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PHASE II EVALUATION OF THE MODIA SYSTEM.(U)
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ATC PROJECT REPORT

PHASE II EVALUATION OF THE MODIA SYSTEM

1 August 1978

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LACKLAND AFB, TEXAS

AIR TRAINING COMMAND

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The MODIA system (Method of Designing Instructional Alternatives) is a computerized planning tool initially designed by Rand Corporation for research purposes and subsequently examined in Air Training Command for use in facilitating course planning. The MODIA system was evaluated at Keesler Technical Training Center to determine its usefulness to branch, group, and center-level course managers. Additional objectives involved the assessment of changes needed to

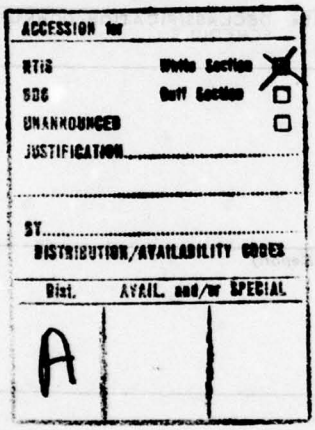
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improve MODIA effectiveness, the feasibility of implementing MODIA at Keesler in the immediate future and the possibility of different management levels using various parts of the MODIA system separately. The results of the Phase II Evaluation were also compared with results obtained in a Phase I evaluation. Seven courses at Keesler were initially identified for simulation and costing using the MODIA system in the Phase II service test. Two groups of three courses each were to be planned under the family grouping concept to demonstrate sharing of technical training resources between related courses. An additional course was selected because of its length and number of resources. ISD personnel from Keesler Technical Training Groups provided a MODIA interface team with course data to input into the MODIA system. The resultant products were a simulation of the course operation and a detailed listing of course costs associated with a given course design. Costs and simulations of alternative designs were also generated. These products, including alternative designs, were given to branch and group-level course managers who were asked to judge the utility, to them, of the information generated by MODIA in managing and planning the selected courses.



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ATC PROJECT REPORT 78-1 (1 August 1978)

PHASE II EVALUATION OF THE MODIA SYSTEM

ABSTRACT

The MODIA system (Method of Designing Instructional Alternatives) is a computerized planning tool initially designed by Rand Corporation for research purposes and subsequently examined in Air Training Command for use in facilitating course planning. The MODIA system was evaluated at Keesler Technical Training Center to determine its usefulness to branch, group, and center-level course managers. Additional objectives involved the assessment of changes needed to improve MODIA effectiveness, the feasibility of implementing MODIA at Keesler in the immediate future and the possibility of different management levels using various parts of the MODIA system separately. The results of the Phase II Evaluation were also compared with results obtained in a Phase I evaluation. Seven courses at Keesler were initially identified for simulation and costing using the MODIA system in the Phase II service test. Two groups of three courses each were to be planned under the family grouping concept to demonstrate sharing of technical training resources between related courses. An additional course was selected because of its length and number of resources. ISD personnel from Keesler Technical Training Groups provided a MODIA interface team with course data to input into the MODIA system.

The resultant products were a simulation of the course operation and a detailed listing of course costs associated with a given course design. Costs and simulations of alternative designs were also generated. These products, including alternative designs, were given to branch and group-level course managers who were asked to judge the utility, to them, of the information generated by MODIA in managing and planning the selected courses.

This service test resulted in simulations of five courses at Keesler and a number of alternative course designs. Cost information on basic course and alternative course designs were provided course managers who judged the products as being of limited value to them in managing course operations more effectively. The limitations of the simulation were of such a nature as to probably prevent the present system from being easily changed to make it acceptable to planners and managers. Personnel involved in the service test generally liked the concept of simulation of alternative course designs and the costing of alternative designs, but felt the present MODIA system was too limited. Additionally, the present MODIA system could not be implemented at Keesler due to the demands placed by the system on current computer resources.

RECOMMENDATION

Recommend the MODIA System not be adopted for use in ATC at this time.

This report has been reviewed and is approved.

EDWARD J. JACKO, Lt Colonel, USAF
Commander
3307 School Squadron
(ATC Technology Applications Center) (ATC)

This PR has been reviewed and is approved by HQ ATC.

SAMUEL E. SHRUM, Colonel, USAF
Director
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PHASE II EVALUATION OF THE MODIA SYSTEM

SECTION I - INTRODUCTION

1. Authority: This Phase II service test and evaluation of the MODIA (Method of Designing Instructional Alternatives) planning system was conducted under the authority of HQ ATC/XP letter, 16 Dec 1976, Phase II Evaluation of MODIA, and the Plan for Evaluating the MODIA System, 14 Oct 1977.

2. Background: Rand Corporation initially designed the MODIA system as a research tool. Air Training Command has examined the potential of the system for use in facilitating course planning. The primary objective of the MODIA system is to provide a systematic process of relating quantitative resource requirements to course design and operation. MODIA should enable planners to consider different sequences of course objectives, alternative sequences of subject matter, varying teaching methods and types of instruction, and different mixes of students, equipment, and facilities. Moreover, MODIA should simulate the way in which students progress through alternative course designs. The MODIA planning system has four components: the description of options for course design, the User Interface (UI), the Resource Utilization Model (RUM), and the Cost Model (MODCOM). The UI is the interactive portion of MODIA, the RUM provides the simulation of course operation and the MODCOM provides course costs.[123]

a. The initial development of MODIA was completed in October of 1973. ISD teams from Keesler and Lowry performed a critical design review at that time. Rand Corporation made several revisions based on the design review, and the Phase I service test of MODIA was conducted at Keesler AFB from

March 1976 to June 1976. The results of the service test were reported in ATC Project Report 76-1 (30 July 1976).[4] The results generally indicated that MODIA, "has the potential to be an effective planning tool whose use could lead to more cost-effective technical training courses." Several important questions, however, could not be addressed in the Phase I evaluation. This study provides data relevant to those unanswered questions.

b. During Phase I, Rand personnel reached the conclusion that the MODIA system was too complicated to be used effectively by the planners themselves, and as a result, a team of individuals was trained in the operation of MODIA. This group, subsequently called the interface team, operated MODIA while the course planners provided the planning data needed to design courses. The concept of the interface team carried over in this evaluation.

c. The physical arrangements at Keesler during Phase II were very similar to those arrangements which existed during Phase I. The special features of these arrangements included: (1) a room in which the interface team operated a remote terminal; (2) a Class A telephone line used with an acoustical coupler; (3) a MODEM (Bell 103A Data Set) in the computer facilities connected on a dedicated line to Biloxi, Mississippi telephone exchange; (4) one of the primary provisions of both Phase I and Phase II tests was that they be conducted on a "non-interference" basis. During the shakedown of the MODIA system (prior to the actual start of the Phase II service test), an attempt was made to use MODIA to set up a rather lengthy course and it was determined that there could be a serious interference problem with on-going training efforts and other users of the Honeywell 6060. This

precipitated a conference which established a minimum-interference working schedule for MODIA use. The hours of operation for the User Interface program were to be from 0530 - 0700 hours daily, 1100 - 1200 hours - 2 days a week, and occasionally as other use dictated. While this schedule was the best that could be devised under the conditions of the service test, it placed severe restrictions on the response time of MODIA planning of alternatives and hampered evaluation of the MODIA system in that not as many course alternatives could be generated as were desirable.

d. The shakedown and debugging of the MODIA system on the Keesler H-6060 took place in October 1977. The actual service test for Phase II began on 14 Nov 77 and ended 17 Feb 1978.

e. The Phase II evaluation capitalized on the experience gained in Phase I, while expanding the scope of the evaluation of MODIA by addressing new questions about its use: in planning specific types of courses (family group courses); in controlling the system by technical school management; in assessing the value of the system to planners and managers; and in determining the data automation requirements of the system now and in the 1980s.

3. Objectives: The objectives of this service test were to:

a. Provide sufficient test data to support the development of a Data Automation Requirement (DAR) should MODIA be adopted.

b. Determine MODIA's usefulness as a planning tool. This objective had several aspects. Specifically:

(1) Explore MODIA's usefulness in planning type 3, family group courses with shared resources.

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(2) Assess the utility of the system to the technical training school management.

(3) Determine MODIA's usefulness given currently existing resource constraints, current computer support capability, and training policy.

c. Determine MODIA's usefulness as a problem-solving tool.

d. Determine the organizational configuration and operational procedures which may be used in applying MODIA at Keesler.

e. Determine resources required to implement MODIA at Keesler in the immediate future.

f. Determine what changes to MODIA are needed to improve its effectiveness.

g. Examine the potential for using the cost model (MODCOM) as a stand-alone system.

h. Develop a training program for the use of MODIA - including development of a "User Interface Team Guide".

SECTION II - METHOD

4. ISD Team Make-up: Initially, it was planned that each ISD team would be composed of a curriculum training specialist, a training resource specialist, and a subject matter specialist. In practice, however, the interface team member from each of the three training groups involved in this exercise worked with only one other person from the training group. This person provided the primary ISD input. Others were involved as needed in the planning of different parts of a given course (for example, the planning of 3ABR32831 involved up to as many as 5 ISD people). The reorganization of the technical training center and shortage of experienced planners

dictated this deviation from the evaluation plan. It should be mentioned that the use of fewer people significantly drove down the personnel cost of planning with the MODIA system. In contrast to Phase I cost analysis which included personnel costs of many ISD team members, this service test figures personnel costs associated with only one or at most several (in the case of 3ABR32831) ISD team members' time. Each ISD member was responsible for revising the selected courses with inputs from other tech school personnel as needed.

5. The MODIA Interface Team: The interface team was composed of a GS-11 (Mr. T. M. Gollday/TTGTI); a Master Segeant (Michael A. Stone/TTKSR); and a Technical Sergeant (Wayne T. Wolski/TTKN). The training of the interface team was accomplished at the Rand Corporation, Santa Monica, California, during the period 12 Sep 77 to 25 Sep 77. This group of individuals served as the interface between the ISD planner and the MODIA system.

6. Course Selection: Courses selected for MODIA service test during Phase II were:

Training Group	Course Number	Title
3380 TTG	3ABR32831	Avionics Nav System Specialist
3390 TTG	3ABR27630	A C&W Systems Operator (Manual)
3390 TTG	3ABR27630-001	A C&W Systems Operator (SAGE)
3390 TTG	3ABR27630-002	A C&W Systems Operator (407L)
3410 TTG	3ABR30434-1	Ground Radio Equipment Repairman (Titan)
3410 TTG	3ABR30435-5	Ground Radio Equipment Repairman (Minuteman)
3410 TTG	3ABR30434	Ground Radio Equipment Repairman

Course selection was based on the following conditions:

(1) There were two sets of family group courses (the 27630 and the 30434 courses) that had to be revised.

(2) Low, medium and high student loads were represented.

(3) Different instructional approaches were represented.

(4) All courses were planned through all 5 steps of the ISD process.

(5) One of the courses (32831) was of long duration and used a great many resources.

The assumption underlying this course selection was that these courses represented the best planning possible by conventional means. If MODIA can be effectively used in the ISD process, then both planners and managers can improve course designs by allowing for more cost effective planning.

7. MODIA Service Test Costs -- Data Collection.

a. It is important to make a distinction here between Phase I and Phase II. Phase I results showed that MODIA could be used by training branch and group level personnel to decrease course costs through better design if they could use any design they chose, regardless of training policy or personnel management considerations. Phase II attempted to see how well they could use MODIA to manage costs in the present training environment, and within real-world constraints. One of the goals of the Phase II effort was to examine the cost of the MODIA system in the light of such restraints. In order to accomplish this goal, all elements of the system cost were collected as outlined in the evaluation plan.

b. Specifically:

(1) Data automation cost information was supplied by Keesler ACD.

(2) Manpower facilities and equipment costs were collected by KTTC/TTGH. Facility costs were not counted as a cost in this evaluation as they were also not counted in Phase I. Also, Rand provided the TI-700

terminal for use in the service test. This terminal cost was not counted as a cost of the service test; however, the costs of terminal "time" on the H-6060 computer were counted as part of the data automation costs. Total equipment and manpower cost breakouts, by course, are provided at Appendix 1. These costs will be discussed in the Results Section, paragraph 17.

(3) EDP and Communications Costs were provided by the 2052 Comm. Sq., Keesler AFB and are also included in Appendix 1.

c. The primary cost of MODIA was in the manpower and computer time required to support the system. This data was gathered through work logs/time sheets and a terminal log kept by interface team members and ISD team members throughout the course of the service test. The work logs/time sheets were filled out on a weekly basis to insure current and reasonable estimates of time spent on various portions of the MODIA service test. Course cost data and cost information for use as inputs into MODCOM were provided by the Comptroller and from Keesler Production Analysis.

d. Requirements for computer resources (CPU time and time-sharing storage requirements) for the various portions of the User Interface are provided at Appendix 2. However, several recommended changes to the MODIA programs are probably extensive enough to significantly alter the operating characteristics of the system, should a DAR be developed for this system.

e. Specific changes to the MODIA system were provided in written comments by ISD personnel and all interface team members, as well as training managers.

f. Down-time, equipment malfunctions and waiting time were not counted as a direct cost of MODIA planning, since it was assumed that such costs would be minimal with a fully operational MODIA system.

8. Questionnaires:

a. Interface team questionnaires with raw data summaries are provided at Appendix 3.

b. ISD team questionnaires with raw data summaries are provided at Appendix 4.

c. Training managers' questionnaires with raw data summaries are provided at Appendix 5.

d. Data contained in responses to the questions in all questionnaires were summarized and consolidated to provide opinion information on MODIA's usefulness as a planning tool and as a problem-solving tool. Additionally, the information provided from questionnaire comments provided a basis for recommended changes to the MODIA system.

SECTION II - RESULTS

9. General: In response to one of the recommendations in ATC PR 76-1, Evaluation of the MODIA System, one of the primary purposes of this evaluation was to determine the utility of the MODIA system to technical training management. In fact, the Phase I report went so far as to say that when procedural questions and organizational configuration questions were resolved,

"It appears that SAAS management will be able to show that MODIA can improve resource management in a technical training environment (para 18g, p. 33, ATC PR 76-1)." The results of the Phase II evaluation dictate a different conclusion. The next section will first discuss the implementation and operating costs of the service test at Keesler, and then report the results as they relate to the objectives previously outlined.

10. MODIA Phase II Service Test Costs: For the Phase II service test implementation, it cost Keesler Technical Training Center $11,074. For the operation of the system during the service test, it cost the technical training center $44,297. (see Appendix 1 for complete cost breakdown by course). These figures are considerably different from those obtained during the Phase I evaluation. For example, the Phase I report placed the implementation cost at around $36,000. The approximate $25,000 difference between that service test and this one can be explained by taking into account several important differences between the two service tests. These differences include a drastic reduction in the number of personnel and manhours involved in the shakedown and set-up phase of the service test. Additionally, fewer manhours were needed to supply interface team members with planning factors - i.e., there were fewer people involved with day-to-day operation of the system. More about these implementation and operating cost differences will be mentioned in the discussion section. The results of this portion of the evaluation also show large differences in the cost of computer operations when compared with those results reported in the Phase I effort. The $1.59/min reported in Phase I is considerably less than the $3.67/min reported in this evaluation. The computer costs, as well as program specifications and operating

characteristics of the MODIA software are addressed in the following section as they pertain to the potential data base for the development of a DAR should MODIA be adopted. Overall, the total service test cost was less than anticipated, despite the fact that computer costs were substantially greater than those costs obtained in Phase I.

11. MODIA System Operating Characteristics and Limitations. As mentioned in the Introduction Section, the size of the UI portion of the MODIA system was so large that it caused some initial interference with the training mission -- and resulted in restricted operating hours for the MODIA service test. The primary result of the service test experience that pertains to the operating characteristics is that the UI (and especially the "C" phase) is much too large. While it is conceivable the UI could be made smaller and more efficient, serious consideration would have to be given to size trade-offs involved with the RUM program. This trade-off is discussed in para 15 of the Results section.

a. In general, the operating problems experienced during the service test can be traced to the fact that MODIA programs were written for an IBM 370/158, and were somewhat incompatible with the Honeywell 6060 system. Another important factor in the incompatibility with the IBM system is a virtual storage system, while the Honeywell system is a segmented storage system which uses program overlays. Aside from some basic incompatibility between the MODIA software and the Honeywell system, there were other problems encountered in using the UI.

b. Several specific findings regarding the operation and use of the MODIA programs were garnered from interface team members' responses in their questionnaire. Most team members found it easy to assign learning objectives

(course content) on the UI with some notable exceptions. First, MODIA was unable to handle assignment of course content under the family grouping concept. The 250 learning event limit was much too restrictive for planners to use MODIA for simulating courses with shared resources. Two of the basic courses planned in this exercise did have 221 and 241 learning events each. Basic, single courses could easily fit within the limitations. However, courses planned under family grouping required up to three times the 250 learning event limit. Second, garbling prevented the assignment of lesson objectives which had certain letter/number combinations. For example, in the 3ABR 30434 course, the interface team member entered sub10309 for a learning objective, but the computer read 1DANTCU. This garbling was a factor throughout the service test. Nevertheless, from responses to the questionnaire, it appeared that the interface team was sufficiently trained to be able to handle most problems that arose in assigning course content.

c. The assignment of resources to specific learning events, however, was a different matter. In all cases, interface team members found it difficult, and in some cases, extremely difficult to allocate resources to learning events in the way they wanted to make the assignments. The main problem encountered was in the extremely limited number of different resources allowed on MODIA (only 30). All interface team members had to "package" resources in order to make resource assignments using the UI. In some cases, a considerable number of resources had to be lumped together or packaged in order to make the resource assignment. In the case of planning both the 30434 and the 32831 baseline courses, very few of the needed resources could be assigned in such a way as to depict realistic use of resources.

d. The limited capability of MODIA to handle the required resource assignment was commented on frequently. In fact, the interface team members felt that the 30 resource limitation hampered realistic simulation of course operation since the 32831 basic course required the assignment of 80 different resources in the 30434 baseline course, over 100 different resource assignments were needed.

e. Another major constraint of the UI program was its inability to handle certain student arrival options. For example, staggered entries with variable numbers of entering students could not be simulated. Moreover, all interface team members voiced the need for a system which could realistically depict shift operations. While the MODIA system can be manipulated to allow simulation of courses with a shift operation, the resultant product had severe limitations. Specifically, the 250 learning event limit for the UI was much too restrictive for depicting courses with shift operations. For example, Course 3ABR32831 would require approximately 400 learning events to simulate shift operation. Resources and learning events for this course would have had to be condensed or packaged even more to simulate a two shift operation. Moreover, course managers felt they had a better handle on managing shift operations with current techniques.

f. All interface team members felt confident in using the UI and all found the User's Guide (provided by Rand) very helpful in working the system. But again, there was considerable difficulty in working around garbling problems. As in phase I, the numbers 143 and 168 were read as 145 and 170. This particular garbling caused a problem every time one had to enter learning event numbers 143 or 168. The problem was surmounted by labeling these learning events as "sick-call" and assigning zero time to the learning event.

g. In general, the interface team felt confident with the simulations and expressed the need for a system like MODIA, but all members also remarked that the system, in its present form, had too many limitations. All interface members rated the output of the RUM as fairly easy to interpret and use, and of value in the planning process.

h. The specific changes recommended for MODIA are dealt with in detail in paragraph 15. Suffice it to say that in the experience of the Phase II service test, the UI system was too large and inefficient to be used on the Keesler H-6060 computer now, or in the future. The direction and magnitude of the recommended changes to the MODIA system make the specifications for the present system useless in supporting a DAR. Based on limitations and problems experienced in this portion of the service test, and on the results reported in the next section, MODIA should not be adopted for use "as is". The operating limitations experienced during Phase II were very similar to those experienced in Phase I.

12. MODIA Usefulness as a Planning Tool.

a. General. The basic thrust of the Phase II evaluation effort was to determine MODIA's usefulness as a management planning and problem-solving tool. The assessment of MODIA's utility must, of necessity, be subjective and depend on the opinions and judgments of those in the training center managment hierarchy who would use a system such as MODIA. The strategy of this evaluation effort was to present course managers with MODIA products (the RUM simulation and Cost Model course costs for each alternative design), and see if they could use either the simulation information or cost model information to arrive at more cost effective course designs -- while staying

within the limits of ATC and Keesler TTC policy directives, manpower limitations and resource constraints.

The basic question involves "how" management should use the MODIA system. Therefore, management responses and results of alternative course costs will be discussed with respect to obtained results in each of the technical training groups, respectively. To help the reader keep this part of the evaluation conceptually straight, there are two basic aspects of MODIA information that could be of use. The questions that address these aspects are: (1) How useful was the cost model information on alternative course designs? and, (2) How useful was the simulation information? The first question is answered by results discussed here, while results pertaining to the second question are discussed in para 13. In the discussion to follow, each of five basic courses in the technical training groups was simulated and cost for the courses calculated using the cost model. The "baseline" course cost figures and operating parameters were designed to reflect the way the course actually operated during 1977. All baseline course costs were figured on the 6-hour training day and were compared with total course cost figures derived using the ATC Comptroller's figures on costs/graduate in each of the training courses multiplied by the annual graduates. The results show that the cost model figure for total course costs agrees closely with a total course cost using the comptroller's cost factors -- a result that agrees with Phase I findings on cost model accuracy.

Because of the time limits of the service test, cost model information was obtained for three basic courses and alternatives for each of the three courses.

b. 3380 TTG - Results of Alternative Costing:

Table 1 presents the cost of the baseline 3ABR32831 course in comparison with costs of various alternatives generated by the interface team members, ISD people, and training managers.

While the cost model was designed to be used either in conjunction with the simulation portion or by itself, ideally, planners would cost out alternative courses they had simulated to determine the most cost effective option. In the present case, five out of eight alternatives were simulated. Not all could be simulated due to the time limitations of the service test and the operating hours.

TABLE 1

COST MODEL BASELINE COURSE COST COMPARISONS
WITH ALTERNATIVE COURSE COSTS
(3ABR32831)[a]

Alternative No.	Baseline[c]	1[d]	2	3	4	5	6	7	8
Data									
1. Annual Entry	412	486	486	730	1128	1128	389	389	389
2. Annual Graduates	269	318	477	477	737	737	255	266	282
3. Annual Failures	7	8	13	13	19	19	6	6	6
4. Avg Course Hours	527	515	527	527	527	527	527	616	537
5. Number of Instructors	32	34	59	52	73	63	38	38	38
6. Total Course Cost (1977 dollars)[b]	1882.9	2137.4	3383.3	3279.4	5000.2	4857.0	1912.0	1802.6	1708.0
7. ATC Course Cost/Graduate	7.23205								
8. ATC Total Course Cost ((7)X(2))	1945.4								
9. Difference (Between 8 and 6)	63.5 (3.2%)								

a. In thousands of dollars
b. Adjusted by a factor of 1.1598 X MODCOM value X 1.057 = 1977$
   (Factors provided by Hq ATC/Management Analysis)
c. 6-hr day (Baseline)
d. 8-hr day

Alternatives 7 and 8 were less expensive than the other alternatives. These two courses represented slightly increased course hours over the baseline course (the course as it actually operated on a 6-hr day and for 527 course hours). The modest reductions of $80.3K (4.3%) for alternative 7 and $173.0K (9.21%) for alternative 8 were obtained by entering students every 36 hours instead of every 40 hours as in the baseline, and by decreasing the actual numbers of students entering the course. Additionally, students were washed out on an average of 217 hours in alternative 8, as opposed to an average of 240 hours to washout in the baseline. The reduction in alternative 7 was due largely to reduced student pay, reduced student PCS costs and instructor PCS costs.

All training managers felt the cost information provided by the cost model was of very little use to them. All sampled managers commented that the cost model information could be used by Hq ATC level people involved in making decisions about policy impact on course costs. The managers in this group indicated that the cost savings shown by using the cost model related to costs not managed by center level managers (student instructor pay and PCS costs). These obtained cost savings were in areas most directly controlled by Hq ATC management actions.

It is significant that the two money saving alternatives (both 7 and 8) were generated independently of any simulation -- i.e., neither of those two alternatives were put on the RUM. This fact demonstrates that the cost model may be used as a stand-alone system, but the overriding question as to "who" should use it is addressed later in this report. Because of the recommendations generated by training managers in this group as well as others, the

the cost model data was given to HQ ATC Comptroller personnel in the management analysis section for further study and comment.

c. 3390 TTG - Results of Alternative Costing. Table 2 presents the cost of the alternatives run for the 3ABR27630-000 course. In this case, the baseline course cost generated by the cost model was within 7% of the ATC Comptroller's figures for the cost of the basic course in 1977. The second alternative simply represents the course cost based on an eight-hour training day as opposed to a 6-hour training day. The resultant savings are trivial ($4.2K). The remaining alternatives represent various ways of figuring course length based on how policy dictated reductions are calculated. While the cost model may give the cheapest alternative (alternative 2 in this case), planners still needed to exercise judgment. The vast bulk of the savings generated by this alternative was in pay and allowances of students, instructors, and base permanent party (support) personnel. These costs, while important, are not meaningfully controlled by managers at the training group level. Additionally, the cheapest alternative is not always the best. In the base of 3ABR27630-000, the Complementary Technical Training (CTT) is vitally important to the course of training. Alternative 4 presented the planners with the best course length and number of graduates from the standpoint of meeting training standards. It is important to note that the planners and managers already knew that the mix represented in alternative 4 would be the best option for them to plan under the new policies. It is also important to emphasize that the way in which these policy decisions would be implemented was determined independently of cost model information. The cost model data confirmed what managers already knew about the effect of recent policy decisions on course costs.

TABLE 2

COST MODEL BASELINE COURSE COST COMPARISONS WITH ALTERNATIVE COURSE COSTS (3ABR27630-000)[a]

Alternative	Baseline[c]	1[d]	2[e]	3[f]	4[g]
Data					
1. Annual Entry	550	550	550	550	550
2. Annual Graduates	471	471	490	471	481
3. Annual Failures	11	11	11	11	11
4. Avg Course Hours	215	285	215	274	242
5. Number of Instructors	25	25	25	25	25
6. Total Course Cost (1977 dollars)[b]	1717.1	1713.9	1567.4	1687.1	1622.7
7. ATC Course Cost/Grad	3.92178				
8. ATC Total Course Cost	1847.2				
9. Difference (between 8 and 6)	-130.1 (7%)				

a & b - Same as other tables
c. 6-hr day
d. 8-hr day
e. 8-hr day (not adding CTT)
f. 8-hr day course + (CTT - 15%)
g. 8-hr day (Course + CTT) - 15%

Both managers in this group rated the cost model information of no use at all to them. They indicated that the information could be of use to Hq ATC Training Managers and others in evaluating the cost of current course training and in evaluating the cost of alternative course designs.

d. 3410 TTG - Results of Alternative Costing.

Table 3 contains the results of alternative costing for the 3ABR 30434 course. Only two alternatives were run through the cost model in this course because time ran out for the service test. A problem with the amount of time necessary to gather data for input into MODCOM (cost model) bears examination at this point. This problem occurred with gathering data to input into all three baseline courses, but is discussed here for convenience. All interface team members spent a great deal of time gathering cost information and putting it in a form usable by the cost model. Specifically, for the 3ABR30434 course, 30% of the total time spent by the interface team members for all phases of the service test was in gathering cost data for MODCOM (for interface team members on 3ABR32831 - 50% and 3ABR27630 - 50%). This amount of time is grossly disproportional when one considers the inability of managers to use the final cost information. In any event, the interface team felt that entirely too much time was spent on this portion of the service test. The mechanics of inputting the information and obtaining final products was, on the other hand, extremely easy and presented no problems whatsoever in terms of computer usage. Once the baseline cost information was obtained, it was very easy to generate costs for alternative course designs.

TABLE 3

COST MODEL BASELINE COURSE COSTS COMPARISONS WITH ALTERNATIVE COURSE COSTS (3ABR30434) [a]

Alternative #	Baseline	1 [c]	2 [d]
Data			
1. Annual Entry	591	591	591
2. Annual Graduates	402	424	435
3. Annual Failures	25	26	26
4. Avg Course Hours	460	520	460
5. Number of Instructors	73	73	73
6. Total Course Cost (1977 dollars) [b]	3280.2	3105.1	2986.9
7. ATC Course Cost/Graduate	8.46088		
8. ATC Total Course Cost ((7) X (2))	3401.2		
9. Difference (Between 8 and 6)	- 121.00 (-3.5%)		

a. In thousands of dollars

b. Adjusted by a factor of 1.1598 X MODCOM value X 1.057 - 1977 dollars (Provided by Hq ATC/Management Analysis)

c. 8-hr day - same course length

d. (Course + CTT) - 15%

The two alternatives presented for the 30434 course show a roughly 5% saving (alternative 1) for the course planned on a straight 8 hour training day with no CTT added; and a roughly 9% saving when planning a course length with CTT added and reducing the resultant course hours by 15%. As with the other training groups, this information was not enlightening to training managers. One of the managers found the cost model information very useful in improving course manning structure and student use of equipment. Both managers felt that costs were generally determined by ATC policy, rather than managed by training group-level personnel.

13. MODIA's Usefulness as a Problem-Solving Tool -- The Resource Utilization Model Simulation. Based on the responses to questionnaires (see Appendix 5) given to the training managers in the three training groups involved in the Phase II service test and on interviews with group and center-level management, the RUM does not appear to be a useful planning tool that can be used by these managers to more effectively manage training resources.

a. General: As mentioned in the Methodology section, all managers were presented with completed course simulations and cost model data for all alternatives -- all managers had the products carefully explained to them (8/9 of the managers responded that they had the products explained well enough to them that they understood all the products from the RUM and the cost model). All managers were facing real course management problems at the time of the evaluation. For example, all had to revise courses from a six to an eight hour training day, all had instructor shortages, and all had students awaiting training. The RUM simulation was unable to provide the training managers with unique information on course operation. From their responses to questions 1, 2, 9, 11, 12, 13, 14, 15, 16 and 17, it was apparent that the MODIA simulation was not telling the managers something they did

not already know about specific problems in the operation of the courses studied in this service test. It appeared from responses given in the questionnaire that the RUM simulation was generally of very little use to the group level managers. From responses generated during debriefing and from comments on the questionnaires, the problems concerning the managers were foreseen without the aid of the simulation. The more pressing problems, such as those concerned with shift operation, could NOT be realistically simulated on MODIA. Seven managers said they had little confidence in the RUM simulation, and all nine managers felt they had foreseen the problems in course operation just as well or better than the simulation.

At this point it is of interest to note that enthusiasm for MODIA ran high during the service test because of perceived potential of the system for helping managers solve some of the problems that were facing them at the time. However, the managers expressed frustration with the MODIA system when they could not use it to help them manage those problems. For example, one branch chief would have liked a system which would allow him to strategically pull instructors to support Air Force exercises and still optimally operate the course.

At the conclusion of the service test, several managers expressed the need for a computerized system which would help them with scheduling problems, and/or a system which would optimize the use of certain resources. It was explained to the managers that MODIA was neither a scheduling nor an optimizing tool. One has to use the RUM simulation to test the feasibility of the given design the planner brings to the system. Other systems, such as the Advanced Instructional System (AIS), could be used to resolve the scheduling and optimizing problems which seem to represent the more important management problems facing course managers.

The results of the managers' opinions about the simulation differed slightly from the opinions of the ISD participants and from the judgments of the interface team members. Two-thirds of the ISD people felt the RUM simulation would be of little use in course planning, while two-thirds of the interface team members felt it would be useful. Both ISD respondents and interface team members were confident in the simulations of their respective courses. Of the six respondents (3 ISD people and 3 interface team members), three said they would seldom use MODIA were it to become a fully operational system, and three said they would use the system often. This result compares to the opinions of the training managers, where five of nine said they would at least use the system "sometime" if it were fully operational.

In summary, the opinions of those involved with the Phase II service test found the simulation lacking in certain respects. In general, there were mixed feelings about the usefulness of the RUM simulation. The managers felt that the simulation was of little value to them, but the ISD and interface team members were of the mixed opinion that perhaps there was some value to be had in the way MODIA simulated course operation. All individuals sampled with the questionnaire felt that the simulation of resource use was less than totally realistic and those most closely involved with MODIA expressed serious reservations about the restrictive limits on the number of resources that could be planned using MODIA. A summary of the training managers' responses in each training group is presented below.

b. The 3380 TTG - 3ABR32831. The interface and ISD participants for this training group had some difficulty packaging resources for this long duration and high-flow course. For example, there were 80 important resources

that could not be broken out as desired in the basic course simulation. In fact, the course structure as it existed in actual operation could not be accurately depicted. 3ABR32831 could not be depicted as progressing from group lock-step, to a self-paced portion, then back to a group lock-step again. The specific problem facing the simulation of 3ABR32831 was that the students had to be returned to that portion of the self-paced block from which they were taken in order to complete the last group-lock-step block. The configuration that was simulated had a self-paced portion at the end of the two lock-step portions with students arriving in random intervals. The training managers who examined the simulation felt that such a simulation was of very little use or no use at all to them -- 5/5 responses were in this category; 4/5 of the managers in this training group felt the simulation and cost model information were of little value; and 3/5 had little confidence in the final simulation.

c. The 3390 TTG - 3ABR27630 Course. The two training managers in the 3390 Technical Training Group found MODIA to be more useful than did the managers in the other two training groups. Both felt MODIA would be useful in helping them manage course revisions better, both thought the system had value to them as managers, and both were very confident in the results. The difference in the response of this group and the others can be attributed to the fact that MODIA simulation helped the managers spot a queuing problem that existed in the 27630 course operation. While the managers knew a problem of some kind existed, it seems MODIA highlighted a possible solution which was subsequently put into operation -- the queuing problem was solved.

While MODIA generally provided favorable results in this training

group, several comments by the managers are important in assessing MODIA's usefulness. First, MODIA could not adequately simulate the group-paced operation of the course. MODIA, however, can be manipulated to handle group-paced instruction, but in the present case the options available for simulating group-paced instruction were not acceptable to training managers. The managers were not satisfied with the way the resultant course "looked" in the simulation. Second, MODIA didn't allow the managers to more effectively manage resources. As the branch chief remarked, "In its present form, the only useful purpose it serves is to highlight the facility costs in one single document." The most pressing problems facing these managers were instructor manning shortages. They felt it would be futile to exercise a system that merely highlighted the manning problems they were aware of already.

d. The 3410 TTG - 3ABR30434. The most predominant remarks made by managers in this group dealt with the limitations of the MODIA system. Both managers felt that MODIA in its present form would be of little value and they had little confidence in the simulation. They both said that they would use MODIA often, if it were substantially changed.

14. Organizational Configuration, Operational Procedures, and Resources Required to Implement MODIA.

As stated in the MODIA Evaluation Plan for the Phase II service test, the determination of how MODIA should be used largely depended on how well the planners and managers felt they could use the simulation and cost information. The results of the two preceding sections indicate that the RUM simulation of course operation was of too limited a scope to be of any value in the planning and management of course operation at the center, group or branch levels.

All personnel involved in the service test were queried as to how and where MODIA should be used if it were adopted. There was a wide range in the recommendations as to who should use MODIA. Some managers felt that only branch level planners should use the system, while most others recommended use by everyone involved in the planning process, from branch level to Hq ATC course managers and manpower personnel. Many managers stated they would not recommend the system as it exists now, but stated that they could use a MODIA-like system. A particular surprise was the suggestion by many that Hq ATC level personnel could use cost model information. This recommendation was surprising in light of the fact that at the beginning of the service test, managers and other training center personnel expressed a fear that MODIA would be used by headquarters to impose unrealistic course policy changes on them. That training managers thought enough of the cost model to recommend its use by Hq ATC planners speaks well for the cost model. Again, though, almost all the personnel questioned did emphasize that the simulation should not be used by anybody unless it was considerably changed.

The comments and responses about the best organizational configuration were clear in the recommendations that one centrally located interface team could handle the planning of all Type 3 courses at Keesler. By far the most frequent recommendation was that a well-trained interface team composed of only 3 members could handle all the necessary planning.

In addressing the questions of resources required to implement MODIA, the results of this service test have several clear implications. As far as the manpower required to operate the system, the results of this evaluation indicate that very little manpower increases would be needed to operate the

system effectively. This result is consistent with the most prevalent recommendation in this service test -- that MODIA be operated by a centrally located team of about 3 individuals. The unexpectedly low cost of this service test was achieved for a variety of reasons, dealt with fully in the discussion section, but in general the results indicate much fewer manhours involved in operating the system than may have been estimated based on Phase I results.

In contrast to the small manpower increases that would be required to implement MODIA, the results of the service test indicate considerable expenditures in computer resources would be required to implement the MODIA system.

The severe interference with training caused by operating the UI and the resultant restriction in operating hours for the service test indicate that MODIA as it currently is written could NOT be used for eight hours a day without causing unacceptable impairment of other training being conducted on the H-6060. There appears to be little possibility of using MODIA on the B-3500 system, since Hq ATC/ACD has gone on record as stating the B-3500 system is currently saturated. The computer personnel at Keesler felt MODIA could not under any circumstances be used in its present form, since existing computer resources and current training priorities leave little room for a system as large as MODIA. The unacceptability of MODIA "as it currently exists" is a consistent theme that runs through the comments of all those involved with the service test. The recommendations advanced for making MODIA more acceptable and usable are discussed in the next section.

15. Necessary Changes to Improve MODIA Effectiveness. One of the standout results of this evaluation was that MODIA would have to be dramatically

changed if it were to be an effective planning tool. Far and away the most prevalent recommendation for change in the RUM was that the limit on the number of training resources be considerably increased. The current limit of 30 resources is just not adequate. All courses planned in this service test, as well as one of the courses in the Phase I evaluation, had difficulty working around this limitation. The magnitude of the problem created by a limit of 30 resources is highlighted when one considers that the average number of resources used in most courses is considerably larger than 30 (and can go as high as 1100 resources in one particular course).

a. In addition to increasing the resource limitations on the UI and RUM portions of MODIA, it is necessary to decrease the overall size of the UI program, especially the "C" phase of the UI. This phase requires 70k bytes of storage in a time-sharing system with 110K bytes available for users. The large portion of the time-sharing system required by this phase causes unacceptable interference with other users of the time-sharing system. This particular recommendation for reduction in the size of the UI is a result which was also obtained in the Phase I service test.

b. At this point it must be mentioned that while the UI could be rewritten to be more efficient and still handle the recommended size increases discussed below, the resultant size increases in the operation of the RUM would probably prove unacceptable. Since the limits that apply to the UI directly affect the amount of storage required by the RUM, increases in the limits allowed on the UI would greatly increase the amount of computer time and core storage demanded by the RUM.

c. In relation to the problem of the overall size of the UI program (especially the 'R' and 'C' phases), the interface team recommended that

provision be made in the program to enter a given phase at particular points during the phase. As the programs are currently written, the user must enter a phase at the beginning if he/she is to make a change and the user must go through the entire phase and reenter all subsequent phases. As a consequence, a considerable amount of time can be expended for relatively minor changes in the resource assignments or capacities. Aside from having to reenter all subsequent information and the amount of time and effort involved, having to tie up the computer for relatively minor changes impairs the cost effectiveness of the UI.

d. While shift operations can be planned on MODIA as it currently exists, the programs should be rewritten so as to allow more direct simulation of the shift operation. Current options on MODIA necessitate manipulation of the MODIA system in such a way as to make simulation of shift operations unrealistic and unacceptable to training managers.

e. Apparent from the garbling of certain numbers and letter combinations and the large size of MODIA programs was a certain amount of incompatibility between the MODIA software and the Honeywell system. MODIA programs currently cannot be rewritten to alleviate this basic incompatibility, but should MODIA eventually be adopted, the garbling problem would have to be resolved.

SECTION IV - DISCUSSION

16. General. The Phase II evaluation effort differed from Phase I in that MODIA planning was attempted in an operating environment with planners and managers judging and considering MODIA simulation and cost information in the light of current policy guidelines and resource constraints. The results of their judgments and the operating experiences of this service test indicate that the simulation has very limited value for the management of technical training courses at the branch, group, and center level. This result is at apparent odds with Phase I findings which seem to indicate MODIA had potential for helping management design more cost-effective courses.

In the Phase I effort, however, the primary concern was determining whether the simulations of course operations were "valid", i.e., could they realistically simulate the way courses actually operated; and whether the cost of MODIA could be offset by more cost-effective designs -- as compared with conventionally designed courses. Phase II mainly tried to determine how course managers might use the system. The results clearly indicate that the simulation and cost information was of little use to managers.

No attempt was made to compare MODIA planning with conventional planning. Such comparisons are a little like comparing apples and oranges. Were MODIA to be radically changed (as indicated in Section III, para 15), the interface tea and 2 of 3 ISD planners felt the system could be an important aid in organizing and clarifying the planning process. In short, MODIA could have been an important addition to the planning process, but limitations in the system as it currently exists precluded managers from seeing it as a positive, useful tool. Specific highlights of the results will be discussed in relation to

Phase I results and in relation to MODIA's potential for implementation now and in the future.

17. MODIA Costs. One of the most striking differences between Phase I and Phase II service tests was the costs of implementing and operating the MODIA system. The main difference in the cost of the two service tests was in the reduced manpower required to operate MODIA. This reduction reflects the high level of competence achieved by the interface team. The experiences of Phase I seemed to have paid some dividends for the Phase II effort. Particular mention must be made of the quality of training of the interface team. The interface team members, as well as the project officer, were very adept at working around problems and seemed to know a great deal more about how to use the system than may have been the case in Phase I. All four individuals expressed complete satisfaction with the thoroughness of the training received at Rand Corporation in Santa Monica. The monies expended for this training undoubtedly paid big dividends both in the reduced cost of operating the system and in the quality of the generated products.

Just how much this experience of the service test would affect the per hour cost of MODIA planning figured in the Phase I effort is difficult to guess exactly since this service test did not address the cost of MODIA planning vis-a-vis conventional planning. It is safe to say MODIA planning would not be as expensive as indicated in the Phase I test. The carefully kept work logs and the comments by virtually all participants (Interface Team, ISD, and Training Managers) indicated MODIA planning would not unduly complicate the planning process. They felt the simulation would be a useful aid in course planning were its limitations corrected to allow more realistic

representation of resource use and more realistic simulation of course shift operations. The limitation of the UI and the RUM products appears to be the main factor mitigating against MODIA effectiveness.

The one "cost" of MODIA that remained consistent across both service tests was the demand placed by MODIA on computer resources. These costs were large in both service tests. The size of the MODIA programs was the major factor contributing to demands on computer resources. This result was expected since MODIA programs were virtually unchanged since Phase I results were published. It was exceedingly difficult to operate the system without interfering with other training being conducted on the Honeywell H-6060. The restrictive operating hours that had to be imposed as a result of the interference no doubt hindered the ability of the interface team to explore as many alternative course simulations as would have been desirable for this service test. In fact, this evaluator was more than a little surprised to see as many alternatives generated as were finally planned on the system. The recommended changes to the MODIA system were very similar to recommended changes made in Phase I.

18. MODIA System Limitations. A look at the recommended changes to MODIA provides the reader with a base from which to judge the limitations of the system. The standout limitation is the restricted number of resources that can be assigned to learning events. This limitation probably reduced the acceptability of the simulation to the majority of the training managers. Again, this finding is unenlightening to some extent since Phase I findings indicated that the limitations degraded its acceptability to course planners. Phase II results showed the limitations degraded the system acceptability to managers as well.

In addition to the resource limits, the interface team reiterated the desire to have a user interface that would be more adaptable. They indicated a need for a system which could be entered at more points in a given phase, and which could accept changes within a phase without having to reenter all subsequent information within a file.

Another major factor influencing acceptability of MODIA was the inability of planners to realistically simulate courses with shift operations, and courses with certain configurations. 3ABR32831 had certain portions of the course where students progressed from lock-step through self-paced instruction and then back to lock-step again. The course could only be simulated with the self-paced portion at the end of the two lock-step blocks. While this resolved the problem of simulating the course with MODIA, it made the resultant "picture" of course operation unrealistic. The problem of simulating courses with shift operations was more serious. Managers expressed a definite need for accurately simulating this type of operation, but the MODIA system was not designed to handle shift operations in a way that would be useful to course managers.

In planning 3ABR27630, the managers were chagrined by MODIA's inability to simulate group-paced instruction. The course was simulated using the lock-step option, but again, the resultant simulation was somewhat unrealistic and the training managers expressed their dissatisfaction with the resulting product.

In sum, while some realistic simulation of the three courses was achieved, managers felt that inherent limitations of the MODIA system prevented the simulation from being of any value to them in managing training courses.

A majority of the managers liked the MODIA concept, but wanted the system to do more than it was designed to do.

As mentioned earlier, there are other scheduling and optimizing models such as AIS, which better handle the problems facing course managers.

A question naturally arises about the relatively small numbers of managers exposed to the MODIA simulation in this service test. From a rigorous standpoint it would be unwise to generalize about the value of MODIA as a management tool based on the judgments of only nine course managers. These nine were sampled in this service test because they were most directly involved in the management of the courses selected for the service test and in the best position to judge the utility and accuracy of the MODIA simulation and cost model information. Additionally, the large reorganization of the former SAAS under the training center caused other managers who would otherwise be involved to be shifted to other organizataional positions. Only those managers who could best judge the accuracy and usefulness were asked to comment on the system.

Arguing for the generalizability of the training managers' judgments is the fact that the perceived limitations of the system were, by and large, the same limitations uncovered in the Phase I service test by course planners. The fact that these limitations were also judged by the training managers as constraining the usefulness of the simulation to management, provides a reasonable clue as to the value of MODIA simulation to others. It is argued here that if the managers must familiar with course operation could not find the simulation useful or acceptable, no one else could either. The point

has to be made that any manager looking at a somewhat unrealistic representation of course operation may run the risk of taking management actions based on misleading information.

19. The Cost Model. In general, the training management found the costing of course alternatives very interesting but of little value to them in management of course operation or in planning revised courses. The large majority of managers stated that the cost model information was of little practical value at their level, but went so far as to suggest the use of cost model information by Hq ATC level management. The obtained accuracy of the cost model figures and the ease with which alternative course costs could be generated argued strongly for its adoption at some level. The inputs to the cost model portion of MODIA can be obtained independently of any information provided by the simulation portion of the MODIA system. In short, from the results of this evaluation, MODCOM could be useful for Hq ATC level planners and managers. Based on the service test experience, however, certain caveats have to be issued regarding the time involved to gather and format information for input into the cost model.

a. The input information for use by MODCOM took a long time to gather and put into a usable form. Regardless of who uses the product, input undoubtedly would have to come from branch and group level planners, and would have to be updated regularly by the same people. This effort would naturally extend to all Type 3 courses at each of the training centers and would involve substantial changes in the way maintenance and cost data on training course resources are kept. Would the effort be worth it? In order to get a feel for the utility of the information provided by the cost

model, the cost model information on each of the three basic courses and for all alternatives examined in this service test were given to planners in the Management Analysis Directorate of the HQ ATC Comptroller. The results of their study of MODCOM indicated that the Cost Model would probably not be of any use at the HQ ATC level.

b. Despite the opinion of group and branch level management that MODCOM information was interesting, but of little value, it could be argued that these managers should be using this information regardless of current practice. The argument may go that just because they are not used to considering costs of alternative course designs, they could or should make such considerations when they plan or revise courses. This position involves the determination of "what" or "who" drives course costs. The managers sampled in this exercise felt that training philosophy, as presented in center-level and headquarters-level policy guidelines (as well as practical considerations like the TPR) drove the bulk of the costs of training. As it turns out, current systems for managing course costs are adequate, and the cost model information would not add anything to current management of course costs.

SECTION V - CONCLUSIONS

20. MODIA System Costs. The personnel costs associated with implementing MODIA at Keesler in the near future would be modest. Three additional positions would be all that would be needed to man an effective, centrally located interface team.

Computer costs in terms of demands on the time-sharing system would be unacceptable. Current computer resources are not sufficient to support a fully operational MODIA system as it is currently structured.

21. MODIA System Limitations. The final determination of the feasibility of making the recommended changes to the MODIA System lies with Rand. Specific changes which, in the judgment of the evaluators, must be made are:

a. Increase the limit of the number of resources that can be programmed with the UI Program. An arbitrary limit increase which may prove acceptable would be a four or five-fold increase.

b. Increase the limit of learning events from 250 to approximately 400.

c. Rewrite programs to be compatible with the Honeywell system.

d. Rewrite RUM and UI programs to allow planning of group paced courses and courses with two shifts.

e. Reduce the size of the UI so as to make the size of various phases much smaller. A good rule of thumb would be to keep each phase within Air Force standard of 40k bytes of storage.

f. Rewrite the UI so each phase could be entered at different points, and subsequent information would not have to be reentered.

The limitations reflected in the recommended changes prevented the RUM

simulation of course operation from being useful to training managers at the branch, group, and center levels.

The evaluator feels that the contradictory demands represented in the recommended changes, i.e., the demand to drastically increase the size and variety of options offered in the simulation versus the demand to decrease the overall size and increase efficiency of the software, prevent the present MODIA simulation from being a viable and cost effective planning tool.

22. MODCOM Usefulness. After reviewing the MODCOM data generated during the Phase II service test, the conclusion of the Management Analysis personnel was that MODCOM would not add significantly to current cost management techniques.

SECTION VI - RECOMMENDATION

23. The following action is recommended:

Recommend that the MODIA System not be adopted for use in ATC at this time.

SECTION VII - REFERENCES

1. Carpenter-Huffman, Polly. Overview of a Tool for Planning the Use of Air Force Training Resources, Vol 1, R-1700-AF, Rand, 1977

2. Carpenter-Huffman, Polly. Options for Course Design, Vol 2, R-17001 - AF, Rand, 1977

3. Hess, R & Kantar, P., A User's Guide to the Cost Model, Vol 5, R-1704 - AF, Rand, 1977

4. ATC PR 76-1, Evaluation of the MODIA System, 30 July 1976

KTTC COST INCURRED TO IMPLEMENT/OPERATE
MODIA PHASE II SERVICE TEST

CATEGORY	FACTOR	RATE	COST
I. IMPLEMENTATION COSTS*			
A. Computer Terminal Time	16.53 hr	$220.00/hr	$3737.00
B. Other Projects run on MODIA Systems	15.4 hrs	220.00/hr	3391.00
C. Communications line installation costs (installation/removal)			200.00
D. TDY Costs			
1. Interface Team Training.	--	--	3194.00
2. Lackland TDY	--	--	262.00
E. MODEM Costs	5 month	58.00/Mo	290.00
SUB TOTAL			11,074.00[1]
II. OPERATING COSTS			
A. 3ABR32831			
1. Computer terminal time	44.8 hr	220.00/hr	9856.00
2. Personnel usage			
1 E-6 (interface)	178	6.45/hr	184.45
2 E-5 (ISD)	47	5.39/hr	253.33
3 E-5 "	97	5.39/hr	522.00
4 E-4 "	22	4.65/hr	102.00
5 GS-9 "	22.5	9.43/hr	212.24
Sub Total			11,130.00[1]
B. 3ABR30434 (all three courses)			
1. Computer Terminal time	16.5 hrs	220.00/hr	3,630.00
2. Personnel Usage			
a. E-7	133.25	7.55/hr	1,006.00
b. GS-9	108.5	9.43/hr	1,023.00
Sub Total			5,659.00[1]

[1]Rounded to nearest dollar.

*Excludes cost of Rand personnel usage in setting up MODIA.

CATEGORY	FACTOR	RATE	COST
C. 3ABR27630 (All three courses)			
1. Computer terminal time	50.3 hrs	220.00/hr	$11,066.00
2. Personnel Usage			
a. GS-11 (Interface)	33.25	11.41/hr	379.38
b. GS-9 (ISD)	15.5	9.43/hr	146.17
Sub Total			$11,592.00[1]
OTHER COSTS			
Personnel Costs:			
Waiting (Computer Proglems - Access, etc.)			
E-7	7.00	7.55	$ 52.85
E-6	97.75	6.45	630.49
GS-11	45.25	11.41	516.30
SUB TOTAL			$ 1,199.00
TOTALS			
Project Officer (Keesler) Capt (69 days x 8 x .6)	331.00	11.01	$ 3,644.00
Total Computer Terminal Time Costs			$31,680.00
Total Personnel Costs (Manpower Time)			3,828.00
Total Implementation			3,946.00
Total Other			1,199.00
TOTAL COST			$44,297.00

STORAGE REQUIREMENTS[1] FOR VARIOUS PORTIONS OF THE USER INTERFACE

PHASE	K Bytes of Storage
I	42
S	42
P	46
T	40
R	58
C	70
RUM	48
RUM	66

[1]On H-6060 Time-sharing System

Appendix 2

INSTRUCTIONS FOR THE INTERFACE TEAM QUESTIONNAIRE

1. You have participated as members of the MODIA Interface Team in exercising the MODIA system for planning technical training courses. You are in a position to make a number of assessments concerning MODIA requirements for operation, as well as the usefulness of MODIA system output for you in planning course revisions. Below you will find a number of specific questions concerning details of your experience with the MODIA system. The judgments required of you are approximate in nature, nevertheless, please exercise thoughtful consideration for each question. Your responses will be kept in complete confidence. Only summary statistical results of your responses, combined with the responses of others, will be used in deciding on the utility of the MODIA system to course planners.

2. Please read each question carefully and indicate your response on the rating scale by placing a check mark BETWEEN one of the five sets of delimiters. When you are finished, make sure you have completed the general information sheet, and that you have put your name in the indicated place. Place the completed questionnaire in the envelope provided and return it to TTGOT. Remember, no other Technical Training Wing personnel will see your responses. The information will be analyzed and presented in summary statistical form by the Technology Applications Center at Lackland AFB, Texas.

3. If you have any additional comments, a clarification, or explanations regarding any particular questions, use the back of the sheet containing the question. Indicate the question number by your comments.

1. How much of the information necessary for the input into the User Interface did the ISD teams have ready?

: 1 :	: 1 :	: :	: 1 :	: :
NONE	VERY LITTLE	ABOUT HALF	MOST	ALL

2. How much time did the ISD teams spend looking for information necessary for input into the User Interface?

: :	: :	: 2 :	: :	: 1 :
LESS THAN 1 HR	1-3 HRS	3 - 5 HRS	5 - 7 HRS	7 HRS OR MORE

3. How much time did you spend explaining the operation of the MODIA system to the ISD teams?

: :	: 1 :	: 1 :	: :	: 1 :
LESS THAN 1 HR	1-3 HRS	3 - 5 HRS	5 - 7 HRS	7 HRS OR MORE

4. How easy/difficult was it to assign objectives (course content on the user interface?

: :	: 1 :	: :	: 1 :	: 1 :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY EASY

5. How difficult was it to assign subject matter types to learning objectives?

: :	: :	: 2 :	: 1 :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY EASY

6. How difficult/easy was it to assign learning event types?

: :	: :	: :	: :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY EASY

7. How often were you able to assign all the course content the ISD teams needed to assign?

: 1 :	: :	: 1 :	: :	: 1 :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

8. How easy/difficult was it to assign required resources to learning events?

: 1 :	: :	: 2 :	: :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY EASY

9. Did the User Interface provide you with enough options for describing student arrivals?

: 1 :	: 1 :	: :	: 1 :	: :
NOT NEARLY ENOUGH	LESS THAN I WOULD HAVE LIKED	ADEQUATE	EASILY ENOUGH	MORE THAN I WOULD EVER USE

10. Was Volume II helpful to you in using the User Interface?

Yes = 3

If not, please briefly list the shortcomings:

11. How helpful was the user Interface Guide?

: :	: :	: 1 :	: 2 :	: :
NO HELP WHATSOEVER	VERY LITTLE HELP	ADEQUATE	HELPFUL	EXTREMELY HELPFUL

12. How many of the planning factors the ISD teams considered important were you <u>able</u> to consider in planning your course on MODIA?

: :	: :	: :	: 3 :	: :
NONE	VERY Few	SOME	MOST	ALL

13. PLEASE LIST THOSE PLANNING FACTORS THAT COULD NOT BE INCLUDED IN YOUR COURSE DESIGN:

14. How much of a deterence to designing alternative courses was the amount of time you spent putting in a given course design on the User Interface?

: :	: :	: 2 :	: 1 :	: :
EXTREME DETERENCE	A SIGNIFICANT DETERENCE	MODERATE DETERENCE	VERY LITTLE	NONE AT ALL

15. How helpful was the hard copy output from the User Interface as worksheets for subsequent phases of the User Interface?

: :	: :	: 1 :	: 2 :	: :
NO HELP WHATSOEVER	VERY LITTLE HELP	ADEQUATE	HELPFUL	EXTREMELY HELPFUL

16. Would different worksheets make the User Interface easier to use?

No = 3

How confident are you in using the User Interface program?

: :	: :	: :	: :	: 3 :
NOT CONFIDENT AT ALL	VERY LITTLE CONFIDENCE	ADEQUATE	CONFIDENT	EXTREMELY CONFIDENT

17. How often did you experience difficulty operating the User Interface?

: :	: 1 :	: 2 :	: :	: :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

18. How often did you have to make special arrangements to use the computer?

: 1 :	: :	: :	: 2 :	: :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

19. How easy/difficult was it for you to interpret the output from the User Interface?

: :	: :	: :	: 3 :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY DIFFICULT

20. How easy/difficult was it to interpret the Resource Utilization Model output to the ISD teams?

: :	: 1 :	: :	: 2 :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY DIFFICULT

21. Would it unduly complicate the planning process if MODIA were used regularly?

No = 3

If your answer to the above question was yes, please list the reasons you feel MODIA would complicate the planning process:

22. Compared to the conventional planning process, how much time do you think you would save using MODIA to plan and revise courses?

: 2 :	: 1 :	: :	: :	: :
NONE	VERY LITTLE	MODERATE	CONSIDERABLE	A GREAT DEAL

23. About how often would <u>you</u> use MODIA in designing/revising a course?

: 1 :	: :	: :	: :	: 2 :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

"If redesigned"

24. If all type 3 courses at Keesler were planned using MODIA, about how many interface team members do you think would be necessary:

All responses = 2 to 3

In your opinion, did the ISD teams use as many of MODIA's options as they could have?

25. How easy/difficult a time did you have simulating shared resources between courses?

: :	: 1 :	: 1 :	: :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY DIFFICULT

26. How useful was the Resource Utilization Model simulation of shared course resources?

: :	: :	: 1 :	: :	: 2 :
NO USE	LITTLE USE	MODERATELY USEFUL	USEFUL	EXTREMELY USEFUL

27. How much of the training content of your course were you able to assign using the User Interface?

: :	: :	: :	: :	: 3 :
NONE	VERY LITTLE	ABOUT HALF	MOST	ALL

28. About how many Teaching Methods were you able to specify using the User Interface?

: :	: :	: :	: 1 :	: 2 :
NONE	VERY FEW	ABOUT HALF	MOST	ALL

29. List all of the teaching methods you were able to using the User Interface?

30. How many of the required resources were you able to assign to subject matter types?

: :	: 2 :	: :	: 1 :	: :
NONE	VERY FEW	ABOUT HALF	MOST	ALL

31. How realistic was the assignment of resources (in your opinion) in your course design?

: 1 :	: :	: 1 :	: 1 :	: :
TOTALLY UNREALISTIC		ADEQUATELY REALISTIC		EXTREMELY REALISTIC

32. How many tests and reviews could you assign?

: :	: 3 :	: :
NOT NEARLY AS MANY AS NEEDED	ADEQUATE	MORE THAN ENOUGHT

33. Did the User Interface provide you with enough options for describing student arrivals?

: 1 :	: 2 :	: :
NOT NEARLY AS MANY AS I WOULD HAVE LIKED	ADEQUATE	MORE THAN ENOUGHT

34. How many increments did the User Interface allow you to break your course into compared to conventional course revision and planning?

: :	: :	: 3 :	: :	: :
NONE	VERY FEW	ADEQUATE	A LITTLE MORE THAN NEEDED	MORE THAN I WOULD NORMALLY USE

35. How much time did it take to design alternative course plans after the baseline course was put in User Interface?

: :	: :	: :	: 3 :	: :
A GREAT DEAL OF TIME	MORE TIME THAN IT TOOK FOR THE BASE-LINE	ABOUT THE SAME TIME	LESS THAN THE BASE-LINE	NO TIME AT ALL

36. About how much of a deterence to designing alternative courses was the time you spent using the User Interface?

: :	: 2 :	: :	: 1 :	: :
NO DETERENCE AT ALL	A SMALL DETERENCE	A MODERATE DETERENCE	A CONSIDERABLE DETERENCE	A GREAT DETERENCE

37. How useful was the User Interface program in helping you consider planning factors in revising and planning your courses?

: :	: :	: 1 :	: 2 :	: :
NO USE AT ALL	VERY LITTLE USE	MODEST USEFULNESS	CONSIDERABLY USEFUL	EXTREMELY USEFUL

38. How many planning factors were you able to consider in designing or revising a course using MODIA?

: :	: 1 :	: 2 :	: :	: :
NONE OF THE NEEDED FACTORS COULD BE CONSIDERED	ONLY A FEW	AN ADEQUATE NUMBER	MOST	ALL FACTORS I NEEDED

39. List all other problems or comments you would like to mention with respect to the use of the User Interface programs.

40. How useful was MODIA simulation in helping you spot problems in your course design?

: :	: 1 :	: :	: 2 :	: :
NO USE AT ALL	OF VERY LITTLE USE	MODERATELY USEFUL	VERY USEFUL	EXTREMELY USEFUL

41. How realistically were the problems in course operation depicted?

: :	: 1 :	: :	: 2 :	: :
TOTALLY UNREALISTIC	SOMEWHAT UNREALISTIC	MODERATELY REALISTIC	VERY REALISTIC	VIVIDLY REAL

42. List all the features of the simulation which you feel were unrealistic Please briefly indicate why you feel the particular feature of the simulatio was not realistic.

43. How many managerial guidelines were you able to incorporate into your alternative course design?

	: 2 :		: 1 :	
NONE	VERY FEW	MODERATE NUMBERS	MOST	ALL

44. How easy/difficult was it to incorporate these changes in alternative course designs?

	: 1 :	: 2 :		
IMPOSSIBLE	VERY DIFFICULT	AVERAGE	EASY	EXTREMELY EASY

45. How easy/difficult was it to use MODIA in simulating courses with shared resources?

No responses

IMPOSSIBLE	VERY DIFFICULT	AVERAGE DIFFICULTY	EASY	EXTREMELY EASY

46. How valuable do you think MODIA simulation will be in revising/ planning courses with shared resources?

Not applicable

OF NO VALUE	VERY LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

47. Compared to conventional course revision/planning, how much time do you think you would save using MODIA?

: 2:	: 1 :			
NONE	VERY LITTLE	MODEST AMOUNT	CONSIDERABLE	AN EXTREME AMOUNT OF TIME

48. If MODIA were a fully operational system, how much do you feel it would complicate the revision/planning process?

: :	: 3 :	: :	: :	: :
NONE	VERY LITTLE	MODERATELY	VERY MUCH	EXTREME

49. How important do you feel it is to be able to consider alternative course designs?

: :	: :	: :	: 2 :	: 1 :
TOTALLY UNIMPORTANT	OF VERY LITTLE IMPORTANCE	MODERATELY IMPORTANT	VERY IMPORTANT	VITALLY IMPORTANT

50. How confident are you in the results of the simulation of course operation?

: :	: :	: 1 :	: 2 :	: :
NOT CONFIDENT AT ALL	VERY LITTLE CONFIDENCE	MODERATELY CONFIDENT	VERY CONFIDENT	EXTREMELY CONFIDENT

51. How often do you think you would use MODIA in the future were it to become fully operational?

: :	: 1 :	: :	: 2 :	: :
NEVER	SELDOM	SOMETIME	OFTEN	CONSTANTLY

52. How easy/difficult to interpret was the output from the Resource Utilization Model?

: :	: 1 :	: :	: 2 :	: :
EXTREMELY DIFFICULT	VERY DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY EASY

53. How useful for course planning was the simulation output from the Resource Utilization Model?

: :	: 1:	: :	: 2 :	: :
OF NO USE AT ALL	OF LITTLE USE	ADEQUATE	USEFUL	EXTREMELY USEFUL

54. List the planning factors that you would normally consider in course design which you were UNABLE to consider in the MODIA planned course.

55. List planning factors that you would like to see considered in a simulated course operation?

Please refer to the Resource Utilization Model output of the course operation for the course(s) which you designed using MODIA. The following questions refer directly to the various summary information and reports that make up the RUM output. Indicate by placing a check mark in the appropriate space, the value of the information contained in the report to you as a course planner. Also indicate whether you could normally consider this type of information in revising/planning a course by conventional means.

56. Report 1. Summary of course design

a. What is the value of this information to you in revising/planning courses?

: :	: :	: :	: 1 :	: 2 :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional course revision/planning?

: :	: :	: :	: 2 :	: 1 :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

: :	: :	: :	: :	: 3 :
NO USE	VERY LITTLE USE	MODERATE	USEFUL	EXTREMELY USEFUL

57. Report II. Resources Required and Capacity by Learning Event.

a. What is the value of this information to you in revising or planning courses?

: :	: :	: 1 :	: 2 :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information is conventional course revision/planning?

: :	: :	: 1 :	: 1 :	: 1 :
NEVER CONSIDER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

: :	: :	: :	: :	: 3 :
NO USE	VERY LITTLE USE	MODERATE	USEFUL	EXTREMELY USEFUL

58. Report III. Learning Events by Resource Type

a. What is the value of this information to you in revising or planning a course?

: 1 :	: 1 :	: 1 :	: :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional course planning or revision?
1 = No answer

: :	: 1 :	: 1 :	: :	: :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

59. RECAP Report 1. Report of Course Operation.

a. What is the value of this information to you in revising or planning a course?

NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional revision or planning?

NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

60. RECAP Report II. Students and Sections by Learning Events.

a. What is the value of this information to you in revising or planning a course?

NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUE

b. What is the extent to which you would normally consider this type of information in conventional planning or revision?

	1	1	1	
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

	1		2	
NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

61. RECAP Report III. Student Queues by Learning Event.

a. What is the value of this information to you in revising or planning a course?

			3	
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional revision or planning?

		2		1
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

1	2			
NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

62. RECAP Report IV. Resource Utilization by Learning Event.

a. What is the value of this information to you in revising or planning a course?

	2	1		
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional planning or revision?

	2		1	
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

	2	1		
NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

63. RECAP Report V. Resource Utilization by Resource Type.

a. What is the value of this information to you in revising or planning a course?

			2	1
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional revision or planning?

		2		1
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

: :	: 1 :	: :	: 2 :	: :
NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

64. How long did it take you to collect and prepare data required for input into MODCOM?

: :	: :	: :	: :	: 3 :
1 HOUR	1 to 3	3 to 5	5 to 7	OTHER (SPECIFY)

65. How useful was the information output from MODCOM?

: :	: 2 :	: :	: 1 :	: :
NO USE	VERY LITTLE USE	MODERATELY USEFUL	USEFUL	EXTREMELY USEFUL

66. How much of the required MODCOM input did you get from the RUM simulation?

: :	: 2 :	: 1 :	: :	: :
NONE	VERY LITTLE	SOME	MOST	ALL

67. How much of the required input did you get from other sources?

: :	: 1 :	: :	: 2 :	: :
NONE	VERY LITTLE	SOME	MOST	ALL

68. List the office symbols of the other sources and estimate the amount of the information required by MODCOM that was provided by the respective sources.

69. How confident are you in the course costs depicted by MODCOM?

:	:	: 1 :	: 1 :	: 1 :	:	:
NONE		VERY LITTLE	SOMEWHAT	CONFIDENT		EXTREMELY CONFIDENT

70. How much of the information required as input to MODCOM would normally be available to you (assuming you had no course simulation -- that is, no RUM output)?

:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

71. List that information that is required by MODCOM, and which can only be generated as a result of the course simulation on the RUM?

72. How often would you use MODCOM, in your opinion, if it were the only part of the MODIA system available to you?

: 3 :	:	:	:	:	:
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY		ALWAYS

73. How would you use it (short sentence or two, please)?

74. List those offices and/or organizations within the technical training wing which you feel uses the kind of information provided by MODCOM.

75. List those offices and/or organizations within the technical school which you feel should use the information provided by MODCOM, or who could benefit from the use of this type of information.

76. In your opinion, how should MODIA be used (a short sentence or two)?

77. In your opinion, who should use MODIA (Specify "who" at each organizational level, i.e., training evaluation, plans, operations etc. -- You can specify NONE or MORE THAN ONE)?

Technical School Personnel (Center Level): _____

Technical Training Group personnel: _____

Branch Personnel: _____

Hq ATC personnel: _____

78. For each organizational level you checked, please, in a sentence or two, explain why they would use MODIA?

Technical School:

Technical Training Group:

Branch:

Hq ATC:

79. What do you think would be the role of those organizations you indicated in using MODIA?

80. Please list any additional comments you care to make about your experience with MODIA, its usefulness, or any suggestions you may have for improving the system.

INSTRUCTIONS FOR
ISD TEAM QUESTIONNAIRE

1. You have participated as members of an ISD team in providing course planning data for the MODIA interface team to exercise the MODIA system in planning your course. You are in a position to make a number of assessments concerning MODIA requirements for operation, as well as the usefulness of MODIA system output for you in planning course revisions. Below you find a number of specific questions concerning details of your experience with the MODIA system. The judgments required of you are approximate in nature, but nevertheless, please exercise thoughtful consideration of each question. Your responses will be kept in complete confidence. Only summary statistical results of your responses, combined with the responses of others, will be used in deciding on the utility of the MODIA system to course planners.

2. Please read each question carefully and indicate your response on the rating scale by placing a check mark BETWEEN one of the five sets of delimiters. When you are finished, make sure you have completed the general information sheet, and that you have put your name in the indicated place. Place the completed questionnaire in the envelope provided and return it to TTGOT. Remember, no other Technical Training Wing personnel will see your responses. The information will be analyzed and presented in summary statistical form by the Technology Applications Center at Lackland AFB, Texas.

3. If you have any additional comments, a clarification, or explanations regarding any particular questions, use the back of the sheet containing the question. Indicate the question number by your comments.

GENERAL INFORMATION SHEET

A. INTRODUCTION: You have participated in the evaluation of the MODIA System at Keesler; therefore, you are in the best position to make a number of assessments concerning the usefulness of MODIA as a tool for planning a training course. This historical sheet has been designed to assist you in furnishing us with specific information relative to your background. Please answer each question and return the history sheet to the project monitor.

B. BACKGROUND:

1. Sex: Male _____ Female _____
2. Grade/Rank:_____
3. Education: _____Years High School _____Years Collge

   Degree (Indicate Type)_____
4. Group Membership _____
5. What is your job/position title?_____
6. How long
7. Experience:

   a. Training Course Planning: _____Years

   b. Instructor: _____Years

   c. Other:_____
8. Total Years:_____Federal Service _____At Keesler AFB

1. How easy/difficult was it to assign objectives (course content) on the User Interface?

: :	: :	: 1 :	: 2 :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	VERY EASY

2. How easy/difficult was it to assign subject matter types to learning objectives?

: :	: :	: 1 :	: 2 :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	VERY EASY

3. How difficult/easy was it to assign learning event types?

: 1 :	: :	: :	: 2 :	: :
EXTREMELY DIFFICULT	DIFFICULT	MODERATELY DIFFICULT	EASY	VERY EASY

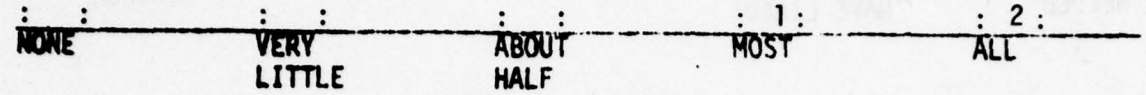
4. About how much time did you spend looking for the information needed by the User Interface Program?

: :	: :	: 1 :	: :	: 2 :
NO TIME AT ALL		MODERATE AMOUNT OF TIME		A GREAT DEAL OF TIME

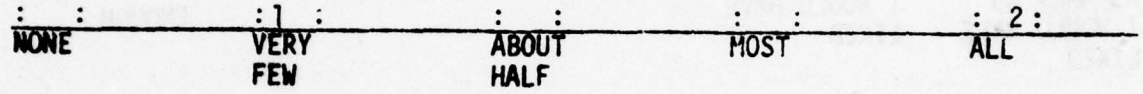
5. About how much of the information demanded by the User Interface Program would be readily available to you in normal course revision/ planning?

: :	: :	: :	: 1 :	: 2 :
NONE	VERY LITTLE	ABOUT HALF	MOST	ALL

6. How much of the training content of your course were you able to assign using the User Interface?

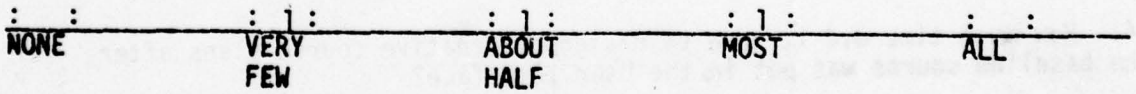


7. About how many Teaching Methods were you able to specify using the User Interface?



8. List all of the teaching methods you were unable to specify using the User Interface?

9. How many of the required resources were you able to assign to subject matter types?



10. How realistic was the assignment of resources (in your opinion) in your course design?



11. How many tests and reviews could you assign?

: :	: :	: :	: 3 :	: :
NOT NEARLY AS MANY AS NEEDED	LESS THAN I WOULD HAVE LIKED	ADEQUATE	ENOUGH	MORE THAN ENOUGH

12. Did the User Interface provide you with enough options for describing student arrivals?

: :	: :	:3 :	: :	: :
NOT NEARLY AS MANY AS I WOULD HAVE LIKED	LESS THAN I WOULD HAVE LIKED	ADEQUATE	ENOUGH	MORE THAN ENOUGH

13. Did the User Interface allow you to break your course into enough increments, compared to conventional course revision and planning?

: 1 :	: 1 :	: 1 :	: :	: :
NONE	VERY FEW	ADEQUATE	A LITTLE MORE THAN NEEDED	MORE THAN I WOULD NORMALLY USE

14. How much time did it take to design alternative course plans after the baseline course was put in the User Interface?

: 1 :	: :	: :	: 2 :	: :
A GREAT DEAL OF TIME	MORE TIME THAN IT TOOK FOR THE BASE-LINE	ABOUT THE SAME TIME	LESS THAN THE BASE-LINE	NO TIME AT ALL

15. About how much of a deterence to designing alternative courses was the time you spent using the User Interface?

: :	: :	: 2 :	: 1 :	: :
NO DETERENCE AT ALL	A SMALL DETERENCE	A MODERATE DETERENCE	A CONSIDERABLE DETERENCE	A GREAT DETERENCE

16. How useful was the User Interface program in helping you consider planning factors in revising and planning your courses?

: 1 :	: 1:	: 1 :	: :	: :
NO USE AT ALL	VERY LITTLE USE	MODEST USEFULNESS	CONSIDERABLY USEFUL	EXTREMELY USEFUL

17. How many planning factors were you able to consider in designing or revising a course using MODIA?

:1 :	:2 :	: :	: :	: :
NONE OF THE NEEDED FACTORS COULD BE CONSIDERED	ONLY A FEW	AN ADEQUATE NUMBER	MOST	ALL FACTORS I NEEDED

18. List all other problems or comments you would like to mention with respect to the use of the User Interface programs.

22. How many managerial guidelines were you able to incorporate into your alternative course design?

: :	: 2 :	: 1 :	: :	: :
NONE	VERY FEW	MODERATE NUMBERS	MOST	ALL

23. How easy/difficult was it to incorporate these changes in alternative course designs?

1 = No response

: :	: :	: :	: :	: :
IMPOSSIBLE	VERY DIFFICULT	AVERAGE	EASY	EXTREMELY EASY

24. How easy/difficult was it to use MODIA in simulating courses with shared resources?

: 2 :	: 1 :	: :	: :	: :
IMPOSSIBLE	VERY DIFFICULT	AVERAGE DIFFICULTY	EASY	EXTREMELY EASY

25. How valuable do you think MODIA simulation will be in revising/ planning courses with shared resources?

: :	: 2 :	: 1 :	: :	: :
OF NO VALUE	VERY LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

26. Compared to conventional course revision/planning, how much time do you think you would save using MODIA?

: 1 :	: 1 :	: :	: 1 :	: :
NONE	VERY LITTLE	MODEST AMOUNT	CONSIDERABLE	AN EXTREME AMOUNT OF TIME

27. If MODIA were a fully operational system, how much do you feel it would complicate the revision/planning process?

: :	: 1 :	: :	: 2 :	: :
NONE	VERY LITTLE	MODERATELY	VERY MUCH	EXTREME

28. How important do you feel it is to be able to consider alternative course designs?

: :	: 1 :	: 1 :	: 1 :	: :
TOTALLY UNIMPORTANT	OF VERY LITTLE IMPORTANCE	MODERATELY IMPORTANT	VERY IMPORTANT	VITALLY IMPORTANT

29. How confident are you in the results of the simulation of course operation?

: :	: :	: 3 :	: :	: :
NOT CONFIDENT AT ALL	VERY LITTLE CONFIDENCE	MODERATELY CONFIDENT	VERY CONFIDENT	EXTREMELY CONFIDENT

30. How often do you think you would use MODIA in the future were it to become fully operational?

: :	: 2 :	: :	: 1 :	: :
NEVER	SELDOM	SOMETIME	OFTEN	CONSTANTLY

31. How easy/difficult to interpret was the output from the Resource Utilization Model?

: :	: 2 :	: :	: 1 :	: :
EXTREMELY DIFFICULT	VERY DIFFICULT	MODERATELY DIFFICULT	EASY	EXTREMELY EASY

32. How useful for course planning was the simulation output from the Resource Utilization Model?

: :	: 2 :	: :	: 1 :	: :
OF NO USE AT ALL	OF LITTLE USE	ADEQUATE	USEFUL	EXTREMELY USEFUL

33. List the planning factors that you would normally consider in course design which you were UNABLE to consider in the MODIA planned course.

34. List planning factors that you would like to see considered in a simulated course operation?

Please refer to the Resource Utilization Model output of the course operation for the course(s) which you designed using MODIA. The following questions refer directly to the various summary information and reports that make up the RUM output. Indicate,by placing a check mark in the appropriate space, the value of the information contained in the report to you as a course planner. Also indicate whether you could normally consider this type of information in revising/planning a course by conventional means.

35. Report 1. Summary of course design

a. What is the value of this information to you in revising/planning courses?

: :	: :	: 2 :	: 1 :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional course revision/planning?

: :	: :	: 2 :	: :	: 1 :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

: :	: 1 :	: 1 :	: 1 :	: :
NO USE	VERY LITTLE USE	MODERATE	USEFUL	EXTREMELY USEFUL

36. Report II. Resources Required and Capacity by Learning Event.

a. What is the value of this information to you in revising or planning courses?

: :	: 2 :	: 1 :	: :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional course revision/planning?

: :	: 2 :	: 1 :	: :	: :
NEVER CONSIDER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

: :	: 2 :	: 1 :	: :	: :
NO USE	VERY LITTLE USE	MODERATE	USEFUL	EXTREMELY USEFUL

37. Report III. Learning Events by Resource Type

a. What is the value of this information to you in revising or planning a course?

: :	: 1 :	: 1 :	: 1 :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional course planning or revision?

: :	: 1 :	: 1 :	: 1 :	: :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

:	:	: 1 :	: 1 :	: 1 :	:	:
NO USE		LITTLE USE	MODERATE USE	USEFUL		EXTREMELY USEFUL

38. RECAP Report 1. Report of Course Operation.

a. What is the value of this information to you in revising or planning a course?

:	:	: 1 :	: 2 :	:	:	:	:
NO VALUE		LITTLE VALUE	MODERATE VALUE	VALUABLE		EXTREMELY VALUABLE	

b. What is the extent to which you would normally consider this type of information in conventional revision or planning?

:	:	: 1 :	: 2 :	:	:	:	:
NEVER		SELDOM	OCCASIONALLY	FREQUENTLY		ALWAYS	

c. How much use could you make of this report in putting together a POI?

:	:	:	: 2 :	:	:	:	:
NO USE		LITTLE USE	MODERATE USE	USEFUL		EXTREMELY USEFUL	

39. RECAP Report II. Students and Sections by Learning Events.

a. What is the value of this information to you in revising or planning a course?

: 1 :	: 1 :	: 1 :	:	:	:	:
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE		EXTREMELY VALUE	

b. What is the extent to which you would normally consider this type of information in conventional planning or revision?

: 1 :	: :	: 2 :	: :	: :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

: 1 :	: :	: 7 :	: :	: :
NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

40. RECAP Report III. Student Queues by Learning Event.

a. What is the value of this information to you in revising or planning a course?

: :	: :	: 2 :	: 1 :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional revision or planning?

: :	: :	: 1 :	: 2 :	: :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

: :	: :	: 2 :	: 1 :	: :
NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

41 RECAP Report IV. Resource Utilization by Learning Event.

a. What is the value of this information to you in revising or planning a course?

: :	: :	: 2 :	: 1 :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional planning or revision?

: :	: :	: 1 :	: 1 :	: 1 :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

: :	: 1 :	: 1 :	: 1 :	: :
NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

42. RECAP Report V. Resource Utilization by Resource Type.

a. What is the value of this information to you in revising or planning a course?

: :	: 1 :	: 1 :	: 1 :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

b. What is the extent to which you would normally consider this type of information in conventional revision or planning?

: :	: :	: 2 :	: 2 :	: :
NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS

c. How much use could you make of this report in putting together a POI?

	2	1		
NO USE	LITTLE USE	MODERATE USE	USEFUL	EXTREMELY USEFUL

43. How long did it take you to collect and prepare data required for input into MODCOM?

30 hrs
25 hrs

	1			
1 HOUR	1 to 3	3 to 5	5 to 7	OTHER (SPECIFY)

44. How useful was the information output from MODCOM?

	1	1	1	
NO USE	VERY LITTLE USE	MODERATELY USEFUL	USEFUL	EXTREMELY USEFUL

45. How much of the required MODCOM input did you get from the RUM simulation?

1		2		
NONE	VERY LITTLE	SOME	MOST	ALL

46. How much of the required input did you get from other sources?

			2	1
NONE	VERY LITTLE	SOME	MOST	ALL

47. List the office symbols of the other sources and estimate the amount of the information required by MODCOM that was provided by the respective sources.

48. How confident are you in the course costs depicted by MODCOM?

NONE	VERY LITTLE	SOMEWHAT	CONFIDENT	EXTREMELY CONFIDENT

49. How much of the information required as input to MODCOM would normally be available to you (assuming you had no course simulation -- that is, no RUM output)?

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
		X	X						X

50. List that information that is required by MODCOM, and which can only be generated as a result of the course simulation on the RUM?

51. How often would you use MODCOM, in your opinion, if it were the only part of the MODIA system available to you?

NEVER	SELDOM	OCCASIONALLY	FREQUENTLY	ALWAYS
	2	1		

52. How would you use it (short sentence or two, please)?

53. List those offices and/or organizations within the technical training wing which you feel uses the kind of information provided by MODCOM.

54. List those offices and/or organizations within the technical school which you feel should use the information provided by MODCOM, or which could benefit from the use of this type of information.

55. In your opinion, how should MODIA be used (a short sentence or two)?

56. In your opinion, who should use MODIA (Specify "who" at each organizational level, i.e., training evaluation, plans, operations etc. - You can specify NONE or MORE THAN ONE)?

Technical Training School Personnel (Center Level):_____

Technical Training Group personnel:_____

Branch personnel:_____

Hq ATC personnel:_____

57. For each organizational level you checked, please, in a sentence or two, explain why they would use MODIA?

Technical School:

Technical Training Group:

Branch:

Hq ATC:

58. What do you think would be the role of those organizations you indicated in using MODIA?

59. Please list any additional comments you care to make about your experience with MODIA, its usefulness, or any suggestions you may have for improving the system.

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PHASE II EVALUATION OF THE MODIA SYSTEM.(U)
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INSTRUCTIONS FOR THE
TRAINING MANAGERS' QUESTIONNAIRE

1. As a manager of various aspects of technical training course operation, you have been asked to participate in the evaluation of the MODIA planning system. You are in a position to make a number of assessments concerning the usefulness of MODIA products to the effective management of training course operations, and to MODIA's usefulness to the training manager as a planning tool. In the following pages, you will find a number of specific questions concerning your experience with MODIA and your opinions as to its potential usefulness. The judgments required of you are approximate in nature, but please exercise thoughtful consideration for each question. Only summary statistical results of your responses combined with responses of others will be used in deciding on the utility of the MODIA system.

2. Please read each question carefully and indicate your response on the rating scale by placing a check mark in the appropriate space. When you are finished, make sure you have completed the general information sheet, and that you have put your name in the indicated place. Place the completed questionnaire in the envelope provided and return it to TTGOT. Remember, no other Technical Training Wing personnel will see your responses. The information will be analyzed and presented in summary statistical form by the Technology Applications Center. If you have additional comments, clarification and/or explanations, regarding any particular question, please make them on the back of the sheet containing the question. Please indicate the question number.

QUESTIONNAIRE FOR TRAINING MANAGERS

1. How useful was the MODIA simulation to you as a training manager, in spotting potential problems in course operation?

: 1 :	: 5 :	: 1 :	: 2 :	: :
NO USE AT ALL	VERY LITTLE USE	MODERATE USEFULNESS	CONSIDERABLY USEFUL	EXTREMELY USEFUL

Please list the potential problems that MODIA allowed you to spot.
- problems in instructor manning in lab situations
- Instructional sequencing
- Number of required classrooms
- No problems not already foreseen
- Student bottlenecks

2. Were any of the problems depicted in the MODIA simulation problems you would have foreseen without MODIA?

8 Yes 1 No

If your response was yes, please list those problems you could have foreseen without MODIA simulation and explain how you would have foreseen them?
- Manpower Utilization
- Delays in student progress
- Costs of Training
- Laboratory Utilization

Which problems would you have been unable to foresee without the MODIA simulation? (Please list)
- None
- All problems were known before MODIA simulation
- All of the problems established by MODIA programs were foreseen and attacked without MODIA

3. How realistic were the alternative course designs provided you by your ISD team member?

: 2 :	: 3 :	: 2 :	: 2 :	: :
TOTALLY UNREALISTIC	SOMEWHAT REALISTIC	MODERATELY REALISTIC	VERY REALISTIC	VIVIDLY REALISTIC

Please comment on aspects of the alternatives which you feel were helpful or unrealistic:
- The alternatives could only provide single shift simulation due to amount of
- inputs required.
- MODIA was limited because suggested alternatives could not be used because of the 250 learning event restriction.
- The alternatives that were used indicated the results that were anticipated.

4. How much time did it take for the ISD team to generate alternative course designs for you?

: :	: 1 :	: 4 :	: 4 :	: :
NO TIME AT ALL	VERY LITTLE	MODEST AMOUNT	CONSIDERABLE	AN EXTREME AMOUNT OF TIME

5. How many of the course design changes you recommended were the ISD interface team members able to incorporate into the alternative course designs?

: 2 :	: 3 :	: 1 :	: 2 :	: 1 :
NONE	VERY FEW	SOME	MOST	ALL

Do you have any additional comments on the alternatives the ISD teams designed on MODIA for you?

6. Could you understand the output of the MODIA simulation?

8 - Yes
1 - Not at all

Comments?

7. Did the ISD team member explain the output to you?

8 Yes 1 No

8. Did you feel that you could understand the simulated course operation after it was explained to you?

8 Yes 1 No

Comments?

9. In your opinion, would the MODIA simulation of course operation and course cost enable you to better manage course problems and resources?

: 1:	: 3 :	: :	: 3 :	: 2:
VERY MUCH SO	SOMEWHAT BETTER		VERY LITTLE	NOT AT ALL

Comments?

- The simulation would enable us to find bottlenecks and queuing problems before they occurred. It would be extremely valuable as a course planning tool if we were able to program the inputs for a two shift course.
- Program needs expanding to allow other management factors to be considered: i.e., class schedules, washback related problems for rescheduling, etc.

10. **Are there any changes you would like to see made in either the course simulation or cost information that would make the MODIA system output more useful to you as a course manager? If there are any changes, please list them and explain?**

- Computer time needs to be increased.
- Limits on the number of inputs requires increasing
- Output needs to be reorganized by higher Hq as valid tool for increasing or decreasing manning and/or facilities.
- Cost data was very difficult gathering and validating.
- Increase the 250 training event limitation
- Increase type of learning events, teaching formats and teaching agents.

11. **How often do you feel you would use MODIA were it to be adopted as a fully operational system?**

: :	: 4 :	: 3 :	: 2 :	: :
NEVER	SELDOM	SOMETIME	OFTEN	CONSTANTLY

12. **Overall, how valuable would MODIA be to you in planning a course revision?**

: :	: 6 :	: 1 :	: 2 :	: :
NO VALUE	LITTLE VALUE	MODERATE VALUE	VALUABLE	EXTREMELY VALUABLE

Additional comments?

13. **How confident are you in the results of the simulation of course operation?**

: :	: 5 :	: 2 :	: 2 :	: :
NOT CONFIDENT AT ALL	VERY LITTLE CONFIDENCE	MODERATELY CONFIDENT	VERY CONFIDENT	EXTREMELY CONFIDENT

14. How confident are you in the cost figures shown to you on the course costs (including the alternative course designs)?

: 2 :	: 4 :	: 1 :	: 2 :	: :
NOT CONFIDENT AT ALL	VERY LITTLE CONFIDENCE	MODERATELY CONFIDENT	VERY CONFIDENT	EXTREMELY CONFIDENT

15. How useful a planning tool would the course simulation be to you as a training manager?

: :	: 7 :	: :	: 2 :	: :
NO USE AT ALL	OF VERY LITTLE USE	MODERATELY USEFUL	VERY USEFUL	EXTREMELY USEFUL

Comments?
MODIA did not tell us anything we didn't already know.

16. How useful was the cost information on the alternative course designs to you as a manager?

: 2 :	: 5 :	: 1 :	: 1 :	: :
NO USE AT ALL	OF VERY LITTLE USE	MODERATELY USEFUL	VERY USEFUL	EXTREMELY USEFUL

Comments?

17. Do you feel the simulation of alternative designs could be of value to you as a course manager?

5 Yes 4 No

18. In what ways would you use information provided by the cost model?

19. What was the cost relationship of the baseline course to the alternatives you asked the ISD team members to plan on MODIA?

Alternative 1:

1 a. Much more expensive

1 b. More expensive

4 c. About the same

3 = No response

____ d. Less expensive

____ e. much less expensive

Alternative 2:

____ a. Much more expensive

1 b. More expensive

3 c. About the same

____ d. Less expensive

3 = No response

____ e. Much less expensive

Comments or explanations?

20. Were the alternative course designs workable -- that is, did they conform to Air Training Command and Technical School policy?

1 a. Completely workable

4 b. Workable with minor changes

2 c. Somewhat unworkable - major changes required

2 = No response ___ d. Totally unworkable

Comments?

21. In your opninion, how should MODIA be used (a short sentence or two)?

22. In your opinion, who should use MODIA (Specify "who" at each organizational level, i.e., training evaluation, plans, operations etc. -- You can specify NONE or MORE THAN ONE)?

Technical School Personnel (Center Level): 4

Technical Training Group personnel: 3

Branch Personnel: 3 course planners/curricula

Hq ATC personnel: 4

2 - No one should use it.

23. For each organizational level you checked, please, in a sentence or two, explain why they would use MODIA?

Technical School:

Technical Training Group:

Branch:

Hq ATC:

24. What do you think would be the role of those organizations you indicated in using MODIA?

25. Please list any additional comments you care to make about your experience with MODIA, its usefulness, or any suggestions you may have for improving the system.

- Increase program limits on teaching formats and agents.
- Increase number of learning events
- Improve cost model to permit insertion of other course cost. One weak area encountered is in expendable supplies. Our training courses use materials that are costly in supporting performance training in the laboratories.
- The system must be expanded to be worthwhile.
- The programs need to be expanded.