection for training is made

Link to KSC's goals and objectives not clear

Missing tie to Career Development Plan

## 4.0 KSC's MANAGEMENT TRAINING SYSTEM

### 4.1 Characteristics

The KSC Management Training System is envisioned as having the following characteristics:

- A planned and on-going process
- Linked to KSC Mission, Goals and Objectives
- Pro-active
- Responsive to a long-term strategy
- Not a catch-all solution (not every performance need is met through training)
- Responsive to continued feedback on actual performance
  
- Focused on the word 'system'
  - Aims to improve organizational performance
  - Focuses on organizational needs in a structured manner
  - Links individual development to improve organizational performance
  
- Considers issues of impact and value
  - Linked to individual progress through organization
  - Sets priorities based on expected results
  - Tracks training and performance data
  - Measures results in terms of costs, benefits and performance improvement
  - has a performance and values-based focus
  
- Establishes Training Priorities
  - Cost/effectiveness
  - Justifiable funding (investment plan)
  - Accountable
  
- Translates into Organizational/Departmental/Personal Plans
  - Professional trends
  - Performance indicators
  - Projected competency (Professional Development Assignments)
  - Career paths

### 4.2 Benefits

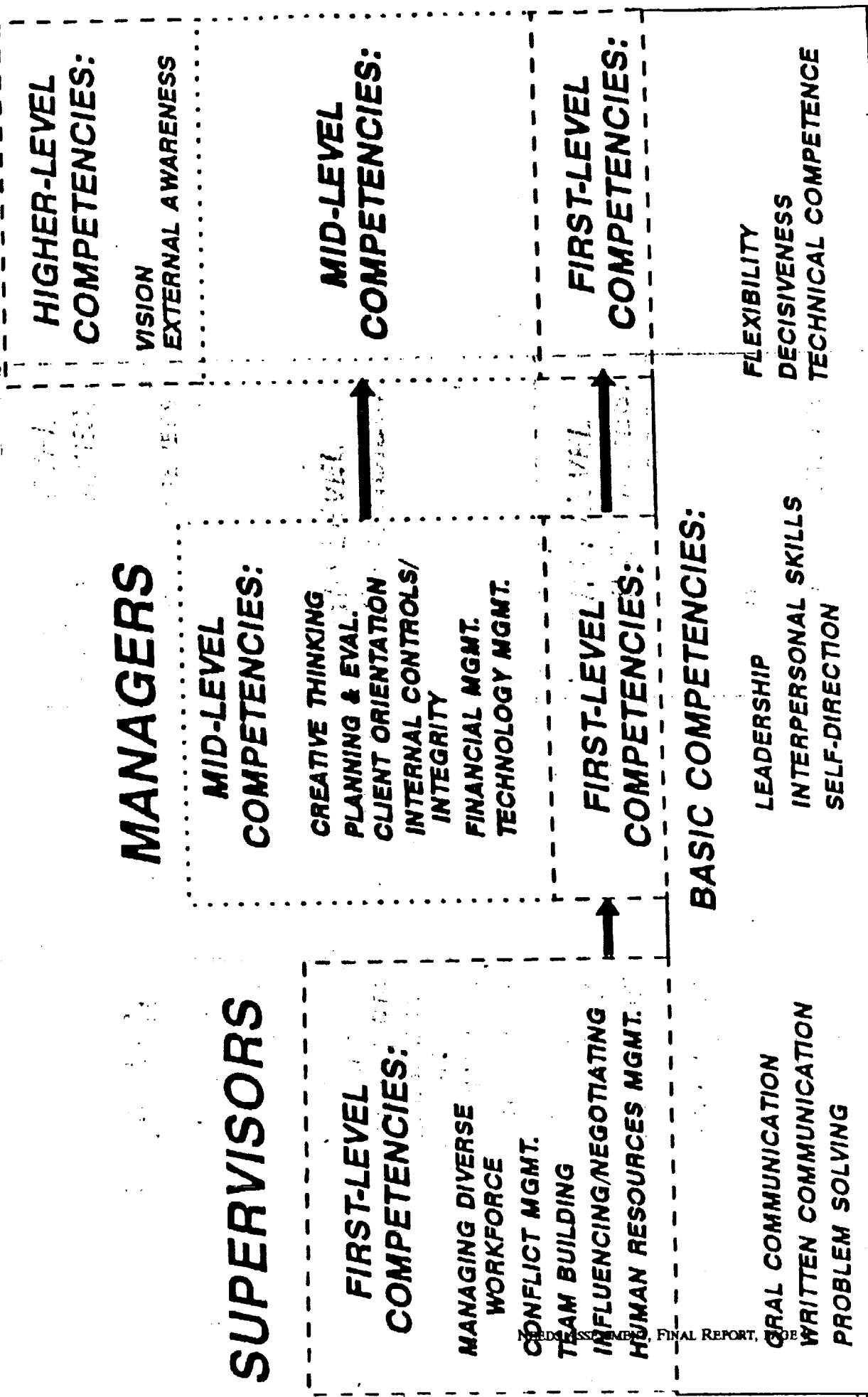
- Appeals to individuals
  - Focus on occupational career path
  - Occupational development assignments
  - Occupational leadership
  - Occupational training plan
  
- Appeals to Supervisors
  - Management involvement
  - Performance plans
  - Performance appraisals

- Skill assessment
- Standardizes and makes objective evaluation method
- Appeals to Departments
  - Needs assessment provides basis for resource allocation
  - Identifies best candidates for promotion or assignment of added responsibilities
  - Considers individual's weaknesses when assessing performance and determining future training needs
  - Helps develop and maintain a balanced work force
- Appeals to Training Professionals
  - Provides framework for discussion, review, and evaluation of training requirements
  - Allows for short/medium/long range planning
  - Justifies resource allocation
  - Individual and organizational evaluation reports
  - Statistical reporting
  - Accountable
- Appeals to Senior Management
  - Framework for justifiable expenditures of scarce training resources
  - Ties training to contribution to organizational performance
  - Focus on team effort, values, leadership and performance
  - Fits into 'NASA/KSC' culture (way of doing things)
  - Consistent with NASA's directives
  - Consistent with OPM's recommendations

#### 4.3 Succession and Development Plan

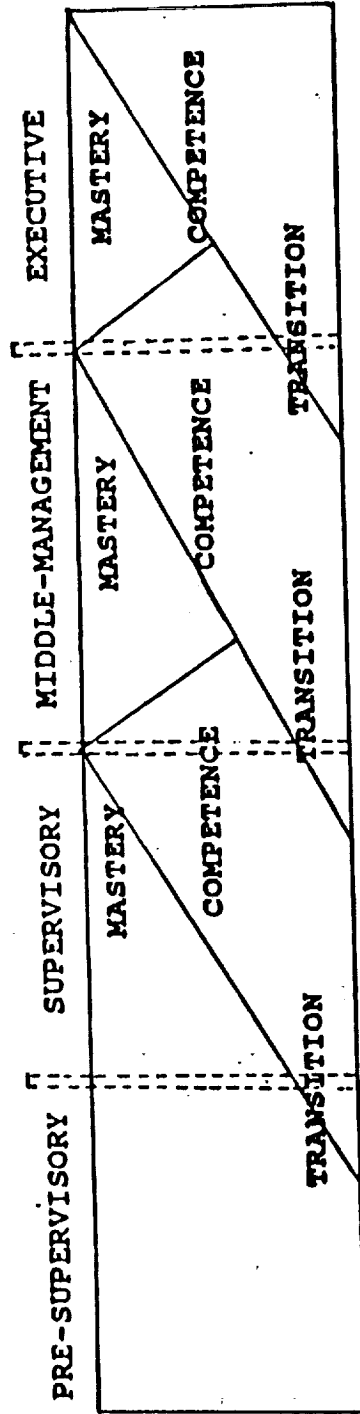
The figures included in the next two pages describe the approach recommended by the U.S. Office of Personnel Management for an organization-wide Management Training Program. The program is envisioned as offering a set of "Basic Competencies" which should be available to all employees. Later, as a person progresses through the organization ladder, training in first level (supervisor) competencies, mid-level (managerial) competencies, and higher-level (executive) competencies should be provided. The time when training is offered is also important: some may be soon after a person reaches a certain position, on occasions training may wait, and still in other cases, training should take place before the person assumes higher responsibilities.

# SUCCESSION AND DEVELOPMENT PLANNING EXECUTIVES



Attachment 1

OPM CAREER CONTINUUM FOR EXECUTIVE, MANAGEMENT, SUPERVISORY DEVELOPMENT



## 5.0 NEEDS ASSESSMENT

This section presents the Management Training System at KSC as proposed by the consensus of the members of the Needs Assessment Focus Group. The figure in the next page summarizes the recommendations in a manner similar to the one proposed by the Office of Personnel Management (see section 4.3). The figure concentrates only those topics rated as "high priority" (3 and over). Section 5.2 includes all the topics, with their priority, in each level. Section 5.3 lists all the topics rated as "Useful but not essential" or "No Need for Training". Section 5.4 describes the Policy Group's response to the Needs Assessment.

The Appendix presents the details of the Needs Assessment exercise. It includes the complete list of topics; the responses made (by respondent) to each topic (including comments), a summary of the priorities assigned to each topic, the recommended levels, and when to train, and a detailed analysis of the consensus observed in the Assessment.

### 5.1 Analysis of Consensus

PRIORITY	LEVEL					Totals	Percent
	Unanimity	Strong Consensus	Weak Consensus	Disagreement			
Unanimity	13	22	5	7	47	26.4	
Strong Consensus	8	9	3	3	23	12.9	
Weak Consensus	13	41	15	21	90	50.6	
Disagreement	4	7	2	5	18	10.1	
Totals	38	79	25	36	178	100.0	
Percent	21.3	44.4	14.1	20.2	100.0		

Notes: Unanimity: All three respondents agreed in assessment  
 Strong Consensus: Two persons agreed, the third was "close"  
 Weak Consensus: Two persons agreed, the third person's opinion was very different.  
 Disagreement: Individual responses were totally different.

The consensus is rated as very high, reflecting the existence of a "KSC Culture". In priority the consensus is about 90 percent. In recommended level, the consensus is less (80%), but still very high by any standards.

# SUCCESSION AND DEVELOPMENT PLANNING

## SENIOR EXECUTIVES

<i>WITHIN 3 MONTHS IN POSITION</i>	<i>WITHIN 2 YEARS IN POSITION</i>
Dealing with media communications	Strategic planning Risk assessment methods

## MANAGERS

<i>WITHIN 3 MONTHS IN POSITION</i>	<i>WITHIN 2 YEARS IN POSITION</i>
Risk/benefit analysis Increasing departmental dialogue Human growth Organization behavior and development Sharing power and authority	The manager as a change agent Managing large and complex organizations Risk management Internal control

## SUPERVISORS

*IF POSSIBLE, BEFORE ASSUMING THIS POSITION*  
Incentivizing your work force to come up with better wa  
Supervision and personal skills  
Cost allocation

<i>WITHIN 3 MONTHS IN POSITION</i>	<i>WITHIN 2 YEARS IN POSITION</i>
Accountability in an organization Coping with continuous change in personnel and technology Developing short-range plans Downsizing (managing shrinking resources) How to delegate work Managing resources Supervision and group performance Management principles Staffing: choosing competent people Budgeting Career counseling Developing mid-range plans Human relations skills Dealing with issues, mistakes, and conflicts Effective interviewing Performance review Handling disagreements Handling mistakes Managing across organization lines Statistical methods for management Strategies for mastering change	Decision support technologies Establishing work with goals Involving subordinates Leadership Managing Award Fee Contracts NASA's Mission, Goals, and Objectives Program management The budget process Developing long-range plans Effective briefings Management information systems at KSC OSHA's standards and regulations Performance-based management

## PRE-SUPERVISOR

<i>WITHIN 3 MONTHS IN POSITION</i>	<i>WITHIN 2 YEARS IN POSITION</i>
Constant Innovation Cost/Effectiveness analysis EEO considerations Encouraging team work External awareness (customer orientation) Monitoring progress Safety and reliability Sexual harassment TQM - Total Quality Management Team approach Work unit planning Written communication Building relationships How to set and achieve goals Budget monitoring Controlling costs Contract administration Goal setting and course solutions Integrity Process Improvement Effective oral presentations	Process analysis and control Productivity measurement and improvement Project management Quality and productivity fundamentals Team building Communication skills Coordinating, monitoring, evaluating and upgrading plan Negotiation/ conflict resolution Understanding and interpreting human behavior Accepting criticism Self-assessment Encouraging innovation Finding information High performing groups Involving others Negotiating Team playing

5.2 Needs Assessment: Topics by Level (Ordered by Priority)

5.2.1 Pre-Supervisor (Basic Competencies)

5.2.1.1 Within 3 months in position

Priority<sup>4</sup>

Constant innovation	4.10
Cost/Effectiveness analysis	4.10
EEO considerations	4.10
Encouraging team work	4.10
External awareness (customer orientation)	4.10
Monitoring progress	4.10
Safety and reliability	4.10
Sexual harassment	4.10
TQM - Total Quality Management	4.10
Team approach	4.10
Work unit planning	4.10
Written communication	4.10
Building relationships	3.73
How to set and achieve goals	3.73
Budget monitoring	3.40
Controlling costs	3.40
Contract administration	3.37
Goal setting and course solutions	3.37
Integrity	3.10
Process improvement	3.10
Effective oral presentations	3.03
Image and self-projection	3.00
Dealing with difficult people	2.73
Multicultural awareness and diversity in the work place	2.73
Providing support to other persons	2.73
Creative thinking	2.37
Interpersonal skills	2.37
Security	2.10
Representation	2.05
Time management	2.03
Listening skills	1.73
Organizational culture	1.73
Personnel management: hiring, firing, promoting, reward	1.73

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<sup>4</sup> PRIORITY	Average of answers to "What is the importance of requiring training in this subject matter?"
0.0	There is no need for training in this subject matter
1.1	Useful but not essential
2.0	Helps individual's performance in the future
3.0	Helps individual's performance now
4.1	Helps organizational performance



5.2.1.2	Within 2 years in position	Priority
	Process analysis and control	4.10
	Productivity measurement and improvement	4.10
	Project management	4.10
	Quality and productivity fundamentals	4.10
	Team building	4.10
	Communication skills	3.73
	Coordinating, monitoring, evaluating and updating plans	3.73
	Negotiation/ conflict resolutions	3.73
	Understanding and interpreting human behavior	3.40
	Accepting criticism	3.37
	Self-assessment	3.37
	Encouraging innovation	3.10
	Finding information	3.10
	High performing groups	3.10
	Involving others	3.10
	Negotiating	3.10
	Team playing	3.10
	How to give and take criticism	2.73
	Information technologies	2.73
	Problem solving	2.73
	Superior service to customers	2.73
	Planning	2.40
	Handling details	2.10
	Relationship with management	2.10
	Relationship with peers	2.10
	Materials management (procurement, transportation, storage)	2.03
5.2.1.3	Anytime before assuming higher responsibilities	
	Building consensus on objectives, approaches and success measures	2.40
	Building diagnostic skills	2.37
	Rewards and recognition	2.37
	The individual / organizational fit	2.37
	Customer service orientation at NASA	2.10
	Managing change	1.73
5.2.2	Supervisors (First Level Competencies)	
5.2.2.1	If possible, before assuming this position	
	Incentivizing your work force to come up with better ways to do things	4.10
	Supervision and personal skills	3.73
	Cost allocation	3.10

5.2.2.2	Within 3 months in position	Priority
Accountability in an organization		4.10
Coping with continuous change in personnel and technology		4.10
Developing short-range plans		4.10
Downsizing (managing shrinking resources)		4.10
How to delegate work		4.10
Innovative management approaches		4.10
Managing resources		4.10
Supervision and group performance		4.10
Management principles		3.73
Staffing: choosing competent people		3.73
Budgeting		3.40
Career counseling		3.40
Developing mid-range plans		3.40
Human relations skills		3.40
Dealing with issues, mistakes, and conflicts		3.37
Effective interviewing		3.37
Performance review		3.37
Handling disagreements		3.10
Handling mistakes		3.10
Managing across organization lines		3.10
Statistical methods for management		3.10
Strategies for mastering change		3.10
Dealing with marginal performers		3.03
Providing performance feedback		3.03
Group dynamics		2.73
Meetings		2.73
Performance analysis/appraisal		2.73
Technical competence		2.73
Training work force for new and changing technologies		2.73
Critical thinking		2.40
Decision analysis		2.37
Developing priorities		2.10
Establishing a motivating environment		2.10
Scheduling and sequencing		2.10
Dealing with hidden agendas		2.03
The procurement process		1.73

5.2.2.3      Within 2 years in position

Establishing work with goals	4.10
Involving subordinates	4.10
Leadership	4.10
Managing Award Fee Contracts	4.10
NASA's Mission, Goals, and Objectives	4.10
Program management	4.10
The budget process	4.10

Developing long-range plans	3.40
Effective briefings	3.10
Management information systems at KSC	3.10
OSHA's standards and regulations	3.10
Performance-based management	3.10
Creating flexible strategies and action plans	2.73
Stress management for professionals	2.73
Utilization of money and equipment	2.73
Cost behavior patterns	2.40
Managing among multiple and conflicting interests, values and demands	2.40
Making decisions	2.37
Economics and decision making	2.10
Influencing others	2.10
Computer models in management	1.73
Productivity issues in a service environment	1.73
Understanding the system	1.73
 5.2.2.4            Anytime before assuming higher responsibilities	
 Decision support technologies	3.40
 5.2.3    Managers (Mid-Level Competencies)	
 5.2.3.1            Within 3 months in position	
 Risk/benefit analysis	3.73
Increasing departmental dialogue	3.40
Managing growth	3.40
Organization behavior and development	3.10
Sharing power and authority	3.10
Decision making under uncertainty	2.73
Representing, explaining, selling and defending the organization policies	2.73
Finance principles for managers	2.10
 5.2.3.2            Within 2 years in position	
 The manager as a change agent	4.10
Managing large and complex organizations	3.40
Risk management	3.40
Internal control	3.10
Marketing skills	2.73
Information management	2.60
Preparing and defending a budget	2.40
Decision making under risk	2.10
Technology management	2.10
Utilization of human resources	2.03

5.2.3.3	Anytime before assuming higher responsibilities	Priority
	Quantitative models in management	2.73
	Removing barriers to creative thinking and mental risk	1.73
5.2.4	Senior Executives (Higher Level Competencies)	
5.2.4.1	Within 3 months in position	
	Strategic planning	2.40
	Risk assessment methods	2.03
5.2.4.2	Within 2 years in position	
	Dealing with media communications	3.00
5.3	"Useful but Not Essential" & "No Need for Training"	
	Topic	
	Accounting principles for managers	1.10
	Building a master activity list and a master schedule	1.10
	Challenge of new roles	1.00
	Consulting skills	1.37
	Dealing with pressure and ambiguity	0.67
	Economics and public policy	0.73
	Expert systems	1.10
	Financial planning	1.40
	Honesty, integrity, trust, openness and respect	1.37
	KSC organizational information management policies	0.73
	Leader/follower roles	0.37
	Logistics	1.10
	Managing relations with state and local government	1.37
	Managing under a labor agreement	1.10
	Matrix management	1.37
	NASA's past, present and future	1.10
	Networking	1.37
	Policy analysis and implementation	1.10
	Political skills	0.73
	Political, economic, social - Future Trends	1.10
	Professional ethics and dealing with conflicts of interest	1.10
	Professional obligation and rights	1.37
	Quality control	1.10
	Science and technology in the public sector	0.73
	Skill assessment	1.03
	Utilizing new technologies	1.10
	Work breakdown analysis	1.40

#### **5.4 Policy Group Response**

The results of the Needs Assessment exercise were presented to the Policy Group on August 5, 1992. After reviewing the results, the Policy Group decided to give high priority to the training of the following topics:

- Managing award fee contracts**
- Ethics**
- Procurement**
- Environmental consciousness**
- Time management**

The Policy Group also recommended that a presentation of the results of the Needs Assessment be made to senior executives; to personnel with "high supervisory potential"; and to lower grade levels and contractors. The possibility of asking lower grades "what does your manager needs?" was also raised. Finally, it was recommended to discuss the issues with the TLP/RMEP programs to see if the fit within their focus.

## 6.0 RECOMMENDATIONS

The following recommendations are suggested, based on the observations and analyses made through this summer, in the hope that the effort done will be useful to KSC Training Branch's and the Center:

### 6.1 On the Needs Assessment:

- a. Revise list of Training Needs developed and prioritized by the Needs Assessment Focus Group. In particular, make sure that the recommendations of the Policy Group regarding the Needs Assessment are implemented, i.e.:
  - i. Give high priority to the training of the following topics:
    - Managing award fee contracts
    - Ethics
    - Procurement
    - Environmental consciousness
    - Time management
  - ii. Present the results of the Needs Assessment to senior executives; to personnel with "high supervisory potential"; and to lower grade levels and contractors.
  - iii. Consider asking lower grades "what does your manager need?".
  - iv. Consider asking the TLP/RMEP programs to revise the Needs Assessment to see if it fits within their focus.

After the revision, circulate the outcome to let the members of the Focus Group (and other important customers) know you have heard what they said.

- b. Use the revised Needs Assessment. Set it as the basis of a "next three-year management training plan". In the future, discuss any new request which includes topics not in this plan. Revise proposed new course descriptions to check if courses fit the plan or modifications (in the plan and/or the courses) are necessary.
  - c. Perform Needs Analyses and Method/Means Analyses: Develop and implement a (few) training course(s) - an immediate, tangible and visible change that improves training for users and demonstrate that their input was listened to.
- ### 6.2 On Evaluation:
- d. Evaluate new training requests in the same way new procurement or new projects are evaluated. This includes examining training requests from the perspective of KSC goals and objectives, and determining expected ROI of proposed training program (does training result in improved productivity, through savings of time, improved outputs, and/or personnel reduction?).

- c. For existing courses, measure results against user expectations! The Focus Group was also polled for information about their expectations for training (and lack of it). Use these handwritten comments to develop and implement objective, performance-based, assessment instruments for each training effort (course, seminar, video/work book, etc.). Use both immediate and delayed evaluations, and keep constant review of training results and productivity gains.
- f. Mechanize course evaluation and develop software to produce standard reports. Modify the form used to evaluate training courses in such a way that, not only all the necessary information is collected, but that it computerized to speed up processing and reporting and to reduce data entry errors. Scanning equipment and form-processing software were recommended to mechanize the data gathering, analysis and reporting processes.

### 6.3 On Documentation:

- g. Keep adequate documentation on cost data (direct, indirect, even "intangible" costs); delivery data (who, how many, where, when); and specific course data (objectives, topics covered, method/means). Even if it means extra effort, it is recommended that an adequate Training Performance Data Base (TPDB) be kept active. It should contain the following data:
  - Cost data (NOT in dollars but in hours, units of resources, etc. This will allow for analysis of real expenditures, if needed).
  - Delivery data (who, where, how, when, how long, why, what (syllabus), number of attendants, instructor, student's initial and delayed evaluations, supervisor evaluation, comments)
  - Performance improvement data (assessment by experts about improved performance, if any. Also by supervisors after a certain time).
  - If implemented, make sure the TPDB is linked to Human Resources databases, allows for longitudinal assessment of impact of training program on an employee's performance.
  - Specific course data (objectives, topics covered, level addressed, expectations by topic).

### 6.4 Other Recommendations

- h. Apply TQM Principles: Periodically conduct personal interviews with the members of the Focus Group, small group meetings (by branch?), or meetings over lunch with selected managers to find out how do they use what is covered in executive training in their day-to-day business. Ask your customers what they like and dislike about existing training services. Ask what they want for the future.
- i. Promote your success. Publicize changes in executive training and illustrate the kind of problems that are being emphasized. Do not forget to give members of the Focus Group feedback on what you are doing as a result of their cooperation. This is an important part of enhancing the Training Branch as a responsive and valuable part of the organization.



The first part of the document discusses the importance of maintaining accurate records. It emphasizes that proper record-keeping is essential for ensuring the integrity and reliability of the data collected. This section also outlines the various methods used to collect and analyze the data, highlighting the challenges faced during the process.

The second part of the document provides a detailed analysis of the results obtained from the study. It compares the findings with previous research and discusses the implications of the results. The authors conclude that the study has provided valuable insights into the phenomenon being investigated and suggests further research to be conducted in this area.

In conclusion, this document has provided a comprehensive overview of the study and its findings. It is hoped that the information presented here will be useful to other researchers and practitioners in the field.