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ASSESSMENT OF A CAREER DEVELOPMENT PROGRAM
FOR EXECUTIVE AND MID-LEVEL MANAGERS

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ABSTRACT

This project sought to validate the competencies required of mid-level and executive managers at the Kennedy Space Center (KSC), in order to enable an assessment of the Resident Management Education Program (RMEP).

Forty (40) statements describing management competencies were presented to a sample of 37 KSC managers, who judged each as essential, useful but not essential, or not needed at each of two management levels.

A content validity ratio (CVR) was calculated for each competency statement at the two management levels. There was general agreement on the validity of 36 of the 40 competency statements.

Based on the content validity ratios and comments from respondents, recommendations for improvement of the RMEP were made.

SUMMARY

The purpose of this study was to examine the management development program for mid-level and executive managers at the Kennedy Space Center (KSC), in view of the changing economic and organizational situation. In particular, the content and activities of the Resident Management Education Program (RMEP) were examined.

A sample of 37 managers who had participated in the RMEP was surveyed. The respondents were presented with 40 statements of managerial competency, derived from previous studies, other federal program sources, and the management literature. They were asked to indicate whether each competency was essential, useful but not essential, or not needed by persons employed at each of two managerial levels: team leaders, and first-line supervisors.

Responses were analyzed by calculating a content validity ratio (CVR) for each competency statement at each management level. This ratio is a measure of the extent of agreement among the respondents that an item (competency statement) is essential to performance of management functions at a particular level. Based on the CVR analysis, it was determined that there is substantial agreement among the respondents with regard to management competencies required of KSC managers. Most of the listed competencies appear to have been addressed in various RMEP sessions in the past, but many of those judged to be most important (i.e., having high CVR values) have not been addressed.

It was also observed that KSC senior management has not been significantly involved in validation of management competencies and also that no formal evaluation of the RMEP has been provided to those senior managers.

Based on the observations and findings of this study, it was recommended that:

1. Senior management participate in a further validation of management competencies.
2. A formal evaluation plan for RMEP be prepared, which will provide for a determination of
 - a. participant opinion with respect to the instructional effectiveness of the program;
 - b. the extent to which participants' subsequent behavior on the job reflects the management competencies that were expected to be attained during the program; and
 - c. opinion of RMEP presenters with respect to preparation of the participants, quality of physical facilities and arrangements, and other factors that might affect the overall quality of the presentation.
3. A design for future RMEP sessions be developed, that will allow for agreement on expected outcomes well in advance of the training sessions.

INTRODUCTION

Several events have converged in recent years to create a situation that challenges the skills of managers in government as well as in the private sector. Chief among these is the general economic condition of the country (and the world), which has led to serious budgetary restrictions and program modifications in all governmental agencies including NASA. Competition from foreign sources, as well as from domestic private industry, has brought about a serious concern for improving the quality of processes and products. This concern has found expression in the Continual Improvement program of NASA and KSC.

As important as the foregoing is the growing sensitivity to matters of diversity and equity in the workplace, and to the changes that must occur if equal opportunity is to be fully realized.

Many managers are still operating in the mode of earlier years when resources were plentiful, employment was high, and little thought was given to conservation issues. This mode does not fit well with changes due to technological advancement, business restructuring, and globalization of activities -- changes that accelerate over time. Executives must be aware of the influence of those and other changes, and they must learn how to deal with the rapidity and scope of such changes. It is not a matter of learning how to manage, and then using that learning throughout one's career. One must also learn how to learn, so that new challenges may be met squarely and overcome to the benefit of the organization.

Cohen (1991, pp. 32-34) said that these challenges await in the next few years:

1. Organizations will have to make maximum use of employee potential, effectively using the skills they currently have. Transfer of learning to new tasks is important.
2. Employees will have to be ready to give up old ways of working without the certainty that a new (or better) way is coming. This will require adaptability, creativity, innovation, courage, a sense of mission or purpose, and other similar skills and competencies.
3. Employees will be held accountable for continuing to improve needed skills.
4. Employees will have to adapt to continuous change, as well as to an increasingly diverse workplace. This will require versatility.
5. Employees must be empowered to make decisions, and organizations must encourage and support that effort.

These challenges can be met by training activities developed around *clusters of competencies* instead of job descriptions. Such training should not be a tool for remediation, but should point the way to continual advanced learning (Cohen, 1991, p. 35).

All managers must be keenly aware of the economic and technical environment in which they work, and must also be aware of actions they should take (or avoid) to accomplish the mission of the organization. This awareness can be fostered and strengthened through the implementation of a well-designed management development program.

The study reported here is an effort to assess the appropriate content of such a program for executive and mid-level managers at the John F. Kennedy Space Center, National Aeronautics and Space Administration.

THE RESIDENT MANAGEMENT EDUCATION PROGRAM (RMEP)

According to McCall, Morrison, and Lombardo (1988, p. 147), management development is

an organization's conscious effort to provide its managers (and potential managers) with opportunities to learn, grow, and change, in hopes of producing over the long term a cadre of managers with the skills necessary to function effectively in that organization.

In describing their idea of a management development program, they said that it should not be viewed as a collection of separate or individual devices such as career planning, mentoring, training courses, rotational assignment systems, and the like. Although those devices are important and useful, they must be used within the general context of management development. These points are implicit in their definition: (1) management development is "organizationally specific" -- that is, it is intended to help managers be more effective within the particular organization; (2) it is a part of a long-term business plan; (3) opportunities for participation must be made available to employees; and (4) it has to be a conscious effort by the organization, in which development opportunities are considered priority activities.

KSC has had a Resident Management Training Program (RMEP) in place for several years. This program was designed for high-performing managers, supervisors and lead personnel in grades 12 through 14 who have been in key lead, management, or supervisory positions for at least two years, and who have not attended the NASA Management Education Program (MEP) at Wallops Island, VA. Current selection practice allows personnel in those grades to attend in anticipation of such assignment. In general, the RMEP satisfies the four points of McCall, Morrison, and Lombardo, listed above.

The stated objectives of the RMEP are (National Aeronautics and Space Administration, 1993):

1. To provide participants with the opportunity to discuss and review current issues affecting KSC and its management with senior KSC managers;
2. To encourage participants to develop Center-wide contacts and thereby to strengthen teamwork throughout the Center;
3. To increase participants' awareness of their own leadership practices and influence strategies;
4. To increase participants' skills in managing interpersonal processes for solving problems and improving performance;
5. To improve participants' skills for leading and working in teams; and

6. To encourage the self-development activities of participants.

The most recent RMEP was organized around a Measurement System for Continual Improvement (CI). (This is not necessarily how future RMEPs will be set up; it was the first one to be so organized.)

The typical RMEP has the following characteristics, which are designed to be specific to KSC:

1. Participation of senior management. Special presentations and discussions are provided by senior management, so that participants have an opportunity to interact with them, learn about their management styles and philosophies, and to address their own concerns with senior managers.
2. Shared experience. Participants have the chance to integrate their conceptual learning and skill training through review and problem-solving discussions.
3. Individual feedback. Several pencil-and-paper instruments are used, both prior to and during the program, to give feedback from co-workers to participants on their supervisory, interpersonal, and influence practices.
4. Behavior modeling and skill training. Through the use of video tapes, participants can view models of management problem situations and solutions. They also have the opportunity to view themselves in role-playing situations.
5. Team development and leadership. Participants focus on procedures and practices leading to the development of superior team leaders.
6. Integration and application. Participants maintain logs of their insights, learning, and opportunities for application. Participants are also requested to develop a plan for improvement and personal development for use following the RMEP.
7. Coordination with supervisors. Participants are expected to discuss their action and development plans and projects with their supervisors following the RMEP. This is an important aspect of the training.

One desirable characteristic is not present in the foregoing list: evaluation of training. Although there are several opportunities for participants to obtain information about themselves and their leadership practices, problem-solving skills and influence strategies, there is no specific provision for feedback to KSC management with respect to whether the participants actually behave differently (i.e., are "better managers") following the RMEP. There is also little evidence concerning the RMEP instruction itself. Both evaluation areas produce vital management information for continual improvement of the training activity. Sepúlveda (1993) had recommended two evaluation forms for

general use, one to be completed by the trainee and the other by the supervisor. The first form appears to be suited to collecting participant opinion, although some minor revisions might be beneficial. The second form (to be completed by supervisors about 6 months following training) was subsequently revised to contain just two items, only one of which deals directly with employee job performance. This form does not contain sufficient information on which to base judgments about performance changes resulting from the RMEP, even in its original design.

SPECIFICATION OF MANAGEMENT COMPETENCIES

Despite the close correspondence to the description of management development activities stated by McCall, Morrison and Lombardo, the RMEP has not been formally organized around any set of competencies that characterize "good management." Consequently, one of the first activities of the present study was to find out whether appropriate descriptions of performance competencies or groups of competencies for KSC managers might be already available. Several sources of "candidate" competencies were found.

Katz (1955) identified three categories into which managerial skills can be grouped: *technical*, *human*, and *conceptual*. Katz said that within each category there exists a hierarchy of skills that can be applied at the various managerial levels in organizations. Each of the managerial levels has needs for each of the skill categories, but the proportions differ as one moves across the levels.

More recently, Sandwith (1993) pointed out that it is not possible to confine the competencies presently required of managers to only three categories. Instead, Sandwith proposed five categories that include Katz's categories, but expand and augment them. Sandwith called these categories "competency domains," and defined them as follows:

1. The **conceptual/creative** domain, which contains the cognitive skills connected with understanding important elements of the job, such as knowing one's role in an organization and how it relates to the roles of others. This domain includes Katz's conceptual category, but also adds a dimension to deal with more recent ideas from cognitive psychology and with creative thought processes.

2. The **leadership** domain, a subdivision of Katz's human skills category, that provides a connection among the **conceptual/creative** and the other domains. According to Sandwith (1993, p. 47), "it is leadership that turns thought into productive action." Skills in this domain are useful both inside and outside the organization.

3. The **interpersonal** domain is another subdivision of the human skills category, and represents the skills managers need for effective interaction with other people. The team emphasis called for by Continual Improvement makes heavy demands upon this domain. All of the communications skills, as well as related skills such as training, delegating, interviewing, etc., are included here.

4. The **administrative** domain is a third subdivision of the human skills category, and applies to organizational activities that lie between the **interpersonal** and the **technical** domains. Sandwith said that skills in this domain do not refer to administrative work in general, but rather to the personnel management and financial management aspects of organizational life (1993, p. 49).

5. Today's **technical** domain, according to Sandwith, is very similar to Katz's technical category. It relates to the actual work that an organization does. Competence in this domain includes skills related to work processes and methods, the use of technology,

Sepúlveda (1992b) conducted a training needs assessment of KSC employees, including mid-level and executive managers. The needs assessment produced a listing of topics based on consensus among the members of a focus group composed of 20 managers who were considered to have great experience in program and project management at KSC. However, the broader management competencies to which each of those topics contribute were not set out. Also, the list of topics was not validated, in the sense that persons outside the focus group were asked to concur in the decisions of that group.

An examination of Sepúlveda's study raises two further concerns. First, only three topics were identified as important for the training of senior executives (higher level competencies); and second, twenty-seven topics were categorized as "useful but not essential" or "no need for training." Examples of topics in the latter category are "Challenge of new roles," "Quality control," "Networking," and "Professional ethics and dealing with conflicts of interest." On the face of it, these topics appear to represent important skills required of managers in the current environment. Since many of the members of the focus group occupy positions that could be considered to be at the executive management level, it is possible that the focus group members assigned importance to the topics based on their personal circumstances, and not on the importance of the topics for senior managers in general.

At the Johnson Space Center in Houston, Texas, Diane DeTroye (personal communication, April 4, 1994) and her associates identified eleven competency areas for four supervisory levels. The supervisory levels identified were: pre-supervisor, first-line supervisor, mid-level manager, and executive. Within each competency category, she described specific competencies required at each of the four levels. The eleven competency categories were: conflict management and negotiation; external orientation; interpersonal effectiveness; written and oral communication; motivation and influence; managing individuals; working with groups; planning, organizing and resource management; technical awareness; personal effectiveness; and problem-solving, analysis, and decision-making.

Another source of competency statements was found in the catalog of management development courses published by the U. S. Office of Personnel Management (1994). This catalog describes the leadership effectiveness framework, which is a model describing competencies "needed by Federal executives, managers, and supervisors to perform effectively in their positions" (p. 33).

Sepúlveda's (1992b) analysis was used as a starting point for the present study. The skills listed by Sepúlveda (pp. 477-478) were condensed into more generic statements that could be located within Sandwith's competency domains. Lists of competencies were compiled from the other sources, and the lists were combined and edited to remove obvious duplications.

These competency statements were then classified into Sandwith's competency domains. Statements that described specific job skills (e.g. operating various kinds of equipment or complying with management instructions or regulations in development of organization budgets) were deleted from the lists or placed into the Administrative or Technical domains. The resulting "grid" of competencies is displayed in Appendix A.

It should be noted that there is substantial overlap among Sandwith's competency domains, and that one might make a good case for classifying a competency statement into a domain other than the ones indicated in the competency grid. The technical and administrative domains were excluded from the present study because those domains relate to performance of specific functions within an organizational unit, rather than to generalized management competencies.

COMPETENCIES REQUIRED OF KSC MID-LEVEL AND EXECUTIVE MANAGERS

In order to better understand the relative importance of the competencies for managerial work at KSC, a survey instrument was designed for administration to managers who had previously participated in the RMEP. Forty (40) competency statements representing competencies in Sandwith's conceptual/creative, leadership, and interpersonal domains were selected for inclusion in the survey.

Although the original intent of the present study was to examine management competencies at mid-level and executive management levels, it was soon found that those categories are difficult to relate to specific positions or salary grades. Consequently, it was decided to classify management levels into two categories: team leaders and first-line supervisors. These categories were selected because of the current flattening of the KSC organizational structure due to downsizing and restructuring, and because they appear to reflect current usage within KSC.

Respondents were asked to read each of the statements and then indicate whether, in their opinion, the competency is (a) essential, (b) useful but not essential, or (c) not needed by team leaders and by first-level supervisors respectively. In addition, the respondents were asked to indicate whether the competency had been addressed in the RMEP in which they participated, and whether they felt that it should be addressed in future RMEPs.

Respondents were also asked to provide general information about their opinions of the RMEP. The survey instrument is reproduced in Appendix B, which also shows the number of respondents who selected each response option. Summaries of responses to the rating scales and open-ended questions are included on page B-1.

With the assistance of the Human Resources Development office, the survey was distributed to a sample of 100 persons currently employed at KSC. Thirty-seven usable responses were received by the date established for return. (Note: a followup memorandum was sent to the non-respondents encouraging them to return their surveys even though the deadline had passed. Surveys received subsequent to that memorandum will be added to the data base for further study.)

In his final report of activity during the summer of 1993, Sepúlveda (1993) briefly discussed the use of the content validity ratio, or CVR, in connection with the evaluation of training. Ford and Wroten (1984) used a content validity approach in establishing statements of knowledge, skill, ability, and other personal characteristics (KSAOs) for use in a police training program, specifically in evaluating the content for such a program once the content domain has been identified.

The content validity ratio (CVR) was proposed by Lawshe (1975) as a means of quantifying consensus among members of a panel attempting to decide whether performance on some test is representative of performance on the job. He said that "content validity is the extent to which

communality or overlap exists between (a) performance on the test under investigation and (b) ability to function in the defined job performance domain" (p. 567). When a content evaluation panel is composed of persons ("experts") who know the requirements of a job, then we can rely on the extent of their agreement to provide a measure of the "relatedness" of the test performance to the job performance requirements.

Lawshe made the following assumptions (p. 567):

1. Any item, performance on which is perceived to be "essential" by more than half of the panelists, has some degree of content validity.
2. The more panelists (beyond 50%) who perceive the item as "essential," the greater the extent or degree of its content validity.

By extension, one can convene a panel whose task it is to decide whether or not some specified performance is essential to successful performance in some job. This was essentially the nature of the investigation for this study, in which individuals who are incumbents in managerial positions and who have participated in a training activity make judgments about the appropriateness of the training for success in a position.

The usefulness of the CVR in this activity derives from these characteristics stated by Lawshe (1975, pp. 567-568):

1. When fewer than half of the panelists say that an item (here, a competency statement) is "essential", the CVR is negative.
2. When exactly half say an item is essential while the remaining half do not, the CVR is zero.
3. When all of the panelists say an item is "essential" the CVR is computed to be 1.00, although it is convenient to adjust it to 0.99 for ease of manipulation.
4. When the number of panelists saying that an item is "essential" is more than half, but less than all, then the CVR is somewhere between 0.99 and 0.00

Table 1 presents the content validity ratios calculated for competencies required for Team Leaders and for First-Line Supervisors, respectively, over the 40 management competency statements contained in the survey instrument (see Appendix B). The same information is presented in Tables 2 and 3, except that the rows have been arranged in descending order of CVR for Team Leaders and First-Line Supervisors respectively.

For Team Leaders, 26 of the 40 competency statements have positive CVRs (i.e., were marked “essential” by more than half of the respondents). For First-Line Supervisors, 36 of the 40 statements have positive CVRs.

The numerical magnitude of a CVR has no direct interpretation other than those described above. However, it can be used to rank order the statements as presented in Tables 2 and 3. When this has been done, a rank-order correlation can be performed to determine whether the panel members generally agree on the importance of the competencies between the two management groups.

A rank-order correlation coefficient (Spearman *rho*) was calculated based on the differences in ranks between CVRs for Team Leaders and First-Line Supervisors. The value of the computed correlation coefficient was 0.80, which is significantly different from zero ($p < .01$). This observation can be interpreted as meaning that the competencies required of managers in the two groups are generally similar. Even though the magnitude of the CVRs has no direct interpretation, an inspection of the data of Tables 2 and 3 reveals that the ratios for First-Line Supervisors are generally smaller than those for Team Leaders. For example, the highest and lowest CVRs for First-Line Supervisors are 0.771 and -0.040 respectively, while for Team Leaders they are 0.943 and -0.500. However, only four of the competency statements were judged to be not essential for First-Line Supervisors (that is, with CVR values less than zero), while 15 were so classified for Team Leaders. This means that the competencies for First-Line Supervisors were less frequently judged “essential” than for Team Leaders, but there was less agreement that the competencies were valid for Team Leaders.

Table 1. Content validity ratios and ranks for 40 competency statements (N=37)

Competency Statement	TL CVR	FLS CVR	Rank by TL CVR	Rank by FLS CVR
1	-0.500	-0.029	40	37
2	0.829	0.892	4	3.5
3	0.657	0.838	8	7
4	0.371	0.838	17.5	7
5	0.886	0.889	2	5
6	-0.486	0.056	39	36
7	0.371	0.611	17.5	25
8	0.643	0.655	11	20
9	0.857	0.786	3	10
10	0.379	0.793	16	9
11	0.357	0.724	19	15
12	-0.185	0.214	31	32
13	-0.111	0.172	28	33
14	-0.143	0.379	29.5	28
15	0.429	0.724	14.5	15
16	0.071	0.724	25	15
17	-0.143	0.351	29.5	29
18	0.714	0.946	6.5	1.5
19	0.943	0.892	1	3.5
20	0.273	0.714	20	17
21	-0.455	-0.231	38	38
22	-0.353	0.111	37	34.5
23	-0.059	0.111	27	34.5
24	0.657	0.676	8	18.5
25	0.143	0.730	24	12
26	-0.040	-0.333	26	40
27	0.450	0.243	13	30.5
28	-0.333	0.622	36	22.5
29	-0.318	-0.294	35	39
30	-0.212	0.622	32	22.5
31	-0.235	0.514	33	26.5
32	0.600	0.730	12	12
33	0.257	0.622	22	22.5
34	0.714	0.622	6.5	22.5
35	0.257	0.730	22	12
36	-0.257	0.243	34	30.5
37	0.257	0.514	22	26.5
38	0.771	0.946	5	1.5
39	0.657	0.838	8	7
40	0.429	0.676	14.5	18.5
Spearman rho -->				0.80

Table 2. Content validity ratios and ranks for 40 competency statements (N=37)
(ordered by CVR rank for team leaders)

Competency Statements	TL CVR	FLS CVR	Rank by TL CVR	Rank by FLS CVR
19	0.943	0.892	1	3.5
5	0.886	0.889	2	5
9	0.857	0.786	3	10
2	0.829	0.892	4	3.5
38	0.771	0.946	5	1.5
18	0.714	0.946	6.5	1.5
34	0.714	0.622	6.5	22.5
24	0.657	0.676	8	18.5
3	0.657	0.838	8	7
39	0.657	0.838	8	7
8	0.643	0.655	11	20
32	0.600	0.730	12	12
27	0.450	0.243	13	30.5
15	0.429	0.724	14.5	15
40	0.429	0.676	14.5	18.5
10	0.379	0.793	16	9
4	0.371	0.838	17.5	7
7	0.371	0.611	17.5	25
11	0.357	0.724	19	15
20	0.273	0.714	20	17
35	0.257	0.730	22	12
37	0.257	0.514	22	26.5
33	0.257	0.622	22	22.5
25	0.143	0.730	24	12
16	0.071	0.724	25	15
26	-0.040	-0.333	26	40
23	-0.059	0.111	27	34.5
13	-0.111	0.172	28	33
14	-0.143	0.379	29.5	28
17	-0.143	0.351	29.5	29
12	-0.185	0.214	31	32
30	-0.212	0.622	32	22.5
31	-0.235	0.514	33	26.5
36	-0.257	0.243	34	30.5
29	-0.318	-0.294	35	39
28	-0.333	0.622	36	22.5
22	-0.353	0.111	37	34.5
21	-0.455	-0.231	38	38
6	-0.486	0.056	39	36
1	-0.500	-0.029	40	37

Table 3. Content validity ratios and ranks for 40 competency statements (N=37)
(ordered by CVR rank for first-line supervisors)

Competency Statements	TL CVR	FLS CVR	Rank by TL CVR	Rank by FLS CVR
38	0.771	0.946	5	1.5
18	0.714	0.946	6.5	1.5
2	0.829	0.892	4	3.5
19	0.943	0.892	1	3.5
5	0.886	0.889	2	5
3	0.657	0.838	8	7
39	0.657	0.838	8	7
4	0.371	0.838	17.5	7
10	0.379	0.793	16	9
9	0.857	0.786	3	10
32	0.600	0.730	12	12
25	0.143	0.730	24	12
35	0.257	0.730	22	12
11	0.357	0.724	19	15
16	0.071	0.724	25	15
15	0.429	0.724	14.5	15
20	0.273	0.714	20	17
40	0.429	0.676	14.5	18.5
24	0.657	0.676	8	18.5
8	0.643	0.655	11	20
30	-0.212	0.622	32	22.5
34	0.714	0.622	6.5	22.5
33	0.257	0.622	22	22.5
28	-0.333	0.622	36	22.5
7	0.371	0.611	17.5	25
31	-0.235	0.514	33	26.5
37	0.257	0.514	22	26.5
14	-0.143	0.379	29.5	28
17	-0.143	0.351	29.5	29
36	-0.257	0.243	34	30.5
27	0.450	0.243	13	30.5
12	-0.185	0.214	31	32
13	-0.111	0.172	28	33
23	-0.059	0.111	27	34.5
22	-0.353	0.111	37	34.5
6	-0.486	0.056	39	36
1	-0.500	-0.029	40	37
21	-0.455	-0.231	38	38
29	-0.318	-0.294	35	39
26	-0.040	-0.333	26	40

DISCUSSION OF THE RESULTS OF THE SURVEY

The responses to the rating scales contained in items 1 and 2 of the survey (see Appendix B, p. B-2) indicate that participants are generally well satisfied with the RMEP. The mean response to item 1, which asked the extent to which participants felt that the RMEP increased their capability to do the jobs they now hold, was 3.75 (maximum 5). The mean response to item 2, asking participants' overall satisfaction with the RMEP, was 4.20 (maximum 5).

Item 3 asked respondents to list the ONE thing that they liked MOST about the RMEP session that they attended. As with any open-ended question, the responses were varied; however, the vast majority of respondents mentioned the value of the sessions in which they were able to meet with senior managers and to discuss issues. Some of the respondents in this group made comments more oriented to their peers, but the opportunity to network with both peers and upper-level managers is an obvious "like" of this sample.

Item 4, another open-ended item, asked respondents to list the ONE thing that they liked LEAST about the RMEP in which they participated. In this case, the responses were much more widely spread. The largest single response (6 respondents) was "disliked nothing." Five respondents stated that they did not like the role-playing exercises (although 8 indicated in item 3 that video-taping of such exercises was positive), and 5 others said that there was not enough time to complete the work (some mentioned the readings, others the project preparation).

Only one respondent mentioned the topic of a specific presentation or session in the list of dislikes. This indicates that it is probably the physical arrangement of the RMEP sessions rather than their content which participants recall negatively. Indeed, the list of "likes" for the 37 respondents is made up exclusively of responses dealing directly with the use or improvement of management competencies that might be valuable on the job at KSC.

At the end of the survey instrument, respondents were asked to describe competencies that should have been included in the list, but that were not. Other comments related to the RMEP were solicited as well. This item was frequently omitted; only 12 survey forms contained responses. No clear trend could be observed in the few suggestions for additional competencies. The "other comments" seem to be in the nature of suggested improvements to KSC management and not, with one or two exceptions, to the RMEP *per se*.

An inspection of Table 1 reveals that, of the 40 competencies subjected to review, only four received negative CVRs for both team leaders and first-line supervisors. Put another way, only

four of the listed competencies were not considered to be essential for managers at either level. These competencies are:

1. Identify and eliminate redundancies within or between KSC organizational units.
21. Tolerate ambiguity in various situations.
26. Integrate the projects and programs of own organization with those of other organizations **external** to KSC.
29. Champion organizational change.

The number of respondents stating that these competencies were addressed in the RMEP they attended was 4, 8, 10, and 15 respectively. Similarly, the number of respondents stating that the competencies *should be* included in the RMEP was 21, 18, 15, and 23 respectively.

CONCLUSIONS

1. Based on the survey of previous RMEP participants, it appears that there is substantial agreement on management competencies required of team leaders and first-level supervisors. This observation is supported by the significant rank-order correlation coefficient calculated on the content validity ratio ranks for the two groups. This does not imply, however, that the curriculum for the RMEP should be modified to assure that *all* the competencies held to be essential for team leaders and first-level supervisors should be addressed in any particular RMEP. Responses to the open-ended questions included in the survey instrument point toward the perceived high value for participants of networking and discussions with senior managers.

2. Conclusion 1 above notwithstanding, there has been no similar validation of required competencies by senior managers. In other words, there is agreement among RMEP "graduates" that the competencies they were asked about are actually competencies required of KSC managers; but senior managers have not been asked whether they concur that the competencies thought valuable by team leaders and first-level supervisors are actually the competencies they wish their subordinates to display.

3. As mentioned earlier, a serious shortcoming of the RMEP is that few formal evaluation activities have been undertaken. Although in some cases participants have been asked to provide feedback about the program, no attempt has been made to determine the effectiveness of the program as perceived by supervisors; also, there is no formal evaluation of the instructional process for the benefit of the office responsible for the program (currently HM-PER-1).

4. Appendix B reveals that most of the 40 competencies were reported to have been covered in the various respondents' RMEP sessions. Whether this is physically possible is questionable. However, and most important to this investigation, is *how* the competencies were addressed. The subject matter covered by any particular RMEP appears to have been largely left to the discretion of the person(s) conducting the sessions. Based on responses to the first open-ended item on the survey instrument, the tone of the sessions seems to have been appropriately set by the presentations of KSC senior management, but the specifics of how this information is woven into RMEP activities (if at all) have not been made clear.

RECOMMENDATIONS

1. Pursue with senior KSC management a validation of the list of management competencies developed under this project. The validation should address (a) the extent of agreement among senior managers that the specific competencies are appropriate, (b) additions desired by senior management to the list of competencies, and (c) removal of inappropriate statements from the list. In particular, competencies that support the provisions of the strategic plan and the continual improvement plan should be identified, categorized (e.g. into Sandwith's domains), and specified for inclusion in RMEP activities. It is especially important to identify competencies associated with newer management approaches implied by the strategic or continual improvement plans.

2. Devise an evaluation plan for the RMEP that will produce management information to be used in determining (a) participants' opinions the instructional effectiveness of the program and (b) the extent to which participants' subsequent behavior on the job reflects the management competencies that were expected to be attained. The plan should also provide for collecting information from RMEP providers with respect to preparation of the participants, quality of physical facilities, and other factors that might affect the overall quality of the presentation.

3. Develop a design for future RMEP sessions that will allow for agreement on the expected outcomes well in advance of the training. That is, take steps to assure that the objectives for training are consistent with the perceived management needs of Kennedy Space Center, and that the training activities to be offered will reasonably bring about the attitudes and understandings that will promote the management competencies desired. The design should be sufficiently flexible that emerging issues can be dealt with in a timely way.

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A-1

APPENDIX A

GENERIC MANAGEMENT COMPETENCIES

Conceptual/Creative Domain	Leadership Domain	Interpersonal Domain	Administrative Domain	Technical Domain
Identifies and eliminates redundancies within and between KSC organizations.	Anticipates, recognizes, manages, and resolves confrontations, disagreements, complaints, and other conflicts in a constructive manner.	Appropriately uses negotiation, persuasion, and/or authority in dealing with subordinates, peers, and supervisors, to meet goals.	Convincingly solicits funding for the agency.	Continuously seeks to improve the quality of services, products, and processes.
Communicates customer expectations and requirements, and ensures that customer needs are met.	Establishes policies, guidelines, plans, and priorities.	Networks with key groups and individuals, including the media, to gain cooperation and exchange information to meet goals.	Plans, prepares, and justifies budgets; allocates resources; and manages the finances of one or more projects within one or more organizational units.	Adapts content and style of communications as appropriate for audiences which may include own organization, KSC, NASA, Congress, the general public, and the media.
Actively seeks customer input and acts as an advocate for customers.	Advocates and supports NASA programs and projects.	Builds and maintains effective positive relationships with customers, contractors, peers, local business leaders, and academia.	Manages procurement and contracting for one or more organizational units.	Presents clear and convincing oral and written material.
Scans the environment for new opportunities, and develops operational strategies to take advantage of such opportunities.	Adapts leadership styles effectively to a variety of individual capabilities and situational demands, including changes in the work environment.	Fosters innovation among others.	Establishes performance measures and monitors the output and quality of projects within the scope of assigned responsibilities.	Asks diagnostic questions, seeks clarification, and provides overall direction on technical areas within directorates.

Conceptual/Creative Domain	Leadership Domain	Interpersonal Domain	Administrative Domain	Technical Domain
Maintains current awareness of laws, regulations, policies, Administration priorities, social and political trends, and other issues affecting NASA in general and KSC in particular.	Improves organizational efficiency and effectiveness.	Actively solicits and listens to the ideas of others.	Develops the capabilities of organizations and individuals to provide for current and future organization needs .	Maintains technical awareness of functions and subfunctions within own organizational unit; understands the consequences and implications of technical decisions.
Seeks alternative solutions to complex problems, identifying the variables involved while distinguishing between relevant and irrelevant information.	Creates an environment that empowers, motivates, and guides individuals and groups.	Provides effective supervision, including appropriate feedback and coaching or mentoring when necessary.	Effectively promotes affirmative employment, good labor relations, and employee well-being.	Manages and integrates internal technology with technical aspects of other organizations.
Creates, communicates and implements the KSC vision and values.	Delegates work appropriately, and establishes performance metrics to meet organizational goals effectively.	Fosters cooperation, communication, and consensus among groups.	Demonstrates knowledge of human resource management systems, and ensures effective recruitment, selection, training, performance appraisal, recognition, and corrective or disciplinary action for all subordinates	Manages the integration of various functional roles within own organizational unit (e.g. procurement, budget, finance, engineering, operations, etc.).
Creates a shared vision of the organizational unit; promotes wide ownership.	Uses appropriate influence strategies to get support for team projects, and for the work of team members. Promotes ethical and effective practices.	Provides guidance and support to work group activities throughout KSC.	Ensures that subordinates are trained and capable.	Applies new and existing technology to the management of the organization.
		Considers and responds appropriately to the needs, feelings, interests and capabilities of others.		
		Treats others equitably, and with respect for individual differences.		

Conceptual/Creative Domain

Champions organizational change.

Develops objectives and implements strategies, both long- and short-range.

Assesses circumstances and draws conclusions about the position of NASA and KSC with respect to NASA Headquarters, the Federal government, the national agenda, the international environment, and the public at large.

Develops insights and solutions through identifying and analyzing problems using sound reasoning and other problem-solving techniques applied to the best data available.

Leadership Domain

Matches organizational skills and abilities to project and program requirements in order to achieve organizational goals.

Analyzes risks and takes decisive action in difficult situations when necessary. Effectively plans and manages team and work group meetings to accomplish meeting goals.

Serves as a role model by demonstrating personal qualities of professionalism, integrity, flexibility, trust, openness, dependability, initiative, self-confidence, and optimism.

Interpersonal Domain

Makes clear and effective oral and written presentations to individuals and groups.

Considers differences between directorates or program offices in corporate culture and policy interaction with other organizations.

Effectively manages stress.

Frames problems for others to solve, and follows up on the resolution of those problems.

Provides employment and development opportunities for a diverse workforce.

Administrative Domain

Maintains internal controls, evaluates programs and projects over time, and makes decisions based on what is best for the organization.

Technical Domain

Demonstrates technical proficiency and an understanding of its impact in areas of responsibility.

Conceptual/Creative Domain	Leadership Domain	Interpersonal Domain	Administrative Domain	Technical Domain
<p>Integrates projects and programs of own organization with those of other organizations and functions internal and external to KSC.</p>	<p>Challenges the system and acts as a steward of the public trust.</p>	<p>Realistically assess own strengths, weaknesses, and their impact on others.</p>		
<p>Tolerates ambiguity in situations. Integrates perspectives of multiple disciplines in analyzing problems and in grasping large-scale systems problems.</p>	<p>Ensures the integrity of the organization's processes.</p>	<p>Manages time efficiently.</p>		
<p>Recognizes the value of cultural, ethnic, gender, and other individual differences in the workforce.</p>		<p>Invests in self-development.</p>		
		<p>Encourages subordinates to stay informed about new technology.</p>		



APPENDIX B



Generic Management Competency Validation

As a "graduate" of the Residential Management Education Program (RMEP), we are requesting your help in validating the list of generic management competencies toward which RMEP activities may be directed in the future. In addition, we ask that you answer a few questions about your experience with RMEP, so that future sessions can be improved for every participant. Your responses will be kept confidential, and the results of this validation study will not identify any individual by name or by unit of assignment. Only summary information will be reported.

Please provide a response to each of the following items:

1. On a scale of 1 to 5, with 5 being **highest**, please indicate the extent to which you feel that RMEP increased your capability to do the job that you now hold.
(Mean = 3.75)

1 2 3 4 5

2. On a scale of 1 to 5, with 5 being **highest**, please indicate your *overall* satisfaction with the RMEP. (Mean = 4.20)

1 2 3 4 5

3. Considering the RMEP experience as a whole, what ONE thing did you like **MOST** about the RMEP?

videotaping of simulated confrontations and self-evaluations (8)
opportunity for hearing senior management presentations and networking (25)
teaching of management skills (4)

4. Considering the RMEP experience as a whole, what ONE thing did you like **LEAST** about the RMEP.

time away from home
role playing (5)
insufficient time (5)
days too long (3)
evening sessions
(disliked nothing) (6)
the food

immobility (2)
the instructor (3)
(a specific presentation)
group too large
lectures
too many structured exercises
lack of followup

Please go on to the next page

Here is a list of several generic management competencies that might be selected for emphasis at an RMEP session. First, read each competency statement and then make a check mark or an "X" to indicate whether you believe it is **Essential; Useful, but not essential; or Not needed** by Team Leaders. Next, indicate whether you believe the competency is **Essential; Useful, but not essential; or Not needed** by First-Level Supervisors. Then, check to indicate whether (to the best of your recollection) it was addressed at the RMEP in which you participated. Finally, indicate whether you think the listed competency should be addressed at future RMEP sessions.

Competency Statements	For Team Leaders			For First Level Supervisors			Was it addressed in <i>your</i> RMEP?		Should it be addressed in the RMEP?	
	<i>E</i>	<i>U</i>	<i>N</i>	<i>E</i>	<i>U</i>	<i>N</i>	Yes	No	Yes	No
1. Identify and eliminate redundancies within or between KSC organizational units.	8	21	3	17	14	4	4		21	
2. Build and maintain relationships with customers.	32	3	0	35	2	0	24		36	
3. Communicate customer expectations and requirements to supervisors and/or subordinates accurately.	29	6	0	34	3	0	23		35	
4. Recognize, manage and resolve conflicts within or between KSC organizational units.	24	10	1	34	3	0	28		34	
5. Ensure that customer needs are met.	33	2	0	34	2	0	21		34	
6. Scan environment for new opportunities; develop strategies to take advantage of such opportunities.	9	23	3	19	17	0	8		25	
7. Manage stress effectively	24	10	1	29	7	0	14		29	

Competency Statements	For Team Leaders			For First Level Supervisors			Was it addressed in <i>your</i> RMEP?		Should it be addressed in the RMEP?	
	<i>E</i>	<i>U</i>	<i>N</i>	<i>E</i>	<i>U</i>	<i>N</i>	Yes	No	Yes	No
8. Use appropriate influence strategies (e.g. negotiation, persuasion or authority) in working with subordinates, peers, and supervisors.	23	5	0	24	5	0	25		29	
9. Foster cooperation, communication, and consensus within groups and teams.	26	2	0	25	3	0	28		27	
10. Treat subordinates equitably.	20	6	1	26	3	0	21		26	
11. Delegate work appropriately and equitably.	19	9	0	25	4	0	16		26	
12. Create and communicate the KSC vision and values.	11	14	2	17	10	1	10		5	
13. Provide guidance and support to KSC work group activities.	12	12	3	17	10	2	11		22	
14. Advocate and support KSC programs and projects.	12	12	4	20	8	1	13		22	
15. Network with key groups and individuals to gain cooperation and exchange information to meet goals.	20	8	0	25	4	0	24		26	
16. Establish and communicate performance metrics for evaluating work quality.	15	12	1	25	4	0	15		28	

Competency Statements	For Team Leaders			For First Level Supervisors			Was it addressed in <i>your</i> RMEP?		Should it be addressed in the RMEP?	
	<i>E</i>	<i>U</i>	<i>N</i>	<i>E</i>	<i>U</i>	<i>N</i>	Yes	No	Yes	No
17. Maintain a current awareness of law, regulation, policy, Administration priorities, and other issues affecting NASA in general and KSC in particular.	15	16	4	25	10	2	10		20	
18. Create an environment that empowers, motivates, and guides individuals and groups.	30	5	0	36	1	0	30		35	
19. Actively solicit and listen to the ideas of others.	34	1	0	35	2	0	31		34	
20. Improve organizational effectiveness and efficiency.	21	10	2	30	5	0	21		33	
21. Tolerate ambiguity in various situations.	9	14	10	10	16	8	8		18	
22. Encourage subordinates to become and remain informed about new technology.	11	20	3	20	13	3	11		18	
23. Challenge the system, but act as a steward of the public trust.	16	12	6	20	10	6	14		27	
24. Assess own strengths and weaknesses and their impacts on others.	29	6	0	31	6	0	32		35	
25. Respect individual differences.	29	6	0	32	5	0	30		34	

Competency Statements	For Team Leaders			For First Level Supervisors			Was it addressed in <i>your</i> RMEP?		Should it be addressed in the RMEP?	
	<i>E</i>	<i>U</i>	<i>N</i>	<i>E</i>	<i>U</i>	<i>N</i>	Yes	No	Yes	No
26. Integrate the projects and programs of own organization with those of other organizations external to KSC.	8	19	7	12	22	2	10		15	
27. Bring together the perspectives of multiple disciplines in analyzing problems.	24	11	0	23	13	1	22		29	
28. Manage time effectively.	29	6	0	30	7	0	27		30	
29. Champion organizational change.	3	18	11	12	18	4	15		23	
30. Develop objectives and implement strategies, both long- and short-range.	15	18	2	30	7	0	25		33	
31. Provide employment and development opportunities for a diverse workforce.	13	12	6	28	7	2	21		30	
32. Analyze risks and take decisive action when necessary.	28	7	0	32	5	0	20		24	
33. Frame problems for others to resolve, and follow up on the solutions.	22	13	0	30	7	0	21		32	
34. Plan and manage team and work group meetings effectively.	30	5	0	30	7	0	32		33	
35. Match skills and abilities available in own organization to project and program requirements.	22	13	0	32	5	0	28		32	

Competency Statements	For Team Leaders			For First Level Supervisors			Was it addressed in <i>your</i> RMEP?		Should it be addressed in the RMEP?	
	<i>E</i>	<i>U</i>	<i>N</i>	<i>E</i>	<i>U</i>	<i>N</i>	Yes	No	Yes	No
36. Promote wide ownership of the organizational unit.	13	18	4	23	12	2	18		29	
37. Foster innovation among others.	22	13	0	28	9	0	23		34	
38. Anticipate and resolve confrontations in a constructive manner.	31	4	0	36	1	0	33		35	
39. Respond appropriately to the needs, feelings, interests, and capabilities of others.	29	6	0	34	3	0	32		33	
40. Serve as a role model by demonstrating appropriate personal qualities	25	10	0	31	6	0	29		31	

In the space below, please write brief descriptions of management competencies that you feel SHOULD HAVE BEEN included in the foregoing list, but that were not. Other RMEP-related comments are invited as well.

Additional competencies: managing resources; measuring effectiveness; understanding leadership styles; job interview and counseling techniques; synergy; group dynamics; problem-solving; TQM/CI integrated techniques; impact of long- and short-range planning strategies; moral and ethical aspects of managing/leading;

Other comments: Communicate performance expectations and feedback to subordinates effectively & objectively; more emphasis on being coach for IDP development; there is a need for upper management to practice what they preach; RMEP ... must be continued. ... More emphasis [on] career development for women and minorities with a true positive objective approach....; send this out sooner or do it at the end of RMEP; ...spend additional time discussing resource management and empowerment.