ARI TECHNICAL REPORT
TR-79-A5

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Development of a Course Outline for Training UH1FS Instrument Instructor Pilots

by

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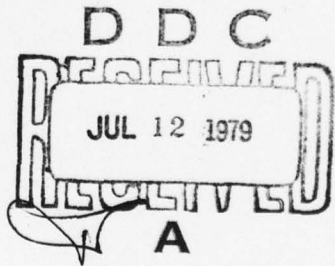Pensacola, Florida   32505

March 1979

Contract DAHC 19-77-C-0039

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER TR-79-A5 ARI	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) DEVELOPMENT OF A COURSE OUTLINE FOR TRAINING UH1FS INSTRUMENT INSTRUCTOR PILOTS.		5. TYPE OF REPORT & PERIOD COVERED Technical Report, August 77 - March 78,
		6. PERFORMING ORG. REPORT NUMBER Seville-TR-78-01
7. AUTHOR(s) Robert N. Isley Edward J. Miller William D. Spears		8. CONTRACT OR GRANT NUMBER(s) DAHC 19-77-C-0039 new
9. PERFORMING ORGANIZATION NAME AND ADDRESS Seville Research Corporation 400 Plaza Building Pensacola, Florida 32505		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 2Q263743A772
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Ave., Alex., Virginia 22333		12. REPORT DATE March 1979
		13. NUMBER OF PAGES 70
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Dr. James Bynum ARI Field Unit - Fort Rucker (PERI-OA) PO Box 476 Ft. Rucker, Alabama 36362		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Monitored technically by James A. Bynum, ARI Field Unit at Fort Rucker, Ala. (Charles A. Gainer, Chief).

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Instructor pilot training	Instructional technology
Flight simulator instructor training	Simulator operator training
Instructional system development (ISD)	
Training program design	
Simulator training	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report presents an outline for a proposed course to train unit instrument instructor pilots to use the UH1FS effectively in instrument instruction. The documentation for the outline was guided by applicable portions of the Interservice Procedures for Instructional Systems Development (ISD). The outline describes a largely self-contained, multi-media, self-instructional training package that could be developed for export to Army field sites having the simulator. This report should be of primary interest to personnel charged.

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20. with the subsequent development of the proposed course, but it should also be of general interest to others engaged in applying the ISD model in training program design.

FOREWORD

In recognition of the need for and importance of adequate training
of instructor pilots (IPs) who conduct training in the UH1 Flight
Simulator, the Army Research Institute for the Behavioral and Social
Sciences contracted with Seville Research Corporation to initiate the
development of (1) such a course of instruction for IPs, and (2) an
Instructor's Guide that could be used to train unit IPs in the effective
use of the UH1FS. As one foundation for these efforts, Seville
completed a detailed survey of media used in past and present courses of
instruction for UH1FS IPs and of media used to train console operators
for this device. The results of that survey were reported in Seville
Technical Report TR 77-10, A Review of Existing UH1FS Training
Materials, in November, 1977.

The present report addresses the first of the above objectives. It
provides an outline for a proposed exportable, self-contained course of
instruction for UH1FS instrument IPs which can be used at UH1FS field
locations to train unit instructor pilots in the effective use of the
simulator. The report also describes the instructional development pro-
cedures that were employed in developing the course outline. These pro-
cedures should be of interest to personnel charged with the subsequent
development of the course described in this report.

The second objective of the developmental effort is the preparation
of a UH1FS Instructor's Guide, or handbook which can be used by the unit
instructor pilot conducting instrument flight training programs using
the UH1FS. The UH1FS Instructor's Guide, which is still under develop-
ment, is intended to become an integral part of the proposed course of
instruction outlined in this report.

The work reported here is being carried out under Contract Number
DAHC 19-77-C-0039 between the U.S. Army Research Institute for the
Behavioral and Social Sciences and Seville Research Corporation. Mr.
Robert N. Isley is project director for Seville. Dr. James Bynum, ARI,
Fort Rucker, Alabama, is the Contracting Officer's Technical
Representative.

DEVELOPMENT OF A COURSE OUTLINE FOR TRAINING
UH1FS INSTRUMENT INSTRUCTOR PILOTS

BRIEF

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Requirement:

The Army has initiated a number of activities designed to improve
the utilization of its growing fleet of simulators for the UH-1H heli-
copter, one of which has been an effort to standardize the aviator
training programs in which the simulator is used. One such program for
the simulator's use by individual rated aviators was developed and
distributed to the field in the fall of 1977. An additional need exists,
however, for a training program that can be used at field locations to
prepare unit instructor pilots to use the UH-1H Flight Simulator (UH1FS)
effectively in aviator training. This report describes the development
of an outline for a course designed to prepare instrument instructor
pilots to use the UH1FS in instrument flight instruction.

Procedure:

In addition to the preparation of this outline, the present project
involves the development of a UH1FS Instructor's Guide, or handbook,
that can be used by unit instructor pilots conducting instrument flight
training programs in the simulator. The handbook will be published
separately. The general approach in developing both the outline and
guide has been to employ, where applicable, the instructional systems
development model described in the TRADOC Pamphlet 350-30, Interservice
Procedures for Instructional Systems Development. This involved a
detailed analysis of the instructor's job in using the UH1FS and exami-
nation of existing training materials in terms of their utility for the
course developed.

Findings:

An outline was developed for a course to prepare instrument
instructor pilots to use the UH1FS in instrument instruction. In the
process, it was found that: existing courses of instruction do not pre-
pare unit instrument instructor pilots adequately in the effective use
of the UH1FS; existing training materials, while useful for training
UH1FS console operators, are of limited utility in the training of unit
instrument instructor pilots in the effective use of the UH1FS; and
development of an exportable, self-contained, self-instructional, multi-
media course of instruction in use of the UH1FS for unit instrument
instructor pilots is feasible. However, Army policy is permissive con-
cerning whether UH1FS proficiency training is to be under the direct
supervision of unit instrument instructor pilots.

Finally, the ISD model was helpful as a guide, but the model was inappropriate or insufficient with respect to certain of the developmental activities required in the present effort.

Utilization of Findings:

The principle value of the results of this research will be in the utilization of the outline in developing a course to prepare instrument instructor pilots to use the UH1FS in instrument flight instruction. However, the full development of such a course should be pursued only if the size of the eventual user population is large enough to warrant the required expenditure of funds. An uncertainty exists in this respect because the Army has not yet resolved the issue of whether the instructor pilot's participation in unit UH1FS proficiency training programs will be permissive or mandatory. Unless a significant number of unit instructor pilots are to conduct training in the simulator, the cost of further course development may not be justifiable.

DEVELOPMENT OF A COURSE OUTLINE FOR TRAINING UH1FS INSTRUMENT INSTRUCTOR
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DEVELOPMENT OF A COURSE OUTLINE FOR TRAINING
UH1FS INSTRUMENT INSTRUCTOR PILOTS

I. INTRODUCTION

BACKGROUND

In the early 1970's, the U.S. Army Aviation Center, Fort Rucker, Alabama, accepted delivery of and subsequently tested its first modern helicopter flight simulator, the UH1FS, a simulator for the UH-1H helicopter. The UH1FS is the first of a planned family of flight simulators for the Army's operational helicopters. Collectively, these simulators are known as the Synthetic Flight Training System (SFTS).[1] Operational suitability testing of the prototype UH1FS was completed in 1972, and since that time production models of the simulator have been delivered to Fort Rucker and to other Army installations having large aviator populations. Seventeen UH1FS devices were in operation at bases around the world by the end of 1977, and more are planned.

The UH1FS is an expensive training device, and with its proliferation has come a recognition of the Army's need to develop more specific policies and procedures concerning the use of the equipment in order that the Army will realize maximum return on its investment.[2] One means of assuring such a return on investment is through the development of standardized training programs which exploit device training capabilities in a fashion likely to maximize the simulator's contributions to overall training goals. Toward this end the U.S. Army Aviation Center (USAAVNC) in 1977 developed a course of instruction (COI) designed to facilitate utilization of the UH1FS in instrument proficiency training of rated Army aviators at UH1FS field locations.[3]

The purpose of the COI developed by the USAAVNC is to provide UH-1 aviators a refresher program to be used, as necessary, to attain and maintain instrument flight proficiency. The course has multiple entry

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[1] SFTS units for the AH-1 (AH1FS) and CH-47 (CH47FS) are currently undergoing testing at Fort Rucker. SFTS units for the UTTAS and the AAH are in development, and simulators for the ASH and HLH are planned.

[2] Return on investment in this case would be aviators who are better trained and/or who are trained at lower overall cost.

[3] UH1FS Training Course, U.S. Army Aviation Center, August, 1977.

points into the training cycle for these "proficiency students"[1] so as to permit individualized instruction adapted to the particular deficiencies and training needs of individual aviators. In addition, the course is designed to be largely self-instructional and usable without the continuing assistance of an instructor pilot (IP). Thus, the existing course was not intended to prepare the IP in the use of the UH1FS, but, rather, was aimed at the proficiency student himself. IPs are often needed, however, to assist proficiency students who are having difficulties and to conduct other unit training programs which utilize the UH1FS, such as initial instrument qualification. Consequently, a training program to teach unit IPs how to use the simulator effectively is needed in addition to the COI that already exists for the proficiency students.

PRESENT PROJECT

Because of this need to train unit IPs in the effective use of the UH1FS, the Army Research Institute for the Behavioral and Social Sciences (ARI) contracted with Seville Research Corporation to develop an outline for a course of instruction and an Instructor's Guide that could be used to train unit instrument instructor pilots (IIPs) to use the UH1FS effectively in instrument training. The IIP course envisioned by ARI would be a multi-media, largely self-contained, self-instructional training package exportable to UH1FS field locations. The format for the course would permit an IIP to select relatively independent course segments appropriate to his needs and time available for training.

The Instructor's Guide is to be an information source for IPs during their initial UH1FS methods of instruction training, and a handbook when conducting subsequent student training activities. The Guide will explain how to use the various training features available in the UH1FS, many of which are not generally recognized by current users, in the accomplishment of flight training objectives.

Project Objectives

Thus, the overall objectives of this project are: (a) to develop an outline for an exportable, self-contained course to be used to train IIPs to use the UH1FS effectively, and (b) to develop an Instructor's Guide which will facilitate both IIP training to use the UH1FS, and subsequent training by IIPs of students in that device.

The achievement of these objectives required examination of all media used in past and present courses of instruction for UH1FS IIPs, as well as media relevant to the UH1FS that are or have been used in training programs for undergraduate and graduate aviators, and for UH1FS console

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[1] Proficiency students are rated aviators using the simulator to maintain their instrument flying proficiency.

operators. The media survey was completed and has been reported else-
where.[1] The present report addresses objective (a) above. It presents
a course outline for training IIPs to use the UH1FS and describes the
development of the outline. As part of the description of this develop-
ment, the manner in which the Interservice ISD Model was applied is
given. A rationale underlying the formulation of the proposed course is
provided, and recommendations concerning instructional media for the
proposed course are made. The second objective will be achieved through
the completion of an Instructor's Guide in the near future.

ORGANIZATION OF THIS REPORT

    The present report, in addition to this introduction, contains (a)
a section describing the approach followed in developing the course out-
line; (b) a section describing the results of a job information analysis
(Phase I of ISD); (c) a section describing the instructional design
(Phase II of ISD); (d) partial development of an instructional plan
(Phase III of ISD); and (e) a section devoted to summary, conclusions
and recommendations. In addition, there are four appendices to the
report. Appendix A contains a table of instructional activities and
associated information sources and UH1FS features. Appendix B contains
a list of the training objectives for the proposed course of instruc-
tion. Appendix C contains the course outline, and Appendix D contains
an abbreviated model of a practical exercise.

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[1] Isley, R.N., Miller, E.J., & Spears, W.D. A Review of Existing UH1FS
Training Materials. Technical Report TR 77-10, Seville Research
Corporation, Pensacola, Fla., November, 1977.

II. APPROACH

The general approach in the present project has been to follow the course development guidelines, or ISD model, set forth in the pamphlet, Interservice Procedures for Instructional Systems Development (IPISD).[1] The five phases of this procedure are given in Table 1. Also shown are the major groups of activities comprising each phase. As presented in the referenced phamphlet, phases are designated by simple words specifying action: Analyze, Design, Develop, Implement, Control. For clarity, these titles are stated more fully in Table 1.

The present project was to develop a course outline rather than the course itself. Hence, only Phases I, II, and a portion of III could be used as guides. Further, several factors involved in this particular application of the ISD model dictated departures from some of the recommended procedures. For example, objectives were developed as in Phase II. Instead of developing tests per se, however, a rationale for evaluating attainment of objectives was presented. The reason for this departure from the ISD guide was that, as envisioned, the "tests" should be administered as exercises which involve learning activities as well as performance evaluations. Thus, these "tests" would be a part of the course content itself, and hence would be developed in the subsequent effort to design the course of instruction. As a second example, the recommended ISD procedure for validating a task list involves a survey of job incumbents to develop information concerning such things as the identification of performed tasks, and the frequency, criticality and difficulty level associated with each task. However, in the present instance it was found that job incumbents[2] did not perform many of the tasks that were of particular interest in this project, i.e., those tasks associated with effective training use of the UH1FS. Consequently, job incumbents were not an adequate source of information for the training analyst. In the present instance, information that was provided by job incumbents necessarily was supplemented extensively with information based on the investigators' expertise and familiarity with the training features of the UH1FS. Such departures from ISD procedures notwithstanding, the intent of the ISD model was followed as conditions warranted.

The approaches used for relevant portions of ISD are described below. Results obtained from these activities appear in subsequent sections. In examining the approach, the reader should keep in mind that the "Phases" referred to are the Phases of the ISD model.

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[1] Interservice Procedures for Instructional Systems Development. TRADOC Pamphlet 350-30, August, 1975.

[2] In a sense, there were few formal job incumbents, since many unit instructor pilots were not actively involved in using the UH1FS in proficiency training.

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Table 1

MAJOR ELEMENTS OF IPISD

Phase I: Analysis

1. Analyze job
2. Select tasks/functions to be trained
3. Construct job performance measures
4. Analyze existing courses
5. Select instructional setting

Phase II: Design of Instruction

1. Develop objectives
2. Develop tests
3. Describe entry behavior
4. Determine sequence and structure

Phase III: Development of Instruction

1. Specify learning events
2. Specify instruction management plan and delivery system
3. Review/select existing materials
4. Develop instruction
5. Validate instruction

Phase IV: Implementation of Instruction

1. Implement instructional management plan
2. Conduct instruction

Phase V: Control of Instructional Quality

1. Conduct internal evaluation
2. Conduct external evaluation
3. Revise system

PHASE I: ANALYSIS

Job Analysis

The job analysis had two facets. Initially, information was sought
concerning the kinds of training instructor pilots administer using the
UH1FS. It was suspected that present unit training involving the UH1FS
varied from unit to unit. Hence, one concern was to determine how, to
what extent, and by whom the UH1FS was being utilized in the field.
Telephone interviews were conducted with simulator staff personnel at
four UH1FS field locations (Forts Hood, Campbell, Stewart, and Bragg) to
determine their patterns of simulator use. In addition, military and
civilian flight instructors who use the UH1FS at Fort Rucker were con-
sulted to determine device utilization practices there. The information
gained in this fashion was used to determine, at a general level, what
graduates of the proposed course of instruction should be able to do
using the UH1FS.

The second facet of the job analysis was to determine more specifi-
cally the nature of simulator training activities, i.e., what does the
instructor do in the simulator? To make this determination the instruc-
tional activities occurring during a typical simulator training period
were analyzed in detail. In this case, a sequential listing of training
activities, i.e., a flow model of the training period, was made and
instructor roles and UH1FS information required to fill those roles were
analyzed. The model encompassed all IIP activities from preflight
planning through student debriefing. Table 2 presents an outline of the
model, and Appendix A depicts the successive stages in detail.

Select Tasks/Functions for Training

All of the training tasks and functions associated with instrument
flying in the UH-1 aircraft have been shown in prior research to be
trainable in the UH1FS.[1,2] These tasks and functions are described in
the Rotary Wing Instrument Guide, a publication of the U.S. Army Aviation
Center. The instrument instructor pilot is already capable of conducting
instrument flight training activities in the aircraft, so the concern in
the proposed course of instruction is to provide the additional training
required for IIPs to conduct these same activities, or, more properly,
to achieve these same training objectives, using the UH1FS.

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[1] Caro, P.W., Isley, R.N., & Jolley, O.B. Mission Suitability Testing
of an Aircraft Simulator. Technical Report 75-12. Human Resources
Research Organization, Alexandria, Va., June, 1975.

[2] HumRRO Division No. 6 (Aviation). A Test of Synthetic Training in
Combat Readiness Proficiency Training. Unpublished Internal Research
Report. Human Resources Research Organization, Fort Rucker, Ala.,
June, 1974.

Table 2

SIMULATOR TRAINING FLOW MODEL OF INSTRUCTIONAL ACTIVITIES

PREFLIGHT ACTIVITIES

1. Analyze scheduled training period
2. Analyze student(s) proficiency
3. Formulate training period
4. Organize learning events
5. Relate device features to learning events
6. Structure (design) period to encompass desired learning events
7. Prepare crew briefing
8. Conduct crew briefing
9. Complete required forms (1623 or equivalent)
10. Determine assigned cockpit is ready

IN-COCKPIT ACTIVITIES

1. Check "aircraft" log book
2. Set illumination/ventilation controls
3. Assist student(s) to fasten doors, adjust seats, pedals, & controls
4. Monitor trainer status information panel
5. Verify present trainer status
6. Modify trainer status as needed
7. Present learning events in proper sequence
8. Divide attention between student(s) and device
9. Monitor communications/interact with console operator
10. Record student(s) performance
11. Analyze student(s) performance
12. Identify problem areas
13. Formulate solution to problem/change instructional strategy
14. Propose solution to student(s)
15. Evaluate effectiveness of proposed solution
16. Critique student(s) performance
17. Solicit questions from students
18. Answer questions
19. Pace instruction/manage training period
20. Complete paper work

DEBRIEFING ACTIVITIES

1. Review performance
2. Inform student(s) of strong/weak areas
3. Suggest ways to overcome weaknesses
4. Solicit questions
5. Answer questions
6. Formulate next training period
7. Discuss next training period
8. Assign study material for next period
9. Complete paper work
10. Dismiss student(s)

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This additional training should focus essentially on how to employ effectively the training features that are inherent in the UH1FS. Hence, UH1FS capabilities must be taught, as well as the means for their effective use. Specific tasks to be taught are those of using various UH1FS switches and controls to enable or disable particular device functions, and display uses and interpretations. Tasks of these types that are involved in simulator training were identified.

Identify Performance Standards

Performance standards that instrument instructor pilots must meet are stated in the Rotary Wing Instrument Guide. These same standards apply to the UH1FS. In addition, the instructor pilot graduate of the proposed course of instruction must be able to employ effectively a number of unique device features and systems in order to accomplish the instructional activities identified during the job analysis. The performance standards associated with the employment of these unique device features were identified. Generally these standards involved demonstrating knowledge of functions and sequences of tasks, and general integration of the use of such features into an instructional scenario.

Analyze Existing Courses and Training Materials

In this step, past and present syllabi of instruction involving the UH1FS were reviewed. In addition, current unit IP training practices at the four field locations were reviewed as stated above. From these reviews, existing training materials of possible use in the proposed course of instruction were identified. A report describing these reviews and presenting the results was prepared earlier.[1] Generally, such materials were found to be of limited utility for present purposes.

Select Instructional Setting

In this step, it was determined whether all of the needed instruction could be accomplished at UH1FS field locations and whether the design goal of a larely self-contained, exportable training package was feasible. This was accomplished through an analysis of the nature of the required training and the requirements it would engender, and examination of the training resources likely to be available at UH1FS field locations.

PHASE II: DESIGN

Develop Training Objectives

In this step, relevant UH1FS features associated with the instructional activities identified in the job analysis were determined. From this analysis the knowledge requirements (enabling information)

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[1] Isley, R.N., et al., op. cit.

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underlying the use of the relevant device features were derived. The derivation of the knowledge requirements was accomplished by examining the learning hierarchies underlying what the instrument instructor pilot needs to know about a particular device feature in order to utilize that feature in performing a given instructional activity. This body of information was then used to define the required course content and to develop training objectives with respect to the effective employment of relevant device features.

Develop Tests

In this step a means was developed for determining that the training objectives for the proposed course have been met. This was accomplished through an examination of overall job performance measures, the instructional setting proposed for the planned course, and the knowledge requirements underlying the use of relevant UH1FS features. Because specific performances during training exercises will be the recommended basis for instructor pilot trainee evaluations, and because the exercises incorporate learning activities which are to be defined in a subsequent stage of the project, tests per se were not developed during the present effort.

Describe Entry Behavior

In this step, information concerning the likely entry level characteristics of prospective course entrants was developed. This information was obtained from a study of the requisites and qualifications for instructor pilots (IPs), standardization instructor pilots (SIPs), and instrument flight examiners (IFEs) as set forth in Army Regulation 95-63. In addition, current unit IP training practices at the four field locations mentioned earlier were reviewed.

Determine Sequence and Structure

In this step a conceptual framework for the proposed course of instruction was formulated, and a means of delivering the instruction to unit instructor pilots was posited. This was accomplished by grouping the informational content of the course into subject matter clusters or instructional blocks. These blocks or clusters were then assembled into a proposed sequence for the planned course. This process was guided by the desire to provide for multiple entry points into the training cycle.

PHASE III: DEVELOPMENT

The Development Phase of the present project was limited to the preparation of a course outline and of a UH1FS Instructor's Guide. The course outline and the results of the application of the procedures described in the approach appear in subsequent sections of the report. The UH1FS Instructor's Guide is still under development and will be published separately.

The course outline emphasizes the use of modules as instructional vehicles. An explanation is in order as to how the modular approach was chosen. The guiding rationale was the desire to produce an eventual training program that is exportable, self-instructional, and largely self-contained. Also, multiple entry points are desired. Modular curricula adapt well to such requirements.

The choice of media to be used in the course also must conform to the same requirements. Hence, certain media or delivery techniques such as computer-assisted instruction (CAI), for example, were excluded from consideration. Not only would a delivery system involving CAI be difficult to provide at unit locations, the cost would be prohibitive.

Currently existing media were reviewed in an earlier report.[1] Such media included programmed texts, sound-on-slide programs, and videotape. Consideration was given to revising the existing programmed texts and sound-on-slide programs, which generally reflected console operator functions rather than IIP operations. Revising the programmed texts was rejected, however, because the scope of the revisions would require as much developmental effort as was expended on them originally. Revision of the sound-on-slide materials was also rejected, but only because the larger context within which these materials would have been employed proved to be impractical. Revision and expansion of the videotape approach was rejected, because of the desire to get away from the "lecture" method and to provide more hands-on training.

As a consequence, it was decided that the media to support the instructional program to be provided in the modules should be designed deliberately for the IIP training program. Revisions of existing media, while possible, would be unsatisfactory in terms both of cost and training effectiveness.

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[1] Isley, R.N., et al., op. cit.

III. ANALYSIS

This section of the report describes in greater detail the results of the Analysis Phase of the ISD model as applied in this project. The job of the unit instrument instructor pilot is described, tasks and functions to be trained and their associated performance standards are identified, and an instructional setting for the proposed course is selected. In addition, results of the analysis of existing courses and training materials are summarized.

JOB ANALYSIS

There are three major training duties that UH1FS instrument instructor pilots can be expected to perform. These duties are (a) to conduct instrument proficiency training or refresher training in the UH1FS, (b) to conduct initial issue instrument qualification training in the UH1FS, and (c) to conduct instrument instructor training in the UH1FS. Each of these training duties will be described briefly. These descriptions will then be followed by an analysis of UH1FS IIP instructional activities and an examination of existing courses.

Instrument Instructor Training Duties

Instrument Proficiency or Refresher Training. The conduct of instrument proficiency and refresher training is the main reason the UH1FS has been deployed and is the largest use to which the device is put in the field. Typical proficiency or refresher training consists of an orientation and diagnostic evaluation flight in the simulator followed by a series of prescriptive refresher training periods as required, based on the evaluation of the aviator's current proficiency. The refresher training periods may be followed by an instrument checkride, also flown in the simulator. Army Regulation 95-1 requires use of the UH1FS (where available) in meeting annual minimum hours of instrument flying. This Regulation also allows aviators to renew their instrument cards on the basis of successfully completing a checkride in the simulator. Proficiency/refresher training, therefore, is likely to remain a major training activity of the unit IP. Graduates of the planned UH1FS IIP course will be expected to conduct this training.

Initial Issue Qualification Training. The number of Army rotary wing aviators who have never had a standard instrument rating is decreasing. Nevertheless, field units still conduct initial issue training for those assigned aviators who, for one reason or another, have never had a standard instrument rating. While the need to conduct initial issue training will continue to decrease in the future, it is still considered a major training activity of the unit IIP. The content of this training at the unit level is similar to that of the instrument phase of undergraduate aviator training at the USAAVNC. It differs from

the refresher training referred to above in the amount of training time required and the depth of subject matter coverage. The nature of the subject matter, i.e., instrument maneuvers and procedures, and the end-of-course objectives, i.e., passing an instrument checkride, are the same as those for refresher training. Graduates of the planned UH1FS IIP course must be able to conduct this type of training.

Instrument Instructor Pilot Qualification Training. In IIP Qualification Training, the UH1FS IIP trains unit IPs to become IIPs in the proficiency and initial issue training programs referred to above. The entrants to this training program are the primary targets of the planned course of instruction being developed in this project. That is, the course being developed is designed to provide the unit instructor pilot with the skills and knowledges necessary to conduct proficiency and initial issue type training in the UH1FS.

Instructional Activity Analysis

The instructional activities that are conducted by IIPs in the UH1FS are shown in tabular form in Appendix A. The table outlines the instructional process involved in the conduct of a typical simulator training period, from preflight planning through debriefing. In addition, the table shows the conditions and standards which apply to the instructional activities and the resources required, and relates specific UH1FS characteristics or features to the instructional activities shown. Of particular interest in the activity listing in Appendix A is the highly interactive nature of instructional activities and the high proportion of activities requiring information processing and decision-making skills. The problem for the UH1FS IIP is how to get the most out of his equipment in fulfilling a training objective. It is not just a question of knowing equipment capabilities and limitations, but also one of knowing how to take selective advantage of equipment characteristics in order to maximize the probability that student learning will occur. Using the equipment, of course, requires knowing how to operate certain device switches and controls. Those operations comprise part of the IIP's task as well, but it is the selective employment of device capabilities in an individually prescriptive manner to enhance learning that characterizes the more effective instructor. In short, he is a training system manager.

The activity list and related information in Appendix A reveal that to use the UH1FS effectively, the IIP must possess a great deal of information about UH1FS subsystems, must process (integrate) such information in relation to ongoing training activities and objectives, and revise, adjust or modify subsequent training period activities accordingly. To illustrate this process, an example is shown in Figure 1. On the surface, the activities depicted in the Figure appear very simple and straightforward. However, as shown in Appendix A, IIP performance of the verification activity involves processing information about at least eight device features or subsystems: trainer status information panel, the motion system, the cockpit instrument panel, audio system, seat

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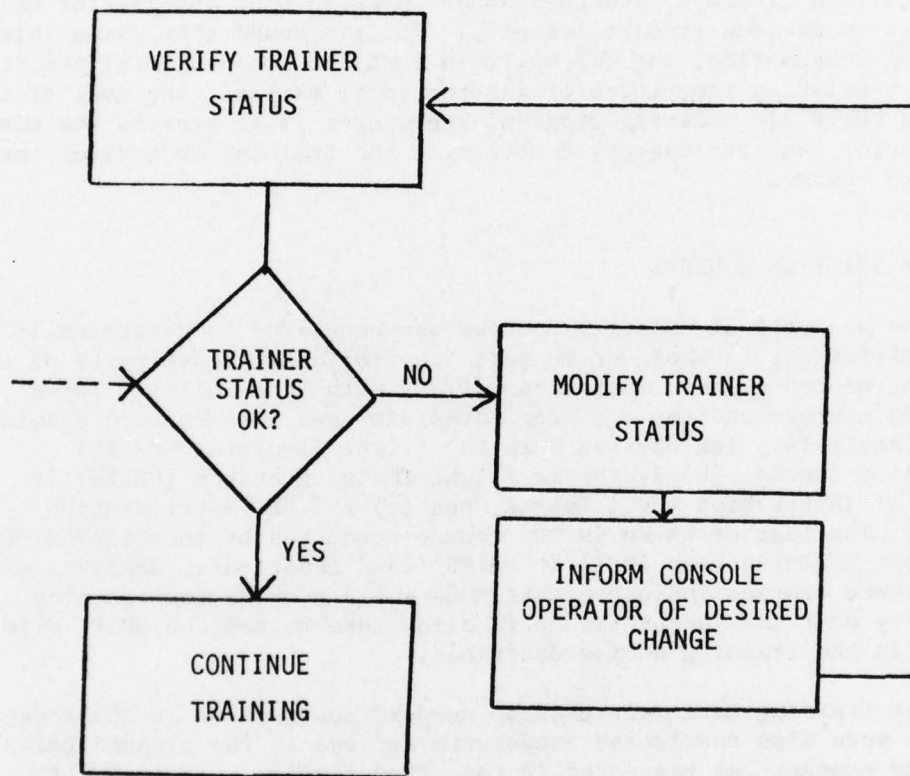
Figure 1.   Example of an Instructional Process Activity

shaker, problem control panel, CRT status display, and CRT gaming area display. Further, this activity is performed repeatedly throughout the in-cockpit portion of the training period.

From a process standpoint, this is what the IIP does when teaching in the actual aircraft, i.e., he processes and integrates information and adjusts his instructional activities according to the changes in student needs and the situation. The difference in the use of the UH1FS is that the typical IIP does not, simply by virtue of his aircraft experience, possess all the information needed to manage the UH1FS training system effectively. The information that is missing concerns the location, function, and possible uses of UH1FS features, controls, switches, and displays, and the manner in which such information can be employed to enhance student learning. It is assumed that given this enabling information, the IIP will, in fact, be able to integrate it into his existing repertoire of instructional skills. The goal of the planned UH1FS IIP training program, therefore, is to provide the missing information, and its mastery constitutes the training objectives for the proposed course.

ANALYZE EXISTING COURSES

The analysis of existing courses was conducted to determine if they were sufficient, in whole or in part, to provide at least parts of the training needed by unit instructor pilots using the UH1FS.[1] Three existing courses and the training materials used in each were examined in the analysis. The courses were (a) Flight Simulator (UH1FS) Specialist Course, (b) Synthetic Flight Training System (UH1FS) IP Method of Instruction (MOI) Course, and (c) the UH1FS Orientation Course. The last of these is the course conducted by the USAAVNC New Equipment Training Team (NET) at UH1FS field locations. Analysis of these three courses indicated that none would provide the training needed by unit instructor pilots to allow them to use the UH1FS effectively in the training duties described.

The training materials used to support instruction in the three courses were also considered inadequate for use in the planned UH1FS IIP training course. As was noted in the cited review, existing UH1FS training materials, i.e., programmed texts, sound-on-slide programs, and videotape programs, were found to be deficient in a number of particulars. Essentially, the basic problem with the programmed texts and sound-on-slide programs was that they were designed for console operator training and, hence, contained much information that was considered unnecessary for IIPs to know and did not contain information that was necessary. Specifically, these materials tended to focus on "knobology" rather than on how various device features can be used to enhance student training. The videotape programs, on the other hand, were considered

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[1] See Isley, R.N., et al., op. cit., for a full discussion of the results summarized here.

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training. The videotape programs, on the other hand, were considered too introductory in their emphasis. Thus, either new training media would have to be developed to support the planned IIP course or major revisions of existing media would be required. On the basis of all considerations, it was concluded that the development of new materials would be more effective and economical.

INSTRUCTIONAL SETTING

The development of a largely self-contained, exportable training program for use by the unit IIPs was an original Army goal, and it was determined in this project that such a program was feasible. The basis for this conclusion was simply that, after analyzing IIP job requirements in light of his qualifications upon entry into training, it was evident that a course fulfilling the Army's goal could be designed. Thus, the instructional settings for the proposed course of instruction outlined in this report are to be the field site locations of the UH1FS. Most of the required training will take place in the UH1FS itself, with some use made of adjacent briefing or classroom space. Operation of the UH1FS will, of course, require console operators and other simulator support personnel.

IV. DESIGN OF INSTRUCTION

Phase II of the ISD process concerns the design or initial formulation of the planned course of instruction. Information generated in the Analysis Phase was used to develop training objectives and a testing rationale for the tasks to be trained, to determine the course entry skills of the IPs, and to determine the sequencing and structure for the proposed instruction. This section of the report contains documentation of the results of the ISD Design Phase.

TRAINING OBJECTIVES

The training objectives for IIP UH1FS training identify the skills and knowledges required for the IIP to use the various UH1FS features effectively in conducting his required instructional activities (shown in Appendix A). Because particular device features or systems are the foci of the course developed here, specific objectives were grouped by relevant device features/system. The device features/systems are identified in Table 3 below, as are the numbers of objectives associated with each. Appendix B lists these objectives, separately by device feature/system. In each case, an objective states specifically what an IIP should be able to do after successfully completing the course. For example, one objective in the ATC Record/Playback group states, "The IIP will be able to use this feature to provide feedback to students on their use of standard phraseology for ATC messages." Another example of such objectives, for the Problem Control Panel, "The IIP will be able to use this feature to activate/deactivate the motion system."

The order of the listing in Table 3 and Appendix B is alphabetical. It does not denote sequencing of materials in the proposed course.

TESTING

The evaluation problem in the proposed course of instruction will be to determine whether or not the IIP can, in fact, use UH1FS device features in the manner indicated in Appendix B to accomplish the instructional activities shown in Appendix A. The preferred way to make such a determination is directly through a performance-based evaluation procedure. The IIP should demonstrate that he can access UH1FS capabilities and use them appropriately in achieving instructional goals. Evaluations, then, should be made during appropriate exercises in which the IIP practices simulator use. Provisions for such exercises have been incorporated into the course outline.

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Table 3

DEVICE FEATURES/SYSTEMS AND NUMBERS OF RELATED OBJECTIVES

	Feature/System	Number of Objectives
1.	ATC Record/Playback	3
2.	Audio Alerts and Coaching Messages	4
3.	Automatic Copilot	4
4.	Automated Training Programs	9
5.	Communication/Navigation Display	8
6.	Gaming Area Map Display	20
7.	Ground Controlled Approach Display	3
8.	Hard Copy Printer	5
9.	Initial Condition Sets	3
10.	Maneuver Record/Playback	6
11.	Overhead Panel Display	4
12.	Problem Control Panel	12
13.	Simulated Aircraft Malfunctions	6
14.	Trainee Score Panel	4
15.	Trainer Status Display	18
16.	Trainer Status Information Panel	6
17.	Visual Error Alerts	5

ENTRY SKILLS

In order to eliminate unnecessary training, the skill and knowledge capabilities of the trainee entry population must be known. In the proposed course of instruction, it is assumed that the course entrant will be a unit instructor pilot who is already qualified to conduct instrument flight training activities in the UH-1H aircraft. The fact that the course entrant is already a qualified instrument instructor pilot obviously has implications for UH1FS IIP course development, so it is important to know something about instructor pilot requisites and qualifications, and current instructor pilot training objectives and procedures.

Army Regulation 95-63 prescribes the requirements for the qualification and designation of Army aviators as instructor pilots. In addition to specifying a requirement for a minimum number of first pilot flight hours and other general criteria, AR-95-63 stipulates that the aviator shall be a graduate of a formal instructor pilot course or shall satisfactorily complete an IP equivalency evaluation administered by a representative of the Directorate of Evaluation and Standardization (DES), U.S. Army Aviation Center. Therefore, UH-1 instructor pilot candidates must either attend the formal UH-1 Instructor Pilot Course conducted at Fort Rucker or acquire the designation through unit training and an equivalency evaluation.

However, completion of the UH-1 IP Course at Fort Rucker does not qualify the graduate as an _instrument_ instructor pilot (IIP), because _instrument_ methods of instruction training is not included in that course. Additional training is required for IIP qualification. While such training is also available at Fort Rucker, it is ordinarily handled as a unit responsibility. FORSCOM Regulation 350-3 permits unit commanders to publish local orders designating selected unit aviators as instrument instructor pilots (IIPs), and these individuals may or may not have had instrument methods of instruction training.

The proposed course of instruction described in this report is for aviators who already are qualified IIPs, not IPs in training for IIP qualification. This distinction is important because of its impact on the likely entry skills of trainees in the proposed course and the consequences for subsequent course design.

Installations with UH1FS devices have a unique capability for providing unit aviators with the specialized instrument instructional skills required of the IIP. Some installations with the UH1FS have already started using the device to accomplish such training.[1] Therefore,

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[1] The development of a standardized course of instruction to provide selected unit aviators with their initial instrument methods of instruction training is beyond the scope of the project. Development of such a course would require additional effort.

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although all entrants to the proposed course will be qualified IIPs, some will have obtained their IIP qualification in a training program using the UH1FS, while others will not. Thus, the range of skills and knowledge of the UH1FS for entering trainees of the proposed course will run from those of the entrant who has never seen the UH1FS, to those of the entrant who received his initial IIP training in the device. The proposed course of instruction must be designed to accommodate the entire range of likely entry trainee capabilities.

SEQUENCING AND STRUCTURE OF THE PLANNED COURSE

The proposed course will be comprised of a sequence of nine modules. These are described further in Section V below and in Appendix C. The modules do not form a rigid hierarachy, but to one with no familiarity with the UH1FS it would be best to master the modules in sequential order. The composition of the modules permit multiple entry points, however, for trainees with varying degrees of familiarity with the device.

Each of the first eight modules has two types of activities to be performed in order. These are (a) acquisition of information, and (b) practical exercises. Brief descriptions of these activities follow.

Acquisition of Information. In keeping with the design goals for a self-contained, self-instructional course of instruction, it is proposed that required enabling information be acquired through individual study of appropriate references. The major instructional references will be the UH1FS Instructor's Guide being developed in the present project. The Guide will be supplemented by the UH1FS Operator's Manual and a series of existing videotape programs describing various simulator features. These references are further supplemented, where appropriate, with the standard Army documents pertaining to instrument flight operations. (These source materials are identified in Appendix A and in Appendix C.)

Practical Exercises. It is proposed that following the individual study of appropriate references, including the viewing of the appropriate videotape programs, the IIP will complete one or more practical exercises in the UH1FS. These exercises will be largely self-conducted. The directions for each such exercise will be recorded on a cassette tape which the IIP can play in the cockpit. The tape will direct his attention to specific device switches, controls, displays, or other device features and will provide directions for using them. Directions for console operator assistance in completing the exercise would also be recorded on the tape. Such recordings are not presently available and will, of course, have to be developed. A possible scenario for one such recording is provided in Appendix D as an example of how the practical exercises can be developed.

Practice Teaching. It is proposed that following the completion of the first eight modules, another series of exercises consisting of mock

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training activities, i.e., practice teaching, be completed. These practice teaching exercises comprise Module Nine. Their function will be to verify that the IIP has mastered the information presented earlier and is competent to conduct actual student training using the UH1FS. These exercises will require the services of an evaluator, e.g., a standardization instructor pilot, and one or more mock students. The exercises themselves will involve conduct of typical syllabus training periods from the proficiency/refresher and initial issue training programs.

V. DEVELOPMENT OF INSTRUCTION

In the Development Phase of ISD, the planned course of instruction will be fully developed. The scope of the present project, however, calls for only two products of this phase to be completed: (a) the course outline, which appears in Appendix C and which is the focus of this report, and (b) the UH1FS Instructor's Guide, still under development and to be published separately at a later date. This section of the present report contains a description of the course outline and states requirements for future course development.

THE COURSE OUTLINE

Overview of the Planned Course

The design goals of the planned UH1FS IIP course are that it be multi-media, largely self-contained, self-instructional, and exportable to the field as a generally complete training package. Achieving these goals or criteria in future course development activities will be a challenge to the course developers. However, the course outline as presented in Appendix C is consistent with these goals, and if it is followed in course development, the final course product should meet the criteria outlined.

The organization of the proposed course is conceived as a series of nine learning modules. The subject matter to be covered in each module is given by the titles below:

Module One: Introduction to the UH1FS

Module Two: Introduction to In-cockpit Device Operations

Module Three: In-cockpit Device Operations, cont'd.

Module Four: Performance Assessment Features

Module Five: Record/Playback Features

Module Six: Automated Training Programs

Module Seven: Console Operations

Module Eight: Administrative Records & Forms

Module Nine: Practice Teaching

Each learning module would consist of a period of individual study of appropriate portions of written and other references that would be

provided in the exportable training package. The individual study period would be followed by one or more practical exercises in the UH1FS. Completion of the practical exercises for each module would indicate trainee readiness to begin the next learning module. Each learning module would focus on a specific content area, activity, or collection of related activities designed to provide the unit IIP with the information and experience he will need to utilize the UH1FS effectively in training. This sequence of activities would continue until all learning modules are completed.

The availability of unit IIPs to attend a formal, full-time course of instruction will be limited. Most likely, they will be required to continue their routine duties while learning to use the UH1FS, and their availability to participate in the planned training course will likely be limited to a few hours per day at most. The proposed course of instruction must take this likelihood into account, and the proposed learning modules should be designed so that they can be completed on a time-available basis. Completion of a given module, therefore, might require several training sessions, or it might be completed in a single training period. This will depend on the IIP's past experience, abilities, and time available. Further, it is likely that IIPs will not be available for group instruction, and the modules must be designed for individual or self-instructional training. The course outline in Appendix C reflects the modular structure as conceived for the planned course.

Organization of Course Outline

The course outline in Appendix C identifies each learning module by topic, identifies the content areas or subject matter of the mdoule, provides a statement of the general training objectives associated with each content area, and identifies appropriate references to support the indicated instruction. The cited references also identify available sources which subsequent course developers will need to consult in order to complete the modules, as well as proposed media not presently available but needed to accomplish the objectives of the modules.

Composition of the Learning Modules

The modular approach to course organization has been taken for several reasons, the most compelling of which has been the desire to make the training program adaptable to self-instructional use on a time-available basis. Other reasons are the need for multiple entry points into the cycle, and the nature of the material to be mastered during IIP training. This latter point bears on the composition of the modules and is elaborated upon below.

Ultimately, the UH1FS IIP's mission is to train students using the simulator as well as the aircraft. As previously stated, it is assumed that before entering the present course they will be qualified to administer instrument instruction in the aircraft. With respect to the effective

use of the simulator, the IIP must learn and be able to integrate a great deal of information concerning the simulator and how its training features can be employed in carrying out his mission, i.e., training proficiency and initial issue students. This enabling information is covered in the first eight modules indicated in the course outline.

Typically, completion of each of the first eight modules will involve a period of study of appropriate references and the viewing of a short videotape introducing the subject. This will be followed by one or more practical exercises in which the information conveyed via references and videotape can be put to use in operating the simulator. These exercises are intended to provide the IIP with hands-on experience in operating device controls, interpreting displays, and exercising various device features. While all of the exercises will require the services of a device console operator, a design goal is to minimize the involvement of personnel other than the "student" IIP. Of necessity, however, some exercises will require the services of an aviator to "fly" the simulator while the student IIP is engaged in activities at the instructor station in the cockpit, or at the console operator's station outside the cockpit.

The IIP training course not only must provide the IIP with enabling information, it also must provide him with experience in employing that information in an operational context, i.e., during student training. A suitable method for meeting the latter requirement is to provide mock training or practice teaching experience as part of the MOI training. This method has been selected for use in the proposed IIP training program because of previous success in its use, and the final module in the course outline consists of such practice teaching.

The practice teaching module, as conceived, will be composed entirely of practical exercises. In contrast to the earlier exercises, which were designed primarily as a means of presenting and/or reinforcing enabling information concerning device operations, the practice teaching exercises in this module are to be evaluative as well as instructional in nature and will require the IIP to conduct one or more syllabus training periods in the UH1FS. Conduct of this series of exercises will require the participation of an evaluator to monitor and critique the IIP's performance. The purpose of these exercises is to ascertain IIP mastery of the information contained in the earlier modules and to certify his readiness to commence actual student training activities with the device.

THE UH1FS INSTRUCTOR'S GUIDE

Frequent reference is made in the course outline and elsewhere in this report to the UH1FS Instructor's Guide, a document under concurrent development at the time of preparation of this report. The need for this document and its intended purpose are explained below.

In the review of exising UH1FS training materials,[1] a number of
guides and handbooks were examined to determine their usefulness in the
planned course of instruction. These existing guides were found to con-
tain useful information, but were considered generally deficient in a
critical area; they generally lacked information relating specific
device features and systems to training uses. That is, the guides con-
tained little information telling instructors how to employ device
features to enhance the learning process. The UH1FS Instructor's Guide
being developed in the present project is intended to remedy this defi-
ciency. The new Guide will contain much of the information found in
existing guides, but will expand that information and will focus on how
IIPs can use simulator features to enhance student learning.

The UH1FS Instructor's Guide is intended to serve as the basic
reference document, or textbook, for the planned UH1FS IIP course of
instruction. As such, the Guide will serve as a handbook concerning the
location, function, and suggested training uses of UH1FS features as
they relate to the conduct of aviator training and evaluation in the
simulator. During IIP training, information contained in the Guide will
be supplemented by the other media shown in the reference blocks of the
course outline. In addition to serving as a basic text in IIP training,
the Guide will be a ready reference document that can be consulted by
the IIP for information frequently needed in simulator flight planning
activites and during in-cockpit training activities.

Since the UH1FS Instructor's Guide is being developed as a part of
this project and thus in advance of the other materials for the planned
course of instruction, it will be available to UH1FS instrument instruc-
tor pilots well before the entire IIP course is ready. It is expected
that early distribution of the guide to all UH1FS field locations will
enhance utilization of the simulator by current IIPs.

FUTURE COURSE DEVELOPMENT REQUIREMENTS

Proposed New Media

The proposed new media will consist of a collection of audio
cassette recordings which will be used in conjunction with the practical
exercises identified in the course outline. The practical exercises are
intended to supplement written course material and to provide the IIP
with "hands-on" experience in employing the information derived from
written and other sources. As envisioned, the cassette tapes will guide
the IIP through exercises, much as tapes guide students through slide-
tape instructional materials. When appropriate during the conduct of an
exercise, tapes will guide the console operator as well. The scripting
of the scenarios for these exercises and the recordings of them are

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[1] Isley, *et al*., *op*. *cit*.

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matters for subsequent course development activities. (An example
script for a tape which illustrates the type of instruction intended
appears in Appendix D).

A Plan for Subsequent Course Development

The UH1FS Instructor's Guide will be the first element of the
planned course to be completed. This Guide can supplement or replace
some materials currently in use for IIP training. Meanwhile, the
learning modules are to be developed, and some consideration of the
order of their completion may be useful to subsequent course developers.

The planned course of instruction for UH1FS IIPs will likely be
developed in sequential stages rather than all at once. This building
block approach could be followed until the entire training package is
completed. The modular structure proposed for the course lends itself
well to such a development scheme.

The order of development of the learning modules should proceed
from Module One to Module Nine, with one notable exception, Module Six,
Automated Training Programs. It is suggested that development of this
module be undertaken last, because the training effectiveness of the
automated training programs currently available in the UH1FS has not
been determined, and reports from the field have indicated that relati-
vely little use is being made of these programs when the instructor is
in the cockpit.[1] Further, research activities programmed by the ARI
to investigate automated training in the UH1FS will likely provide
information of considerable use in the preparation of the module
covering automated training. Thus, the preparation of Module Six would
likely benefit from the proposed delay in its development.

The course outline described in this report must be considered a
working draft. Subsequent course development activities may dictate
changes to the proposed format and structure of the planned course. For
example, an initial tryout of the learning modules, as proposed in the
outline, may reveal a need to shift some content areas from one module
to another. The further development and preparation of the practical
exercises shown in the outline may also suggest changes that would
improve the composition of the learning modules. An inherent advantage
of the modular approach taken in developing the course outline is, of
course, the flexibility with which such improvements can be accomplished.

An Additional Consideration

This report has been prepared under the assumption that subsequent
course development will, in fact, occur. A note of caution is in order,

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[1] Isley, R.N., and Miller, E.J. The Role of Automated Training in
Future Army Flight Simulators. Final Report FR-ED-76-27. Human
Resources Research Organization, Alexandria, Va., October, 1976.

however, concerning this assumption. In the survey of current training practices at UH1FS field locations, it was found that the trend within the Army appears to be away from IIP involvement in the conduct of instrument proficiency training in the UH1FS. In many instances, instructor pilots became involved in such training very irregularly, if at all, with the bulk of proficiency training for the individual aviator being accomplished under self-supervision without an instructor in the cockpit. Given this permissive trend concerning IIP involvement in proficiency training, one might well question the need for a UH1FS IIP training program.

Considerable developmental effort will be required to complete an exportable training package along the lines described in this report. As has been noted, the user of that package has been assumed to be an IIP, and the focus of the course would be to give him the skills required to use the UH1FS effectively in proficiency/refresher training for unit pilots. If such training is not to be directly administered and supervised by the unit IIP, then there would be serious question concerning the size of the IIP population who would use the planned course. It would seem prudent, therefore, to obtain clarification of Army policy with respect to the use of instructor pilots as UH1FS instructors before proceeding with the development of the planned course.

VI. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

As part of the Army's general efforts to achieve maximum training benefit from the use of its fleet of flight simulators (UH1FS) for the UH-1H helicopter, the present effort has developed the outline for a course intended to train unit instrument instructor pilots (IIP) in effective use of the UH1FS. Their principal use of the UH1FS would be in connection with the instrument proficiency/refresher training of unit aviators or, in some instances, in the initial instrument qualification of unit rotary wing aviators. Based on the characteristics of the IIP group who would use the planned course, as well as on Army guidance concerning desired characteristics of the course, an exportable, self-contained, self-instructional, multi-media course concept was developed. The development of this course concept was governed by the general guidelines of the Interservice Procedures for Instructional Systems Development. A second aspect of the present project, to be reported separately, is the development of a UH1FS Instructor's Guide to be used as the basic training reference source in the proposed course.

In connection with the development of the course concept and the UH1FS Instructor's Guide, existing courses and training materials dealing with the use of the UH1FS were reviewed for applicability. This review indicated that existing courses and media were inadequate to serve the needs of the projected course and that new media should be developed.

As a result of these activities, a nine module course concept was developed, and the present report presents the outline for this course, along with the objectives for the course. Full development of these modules was beyond the scope of the present effort, but a recommended plan for such development was prepared. The first eight of the course modules are devoted to providing enabling information about the UH1FS with practice "hands-on" exercises provided for in each module. The ninth module is conceived as a series of exercises in which the IIP would practice teaching instrument flying skills to mock or actual students. Evaluation of IIP trainee performance would occur during these practice teaching exercises. The contents of these modules are conceived to be as follows: (a) Introduction to the UH1FS; (b) Introduction to In-cockpit Device Operations; (c) In-cockpit Operations (cont'd.); (d) Performance Assessment Features; (e) Record/Playback Features; (f) Automated Training Programs; (g) Console Operations; (h) Administrative Records and Forms; and (i) Practice Teaching.

CONCLUSIONS

On the basis of the information developed in this effort, the following conclusions are warranted:

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1. Existing courses of instruction do not prepare unit instrument instructor pilots adequately in the effective use of the UH1FS.

2. Existing training materials, while useful for training UH1FS console operators, are of limited utility in the training of unit instrument instructor pilots in the effective use of the UH1FS.

3. Development of an exportable, self-contained, self-instructional, multi-media course of instruction in use of the UH1FS for unit instrument instructor pilots is feasible.

4. Army policy is permissive concerning whether UH1FS proficiency training is to be under the direct supervision of unit instrument instructor pilots.

5. The ISD model was helpful as a guide, but the model was inappropriate or insufficient with respect to certain of the developmental activities required in the present effort.

RECOMMENDATIONS

Based on the results and findings of this effort, the following recommendations are made:

1. Army policy concerning whether the instructor pilot's participation in unit UH1FS proficiency training programs will be permissive or mandatory warrants resolution so that the nature and size of the potential user population for the course outlined in this report can be clarified. Unless unit instructor pilots participate in UH1FS proficiency training to a significant degree, it is possible that the size of the potential user population for the planned course will be insufficient to warrant the expenditure required for its full development.

2. Given that unit UH1FS proficiency training will be under instructor pilot direction to a significant degree and that full development of the present course is to be pursued, such development should be in accord with the outline described in this report.

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5. Isley, R.N., & Miller, E.J. <u>The Role of Automated Training in Future Army Flight Simulators</u>. Final Report FR-ED-76-27. Human Resources Research Organization, Alexandria, Va., October 1976.

6. Isley, R.N., Miller, E.J., & Spears, W.D. <u>A Review of Existing UH1FS Training Materials</u>. Technical Report TR 77-10. Seville Research Corporation, Pensacola, Fla., November 1977.

APPENDIXES

APPENDIX A

UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES

    This Appendix contains a tabular listing of the instructional activities required of a UH1FS IIP in the conduct of a typical training period in the simulator. The activities are listed sequentially from pre-flight planning through post-flight student debriefing. However, it should be noted that many activities are concurrent, interactive, and/or continuous. For each major activity listed the table shows, where appropriate, (a) the general purpose of the activity, (b) the location (when changed) of the activity, i.e., where the activity takes place, (c) the cues (when newly presented) associated with initiating the activity, (d) the standards for the activity when applicable, (e) the resources or references required to support the activity, and (f) the relevant features of the UH1FS involved in performing the activity.

    In the Table, resources usually have only brief shorthand identifications. More specific identification of acronyms and reference documents are provided below.

RESOURCE	IDENTIFICATION
A/C Instructor Handbook	Instructor Pilot's Handbook (Fundamentmentals of Instruction)
AR's	Army Regulations
DD Forms 175 and 175-1	Military Flight Plan and Flight Weather Briefing Forms
DOD FLIP	Flight Information Publications (Dept. of Defense)
FAR's	Federal Aviation Regulations
Flight Training Guide	Flight Training Guide for the UH1FS Training Course
FM1-5	Instrument Flying & Navigation for Army Aviators
FM1-30	Meteorology for Army Aviators
Form 1623	Military Flight Plan (Simulator)
IFR Supplement	Instrument Flight Rule Supplement to DOD FLIP

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RESOURCE	IDENTIFICATION
Local SOP	Local Standard Operating Procedures
NOTAMS	Notices to Airmen
SID's	Standard Instrument Departure Charts
TM 38-750	The Army Maintenance Management System
UH1FS Handbook	STI-75, Flight Simulator Handbook
UH-1 Operator's Manual	TM-55-1520-210-10

UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES

PREFLIGHT
1. Analyze Scheduled Training Period
  a. Review goals
  b. Review objectives
  c. Identify/collect resources
  d. Recall previous experience with this block of instruction
	Instructor familiarization with scheduled training period, typical student problems, common errors, and effective solutions used in past training	Flight simulator planning room	Assigned 1 or 2 students for a training period; specific training schedule known	All needed training period resources identified and collected	Flight syllabus,
					Lesson plans,
					Flight instruction breakdown,[a]
					AR's, FAR's, FMI-30,
					FMI-5, TM38-750,[b]
					DD Forms 175 & 175-1,[b]
					DOD FLIP,[b] enroute charts,[b]
					SID's,[b] IFR supplement,[b]
					NOTAMS,[b] weather report,[c]
					Winds aloft report,[c]
					Rotary Wing Instrument Guide,
					Form 1623 or equivalent,
					Local SOP,
					UH-1 Operator's Manual,
					UH1FS Handbook,
					A/C Instructor's Handbook
						N/A[d]

[a] The Flight Instruction Breakdown is a tool used by IPs as an outline for the presentation of instruction. The breakdown is preared for each maneuver and procedure in the flight syllabus and contains key teaching points, common student errors, and other cues to assist the IP in the conduct of training.

[b] All of the flight planning documents listed serve as reference material for subsequent training activities. Rather than repeat each of these each time it is a resource, the notation IFR Publications will be used in the remainer of the Table.

[c] Simulated (actual weather does not affect simulator operations).

[d] Not applicable.

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UHIFS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
PREFLIGHT (cont.)						
2. Analyze Student Proficiency[a]	To relate students entry level skills to scheduled training period objectives	Flight simulator planning room		Correctly identify difference between entry level skills and scheduled training period objectives	Grade or comment slips	Hard copy printer
a. Determine present student(s) proficiency					Hard copy printout	
b. Recall past experience with other students						
3. Formulate a Training Period	To aid in the subsequent planning of a training period consonant with student's proficiency			Match proposed period activities to estimated student skills		
a. Identify/modify/adjust training period goals						
b. Identify/modify/adjust period objectives						
4. Organize Learning Events	To provide a logical framework for the training period			Events sequenced in logical fashion	Flight instruction breakdown —	
a. Tasks to be exposited by IP						
b. Tasks to be demonstrated						
c. Tasks to be exposited by students						
d. Tasks to be practiced by students						
e. Tasks to be critiqued by IP						

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[a] If scheduled training period is the initial training period for the assigned students, the IIP will have to estimate student entry level skills based on preliminary knowledge regarding the student(s) and his past teaching experience. If the training period is later in the syllabus he will have first hand evidence of current student's proficiency.

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UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
PREFLIGHT (cont.)						
5. Relate Device Features to Learning Events	To identify specific device features of possible use in presentation of training	Flight simulator planning room		Effective use of UH1FS	UH1FS Handbook	Gaming area, performance monitoring and assessment systems,a malfunctions, automated training, freeze, slow time
6. Structure (Design) Training Period to Encompass Desired Learning Events	To provide a flight instruction activity sequence for the period		1-5 completed	In accord with MOI		
a. Identify desired initial conditions for start of training				ICs entered on Form 1623	UH1FS Handbook, Form 1623	Initial conditions sets
b. Identify desired malfunctions/emergencies to be introduced and/or practiced				Malfunctions entered on Form 1623	UH1FS Handbook, Form 1623	Simulated malfunctions
c. Prepare lesson plan				Lesson plan completed		

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aAudio Alerts, Visual Alerts, Playback/Record, Hard Copy, Airspeed/Altitude Plot, Problem Time Line, Ground Track, Trainee Score Panel.

UHlFS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
PREFLIGHT (cont.)						
6. (cont.)						
d. Formulate instructional strategies		Flight simulator planning room		In accord with MOI	IP expertise	Auto training programs, performance assessment systems
(1) IP expositions						
(2) IP demonstrations						
(3) Student expositions						
(4) Student practice						
(5) IP critiques						
7. Prepare Crew Briefing	To assure briefing will be complete			In accord with MOI	Flight instruction breakdown or flight plan	
a. Review maneuver/procedures						
b. Note key teaching points						
c. Note standards						
8. Present/Conduct Crew Briefing	To assure students are ready for training and know what is expected of them	Briefing room, student(s) present	Planning completed, student(s) arrive, trainer scheduled		Flight plan, Form 175 & 175-R, IFR publications, Form 1623	
a. Outline training period plans						
b. Explain maneuvers/ procedures						
c. Determine student's readiness for training						
(1) Ask questions						
(2) Evaluate responses						
(3) Solicit questions						
(4) Answer questions						
(5) Provide additional information						
d. Adjust or modify plans based on results of (c)						

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UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
PREFLIGHT (cont.)						
8. (cont.)						
(e) Explain pilot/copilot (student) roles and IP expectations		Briefing room	8.d. completed		Flight plan	
(f) Explain desired performance standards				In accord with RW Instrument Guide, AR's, FAR's	RW Instrument Guide, AR's, FAR's	
(g) Explain IP role				In accord with SOP	Local SOP	
(h) Explain SOP & safety procedures						
9. Complete Form 1623 (or equivalent)	To provide required information to console operator			Form 1623 100% completed	Form 1623, UH1FS handbook	Operating modes, auto training system, initial conditions, malfunctions, hard copy printer, audio alerts, ATC chatter tape, ATC recorder
a. Obtain student information						
b. Select mode of operation; if auto, select program desired						
c. Specify IC						
d. Specify malfunctions						
e. Specify audio alerts						
f. Specify hard copy printer						
g. Specify ATC recorder & ATC chatter tape						
h. Specify special assistance from device operator, e.g., ATC, GCA						

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UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
PREFLIGHT (cont.)						
10. Determine Assigned Cockpit Is Ready a. Identify assigned cockpit b. Give device operator 1623 c. Give device operator special instructions	To expedite training	Device operator station	Briefing completed	Cockpit located, Form 1623 and special instructions delivered	Form 1623	
IN COCKPIT						
1. Check Cockpit Logbook a. Determine maintenance status b. Make appropriate entries in logbook	To note any maintenance deficiencies, to maintain logbook	Cockpit[a]		In accord with local SOP Students positioned to operate device controls effectively	Logbook, SOP, UH1FS Handbook, flight gear, IFR publications, UH-1 Operator's Manual	
2. Set Cockpit Illumination and Ventilation Controls	To provide a comfortable learning environment		Ambient conditions	Maintain comfortable learning environment	UH1FS Handbook	Illumination and ventilation system
3. Assist Students to Fasten Doors, Adjust Seats, Pedals and Controls	To assure safety of flight		Pre-flight completed, trainer ready			Motion system interlocks, restraining system, control friction system, control adjustment system

[a] For the in-cockpit activities in this section the IIP's normal teaching position is assumed to be the instructor/observer seat aft of the pilot and copilot positions. While some training may be conducted with the IIP in the copilot position, this position does not allow the IIP access to the information displayed on the cockpit CRT. Occasionally IIPs may conduct training from the console operator's platform. At this teaching position instructional activities remain as shown but three additional device features become relevant. These features are the overhead instrument panel, the ATC/CRT and the GCA pedestal.

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UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
IN COCKPIT (cont.)						
4. Monitor Trainer Status Information Panel	To ascertain current status and to cue subsequent actions	Cockpit	Indicator lights on status panel	Correctly interpret status indicators	UH1FS Handbook	Trainer Status Panel
a. Trainer Ready Light				ON/OFF		
b. Auto copilot status light				ON/OFF		
c. Motion system status light				ON/OFF		
d. FREEZE status light				ON/OFF		
e. Playback status light				ON/OFF		
f. Instructor call acknowledge light				ON/OFF		
5. Verify Trainer Status	To ascertain simulated aircraft is in desired configuration for start of training		Cockpit instrument readings, Trainer Status Panel, sound, motion, Problem Control Panel, CRT status and gaming area displays	Correctly interpret trainer status indicators and cockpit instruments	UH1FS Handbook, local SOP, IFR publications	Trainer Status Panel, Instrument Panel, audio system, seat shaker, motion system, Problem Control Panel, trainer status and gaming area displays
6. Modify Status as Needed	Correct discrepancies to obtain desired configuration		Status not as desired	In accord with planned training activities	UH1FS Handbook	Intercommunications system, instructor call switch, Problem Control Panel

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ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
IN COCKPIT (cont.)						
7. Present Learning Events in Proper Sequence:	To facilitate the learning process	Cockpit	Trainer status as desired	In accord with planned training activities	Flight Training Guide, UH1FS Handbook	Auto briefings, CRT display, cockpit instruments
a. Explain maneuver or procedure						
b. Demonstrate maneuver or procedure						Auto demonstrations, malfunctions, CRT display, cockpit instruments
c. Observe/monitor student performance						Guided practice exercises, adaptive practice exercises, non-adaptive practice exercises, CRT display, Trainee Score Panel, cockpit instruments
d. Critique/debrief student performance						Maneuver playback, freeze, ATC playback, CRT display, Trainee Score Panel, cockpit instruments
8. Divide Attention Between Student(s) and Device	To manage & control training activities, e.g., modify approach, pace instruction	Cockpit	Student actions, CRT status, trainer status, cockpit instruments, radio communications	Correctly interpret device indicators, student actions, & communications	UH1FS Handbook, FM1-5, local SOP, Flight Training Guide	Trainer Status Panel, Trainee Score Panel, Problem Control Panel, Communication system, CRT displays, performance assessment & monitoring features

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UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

IN COCKPIT (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
9. Monitor Communications From Console-Interact With Console Operator a. VHF radio b. UHF radio c. FM radio d. ICS	To coordinate with console operator in order to manage and control training activities		Aircraft call sign, desire for console operator assistance	ATC procedures, correct/appropriate instructions for training problem	UH1FS Handbook, radio communication procedures, IFR publications	Communication system, instructor call switch, instructor aid acknowledge indicator
10. Record Student Performance a. Manual recording b. Request hard copy record c. Communications recording d. Record/replay	For grading, evaluation, analysis, and quality control, coaching, and feedback		Student actions, cockpit instruments, audio alerts, visual alerts, problem time	Correctly interpret/ record student performance	Flight Training Guide, A/C Instructor's Handbook, -10 checklist, IFR publications, grade slips, other data forms	Performance monitoring and assessment features (1) Hard copy (2) Maneuver playback (3) ATC recorder (4) Ground track plotter (5) Plot area recall (6) Trainee scoring (7) Adaptive practice (8) Audio alerts (9) Visual alerts
11. Analyze Student Performance	To identify perform-ance deficiencies (sub-standard performance) & causes of poor performance, to reinforce correct performance	Cockpit	Student actions & communications, audio alerts, visual alerts, CRT displays, instrument panel indicators	Fair & impartial interpretations	Flight Training Guide, UH1FS Handbook, -10 checklist, UH-1 Operator's Manual, A/C Instructor's Handbook, R/W Instrument Guide	Performance monitoring and assessment features

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UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
IN COCKPIT (cont.)						
12. Identify Problem Areas a. Motor skill b. Cognitive skill c. Discriminative skill d. Time sharing skill e. Higher order skill	Correct sub-standard performance	Cockpit	Student having problems	Correctly interpret student(s) problem(s)		
13. Formulate Solution for Problem(s) a. Additional practice needed b. Additional information needed c. New approach needed, e.g., Change strategy	Correct sub-standard performance	Cockpit	Student having problems	In accord with MOI	UH1FS Handbook, Flight Training Guide, A/C Instructor's Handbook, R/W Instrument Guide	Parameter freeze, playback (real or slow time), demonstrations, auto briefings, problem-reset, guided practice Adaptive practice, non-adaptive practice
14. Propose Solution to Student, i.e., Change Training Activities	For student assimilation and subsequent learning				UH1FS Handbook, Flight Training Guide, A/C Instructor's Handbook	
15. Evaluate Effectiveness of Proposed Solution, e.g., Recycle Items 10-14	To determine if solution is adequate				Flight Training Guide, A/C Instructor's Handbook, R/W Instrument Guide	Performance monitoring features: (1) Hard copy (2) Playback (3) ATC recorder (4) Ground track recorder (5) Plot area recall (6) Trainee scoring (7) Adaptive practice (8) Audio alerts (9) Visual alerts

UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
IN COCKPIT (cont.)						
16. Critique Student Performance a. Provide verbal comment b. Provide graphic display (CRT) c. Provide self-confrontation (playback)	To provide feedback to student	Cockpit			Flight Training Guide, A/C Instructor's Handbook, R/W Instrument Guide, IP expertise	CRT displays, CRT time histories, freeze, playback (real time), playback (slow time), stored plots, ATC playback, audio alerts, Trainee Score Panel
17. Solicit Questions From Students	To identify knowledge deficiencies		Student is confused/quiet, or non-responsive		A/C Instructor's Handbook, R/W Instrument Guide	
18. Answer Questions	To provide information		Student asks questions	Answer questions honestly or if answer is unknown direct student to possible source for answer	UH1FS Handbook, -10 checklist, UH-1 Operator's Manual, Flight Training Guide, A/C Instructor's Handbook, R/W Instrument Guide	Trainee Score Panel, maneuver playback, ATC playback, gaming area display

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UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
IN COCKPIT (cont.)						
19. Manage Training Period According to Student Progress & Device Status (pace instruction)	Enable student to progress at his own pace	Cockpit	Problem and clock time, student progress, fatigue, device status	In accord with appropriate training guides and lesson (flight) plan	UH1FS Handbook, -10 checklist, UH-1 Operator's Manual, Flight Training Guide, A/C Instructor's Handbook, R/W Instrument Guide	Performance Monitor Features: (1) Hard copy printout (2) Playback (3) ATC recorder (4) Ground track plotter (5) Plot area recall (6) Trainee scoring (7) Adaptive practice (8) Audio alerts (9) Visual alerts
20. Complete Paperwork a. A/C logbook b. Grade slips c. Simulator training records d. Evaluation/ diagnostic flight check records	Accomplish administrative requirements		Trainer period completed	Complete required forms to 100% accuracy	TM 38-750, local SOP, (relative to grade slips/ training records, eval/diagnostic records)	
DEBRIEFING						
1. Review Performance During Training Period	Provide feedback to student	Debriefing room	Simulator flight completed		Written notes, hard copy printout, flight training syllabus, R/W Instrument Guide, ATC recording, grade slips	ATC playback/record, hard copy printer, stored plots
2. Inform Students of Strong and Weak Areas	Provide feedback to student					
3. Suggest Ways to Overcome Weaknesses	Enhance training		Weaknesses identified		IP expertise	

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UH1FS IIP INSTRUCTIONAL PROCESS ACTIVITIES (cont.)

DEBRIEFING (cont.)

ACTIVITY	PURPOSE	LOCATION	CUES	STANDARDS	RESOURCES	RELEVANT DEVICE FEATURES
4. Solicit Questions	Enhance training					
5. Answer questions	Enhance training		Questions asked			
6. Formulate general goals for next training period; adjust syllabus as necessary	Facilitate planning				Flight syllabus	
7. Discuss Next Training Period	Inform students of plans for next period					
8. Assign Study Material for Next Period	Facilitate student preparation for next period				UH-1 Operator's Manual, IFR publications, Flight syllabus	
9. Complete Paperwork a. Grade slips b. Flight insert c. Other admin. forms	Provide necessary records	Debriefing room			Grade slips, flight insert, administrative forms	
10. Dismiss Students			Training period completed			

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APPENDIX B

TRAINING OBJECTIVES AS RELATED TO UH1FS DEVICE FEATURES

This Appendix contains a listing of 17 UH1FS features. Groups of training objectives are given for each feature. The planned course should enable the unit instrument instructor pilot to utilize these device features as stated in the objectives.

1. ATC Record/Playback - The IIP will be able to use this feature:

   ● To verify clearances, readbacks, and position reports.
   ● To provide feedback to students on their use of standard phraseology for ATC messages.
   ● To critique students on ATC voice procedures.

2. Audio Alerts and Coaching Messages - The IIP will be able to use this feature:

   ● To call attention to the fact that an out-of-tolerance condition exists.
   ● As a prompter signifying that student is having difficulty controlling a particular flight parameter.
   ● To assist the instructor in detecting patterns of student error.
   ● In lieu of instructor verbal alerts, especially when the IP is not in the cockpit or is attending to other matters.

3. Automated Training Programs - The IIP will be able to use this feature:

   ● To present a standardized description of a maneuver or procedure, including relationships between relevant controls and instruments, the performance standard associated with the maneuver or procedure, and other didactic information.
   ● To supplement, or substitute for, a briefing presented by the instructor.
   ● To provide an idealized, standardized model of maneuver performance (real or slow time).

4. Automatic Copilot - The IIP will be able to use this feature:

   ● To relieve the IP of performing the copilot task during instruction so that he can devote full attention to other instructional activities.
   ● To relieve the student of flight control tasks while he consults approach charts or other flight documents.
   ● To assist the student in recovery from an unusual attitude.
   ● In lieu of the freeze feature when it is desirable to continue the flight rather than freeze the training problem.
   ● To supplement, or substitute for, a demonstration flown by the instructor.

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- To present part-task learning situations to students whose proficiency is below that required for whole-task practice.
- As a means of reducing the IPs task level so that more attention can be devoted to monitoring student actions.
- As a means of matching task difficulty with a student's current proficiency level.
- As a means of comparing student performance of a maneuver with a standardized model for the maneuver.
- As a means of determining aviator proficiency with respect to an annual instrument checkride.

5. Communication/Navigation Display (ATC CRT) - The IIP will be able to use this feature:

- To identify or verify the appropriate frequency to use for a given facility.
- To obtain glideslope angle information.
- To obtain the geographical location of a facility, e.g., the X-Y location of a marker beacon.
- To verify clearance in effect.
- To determine the frequencies to which cockpit radios are tuned.
- To determine the transponder code in use.
- To formulate a request to the console operator to fail a navigational aid or to restore a previously failed aid.
- To reposition the simulated aircraft in relation to a given navigational aid, e.g., five miles south of a marker beacon.

6. Gaming Area Display - The IIP will be able to use this feature:

- To identify the present location of the simulated aircraft within the gaming area selected.
- To determine the distance between the simulated aircraft's present position and a particular navigational facility.
- To monitor the ground track progress of the flight.
- To monitor where along the ground track various student errors occur.
- To determine that an audio alert is being given (visual signal will flash).
- To show the student where he is in relation to a facility or other known location.
- To show the student where he has been (feedback).
- To illustrate what a proper ground track pattern should look like, e.g., a holding pattern.
- To provide a cue for positioning the simulated aircraft on a desired heading or course, e.g., direct student to turn right/left x degrees.
- To provide a cue to trigger delivery of ATC messages to the student pilot, e.g., holding instructions, approach clearances, etc.
- To provide a cue that the student should make an ATC report.

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- To provide a cue that the student should perform a specific maneuver, e.g., enter holding, missed approach.
- To provide a cue that a preprogrammed *time-activated* malfunction is about to occur.
- To provide a cue that a previously programmed time-activated (but currently unwanted) malfunction should be inhibited.
- To determine when to request console operator to change a displayed map, e.g., simulated aircraft flies off map boundary, aircraft entering approach map area.
- To determine when to request a GCA readout.
- To determine that a request for X-Y relocation should be made to expedite training.
- To determine a desired X-Y location.
- To verify that a requested relocation has been effected and aircraft is now in desired new location.
- To review an earlier portion of the ground track using recalled ground track.

7. Ground Controlled Approach Display - The IIP will be able to use this feature:

- To conduct GCA approaches from inside the cockpit or from the console operator's platform.
- To present a GCA when the console operator is unavailable to do so.
- To supplement information derived from the cockpit instruments.

8. Hardcopy Printer - The IIP will be able to use this feature:

- To obtain a permanent record of trainee performance.
- To monitor performance during training.
- To identify specific flight control problems.
- To identify improper checklist procedures during engine starts.
- To provide an aid in debriefing.

9. Initial Condition Sets - The IIP will be able to use this feature:

- To place simulated aircraft in desired geographical location and configuration to start training.
- To move trainer to a new location and/or configuration during training.
- To establish or modify a given IC set to suit particular training needs, e.g., change altitude, airspeed, heading, fuel weight, turbulence, etc.

10. Maneuver Record/Playback - The IIP will be able to use this feature:

- To allow the student to review his own performance.
- To verify that a disputed event did or did not occur.
- To relate student control inputs to instrument indications.

- To "slow down the action" to allow more time for the student to grasp important relationships between control inputs and resulting instrument indications.
- To provide an aid in critiquing student performance.
- To provide an aid in overcoming problems of overcontrol.

11. Overhead Panel Display - IIP will be able to use this feature:

- To monitor cockpit instruments while conducting training from outside the cockpit.
- To time maneuvers or segments of maneuvers.
- To provide an aid in evaluating student performance.
- To verify that requested changes in device configuration have been made.

12. Problem Control Panel - The IIP will be able to use this feature:

- To activate/deactivate the motion system.
- To signal the console operator to contact the cockpit.
- To disengage the automatic copilot.
- To insert or remove a malfunction.
- To increase or decrease the simulated turbulence level.
- To select and set up an auto training briefing, demonstration or exercise.
- To reset an auto training briefing, demonstration or exercise.
- To advance an auto training briefing, demonstration or exercise.
- To slow down demonstrations or playbacks to $\frac{1}{2}$ real time rate.
- To freeze the cockpit.
- To unfreeze the cockpit.
- To determine that a setup is in progress, e.g., the computer is in the process of establishing initial conditions for the start of training.

13. Simulated Aircraft Malfunctions - IIP will be able to use this feature:

- To provide the student with exposure to and practice in dealing with possible UH-1 inflight emergencies and aircraft systems malfunctions.
- To provide a safe environment in which to practice emergency procedures, particularly for those inflight failures that can not be practiced in the aircraft for safety reasons.
- To build student confidence in his ability to handle inflight failures and malfunctions.
- To increase training problem difficulty by increasing the student's task load.
- To provide a means of simulating flight under partial panel or other degraded conditions.
- To expedite training by arranging for the console operator to preselect the malfunctions initially desired on-line in advance of the training period.

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14. Trainee Score Panel - The IIP will be able to use this feature:

   ● To monitor problem difficulty level during adaptive practice.
   ● To monitor cumulative errors during automated training exercises not involving adaptive practice.
   ● To identify the automated training problem or problem segment in progress.
   ● To provide a cue to the provision of student feedback.

15. Trainer Status Display (CRT) - The IIP will be able to use this feature:

   ● To determine the mode of trainer operation, i.e., semi, auto, or checkride.
   ● If trainer is in automatic mode, to determine the particular automated training period being flown.
   ● To determine the on/off status of the automatic copilot feature.
   ● To determine that aid requested of the console operator has been acknowledged.
   ● To determine that the simulated helicopter has weight on skids, i.e., is on the ground.
   ● To determine that a flight is being flown on partial panel.
   ● To determine that an automatic briefing is in progress.
   ● To determine that a ground communication is in progress.
   ● To determine that trainer is ready for next activity.
   ● To determine that a crash or freeze condition exists.
   ● To determine which flight parameters are frozen or unfrozen.
   ● To determine preprogrammed malfunction status, to including malfunctions already inserted, those available for manual insertion, and those that will occur automatically within 15 seconds unless they are inhibited.
   ● To determine current environmental conditions.
   ● To verify that requested status changes have been entered into the simulation.
   ● To determine elapsed problem time.
   ● To relate errors to problem time.
   ● To monitor airspeed.
   ● To monitor altitude.

16. Trainer Status Information Panel - IIP will be able to use this feature:

   ● To determine that trainer is ready for next training activity, i.e., setup is completed.
   ● To determine that the auto copilot system has been engaged by the console operator.
   ● To determine whether the trainer is frozen or unfrozen.
   ● To determine that the motion system is on (or off).
   ● To determine that the console operator is aware of IIP's call for assistance.
   ● To determine that a maneuver playback is in progress.

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17. Visual Error Alerts - The IPP will be able to use this feature:

- To monitor where along the ground track various errors occur.
- To determine that an audio alert is being delivered.
- To provide feedback to student.
- To provide a cue that the student is having difficulty controlling a specific flight parameter.
- To alert the instructor that errors are occurring when the audio alerts may not be in use.

APPENDIX C
A COURSE OUTLINE FOR UH1FS IIP TRAINING

This Appendix contains the outline for a proposed course of instruction for training unit instrument instructor pilots to use the UH1FS effectively. The format of the outline is modeled after that typically used to describe Army School training courses. However, the proposed course of instruction outlined here and described in the main body of the report is intended for individual training at the unit level, rather than school training, and thus dos not contain all of the entries normally found in descriptions of school training courses.

SECTION I: PREFACE

A. Course Title: UH1FS Instrument Instructor Pilot Training Course

B. Purpose: To provide Commissioned, and Warrant Officer, instrument instructor pilots with a training program to qualify them to utilize the UH1FS effectively as an instructional vehicle.

To enable instructor pilots to conduct instrument proficiency or refresher training and to conduct initial issue instrument qualification training in the UH1FS.

C. Prerequisites: Commissioned, or Warrant Officer UH-1 Instrument Instructor Pilots.

D. Note: This course is designed as a largely self-paced, self-taught, proficiency advancement course employing individualized instruction. The course design does not require it to be employed in its entirety; rather, it provides for multiple student entry points and is designed to take advantage of previously acquired trainee skills and knowledges in the UH1FS. The hours shown for completion of individual learning modules are approximations only.

E. Training Locations: UH1FS Field Sites

F. SSI/MOS Feeder Pattern:

	Prerequisite	Trained in this course	Feeds following
Commissioned Off:	15A	None	None
Warrant Officer:	100B,C,D,E, or 120A	None	None

G. Ammunition Requirements: None

H. Selected Training Recapitulation: Not applicable

I. Standardization of Prefix Digit 5 Training: Not applicable

J. Essential Training Recapitulation: Not applicable

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SECTION II: SUMMARY

Total Hours: 45 (approximately)

			Hours
A. Learning Modules:	Introduction to UH1FS		3
	Introduction to in-cockpit Device		
	Operations		3
	In-cockpit Operations		6
	Performance Assessment Features		6
	Record/Playback Features		3
	Automated Training Programs		9.5
	Console Operations		3
	Administrative Records & Forms		1
	Practice Teaching		10.5
		Total	45
B. Recapitulation:	Security Classification		
	Secret		0
	Confidential		0
	Unclassified		45
		Total	45
	Type of Instruction		
	Television		1.3
	Practical Exercises/Examination		35.7
	Individual Study		8
	Non-Academic		0
		Total	45

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SECTION III: LEARNING MODULES

MODULE ONE: INTRODUCTION TO THE UH1FS

Content Areas:

1. General Introduction to the UH1FS and the UH1FS IIP Training Program

   Objective: To provide the IIP with an overview of the UH1FS as a
                 training system and to provide a description of the
                 scope of the course and the supporting media employed.

   References: Video Tape Recording (VTR) 2C-011-0447B, UH1FS
                 Operator's Manual, UH1FS Instructor's Guide, Student
                 Handout (this handout will contain an explanation of
                 the organization of the course and the cassette
                 recordings, a description of each practical exercise,
                 and a listing of order of use.)

2. Local Standing Operating Procedures (SOP)

   Objective: The IIP will be able to specify safety procedures and
                 operating rules related to UH1FS operations.

   References: Local SOP and UH1FS Operator's Manual

3. Orientation Flight in UH1FS (Practical Exercise)

   Objective: The IIP will be able to recognize the basic flight
                 characteristics and flight control responses of the
                 UH1FS and utilize operational capabilities of the
                 navigation/communication equipment while flying solo in
                 the left seat of the UH1FS. (See Appendix D for a
                 description of the exercise.)

   References: Rotary Wing Instrument Guide, UH1FS Operator's Manual,
                 DOD FLIP, FM 1-5, Cassette Number (to be determined)

4. Introduction to Console Operator Duties and Responsibilities

   Objective: To provide the IIP with a briefing on the duties and
                 responsibilities of the console operator.

   References: Console operator briefing, UH1FS Operator's Manual,
                 UH1FS Instructor's Guide

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MODULE TWO: INTRODUCTION TO IN-COCKPIT DEVICE OPERATIONS

Content Areas:

1. Safety Considerations and SOP

    Objective: The IIP will be able to apply safety considerations and
                  SOP during activation of the UH1FS.

    References: Local SOP, UH1FS Operator's Manual

2. Lighting and Ventilation

    Objective: The IIP will be able to activate and control the UH1FS
                  lighting and ventilation systems.

    References: UH1FS Operator's Manual

3. Motion System Interlocks

    Objective: The IIP will be able to describe the function of the
                  motion system interlocks, identify their locations, and
                  activate and deactivate the motion system of the UH1FS
                  from the cockpit.

    References: UH1FS Instructor's Guide, UH1FS Operator's Manual, VTR
                  191-011-0478B

4. Problem Control Panel

    Objective: The IIP will be able to locate the problem control
                  panel; be able to identify, describe the functions of,
                  and activate the following device controls: MOTION,
                  CONTINUE, FREEZE, INSTRUCTOR CALL.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

5. Trainer Status Information Panel

    Objective: The IIP will be able to locate the trainer status
                  panel, and describe its functions.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

6. Practical Exercise

    Objective: To familiarize the IIP with applying SOP, and the loca-
                  tion and functions of the controls identified in areas
                  2-5 above.

    References: UH1FS Instructor's Guide, Local SOP, Cassette Number
                  (to be determined)

7. Gaming Area Map Display

    Objective: The IIP will be able to locate the Gaming Area Display
                 on the cockpit CRT, recognize the cross-country map,
                 approach maps, identify the displayed symbols,
                 recognize map scales, and request map changes from the
                 console operator.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

8. Practical Exercise

    Objective: To familiarize the IIP with the format and type of
                 information shown on the Gaming Area Map Display.

    References: UH1FS Insructor's Guide, Cassette Number (to be
                 determined)

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MODULE THREE: IN-COCKPIT OPERATIONS, CONTINUED

Content Areas:

1. Problem Control Panel

    Objective: The IIP will be able to locate, identify, and describe
                    the function of the following switches and lights:
                    Malfunction, Set Up, In Progress, Advance, Slow, Reset,
                    Auto Co-pilot, and Thumbwheel Selector.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

2. Trainer Status Display (CRT)

    Objective: The IIP will be able to locate the Trainer Status
                    Display area of the CRT, identify the various status
                    groupings, and interpret status symbols.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

3. Auto Co-Pilot

    Objective: The IIP will be able to describe the function of the
                    auto co-pilot, to enable and disable it, and identify
                    typical uses.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

4. Practical Exercise

    Objective: To familiarize the IIP with the use of the auto co-
                    pilot.

    References: UH1FS Instructor's Guide, Cassette Number (to be
                    determined)

5. Parameter Freeze

    Objective: The IIP will be able to identify parameters that can be
                    frozen, access them and identify typical use.

    References: UH1FS Operator's Manual UH1FS Instructors Guide, VTR
                    191-011-0659B

6. Practical Exercise

    Objective: To familiarize the IIP with UH1FS flight characteristics
                    when individual flight parameters are frozen.

    References: UH1FS Instructor's Guide, Cassette Number (to be
                    determined)

7. Malfunctions

   Objective: The IIP will be able to select, activate, and deac-
                tivate malfunctions from the cockpit.

   References: UH1FS Operator's Manual, UH1FS Instructor's Guide,
                UH1H-10 (Emergency Procedures Checklist), Malfunction
                Analysis Chart

8. Practical Exercise

   Objctive: To familiarize the IIP with those simulated aircraft
                malfunctions with which he may be unfamiliar.

   References: UH1FS Instructor's Guide, UH1H-10, Malfunction Analysis
                Chart, Cassette Number (to be determined)

MODULE FOUR: PERFORMANCE ASSESSMENT FEATURES

Content Areas:

1. Visual Error Alerts

    Objective: The IIP will be able to describe the visual error alert
                   system and read the interpret the alert symbols.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide, VTR
                   191-011-652B

2. Audio Alerts

    Objective: The IIP will be able to describe the audio alert system,
                   identify individual alert messages, and be able to
                   enable and disable the alerts in part or in toto.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

3. Coaching Messages

    Objective: The IIP will be able to describe the coaching message
                   system, identify individual messages and message cues,
                   and be able to enable/disable messages in part or in
                   toto.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

4. Ground Track Plots

    Objective: The IIP wil be able to identify the location and direc-
                   tion of travel of the simulated aircraft from the
                   ground track plot, know the parameters of operation,
                   and how to erase and recall plots.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

5. Practical Exercise

    Objective: To familiarize the IIP with the operation of visual and
                   audio alerts, coaching messages, and ground track plots.

    References: UH1FS Instructor's Guide, UH1FS Operator's Manual,
                   Cassette Number (to be determined)

6. Hardcopy Printout

    Objective: The IIP will be able to identify the hardcopy printer,
                   describe its functions, know how to access it, and be
                   familiar with its potential uses.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

MODULE FIVE: RECORD/PLAYBACK FEATURES

Content Areas:

1. Maneuver Record/Playback

    Objective: The IIP will be able to describe the maneuver record/
                   playback system, how to access it, its operational rane
                   and limitations, control, and function, in both real
                   and slow time.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

2. ATC Record/Playback

    Objective: The IIP will be able to identify the system, describe
                   its method of operation (cueing), and know how to
                   access it and its typical uses.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide

3. Practical Exercise

    Objective: To provide the IIP with hands-on experience in using
                   the UH1FS record and playback systems.

    References: UH1FS Instructor's Guide, Cassette Number (to be
                   determined)

MODULE SIX: AUTOMATED TRAINING PROGRAMS

Content Areas:

1. Briefings

    Objective: The IIP will be able to describe automated briefings
                  and know how to access them from the cockpit.

    References: UH1FS Instructor's Guide, Automated Briefing Scenarios

2. Demonstrations

    Objective: The IIP will be able to describe Demo programs, iden-
                  tify content, and select and activate programs from the
                  cockpit.

    References: UH1FS Instructor's Guide, Automated Demonstrations

3. Guided Practice Exercises

    Objective: The IIP will be able to identify exercises involving
                  guided practice, describe them, and select and activate
                  them from the cockpit.

    References: UH1FS Instructor's Guide, Guided Practice Exercises

4. Adaptive Practice Exercises

    Objective: The IIP will be able to identify exercises involving
                  adaptive practice, describe them, and select and acti-
                  vate them from the cockpit.

    References: UH1FS Instructor's Guide, Adaptive Practice Exercises

5. Non-Adaptive Practice Exercises

    Objective: The IIP will be able to identify programs involving non-
                  adaptive practice, describe them, select and activate
                  them, know their function and operation, and be famil-
                  iar with suggested uses.

    References: UH1FS Instructor's Guide, Non-Adaptive Practice
                Exercises

6. Trainee Score Panel

    Objective: The IIP will be able to locate the trainee score panel,
                  know how to turn it on and off, and be able to
                  interpret the numeric display for each automated
                  program.

References: UH1FS Operator's Manual, UH1FS Instructor's Guide

7. Practical Exercise

    Objective: To familiarize the IIP with the contents of automated
                  training demonstrations and exercises by having him fly
                  through a representative sample of them.

    References: UH1FS Instructor's Guide, Automated Training Programs,
                  Cassette Number (to be determined)

8. Automated Checkride

    Objective: The IIP will be able to describe the automated
                  checkride, know how to access the checkride, and know
                  the communications and other IIP requirements during
                  checkride mode operations.

    References: UH1FS Instructor's Guide, Auto Checkride

9. Practical Exercise

    Objective: To familiarize the IIP with the contents of the auto-
                  mated checkride by having him fly the checkride.

    References: UH1FS Instructor's Guide, UH1FS Operator's Manual, AR
                  95-63, DOD FLIP, FM 1-5, FM 1-30, Rotary Wing
                  Instrument Guide, AIMS Part 1 and 3, AR 95-1.

MODULE SEVEN: CONSOLE OPERATIONS

Content Areas:

1. Initial Conditions

    Objective: The IIP will be able to describe initial conditions,
                  identify and interpret them, select and/or identify
                  modifications to them, and now how to request changes
                  from the console operator.

    References: UH1FS Operator's Manula, UH1FS Instructor's Guide, VTR
                  191-011-566B

2. Practical Exercise

    Objective: To familiarize IIP with UH1FS initial condition sets
                  and their modifications by observing console operator
                  manipulation of the system.

    References: UH1FS Instructor's Guide, UH1FS Operator's Manual,
                  Cassette Number (to be determined)

3. GCA Display

    Objective: The IIP will be able to describe the GCA display, know
                  which GCA facilities are available, know operating
                  constraints, and be able to conduct GCA from the con-
                  sole or from the instructor station in the cockpit.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide, ATC
                  Procedures for GCA, TM 1-5, TM 11-2557-29, TM 11-2557-
                  30, PT 5170111 1515A

4. Overhead Panel Display

    Objective: The IIP will be able to identify and interpret the
                  instruments, gauges, and digital readouts on the
                  overhead panel display and select desired cockpits.

    References: UH1FS Operator's Manual, UH1FS Instructor's Guide, FM
                  1-5

5. Practical Exercise

    Objective: To familiarize the IIP with the content of a GCA
                  approach using the information available at the console
                  operator's station, i.e., overhead panel display and
                  GCA display.

    References: Cassette Number (to be determined)

MODUEL EIGHT: ADMINISTRATIVE RECORDS AND FORMS

Content Areas:

1. Records and Forms

    Objective: The IIP will be able to properly prepare and/or
                  complete the following forms as required: Form 1623 or
                  equivalent, DASH 12 and 13, and Grade Slips.

    References: DOD FLIP, TM 38-750, Local SOP

2. Practical Exercise

    Objective: Complete required forms to 100% accuracy.

    References: Local SOP, administrative forms

MODULE NINE: PRACTICE TEACHING

Content Areas:

1. Practical Exercises(s)

    Objective: Conduct one or more diagnostic flights in the UH1FS.

    References: Proficiency Sylabus, UH1FS Instructor's Guide

2. Practical Exercise(s)

    Objective: Conduct one or more Instrument Proficiency Sylabus
                  Training Periods (IFR Cross-Country Flight) from the
                  instructor's station utilizing device features and
                  systems as appropriate.

    References: Proficiency Sylabus, DOD FLIP, UH1FS Instructor's Guide

3. Practical Exercise(s)

    Objective: Conduct one or more proficiency training periods (in
                  two cockpits simultaneously), from the console
                  operator's platform using information available at the
                  console operator's station.

    References: UH1FS Instructor's Guide, DOD FLIP, Proficiency
                  Syllabus

4. Practical Exercise(s)

    Objective: Conduct one or more Initial Issue Syllabus training
                  periods in the UH1FS.

    References: UH1FS Instructor's Guide, Initial Issue Syllabus

5. Practical Exercise(s)

    Objective: Conduct one ore more automated checkrides in the UH1FS.

    References: UH1FS Instructor's Guide, Rotary Wing Instrument Guide,
                  Automated Checkride

APPENDIX D

PRACTICAL EXERCISE MODEL (CASSETTE RECORDING)

This Appendix contains an abbreviated model of the practical exercises listed in the course outline. The model includes the identification of the exercise, the prerequisites for the exercise, the objectives and purpose, the initiating actions required of the IIP (and console operator), and the instructions or directions, i.e., the scenario that would be recorded on the cassette tape. The model is intended to serve as a guide for future course developers who will complete the development of the exercises identified in the course outline.

PRACTICAL EXERCISE: UHlFS Orientation Flight
(Module One – content area 3)

OBJECTIVES:

The IIP will be able to recognize the basic flight characteristics and control responses of the UHlFS and utilize the operational capabilities of the navigation/communication equipment. Specifically in this practical exercise the IP will become familiar with the following while flying in the left seat of UHlFS:

            Aircraft control feel and response
            Navigation radio tuning and indications and communications
                radio tuning
            Location and function of the simulator controls CONTINUE,
                FREEZE and MOTION.

PURPOSE:

The purpose of this orientation flight is to accomplish the objectives stated above by having the IIP fly a relatively short attitude instrument flight utilizing all of the attitude instruments to fly straight and level, perform level turns, straight climbs and descents, climbing and descending turns, and ADF and VOR orientations and tracking exercises. The entire flight is flown in the left seat of the UHlFS.

PREREQUISITES:

The IIP will have read the Instructor's Guide section on Problem Control Panel, specifically the part treating the location and function of the MOTION, FREEZE, and CONTINUE switches. The IIP will have also

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viewed the video tape and consulted the other references given in the course outline for Module One, i.e., local area SOP and UH1FS Operator's Manual.

EQUIPMENT REQUIREMENTS:

    (a) Flight helmet
    (b) FLIP local training area navigation chart
    (c) Cassette player and cassette tape NR 1-3
    (d) UH1FS Instructor's Guide

NOTE:

This scenario is written as if the cassette player were a standard commercially available model with a play, record, rewind, and stop switch. It would be preferable to have the type of player that would stop automatically at the end of each short message and have to be started manually when the instructor was ready for the next message.

It would also be desirable to have a "Y" extension cord, in order to adapt the cassette to play through the pilot's helmet receiver system.

INITIATING ACTIONS:

    (1) The IIP must inform console operator he is going to take an orientation flight in the UH1FS and needs the following initial device conditions:[1]

        (a) An airborne setup (appropriate for the local area) in a training area within range of a VOR, NDB, or ILS localizer. Altitude 3000 feet AGL, 90 kts airspeed, heading optional (any acceptable), WV = 0, WD = 0, TURB LVL = 0, SOUND LVL = 3, and RADIO STATIC 1; (the other flight parameters associated with an airborne setup are acceptable)

        (b) Local communication frequencies for UHF, VHF, FM.

    (2) The IIP will climb the ladder to motion platform walkway and start cassette for first recorded instruction.

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[1] Initial device conditions for each exercise will be needed and should be printed on a card that the IIP can hand to or discuss with the console operator at the beginning of the exercise.

RECORDED INSTRUCTIONS:

(1) Instruction: "This orientation flight in the UH1FS is
     intended to familiarize you with the flight characteristics
     and control responses of the simulator, the navigation and
     communication radios, and the location and function of the
     CONTINUE, FREEZE, and MOTION switches. You should be able to
     follow the recorded instruction without difficulty. If you
     are uncertain of the location of the device controls
     referenced in this exercise, consult your UH1FS Instructor's
     Guide. Check that pilot's door and rear door are closed and
     secure; enter left front door to cockpit and adjust seat;
     secure safety belt and shoulder harness; secure door. Stop
     cassette until these actions are completed, then when ready,
     start cassette again."

(2) Instruction: "Connect helmet to communications jack plug on
     the cord behind your seat; tune UHF, VHF, FM radios to local
     frequencies; stop cassette; when ready to continue start
     cassette again."

(3) Instruction: "The console operator has erected the ladder and
     checked to see if motion area is clear; set co-pilot's (left)
     communications control panel receiver 1, 2, 3, INT, and NAV to
     on; set transmitter switch to 3; call console operator on FM
     (3) using floor switch or cyclic switch and request clearance
     to go on motion, stop cassette; when cleared to go on motion
     start cassette again."

(4) Instruction: "Locate the MOTION switch on lower left hand
     corner of the problem control panel and press it. The motion
     system will now erect to the ready-for-flight position. It
     takes approximately 30 seconds for the system to erect and you
     will feel two bumps as it stabilizes in position. The simula-
     tor will then be ready to fly. Take a few minutes to fami-
     liarize yourself with the instrument panel and the radio
     control console (center pedestal). Also note the position of
     the aircraft switches and controls to insure they are in the
     correct position for flight (e.g., force trim, emergency fuel
     governor, inverter, generator, throttle full open, etc.).
     Stop the cassette until this has been accomplished, then when
     ready, start cassette again.

(5) Instruction: Now that you are ready to fly, tune and identify
     local nav aids on the VOR and NDB, and note directions to sta-
     tions. Stop the cassette while you set radios, then start
     cassette again.

(6) Instruction: Now you have located your position in the
     instrument training area and you should be oriented. Locate
     the CONTINUE switch on the upper left hand corner of the
     problem control panel. When you press it you will have the
     aircraft controls released to your control and you will have
     to fly the simulated aircraft. Note the location of the
     FREEZE switch on the problem control panel. It is the third
     switch down in the second row of switches. If for any reason
     you desire to stop the simulated aircraft, press this switch.
     Now press the CONTINUE switch. Note time.
     Fly the aircraft straight and level and note control feel,
     control response and instrument responses. Then execute
     several standard rate 90° left and right level turns and then
     several 180° level left and right turns. Stop the cassette
     until you are finished with the level turn series, then start
     cassette again for next instruction."

(7) Instruction: "Now that you have a feel for the aircraft, try
     a standard rate climb for 1000 feet and a standard rate
     descent for 1000 feet, again noting control response and
     instrument responses. Also try a left and a right 180°
     climbing and descending turn. Stop the cassette until you
     have finished these maneuvers, then start cassette again."

(8) Instruction: Next, turn to the NDB and home on the beacon for
     approximately 2 minutes and note the number one needle
     response on the RMI, then do the same with the number two
     needle for the VOR station. Stop cassette until you complete
     the VOR/ADF orientation and are again in FREEZE, then start
     cassette again. Press CONTINUE to begin."

(9) Instruction: "This is the end of the orientation flight. You
     should be familiar with the following:

               aircraft contol response;
               nav radio tuning and indications;
               communication radio tuning.

     You should also be familiar with the CONTINUE, FREEZE, and
     MOTION switches on the problem control panel. Now call the
     console operator on the VHF radio and request permission to
     come off motion. When he responds, press the MOTION switch.
     It will take approximately 30 seconds from the time you press
     the switch until the motion platform settles. Log your flight
     on the -12 and -13 in the log book and depart the cockpit.
     If you need more time, you can reschedule and repeat this
     period. If not, your next practical exercise will be on
     cassette number (to be determined)."