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Programmed Instruction from the Instructor's Viewpoint

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PROGRAMMED INSTRUCTION FROM THE

INSTRUCTOR'S VIEWPOINT

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ABSTRACT

PROGRAMMED INSTRUCTION
FROM THE INSTRUCTOR'S VIEWPOINT

SUBMITTED TO
DR. J. REYNOLDS OF THE
DEPARTMENT OF INSTRUCTIONAL MEDIA

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The role of the instructor is, and always will be, a critical one. Until now, though, mediating a course to a self-paced, programmed learning environment frequently has neglected the fact that the instructor will have to alter teaching methods to a great extent in order to cope with the new situation. Further, without a thorough understanding of the role to be played out, the instructor could actually destroy even the best of courses.

This report studies the changeover of United States Air Force technical training course 3ABR25130 Weather Specialist from group-lock step to self-paced programmed learning. A background of both military technical training and the specific course are given as well as a thorough discussion of attitudes expressed by instructors through the use of a seventy-three item open-ended questionnaire.

The effort focuses on attitudes that curriculum designers and administrators must be cognizant of in order to design courses and materials that both student and instructors can live with.

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INTRODUCTION

Training of, and by, the armed forces has always been sensitive to educational innovations--probably as sensitive as the educational community at large. This is due to a variety of factors. First, the objectives of military training are relatively well-defined since the behaviors or skills to be developed have been rather specifically identified. (See Appendix 1.) The range of skills required is more circumscribed than are those of secondary and higher education in the civilian community. Armed forces training has been principally concerned with perceptual-motor and procedural tasks. Additionally, since military training is more directive and less encumbered by formal diploma requirements, the reaction time is reduced for change. A new idea or teaching device can be tried out systematically while still in the embryo stage. Finally, the need for shortening training time and improving quality has increased continually since World War II. The pool of qualified manpower is shrinking, the length of service is short, but the complexity of military systems is increasing at an amazing rate.

Since the climate for innovation is favorable, and the need for maximum efficiency in training crucial, the military services support a substantial effort in educational research both in their own laboratories and through contracts to universities and industry. The Air Force, Army, and Navy all support important programs in educational research.

This research and development has led in pilot training, for instance, to the successful use of flight simulators a decade before their introduction into non-military training. The armed forces have pioneered in the development and exploitation of audio visual aids, and their integration into curriculum is today more advanced than in public education. The overhead projector, for example, now widely available commercially, was developed by the U.S. Navy. The Navy, again, in the area of educational television, conducted experiments in its validity for training and had an operating, experimental television facility in 1951.

All of this innovation, though, has not been for innovation's sake, but rather on a grander scale, in an effort to teach activities to personnel who, although inexperienced in such areas as combat activities, are expected to display a high level of proficiency should the need arise. With upwards of five hundred thousand new enlistees entering the military each year, an immense training problem arises in terms of the limited time available and the continuous need to upgrade the knowledge in the face of technological advance. As prodigious as this may seem at first glance, high training efficiency is getting the job done.

Other factors, then, contribute to this end. Great emphasis is placed on training aids in all branches of the armed forces. The Naval Training Device Center serves all arms of the military with a conservative estimate of six hundred engineers, scientists, educators, and psychologists, and an annual operating budget well in excess of \$65 million.

A second factor contributing to training efficiency is the nature and extent of the texts and supplementary teaching materials. Specially written texts are the rule. They are written by the staff of the course where the materials are to be used or, though rarely, by a central type activity such as the Training Publications Division of Chanute Air Force Base.

The common procedure in the generation of such materials by staff instructors would be to begin with the approved Plan of Instruction (POI). A sample is provided as Appendix 2. From here are derived the behavioral objectives that must be satisfied. With them as an outline, Study Guides and Workbooks are designed to quicken the pace of instruction, eliminating much of the formal note-taking that is required, and providing the student with structured exercises that can be accomplished both in and out of class.

No matter how ingenious and well-conceived training aids and texts may be, their effective use depends on well-trained instructors. Accordingly, all branches of the armed forces offer extensive instructor-training courses. Once out of the formal course, instructors are required to maintain proficiency by attending In-Service Training courses yearly. Courses range in such areas as Academic Counseling, Instructional Systems Development, Test and Measurement, Instructor Supervisor, and Tech Writing.

Personally, I feel a striking characteristic of education within the Air Force, and probably within the other services, is the extent to which emphasis is placed on the quality of the instruction. Training aids are not dependent on an instructor's

ingenuity alone; hundreds of highly qualified specialists devote their entire time to devising them. Textbooks are not standard products--often out-of-date by the time they are published--and are aimed to fit the needs of highly specific situations. They are specially prepared for a particular course, adapted to a definite method, and kept currently updated. Teacher competence is not judged by the number of publications produced, ("Publish or perish" is an unknown phrase to military members) prominent posts acquired, or other status-seeking activities; it is based on the ability to impart knowledge skillfully, effectively, and in the minimum amount of time.

I've eluded earlier to the feature of armed forces training which gives use to, and permits, a special interest in educational innovation. Much of this applies to programmed instruction--an innovation of widespread interest and importance to the entire educational community. There are, however, special conditions that occur in military training that make programmed instruction of particular interest. These conditions can be described under the headings of Personnel and Subject Matter.

Personnel

Personnel problems are two-fold--instructors and students. These are admittedly universal problems, but they assume a proportion in military training which makes programmed instruction especially desirable and useful.

Instructors in the military tend to be subject matter specialists rather than teachers as such. They are drawn from various technical fields and characteristically have little

teacher training. Their competence is restricted to specific technical areas where they are, indeed, experts. This fact, combined with the character of the subject matter and the extremely limited time available, requires a highly organized and structured curriculum. Instruction proceeds according to detailed hour-by-hour lesson plans, lesson plans that are identical for every instructor in that branch.

Instructor teaching loads are heavy even by present day educational standards. Instructors are rotated in and out of teaching assignments so that no stable pool can be maintained. Release from military service, promotions, and enticements from industry all act to augment the problem.

Since one of the effects of programmed instruction is to standardize not only course content but, more important, to standardize the way in which such content is presented, it is obvious that such a technique would prove particularly useful in military training.

Subject Matter

Course content in the military is typically highly technical. With the increased emphasis on mechanization in all branches, technical "know-how" is a prerequisite. Not only must theory be taught and learned, but also considerable skill in operating, maintaining, and trouble-shooting equipment must be acquired. Whether it is sound pedagogy or not, there is a dichotomy between the "nice-to-know" and the "must-know" material. The shortness of time available for classroom instruction, the need in the field for skilled technicians, and the rapid turnover of personnel compel the military to teach the minimum amount

of material that must be learned. Furthermore, the program is accelerated such that the enlisted student is cramming material six hours a day, five days a week. In addition to the heavy classroom load, the student must do homework assignments each evening. It is not unusual for courses to continue in this manner anywhere from six to forty-five weeks. (This time is set apart from an allocated 1½ hours a day for "Special Individual Assistance.")

Because of the lack of instructors, and as a result of the poor preparation many enlistees have received in secondary education, a backlog of students frequently accumulates before there are classes available to admit them. During those weeks when the students are awaiting class assignments, self-automated tutors¹ with pertinent programs could be given as refresher courses. Considering the great heterogeneity of the incoming classes, it is especially important that at the start of a course the enlistee be brought up to a minimally acceptable level for efficient learning to occur. Such programs, of course, require no instructor and they efficiently utilize the student's time.

A kindred problem facing the military is the maintenance of skilled performance on those complex systems that are never activated except in times of national emergency. Some of these systems are so critical that little or no practice is possible, and the only available training is at training centers utilizing expensive and complex simulators. Maintaining highly complex skills over extended periods of time with opportunity for prac-

¹PLATO IV, for instance, which is readily available at Chanute AFB.

tice is at best difficult. It is possible, though, to devise teaching machine programs for maintaining such skills.

Along the same lines, learning and maintaining trouble-shooting skills for systems can be done by programmed instruction. Frequently, the trouble-shooting process is largely an intellectual activity. Conventionally, trouble-shooting is taught to students by an instructor using actual components.

The subject matter of military training, then, since it tends to be concrete and factual, and since it must be presented in highly concentrated form, is particularly suited to programmed instruction.

What follows is the body of a report I submitted while serving as a member of the Training Research Applications Branch team here at Chanute AFB.

"Before 1960 most teaching was instructor-centered, that is, emphasis was placed on the instructor's ability to stand face-to-face with a group and exhibit those qualities that usually denoted a 'good' instructor. But in the early 1960's we began to take advantage of serious studies about the learning process. For example, certain studies indicated that the instructor's personal attributes were not the all-important factors that generate learning. Consequently, the organization and structure of the material along with individual differences among the learners began to play a more specific role. The result was a shift of emphasis which made the instructional process more effective and efficient. The concept is "self-pacing." Because all students cannot be expected to learn a given task in the same amount of time, self-pacing allows for a student to move through the instructional sequence at his or her own pace. Studies indicate that most students are highly motivated to learn if they are allowed to demonstrate personal initiative and drive in establishing their own learning and comprehension speed.

In spite of the fact that self-pacing is probably the purest form of student-centered instruction, instructors still must have their roles analyzed and understood. In order to recognize the role of the self-paced instructor, let's first look at the instructor we've all seen for the most part during our schooling. That teacher stood in front of the class in more or less complete control, while we followed along. Our teacher taught us, analyzed our performance, answered our questions, administered tests, and in many cases, made subjective decisions about our abilities. But now let's look at

the self-paced instructors. Do they teach us? No, not really. Their position is more of monitor--one who moves through the class checking to ensure the students are moving in the right direction and working with students on a one-on-one basis. They set their own pace and follow those instructions set forth by the Programmed Text.

This routine can set the stage for varying degrees of instructor dissatisfaction in self-paced courses, i.e., job routine, high levels of idle time and feelings of diminished effectiveness.

What is necessary is to recognize that the departure of self-paced instruction requires an equally radical departure from traditional lock-step course management."

This report, quite obviously, does not depart from the norm to any great degree. What is surprising, though, is that there is no information available that describes in any way what the role of the self-paced, programmed learning instructor should be. An indication of this is readily available when one views the Air Force's basic instructor course that all prospective instructors must attend. The handbook issued to each student spans 226 pages, with less than one page being devoted to the realm of programmed learning, and none of that from the aspect of the instructor's role.

The basic instructor course is designed to give one the basic ability to go into a classroom and handle a formal lecture, demonstration/performance, or discussion, or, in other words, to maintain control of the classroom and the training situation in general. This, though, does not even bear a stepchild relationship to what is expected of the instructor within the self-paced, programmed learning environment, one where the instructor is now acting in a monitor capacity.

The Air Force has recognized the necessity to employ programmed learning in any feasible area, and does so whenever possible. It has gone to a great deal of trouble to generate a

plethora of material which deals with the systematic approach to the construction of programmed materials, but has not directed any visible effort toward the education of the prospective instructor within the self-paced area.

CHAPTER I

A BACKGROUND OF THE 3ABR25130 WEATHER SPECIALIST COURSE

Since 1971, the Weather Specialist Course at Chanute AFB has devoted part of its instruction to programmed learning. The prime intent was to find a better way to teach the student how to plot weather charts since to do so in a lecture atmosphere was both long and very, very boring. As time progressed, it became more and more evident that there was a certain portion of every class that genuinely liked to plot weather charts, and did so voraciously, while others would rather have had teeth pulled. The instructor staff dreaded the map plotting area because of the high boredom level. It was finally decided that map plotting may well be one place where programmed instruction could fit well into the curriculum, and the map plotting portion was placed in an ISD mode. At the same time, it was realized that a revamping of the remainder of the course was going to be necessary in order to actively employ the time of the students that completed the map area quickly.

We come then to the present day situation as outlined in Appendix 3. What is employed in the Weather Specialist Course is a combination of the stand-up lecture, laboratory work, and self-paced, programmed instruction.

The first thirty-eight academic days are spent dealing with all of the basics of the weather career field. It is done in a

group-lock step situation whereby a portion of material is formally presented by the instructor in lecture form and students are given workbooks in order to reinforce learning through actual performance of the task. After a set portion of time (this is easily visualized in Appendix 2 where each of the pages listed as being ATC Form 133's have instructional guidance outlined on the back) a formal multiple choice test is given. The standard throughout the course is seventy-five per cent for measurement areas which must be attained before a student is allowed to progress on to the next area. The student who fails then appears to be stuck out in left field, but such is not the case. The student who fails an exam is brought back to school in the afternoon (class runs from 0630-1230 Monday through Friday, with extra time from 1400-1530 each day.) This extra time in the training program is called "Special Individual Assistance" and its goal is to bring students up to minimum standards either before or after a test.

Upon returning to the school in the afternoon, the instructor tries to ascertain why the student did poorly on the exam via counseling. This counseling form is then sent through supervisor personnel who verify the results of the counseling as being a reasonable assessment of the student's position and approve the course of action. This usually entails the student coming back in the afternoon for three or four days of extra help before a retest is given in the weak area.

Two points must be kept in mind when considering what is happening in this type of situation. One is that the Air Force does not allow a student the opportunity of progressing in another area before passing the prior test. (Any student, then, in USAF

technical training is always passing!) The second point is given to clear up any misinterpretation insofar as the student we are discussing is still with his or her current class and is getting any and all new material, but is still responsible for the prior area until successful completion of a retest. Once accomplished, the student is removed from the "Probationary Continuation" status and the student returns to a "normal" status.

Should a failure occur the second time in the same material, a "washback" usually takes place. This very simply means that the student is moved to the class that is behind his current class, and he is given all of the material another time from beginning to end while the rest of his new class is receiving it for the first time. This not only provides the student with the additional knowledge needed to pass the test, but also acts as a rest period for the student who up until that point was responsible for two areas of material. Now he is hearing the same presentations again and can relax a bit while getting back in the "swing of things."

If a failure were to occur again, (the third time!) the student would probably be put in for academic disenrollment from the course, whereby a new career field would be found and the student would leave Chanute to pursue technical training in another area. (A beauty part of the weather field is that it is ranked as the second most demanding enlisted career field and, should a student not successfully complete the course, a myriad of fields are still available.)

This, then, is the daily fare doled out for the first thirty-eight academic days, rigorous by most people's standards, but at the same time, providing an excellent basis of knowledge for

a career in weather. Most universities accept this as being worth ten semester hours of undergraduate credit.

This, then, takes us to the beginning of Block III, the map plotting area of the course and the area where programmed instruction is fully employed. The first day is spent introducing the class to a form of instruction that many have never even heard of, much less used. The students are told that they will be responsible to learn how to decode and plot ten weather codes on a map with each code being tested by a Criterion Progress Check. The progress checks, or CPCs, are designed so that a student is required to plot a certain number of weather station reports on a map in a specified period of time with no more than a given number of errors. Once a student starts Block III, he is given the necessary Programmed Texts, maps and Workbooks so that he can learn the codes by himself. (Appendix 4 is the current Programmed Text and Workbook that the student is issued upon arrival to the block.)

As the student is learning the code from the Programmed Text, he is going to a practice map and reinforcing the learning with practice. Once he has learned the code, exercises are plotted and given to the instructor who grades the chart and discusses any weak area with the student. Once all required exercises are done, the student takes the CPC. If he passes, he is given materials for the new code and work is begun immediately in the next type of report. Should the student fail the CPC, the instructor assigns additional plotting exercises to be completed before the CPC is re-administered. This procedure differs slightly from the first two blocks because there is no maximum number of

times that retests can be given.

The only area that is critically studied in the Block III area is the aspect of time. The block is designed to have a twenty-day duration, and the students are rarely viewed as being deficient until they pass the twenty-day mark.²

Assuming that the average class size coming into Block III is about thirty-five, students begin blocking-out on about the tenth day at the rate of roughly four per day. As these groups of students complete the block, they are then placed in four-person groups and sent to Block IV where they receive the last fourteen group-lock step days of the course. This provides an excellent flow of students into the last area because the students are homogeneously grouped by the rate of time that they completed Block III. This is rather important since these last fourteen days tie the first three blocks together in a lab atmosphere.

Until this point, the student has learned the basics of taking a weather observation through the use of workbooks. Little or no time is spent dealing with the actual conditions outside, aside from an occasional example. He then goes into Block III where he learns map-plotting from simulated conditions. Block IV purpose, then, is to provide that necessary transition from the pretend situation of school to the real-life situation of the typical air base weather station. The approach borders on genius

²The course built in a great deal of slack when this twenty day figure was arrived at, as can be readily shown. The instructor writes down on the chalkboard at the start of each day where the student should expect to be if he wants to be done in an "average" amount of time. Following this schedule will "block-out" the student in thirteen days!

yet is extremely straightforward.

The training area is divided up into a number of small weather stations, each designed to give the student a "hands-on" feeling of a real weather station. Each station has an operational teletype machine that the student receives current weather across from all over the world. The instructor fuses together the students knowledge of taking observations by bringing back the learning that took place in the first two blocks while getting the student used to looking at, and analyzing, actual weather, of which the Illinois area has excellent diversities of.

This block of instruction is designed with the thought in mind that the student has demonstrated an understanding of all previous areas, therefore, no tests are administered. Rather, time is spent where time is needed. This aspect of the course (instruction emphasized where needed) is possible thanks to the grouping ability provided by the blocking-out procedure that Block III furnishes them with.

In a nutshell, then, this is an overview of course 3ABR25130, Weather Specialist. If one was to back away from a narrow view of Air Force weather training, he might be shocked to find that weather training is also being done by the Army and Navy with, in some cases, only slight variations. This, then, prompted the Department of Defense to consider the logical integration of all schools under one roof, that roof being at Chanute AFB. What follows is a description of current efforts to bring all of the weather training together with as little duplication of effort as possible.

CHAPTER II

THE ARMY AND NAVY MOVE TO CHANUTE

United States Army instructors arrived at Chanute AFB in the summer of 1976 from Fort Sill, Oklahoma. With them came not only all of their staff, but, naturally, all of their course materials. After a great deal of discussion, it was decided that complete integration of Army and Air Force students would not serve any useful purpose since the two branches of the military dealt with different aspects of weather. What was decided, though, was that the basic background provided by the first twenty academic days of the Air Force course would be of benefit to the Army students, but the next eighteen days of the thirty-eight-day area would not provide useable information. So it was here that a line of demarcation was drawn.

For the Air Force all that was needed was a slight shift in the order that the information was taught and a paperwork transfer of the thirty-eight-day Block I to a twenty-day Block I, and an eighteen day Block II. The Army, after Block I was taught, would take its students out of the consolidated class and instruct the students to its standards. This has been operational now for over a year, with the only pitfall being that a significant portion of the Army students do not learn the material to the same level of achievement as the Air Force students; and the Army doesn't know what it should do to get its people up to standards.

The next phase of weather training integration is probably

the single greatest reason why I am writing this paper. It deals with the arrival of Navy personnel and their concept of weather training.

The Navy has employed programmed instruction in all of its training now for years, and it points proudly to a one per cent elimination rate, whereas the Air Force currently has a thirteen per cent rate. It was this fact that lead Naval staff personnel to insist that the revamped course be designed on the basis of all programmed texts.

Once approval was given by the Air Force, the monumental task of a course re-write was begun. It involved the efforts of one Air Force instructor and twelve Navy instructors. Room was set aside, and the instructors began generating the materials. Three Navy instructors did the actual writing of the programmed materials, while the remainder was scattered throughout the various offices to start drawing together all the efforts.

No formal training was provided to the Navy personnel aside from a much condensed basic instructor course which all were or are enrolled in for the express purpose of becoming accustomed with USAF terminology and form numbers. At the current time, no personnel involved in the rewrite have ever been given any instruction in the proper generation of professional programmed learning materials.³ As it stands at the present time, the Navy is going to use its current materials on the students coming through the course until the consolidation effort is complete and

³Until recently, the Navy has frequently called on private enterprise to design and write programmed texts and related materials, but has dropped such activities as being too extravagant! I, for one, am curious if it wasn't because the Navy used professionally generated materials instead of the amateur versions in such abundance that caused the one per cent elimination rate.

teaching via full programmed instruction is begun in the early fall of 1977.

With the light at the end of the tunnel getting quite bright it would do well for us to analyze what the impact of all of this is going to be on the instructor that will have to make all of these plans work.

CHAPTER III

THE QUESTIONNAIRE--A DISCUSSION

To approach this study, then, I decided that it would be interesting to see how instructors in the Air Force version of the weather course not only perceived their current position as instructors in either Blocks I/II (they are the same people) or Block III, but also how they feel about the prospects of having everyone become instructors in a self-paced environment. To this end I generated a seventy-three item questionnaire (Appendix 5.) It was designed in such a way as to make a statement about a certain subject and ask the person to respond by circling a number from 0 (Very Strongly Disagree) through 9 (Very Strongly Agree.) This Likert-type scale was designed to eliminate any neutral responding by making the mid-point an uncircleable $4\frac{1}{2}$. The sample size was eight in Blocks I/II and nine in Block III. (This constitutes about an eighty per cent rate.)

The questionnaire dealt with a wide diversity of areas including hours, pay, field experience, promotions, quality of supervision, motivation, geographical locale, living conditions, autonomy, and administrative policies. More importantly, though, the questionnaire zeroes in on the attitudes that group-lock step instructors have toward the self-paced environment, and the attitudes that current self-paced instructors have toward their job. The rationale for such a study is, in my opinion, quite strong insofar as it is the instructor that will play a key role

in the media change and its eventual success or failure. For this reason I wanted to see if the instructors who were weaned in front of a classroom were eagerly anticipating the prospects of becoming a "monitor" or whether they would resist any change in their highly autonomous position.

Part I of the questionnaire deals with many areas that show similar results, and for this reason I felt there was a common frame of reference in the two sets of instructors. Number four, for instance, states that there is too much emphasis placed on details and trivia. Blocks I/II scored it 7.75 with Block III rating it at 8.30. Other items, such as their consideration of themselves as effective instructors, were as high as 8.00 and 9.00 respectively between Blocks I/II and Block III.

Some items, though, show distinct differences. "My job is interesting" received an 8.00 from the stand-up instructors, but was down at 5.67 (leaning toward agree, but not strongly) by the self-paced personnel. The self-paced instructor does not feel that instructor duty utilizes and develops his training and experiences well (3.33) while the stand-up instructor feels quite the opposite (8.00.) This relationship, though, is easily explained from the aspect that the instructor in the self-paced area is involved in an area that does not get tested heavily in promotion test, whereas the Blocks I/II personnel have the majority of promotion questions coming directly from their teaching.

An area that showed management failing dealt with numbers twenty-five and thirty-three. Number twenty-five wanted to know if the instructor felt thoroughly familiar with the duties and what was expected of him. Blocks I/II give the statement a

strong 8.50 (feelings run strong that Blocks I/II have one of the finest supervisors possible) while the personnel in Block III (5.00) don't feel strongly positive toward that statement at all. (They, in fact, felt they had one of the poorest supervisors possible.) This feeling is further amplified by number thirty-three which wants to know whether or not the right people recognize a job well done. The respective ratings were 6.50 and 2.67. Block III also tended to believe that its supervisor expected more than its fair share of work. The statement was rated at 5.0 while the Blocks I/II instructors seem satisfied that they are doing no more than their fair share (3.00.)

I feel an interesting area was uncovered when number thirty-five stated, "Within reason, I am free to do my job the way I feel is best." Blocks I/II's responses arrived at a mean of 6.25 indicating that, while not adamant, they did feel a certain freedom about the way they conduct their classes. Block III, on the other hand, felt quite strongly that it did not have this freedom (2.33.) What makes this interesting is that the Air Force places a great many constraints on how the classroom is operated in terms of the group-lock step environment, but does not have any guidance in terms of regulations dealing with the self-paced classroom's operation. Instructors related this back primarily to supervision. Knowing what was expected of them, and not being forced to do more than their share of the work, provided Blocks I/II with a good attitude and a known set of constraints that actually provided freedom. The Block III personnel queried stated that their supervisor constantly changed his mind and was always complaining about their sitting in the back of the room (even though they

were told before that not to move about the classroom.) Another difference is based on the lack of quality control that the Blocks I/II instructors were subjected to. They stated that they received positive reinforcement from their supervisor and that he as supervisor, didn't feel that they should scrutinize and "knit-pick" each other. This gave the instructors one additional reason for doing a good job on their own. Contrast this to Block III personnel being quality controlled by the supervisor and fellow instructors and thus leading to a degree of paranoia. Number thirty-seven deals with the supervisor being good at dealing with people. Blocks I/II scored their boss at 7.25 whereas Block III rated its boss at 3.00.

The last item to be dealt with in Part A indicates that Blocks I/II instructors strongly disagree that their job is overly routine whereas Block III instructors agree (but not strongly) that their job is. The means were 1.75 and 5.50 respectively.

Part B of the questionnaire had as its intent the desire to glean out attitudes dealing with emotions toward self-pacing, be they actual or perceived. Certain areas dealt with blocks of information such as what instructors feel would be the best way to get good teaching results (numbers 45-49.) Since the intent was to have the instructor rank one method over another, results are shown in graph style and comprise Appendixes 6, 7, and 8.

When looking at how the stand-up instructor perceives teaching methods, (Appendix 6) we find he feels that lab instruction (8.00), instructor lectures (7.50), and study guides/workbooks (7.00) far surpass movies (5.25) and programmed texts (4.50.) The programmed text finds itself at the bottom of the list, but

by the same token it is significantly situated at 4.50, the non-committal, or no opinion, point. This, though, can be important in itself since the stand-up instructor was indeed opinionated in terms of the other modes available.

The study guide/workbook and programmed texts tied as the forms of teaching or teaching support that self-paced instructors felt would get them the best results (6.33.) The 4.50 point was not neglected by these instructors either, but now it is occupied by instructor lectures. Lab instruction (4.00) and movies (3.50) both found themselves below 4.50 which indicates that these instructors don't feel either form provides good results.

"As an instructor, I feel the best teaching strategy is..." (Appendix 7) dealt with three approaches: lock-step, group or team paced, and self-paced. The lock-step instructors are sure that their mode (7.50) is the best, followed by a variation in their own methods, i.e., group or team paced at 6.50 and lastly, self-paced well back at 3.00.

Feelings were found to be substantially different from those of the lock-step instructors insofar as self-paced persons felt the best strategy is to group or team pace students (6.67), to self-pace them (5.67), but obviously not to allow them to go lock-step since that was rated at 1.33.

Both groups appear to believe in the team pace concept with almost identical means. The major difference at this point was where the two groups would rate the others mode and, at this point, it wasn't a surprising finding.

Once it was determined how self-paced instruction was rated by the two groups, the logical continuation would be to

affix adjectives to it and see how the two groups responded to them. Graph-wise, this one particular exercise presented what I feel were the most impressive results since the groups were strongly opinionated (Appendix 9).

Six positive adjectives and six negative adjectives were used to describe how the instructors would feel working with self-pacing. Results would tend to indicate that, if all lock-step instructors were to be placed in the self-paced atmosphere, significant morale drops would ensue. The lock-step group imbues self-pacing to embody all of the bad attributes (and in fact, all descriptors fell between 7.00 and 8.50) and none of the good values. (The highest score was captured by exciting which came in at 3.00 through fun at 0.50.)

The self-paced instructors were much more positive about their feelings toward their teaching methodology, rating such feelings as making them proud of themselves at 8.00, enjoyable at 7.33, challenging at 6.67, and so on. They found that two adjectives (boring and exciting) did not really adequately describe self-pacing, and they ended up together at 4.67. Negative descriptors such as confusing (1.00), depersonalizing (2.33), and annoying/depressing (3.00) were all ranked as not adequately describing self-pacing.

There were two areas uncovered where feelings closely matched between the two groups. Both felt that the self-paced materials should be written by the instructors, a feeling I found was grounded in the fact that there is a strong distrust in letting any course materials be as much as inspected by people outside of the branch, much less written. The second point I found was that all of the instructors that I spoke with

felt that self-paced materials were quite easy to write. The other area found to be agreeable to both groups is that they feel that the Instructor Training Program does not prepare one for the role of being a good self-paced instructor.

Knowing that the Air Force does not have an abundance of the material available on the operation (it has none that I can find) I asked the two groups if they felt there was too much and if it was annoying. The self-paced instructors know this isn't true and responded at 1.00. The lock-step instructor appears to be uncertain, but tends to believe that if this is the same as most other Air Force operations, it probably does. Hence, the 5.75 rating.

Abundant examples seem to be available to indicate that lock-step instructors don't have any use for self-pacing, such as number fifty-eight which wants to know if they would feel any lack of effectiveness if they were instructors in a self-paced course. Their response at 8.50 would tend to make one believe that this is true. The self-paced personnel, though not strongly committed to the attitude that there is not a lack of effectiveness, rate the statement at 3.33.

The last area I wanted to tackle was that of how the instructor responds to being made part of what is going on in terms of the changeover in media. It seems that both groups tend to feel that they are in the dark to a degree (Blocks I/II, 6.50; Block III, 5.67) about the change; but, more importantly, the lock-step instructor feels strongly antagonistic toward the new media (8.25) because of his being in the dark about the changeover.

CHAPTER IV

PUTTING IT ALL TOGETHER

Whatever else happens in the Weather Specialist course here at Chanute, one thing is for sure: self-paced, programmed instruction is on its way, and a course that once relied on the instructor to impart all of the necessary information to the students is being replaced with a book. It may not teach the student in exactly the same manner, it may not seem as much fun, but it does get the job done. It gets it done in less time and with an increase in efficiency which is what it's all about.

One could go on and on about the positive aspects of the programmed text and how well studies show it will be positively received by the student populus, but what if a disgruntled instructor staff decides to wage a campaign against programmed texts and all of the positive aspects of self-pacing? It surely cannot be viewed as an absurdity after seeing how the lock-step instructors feel about it from many different standpoints. What has to be done is to wage a campaign aimed directly at the lock-step instructor; the goal to be one of building a strong, positive attitude toward programmed learning.

But let's step back for a moment and take a look at the professional educator, not the military instructor. Even these people, at the "pinnacles" of education seem to be suffering considerable confusion over the function of the teacher in the self-paced environment. As dedicated to the field of education

as they may be, it appears very few would openly welcome programmed learning into their classrooms, supplanting, or worse even, possibly replacing them.

What we in the Air Force have to remember is that we are dealing with the para-professional educator, one whose introduction into the field of education was given via the course schedule listed in Appendix 10. Are we to expect that they will wantonly accept programmed learning without a fuss, or should higher-ups contemplate some form of indoctrination in order to belay any fears in this instructor staff that they could be later considered to be totally worthless? Two points jump out at you once you contemplate it. One is that some introduction is necessary because, two, there is nothing available to do so at the present time.

The reaction of instructors and teachers outside the military atmosphere has become increasingly favorable. They have found programmed instruction, rather than being a threat, is actually an invaluable educational aid which promises to make the instructor's role more interesting and rewarding. It can drastically reduce the amount of routine drill and drudgery that makes up a substantial amount of every instructor's time.

It is also readily pointed out that the teacher who actively participates in the generation of programmed materials will more openly accept the media used. Alice Foley of the New York Teachers Association has written, "I am certain that any teacher who does some programming will be a better teacher when he has finished his work." The implication from that would see that the role of the teacher is one of dynamic participation, of con-

structing units, trying them out, and being part of the developing experience. I, for one, readily accept that position and would, therefore, like to look at the programming here at Chanute to see if such a program is being used, i.e., the classroom instructor being an integral member of the programming team.

The program was undertaken to re-write the Weather Specialist course in early 1977. At that point, a retiring Master Sergeant was tasked with a major portion of the re-write, along with a civilian who has not been involved with classroom instruction for over fifteen years, as well as never having seen a programmed text. This two-man team set out to start the revamping that could be done at that time.

The first obstacle they attacked was that of time. The current course is programmed to run fourteen weeks and two days. The Tech School decided that programmed instruction should cut eight days off of the normal length, therefore, the course redesigners would have to fit that into the picture.⁴ After this time was worked into the number of things they had to keep in mind, they set out to do the actual writing of the course in the style of programmed texts.

There was disagreement as to how often a frame's information should be repeated so that the student could have the material reinforced. It was decided that any reinforcement would prove repetitious and would increase both the size of the books and the

⁴This, in my opinion, has to be one blatant example of the Air Force's helter-skelter approach to programmed instruction since all of the material I have seems to indicate that the only plausible approach is to design the materials and then field test the material to arrive at a workable course length, along with the added benefit of validation having taken place.

amount of time that the student would spend in the booklets.

Later in May it was decided that the material was quite dry and an instructor from the branch was relieved of teaching duties so that pictures and humor could be injected into the material by him. With the retirement of the Master Sergeant soon after, it became necessary to find a replacement, once again drawing on the lock-step instructor staff, effectively causing a short-manning condition to ensue. This person also had no idea of what constituted a good, or even poor, programmed text, but this did not stop the fact that progress (?) kept on. On a number of occasions I can remember this replacement coming up to the offices telling us how this was being cut out of the course, or that another less important area was being substantially increased, causing no small amount of consternation and antagonism among we instructors who would have to "suffer" (if that's a fair descriptor) with what we felt was being totally mutilated on the floor below.

We are now at the point where the materials are being sent off to the printers. No, I haven't forgotten that any new material should undergo a validation effort to get any bugs out, but that would also hold up to program's implementation so this also had to be forestalled.

The point I have been leading up to is a simple one, and John Barlow says on the subject, "I have some real reservations as to the overall profit to the student and to education in instances in which a teacher who has never constructed a program and who does not understand the process involved in them, uses programs for his students that someone else has prepared for him." I will go one step further and question whether or not any objectives can

be legitimately achieved by a staff who uses materials generated by a staff who has no conception of what a good programmed text even looks like! My opinion, quite obviously, is that one cannot just sit down and generate a programmed text just because a set of behavioral objectives is available to be utilized in designing what has to be taught. But this is exactly what is being done. Not only do the instructors have no input to how the material is presented, but they don't even know what material is going to be in the PT's. Somehow I don't find it extremely hard to wonder why the group-lock instructors are antagonistic toward this "panacea" that everyone is heralding the approach of.

Now that we have seen that programmed learning materials here at Chanute are amateuristic attempts at best, one may wonder what is available in order to see that good materials get to the student since Chanute, in spite of itself, does have a desire to see qualified students go into the field.

When it was a recognized fact that self-pacing was to encompass an increasing amount of the instruction within the Air Force in the coming years, Sheppard AFB, another technical training base, was called on to generate an In-Service Training course that was to be dubbed "The Instructor's Role in Self-Paced Learning." The primary role of the course was to fill the gap between the basic instructor course that all instructors have to attend, and the self-paced classroom that some of the instructors would find themselves. The course was designed to span thirty-six hours, to be taught over a three week period. The design that was followed was to get one of the Instructor Training program personnel to run the pilot course, and at the end of two

classes, Chanute was to report back to its Sheppard counterparts on the success of the program. What actually happened was a sham.

As the students for the first class met, they found that the Chanute instructor was to lecture on all topics, and that he not only had never taught in a self-paced environment, but further, told all of the instructors gathered that he would refuse to be placed in a self-paced classroom, and that if those who were there had any brains, they should try to get into lock-step areas. To continue, he felt that there was only about three days worth of material to cover, so the remaining time was allocated as "lab time," time that the instructor could use as he wished, in other words, time off.

This was to continue on through the second class also. At the end of the two-class test period, the ITP department head wrote back to Sheppard AFB telling them that the entire program was "worthless" and that the IST course should be abolished. This recommendation was accepted without reservation and, at the present time, there is no mode of instruction available at Chanute AFB to introduce the prospective instructor to life in the self-paced classroom.

CHAPTER V

CONCLUSION

One of the trends within Air Training Command at this moment is that of Instructional Systems Development (ISD.) The product of such an effort is increasingly that of changing over a course from group-lock step, or team-paced, to the self-paced mode.

If a course is converted to a self-paced mode, one of the fallout benefits should be a net savings of training time. This is not to say that training quality should suffer, but that quality is maintained with the added benefit of reduced training time. For it only stands to reason that a high aptitude student, cut loose from a lock-step program, will usually complete the course in a shorter length of time than programmed. Likewise, a slower student may even complete it in a slightly greater than programmed time. But the end result of the self-paced program should be a net savings of training resources.

With an increasing interest in the area of criterion-referenced testing in technical training, the importance of numerical grades is diminishing. For the concept of criterion testing is to modularize the required performance functions to such an extent that a student can do nothing but demonstrate full competence or no competence in that particular behavior. This procedure would put the grading system on a pass-fail basis. In effect, the present numerical grade system is functionally a pass-

fail mechanism, for no added benefit is gained by an individual if his course average is ninety-five per cent as opposed to a seventy-five per cent. Aside from an honor graduate certificate, the ninety-five per cent student is handled no differently by the personnel system or the gaining command than is the individual with the seventy-five per cent grade.

With the self-pacing mode's latitude in producing differing course completion times, and the pass-fail characteristics of the grading system, a new philosophy toward self-pacing should be emerging. This philosophy implies that the role traditionally played by the numerical grades could be shifted to differentiate students on the basis of their completion time in each block. Therefore, failure would be defined as not reaching minimal passing score, and, more importantly, taking longer than the programme block time before finally progressing to the next block. On the other hand, an excellent student would be defined as having completed each block in the minimal time (say forty per cent to fifty per cent of the programmed length) with a passing score on all measurements. This approach may sound iconoclastic, but I feel it is the logical consequence of the prevailing conditions, and it is the only approach which will maximize the benefits of self-pacing toward economizing training resources as well as maintaining a satisfactory level of training quality.

The departure of self-pacing from the traditional lock-step method of instruction requires an equally radical departure from lock-step course management. This calls for a shifting of emphasis away from grades and toward completion times, but that's not always where it stops.

In terms of the instructors, if any of my findings can be considered representative, the obvious task that looms before the Air Training Command is one of deciding what course of action must be taken in order to ensure that the instructors that are in the self-paced classroom can adequately cope with, and positively project, the self-paced concept. This required action necessary strikes me as quite humorous from the standpoint that such a program was available here at Chanute and was scrapped simply because there was no one who was willing to launch a pilot program and make it work! What is needed is a course that can bring the self-paced course instructors from different parts of the base together in a discussion-type atmosphere, to banter back and forth the various aspects of the teaching and how it is being done in other areas around the base.

Additional subject matter needed to bring that course up to the point where it would have accomplished something would include

1. Analysis of the optimum means of dealing with student questions. Such matters as whether questioning techniques should be employed to answer questions, or whether the instructor should just provide the answer, have caused numerous problems in the past.
2. Analysis of factors causing instructor dissatisfaction in self-paced courses, i.e., job routine, idle time, etc.
3. Consideration of what has a higher priority in self-paced courses--a high grade or an early completion time.
4. Evaluation of whether a student should be expected to progress through a self-paced course to reflect his or her reported aptitude level.

5. Are there sufficient measures being taken to reward the student who completes the course in minimum time? If not, what should be the rewards?

These are proposed as a sample list that, if anything, is quite short, but at least deals with some of the issues that currently confront the instructor staff.

I also feel strongly that the instructors in this class would profit from an exercise that would encompass the individual going back to his block of instruction and prepare a report outlining the function of the block, whether self-pacing is an adequate means of providing the instruction, where the problem areas are, and recommend solutions for the elimination of present and future problems. This would provide the instructor the time to look in-depth into his course of instruction in order to find out what makes it tick and, as an added and probably more important benefit, it would provide those in a capacity to impose change, an excellent form of input from the person that will ultimately decide whether self-pacing has a place and future in the U.S. Air Force.

In closing, I leave the reader with a paragraph from a book that I don't even know the title of. Its origins date back to the time when the possibility of a thesis was but an embryo in my mind, and I felt that this would be the climax and highlight of the point I would try to make on the administrators of a course or institution that I may come in contact with.

"Administrators have long ago learned, often through bitter experience, that new methods are not accepted by faculty and students until they are understood, or in some cases, until it is clear that no one is 'threatened' by them. Certainly the intro-

duction of programmed learning calls for care and consideration. It is most important that everyone concerned--administrators, teachers, and students--be aware of the nature of the new technique, and the future that is contemplated for it.

A hostile staff or student body has often spelled death for a new program even before its inception and before any opportunity for a genuine trial was given."

WEATHER SPECIALIST
AND
WEATHER TECHNICIAN

1. Purpose of this Specialty Training Standard (STS). As prescribed in AFR 8-13, this STS:
 - a. States in column 1 of attachment 1 the tasks, knowledges and study references (SR) necessary for airmen to perform duties in the Weather ladder of the Airman Weather Career Field. These are based on Specialty Descriptions effective 30 April 1975 in AFM 39-1.
 - b. Indicates in columns 2A, 3A, and 4A of attachment 1 the minimum proficiency recommended for each task or knowledge for qualification at the 3, 5, and 7 skill level AFSCs. AFM 50-23 is the authority to change the proficiency level during JPG development when the local requirement is different from the level shown in this STS.
 - c. Shows in columns 2A and 4A of attachment 1 the proficiency attained in course 3ABR25130 (PDS Code AXE) and course 3AAR25170 (PDS Code AXL) described in AFM 50-5. Proficiency codes for the minimum proficiency recommended for the 3 and 7 skill level AFSCs and the proficiency attained in the courses are the same except when dual codes are entered. When dual codes are entered the second code shows the proficiency attained in the course.
 - d. Provides basis for supervisors to plan and conduct individual OJT programs.
 - e. Provides a convenient record of on-the-job training completed when inserted in AF Form 623, "On-the-Job Training Record," and maintained in accordance with AFM 50-23.
 - f. Defines the knowledge requirements covered by Specialty Knowledge Tests in the Weighted Airman Promotion System.
2. Proficiency Code Key. Attachment 1 contains the Proficiency Code Key used to show proficiency level.
3. Career Development Channel of OJT. Satisfactory completion of CDC 25251 is mandatory for personnel training to AFSC 25150. Satisfactory completion of CDC 25170 and fulfillment of management training requirements specified in AFM 50-23 are mandatory for personnel training to AFSC 25170. (See ECI Catalog and Guide, chapter 3, paragraph 3-5, for current CDC identification numbers for ordering purposes.)
4. Study Guidance for Weighted Airman Promotion System (WAPS). Specialty Knowledge Tests (SKTs) for promotion to E-5 are based on 5 skill level knowledge requirements. SKTs for promotion to E-6 and E-7 are based on 7 skill level requirements. SKT questions are based primarily on Career Development Courses (CDCs). However, some questions may be drawn from other references listed in this Specialty Training Standard. The CDCs listed in the index of ECI study reference material for the applicable WAPS testing cycle provide primary study reference material for the WAPS test, and no attachment 2 is required for this STS. The CDCs for SKT study are maintained in the WAPS Study Reference Library. Individual responsibilities are outlined in AFM 35-8, chapter 19, paragraph 19-3g.
5. Recommendations. Report to ATC/TT unsatisfactory performance of individual graduates or inadequacies of this STS. Refer to specific paragraphs of this STS. See AFR 50-38.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

DAVID C. JONES, General, USAF
Chief of Staff

JACK R. BENSON, Colonel, USAF
Director of Administration

1 Attachment
Qualitative Requirements

<i>THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY</i>		
TRAINEE		
NAME	INITIALS <i>(In Writing)</i>	GRADE
ORGANIZATION		
IMMEDIATE SUPERVISOR'S NAME AND INITIALS <i>(In Writing)</i>		
N/I	N/I	
N/I	N/I	

QUALITATIVE REQUIREMENTS

PROFICIENCY CODE KEY		
	SCALE VALUE	DEFINITION: The Individual
TASK PERFORMANCE LEVELS	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. May not meet local demands for speed or accuracy. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. Meets minimum local demands for speed and accuracy. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)
* TASK KNOWLEDGE LEVELS	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step by step procedures for doing the task. (PROCEDURES)
	c	Can explain why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, identify, and resolve problems about the task. (COMPLETE THEORY)
** SUBJECT KNOWLEDGE LEVELS	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can explain relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
- EXPLANATIONS -		
<p>* A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b)</p> <p>** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks.</p> <p>- This mark is used alone instead of a scale value to show that no proficiency training is provided in the course, or that no proficiency is required at this skill level.</p> <p>X This mark is used alone in course columns to show that training is not given due to limitations in resources.</p>		

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
1: Users may annotate lists of SRs to identify current references pending STS revision.									
2: See AFR 0-4 for requisitioning instructions to obtain AWS publications, underlined in this STS.									
3: Task and knowledge statements marked with an asterisk (*) in column 1 indicates training is required by a limited number of personnel and will be given only in Course 3AZR25150-1, Rawinsorde Operations, or OJT.									
4: Additional training for job elements, marked with a double asterisk (**), in column 1, for paragraphs 16 and 17 of this standard, will be given to the very limited number of personnel requiring it and only under the provisions of AFR 50-9 or OJT.									
IRMAN WEATHER LADDER									
a. Mission and organizational structure of AWS SR: AFR 23-1	A			B			B/-		
b. Duties of weather career ladder (251X0) SR: AFM 39-1	A			B			C		
SURFACE OBSERVATIONS									
a. Observe weather elements and operate equipment to make evaluations of: SR: FMH-1; International Cloud Atlas									
(1) Sky condition and cloud forms	2b			3c			4c/-		
(2) Present weather	2b			3c			4c/-		
(3) Visibility and obstructions	2b			3c			4c/-		
(4) Wind	2b			3c			4c/-		
(5) Temperature and humidity	2b			3c			4c/-		
(6) Pressure	2b			3c			4c/-		
(7) Precipitation	2b			3c			4c/-		
b. Operate tactical meteorological equipment to obtain surface weather elements SR: TO 31M3-2TMQ-22-2	-			2b			3c/-		
c. Encode and record data for dissemination SR: FMH-1	2b			3c			4c/-		

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A AFSC/Crs	B Date DJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date DJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC/Crs	B Date DJT Started	C Date Completed & Trainee's Supervisor's Initials
Correct weather observations SR: FMH-1	1b			2b			3c/-		
WEATHER CODES AND PLOTTING									
Decode and plot surface weather codes SR: AWSMs 105-22, 105-24; FMH-1	FMH-2								
(1) Land synoptic	2b			3c			3c/-		
(2) Ship synoptic	2b			3c			3c/-		
(3) Airways	2b			3c			3c/-		
(4) Metar	1b			2b			3c/-		
(5) RAREP	2b			3c			3c/-		
Decode and plot upper air codes SR: AWSMs 105-22, 105-24, 105-17; AWSR 105-17; FMH-4; FMH-6									
(1) Upper wind	2b			3c			3c/-		
(2) Rawinsonde	2b			3c			3c/-		
(3) RECCO	1b			2b			2b/-		
(4) PIREP	2b			3b			4c/3c		
(5) AIREP	a			2b			3b/-		
Encode and record forecast codes for dissemination SR: AWSM 105-24	-			a			3c/2b		
UPPER AIR OBSERVATIONS									
SR: AWSM 105-1; 9WRWR 105-1; FMH-3;	FMH-5								
Observe and compute pressures, densities, temperatures, humidities, and wind velocities from									
(1) Pilot balloons	-			2b			3b/-		
(2) Rawinsonde	-			2b			3b/-		
(3) Dropsonde	-			2b			3b/-		
(4) Rocketsonde	-			2b			3b/-		

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A AFSC/Cs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC/Cs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
Orient and operate upper air meteorological and geophysical equipment Correct weather observations Bucode and record data for dissemination Exercise safety precautions when using compressed gas SR: AFM 127-101 (chap 6, 7)	-			2b			3b/-		
CLIMATOLOGY AND WEATHER DATA FILES Sort and process weather data and charts for posting and display SR: AWSM 105-22; AWSP 50-9 Prepare climatological weather records SR: AWSM 105-3 Climatic controls SR: AFM 51-12; Trewartha, "An Introduction to Climate," McGraw-Hill, 1968; Geiger, "The Climate Near the Ground," Harvard U. Press, 1965 Prepare climatological and objective forecast studies SR: AWSM 105-3; AWSP 105-4 (all vols); AWSTRs 105-19, 211, 235	1a			2b			3c/-		
WEATHER RADAR/SATELLITE EQUIPMENT OPERATION Exercise safety precautions while using weather equipment SR: AFM 127-101 (chap 6, 10) Operate weather radar SR: AWSM 105-8 (vol I); AWSR 105-15; AWSTRs 180, 184, 238, 243; Manual for Weather Radar (part A, B, and C)	-			1a			3c/2b		
(1) Principles of weather radar (2) Take radar observations (3) Interpret radar observations	A			B			C		
	1a			3c			4c/-		
	-			-			4c/3c		

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
6b(4) Encode and record radar observations for dissemination	1b			3c			4c/3c		
Operate weather satellite read-out equipment to obtain satellite sensed data	-			2b			3c/-		
SR: <u>AWSTRs 196, 212</u>									
Analyze and evaluate satellite sensed data	-			-			3c/2b		
SR: <u>AWSTRs 196, 212</u>									
PREVENTIVE MAINTENANCE									
SR: <u>FMR-1</u>									
Perform preventive maintenance on weather instruments and electronic weather equipment	a			2b			3b/-		
Replace charts and graphs on recording equipment	a			2b			3b/-		
Maintain operating logs and maintenance records	a			2b			3c/-		
SR: <u>AWSR 105-2 (vol I)</u>									
COMMUNICATION									
Request centrally prepared data	1a			2b			3c/-		
SR: <u>AWSP 100-5</u>									
Disseminate weather observations, forecasts, and warnings	2b			3c			4c/3c		
SR: <u>AFCSR 105-2; AWSM 105-2 (vol I); AWSRs 105-12, 105-15; FMH-1</u>									
Report communications outages	1a			2b			3c/-		
SR: <u>AWSM 105-2 (vol I)</u>									
Grade facsimile charts	-			2b			3c/-		
SR: <u>AFCSR 105-4</u>									
Survey data requirements	-			2b			3c/		
SR: <u>AWSM 105-2 (vol I)</u>									
Weather communications systems									
SR: <u>AFCSR 105-2; AWSM 105-2 (vol I)</u>									

PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A AFSC/Ces	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC/Ces	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
8f(1) USAF/DCS communications network	A			B			B/-		
(2) Automated weather network (AWN)	A			B			B/-		
(3) Military facsimile networks	A			B			B/-		
WEATHER BRIEFING									
SR: AFM 60-16; AFR 105-4; AWSP 105-5; AWSR 121-4									
1. Prepare briefing materials	-			-			4c/2b		
2. Present weather briefings	-			-			4c/2b		
METEOROLOGICAL MATHEMATICS AND PHYSICS									
1. Compute meteorological and climatological data with WBAN computers, algebra, or elementary trigonometry	1a			2b			3c/2c		
SR: FMH-1; Middlemiss, "College Algebra," McGraw-Hill, 1952; Kells, "Plane and Spherical Trigonometry With Tables," McGraw-Hill, 3rd Ed. 1951									
2. Tabulate weather data	-			2b			3c/2c		
SR: AWSM 105-3									
3. Meteorological physics									
SR: V n der Verve, "College Physics," McGraw-Hill, 1966									
(1) Matter and energy	-			-			C/B		
(2) Systems of measurement	-			-			C/B		
(3) Mechanics	-			-			C/B		
(4) Heat and thermodynamics	-			-			C/B		
METEOROLOGY									
SR: ANSTR 241 (vol I and II); Byers "General Meteorology," McGraw-Hill, 3rd Ed. 1959; Petterssen, "Weather Analysis and Forecasting," vol I and II), McGraw-Hill, 1965									
1. Properties and structure of the atmosphere	A			A			C/B		
2. Classification and identification of airmasses	A			A			C/B		
3. Characteristics and types of fronts and cyclones	A			A			C/B		
4. Causes and properties of winds	A			A			C/B		

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A	B	C	A	B	C	A	B	C
AFSC/Cra	Date OJT Started	Date Completed & Trainee's Supervisor's Initials	AFSC	Date OJT Started	Date Completed & Trainee's Supervisor's Initials	AFSC/Cra	Date OJT Started	Date Completed & Trainee's Supervisor's Initials	
Flight hazard phenomena	A			A			C/B		
Tropical weather characteristics	A			A			C/B		
METEOROLOGICAL WATCH AND FORECASTING									
Analyze surface and upper air charts									
SR: <u>AWSMs 105-22, 105-24, 105-114</u> ; applicable AWS Tech Reports; USWB Forecasters Handbook No. 1									
(1) Nephanalysis	-			-			4d/3c		
(2) LAWC/LASC	-			-			4c/3c		
(3) Constant pressure charts	-			-			4c/2b		
(4) Atmospheric soundings	-			-			4c/2b		
(5) Vertical consistency	-			-			3c/2b		
(6) Streamlines and isotachs	-			-			3c/2b		
Analyze and interpret physical characteristics of the atmosphere	-			-			3c/2b		
SR: <u>AWSTR 241 (vol I and II)</u> ; Byers, "General Meteorology," McGraw-Hill, 3rd Ed. 1959; Petterssen, "Weather Analysis and Forecasting," (vol I and II), McGraw-Hill, 1965									
Locate and interpret meteorological features on central weather facilities products	-			-			4c/2b		
SR: <u>AWSM 105-22, 105-24</u> ; AF WCP 105-1									
Integrate meteorological analysis, centrally prepared products, latest observations, and statistical/empirical aids to provide short-range terminal forecasts, advisories, and warnings	-			-			4c/2b		
SR: <u>AWSMs 105-22, 105-24, 105-39, 105-54, 105-100, 105-124</u> ; applicable AWS Tech Reports; USWB Forecasters Handbook No. 1									
Prepare extended forecasts from centrally prepared products for terminals and routes	-			-			4c/2b		
SR: <u>AWSMs 105-22, 105-24, 105-39, 105-54, 105-100, 105-124</u> ; applicable AWS Tech Reports; AFGWCP 105-1; USWB Forecasters Handbook No. 1									

PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
f. Maintain continuous meteorological watch SR: AFM 60-16; AWSR 105-15	-			-			4c/-		
ADMINISTRATION AND SUPPLY									
a. Prepare correspondence and reports SR: AFM 10-1; AFP 13-2	-			-			3c/-		
b. Maintain and dispose of weather records, technical library, maps and charts, and files SR: AFMs 5-1, 12-20, 12-50; AWSR 50-9	-			2b			3c/-		
c. Draft operating instructions and procedures SR: AFM 5-1; AFP 13-2; AWSP 50-9	-			-			3c/-		
d. Perform unit self-inspection SR: AFR 123-1; MACM 123-1; AWSR 123-1	-			-			3c/-		
e. Develop and supervise an Operational Effectiveness Program (OEP) SR: AWSRs 105-6, 105-38	-			-			3c/-		
f. Process inspection and staff assistance visit reports SR: AFM 10-1; AWSR 123-1	-			-			3c/-		
g. Survey supported organizations for weather data requirements SR: AFR 11-4	-			-			3c/-		
h. Perform liaison between weather unit and other agencies SR: AFR 11-4	-			-			3c/-		
i. Prepare management information system report SR: AWSR 25-1	-			-			3c/-		

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
Post changes to communications and operations manuals <u>SR: AFR 5-31</u>	a			1a			3c/-		
Property accountability and responsibility <u>SR: AFMs 67-1 (part 1, vol I thru IV), 400-12; AFR 67-10; AWS? 50-9</u>	A			B			C/-		
Determine requirements and initiate requests for supplies and equipment <u>SR: AFMs 67-1 (part 1, vol I thru IV), 400-12; AFR 67-10; AWS? 50-9</u>	-			a			3c/-		
Conduct inventories and maintain supply records <u>SR: AFMs 67-1 (part 1, vol I thru IV), 400-12; AFR 67-10; AWS? 50-9</u>	-			1b			3c/-		
SUPERVISION									
a. Schedule and monitor duty assignments <u>SR: AFR 39-6</u>	-			-			3c/-		
b. Evaluate and document performance of subordinates <u>SR: AFM 39-62</u>	-			1a			3c/-		
c. Counsel subordinates <u>SR: AFM 39-62; AFR 39-6</u>	-			1a			3c/-		
d. Construct the job proficiency guide <u>SR: AFM 50-23</u>	-			-			3c/-		
e. Maintain training records <u>SR: AFM 50-23</u>	-			-			3c/-		
f. Conduct on-the-job training <u>SR: AFM 50-23</u>	-			2b			3c/-		
g. Coordinate miscellaneous training with base agencies <u>SR: AWSPs 50-8, 50-9; AWSR 50-5</u>	-			-			3c/-		

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC/Crs	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
b. Conduct training for certification of nonweather personnel SR: <u>AWSP 50-8</u>	-			2b			3c/-		
i. Conduct seminars for qualification training SR: <u>AWSP 50-9; AWSRs 105-6, 105-38</u>	-			2b			3c/-		
j. AF Form 1284, Training Quality Report SR: <u>AWSR 50-15</u>	-			-			B/A		
COMMUNICATIONS SECURITY									
SR: <u>DODR 5200.1; AFRs 205-1, 205-7</u>									
a. Identify information as classified, unclassified, or of possible intelligence value	B			B			C/-		
b. Identify official information as Top Secret, Secret, Confidential, or For Official Use Only	B			B			C/-		
c. Select and recommend mode of transmission dictated by security and expediency required	B			B			C/-		
d. Observe security precautions involved in communications	b			2b			3c/-		
WEATHER DATA PROCESSING									
SR: <u>Text material applicable to computer(s) used and types of programs required</u>									
*a. Edit weather data for electronic data processing	-			2b			3c		
*b. Operate EDPS machines	-			2b			3c		
*c. Prepare punch card and magnetic tape input	-			2b			3c		
*d. Post machine use logs and perform preventive maintenance	-			2b			3c		
*e. Supervise weather personnel engaged in EDP weather systems	-			2b			3c		
*f. Develop and issue routine computer programs	-			2b			3c		
*g. Quality control computer products	-			2b			3c		

TASKS, KNOWLEDGES AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 Skill Level			3. 5 Skill Level			4. 7 Skill Level		
	A	B	C	A	B	C	A	B	C
	AFSC/Crs	Date OJT Started	Date Completed & Trainee's Supervisor's Initials	AFSC	Date OJT Started	Date Completed & Trainee's Supervisor's Initials	AFSC/Crs	Date OJT Started	Date Completed & Trainee's Supervisor's Initials
SPACE ENVIRONMENTAL FORECASTING									
SR: Text material applicable to the specific Space Environmental Forecasting Program required									
a. Obtain, analyze, and evaluate solar and geomagnetic data	-			2b			3c		
b. Provide tailored space environmental support to the user	-			2b			3c		

PLAN OF INSTRUCTION
(Technical Training)

WEATHER SPECIALIST



CHANUTE TECHNICAL TRAINING CENTER

7 July 1976 - Effective 7 July 1976 with class 760707

LIST OF CURRENT PAGES

This POI consists of 67 current pages issued as follows:

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Title.	Original
A.	Original
i.	Original
1 thru 64.	Original

DISTRIBUTION: ATC/TTMS-1, AUL/LSE-1, CCAF/AY-2, MOM-1, TMWTC/W-120, TTOX-2, TTOR-1, TTOR-1, TTE-1.

FOREWORD

1. PURPOSE. This publication is the plan of instruction (POI) when the pages shown on page A are bound into a single document. The POI prescribes the qualitative requirements for Course 3ABR25130, Weather Specialist, in terms of criterion objectives and teaching steps presented by units of instruction and shows duration, correlation with the training standard, and support materials and guidance. When separated into units of instruction, it becomes Part I of the lesson plan. This POI was developed under the provisions of ATCR 50-5, Instructional System Development, and ATCR 52-7, Plans of Instruction and Lesson Plans.
2. COURSE DESIGN/DESCRIPTION. The instructional design for this course is Group/Lock Step and self-paced. The course trains airmen to perform duties prescribed in AFM 39-1 for Weather Specialists, AFSC 25130. Training includes meteorology, observing, recording, encoding and transmitting of weather elements for a surface observation; weather radar; operation of standard weather instruments and communications equipment; and decoding and plotting of both surface and upper air codes upon standard maps and diagrams. In addition, related training is provided on driver education, supplemental military training, troop information program, commander's calls/briefings, etc.
3. TRAINING EQUIPMENT. The number shown in parentheses after equipment listed as Training Equipment under SUPPORT MATERIALS AND GUIDANCE is the planned number of students assigned to each equipment unit.
4. REFERENCES. This plan of instruction is based on SPECIALTY TRAINING STANDARD 251X0, 31 May 1975, and Course Chart 3ABR25130, 1 June 1976.

FOR THE COMMANDER



J. EDWARD LORENZ, Colonel, USAF
Commander, 3360th Technical Training Group

Supersedes Plan of Instruction 3ABR25130, 31 May 1975.
OPR: 3360th Technical Training Group
DISTRIBUTION: Listed on Page A

PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR	COURSE TITLE Weather Specialist
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BLOCK NUMBER I	BLOCK TITLE Basic Weather
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1 COURSE CONTENT	2 TIME
<p>NOTE: Successful completion of measurement tests developed IAW ATCR 52-3 paragraph 5a will satisfy the achievement of objectives in Block I.</p> <p>1. Orientation and Study Techniques</p> <ul style="list-style-type: none"> a. Completion of locator card. b. Diagnostic testing. c. School orientation conducted IAW SR 50-18, attachment 3 outline. d. Privacy act statements. e. Study skills. 	<p>4 (4/0)</p>

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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-SG-101, Orientation
 3ABR25130-H0-101, Reference Materials
 3ABR25130-H0-101A, Community College of the Air Force
 ATCPT 52-11, Study Skills

Training Methods

Discussion (4 hrs)

Instructional Guidance

Issue ATCPT 52-11 for Home Study. Privacy act statements for all student forms available to student to read if he wishes. Observe students closely during class and emphasize safety.

PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR		COURSE TITLE Weather Specialist	
BLOCK NUMBER I	BLOCK TITLE Basic Weather		
1	COURSE CONTENT		2 TIME
	<p>2. Cloud Forms</p> <p style="margin-left: 40px;">a. Define a cloud, identify the average height ranges of the ten basic clouds in the middle latitudes, and state the methods of classifying clouds. STS: 2a(1) Meas: W</p> <p style="margin-left: 40px;">b. Identify each low cloud by classification number or abbreviation from written descriptions. Record mandatory remarks. STS: 2a(1) Meas: W</p> <p style="margin-left: 40px;">c. Identify each middle cloud by classification number or abbreviation from written descriptions. Record mandatory remarks. STS: 2a(1) Meas: W</p> <p style="margin-left: 40px;">d. Identify each high cloud by classification number or abbreviation from written descriptions. STS: 2a(1) Meas: W</p>		<p align="right">14 (14/0) (1) (4) (4) (5)</p>

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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-WB-102, Cloud Forms
 3ABR25130-HO-102 (3ABR25231-HO-103), Clouds

Audio Visual Aids

Slides, "Clouds and Meteors"
 Transparencies, "Clouds"

Training Methods

Discussion (6 hrs)
 Performance (8 hrs)

Instructional Guidance

Show appropriate transparencies and slides to define and to illustrate typical low middle, and high cloud types. Allow each student to make a physical evaluation of actual clouds present outside, when practical, to give students practice in determining cloud forms. Observe students closely and emphasize safety.

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PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR		COURSE TITLE	
		Weather Specialist	
BLOCK NUMBER	BLOCK TITLE		
I	Basic Weather		

1	COURSE CONTENT	2 TIME
	3. Meteorology	19 (19/0)
	a. Identify the divisions and composition of the atmosphere. STS: 11a Meas: W	(2)
	b. Identify three types of heat transfer and select factors that influence the earth's heat balance. STS: 11a Meas: W	(1)
	c. Identify three states of moisture, the results of changes in state, and the effects of saturation. STS: 11a Meas: W	(2)
	d. Identify the characteristics and movement of migratory and semipermanent pressure systems. STS: 11a Meas: W	(2)
	e. Define and identify two adiabatic processes, lapse rate, inversion, and three types of stability. STS: <u>11a</u> Meas: W	(2)
	f. Identify the four forces of windflow and the causes of local winds. STS: <u>11d</u> Meas: W	(3)
	g. Classify an airmass according to given characteristics and source region. STS: 5c, <u>11b</u> Meas: W	(2)
	h. Identify four types of front from given characteristics. STS: <u>5c</u> , <u>11c</u> Meas: W	(2)
	i. Identify three stages of a thunderstorm and the associated weather with each stage. STS: <u>11e</u> Meas: W	(2)
	j. Define monsoon and identify three stages of development of a tropical cyclone. STS: <u>11f</u> Meas: W	(1)

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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-WB-103, Meteorology
 3ABR25130-HO-103A(100), Weather Glossary
 3ABR25130-HO-103, Regional Climatology
 AFM 51-12, Weather for Aircrews

Audio Visual Aids

TFI-5388A, Airmasses and Fronts
 TFI-5388B, Fronts and the Surface Weather Map
 TFI-5388C, Cold Fronts
 TFI-5388D, Warm Fronts
 TFI-5388E, Occlusions
 TFI-5206A, Wind and the Navigator
 TFI-4919, Thunderstorm
 FLC 20/119, Tornado
 TF46-3974, Introduction to Weather

Training Methods

Discussion (19 hrs)

Instructional Guidance

Objective 3a: Lecture on divisions of meteorology, divisions of the atmosphere; percentage of gasses and impurities. Show TF46-3974 as scheduled. Objective 3b: Lecture on types of heat transfer; define insolation. Objective 3c: Lecture on three states of moisture and the results when one state changes to another; define saturation, relative humidity, and dewpoint. Objective 3d: Describe the characteristics and movement of high and low pressure systems. Lecture on the wind flow associated with pressure systems to include Buys-Ballots Law. Objective 3e: Define lapse rates, inversions, the adiabatic process, and types of stability. Objective 3f: Lecture on the four forces affecting wind flow, three types of winds, and the general circulation. Lecture on the local winds, including Chinook and Foehn winds. Show TFI-5206A as scheduled. Objective 3g: Lecture on the characteristics of an airmass and the requirements in terms of moisture, geographical designators, and thermal construction. Show TFI-5388A as scheduled. Discuss the airmasses affecting the North American continent. Objective 3h: Define a front. Lecture on the characteristics of cold, warm, stationary, and occluded fronts. Show TFI-5388B, TFI-5388C, TFI-5388D, and TFI-5388E, as scheduled. Objective 3i: Define the three stages of a thunderstorm and lecture on the elements necessary for their formation. Discuss atmospheric phenomena associated with thunderstorms, including tornadic activity. Show TFI-4919 and FLC 20/119 as scheduled. Objective 3j: Define and locate Tropical Weather to include tropical cyclones and monsoons.

4. Measurement and Critique
 - a. Measurement Test.
 - b. Test Critique.

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PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR		COURSE TITLE	
		Weather Specialist	
BLOCK NUMBER	BLOCK TITLE		
I	Basic Weather		
1	COURSE CONTENT		2 TIME
<p>5. Sky Condition</p> <p>a. From problems of sky conditions and with the aid of the FMH-1, select the appropriate entries for column 3 on AWS Form 10 for encoding and recording sky cover layers using appropriate symbols, assigning reportable height values, and selecting the ceiling layer. STS: 2a(1), 2c Meas: W</p> <p>b. Given sky condition problems, including simulated cloud height equipment readouts, select cloud heights and assign appropriate ceiling classification letter based on method used. STS: 2a(1), 2c Meas: W</p> <p>c. From problems of sky conditions and with the aid of the FMH-1, select the appropriate entries in columns 3 or 13 on AWS Form 10 for variable ceilings, variable sky condition, obscurations aloft, surface based obscurations, and remarks. STS: 2a(1), 2c Meas: W</p>			<p>33 (25/8) (4)</p> <p>(7)</p> <p>(14)</p>

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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-WB-105, Sky Condition and Obscuring Phenomena

3ABR25130-WS-105-111, 203, (105-110), AWS Form 10

FMH-1, Surface Observations

Training Methods

Discussion (15 hrs)

Performance (10 hrs)

CTT Assignment (8 hrs)

Instructional Guidance

Discuss rules governing entries on AWS Form 10. Discuss observation methods and procedures for obtaining height of cloud base. Observe students closely, and emphasize safety.

6. Measurement and Critique

2

a. Measurement Test.

b. Test Critique.

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PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR		COURSE TITLE	
		Weather Specialist	
BLOCK NUMBER	BLOCK TITLE		
I	Basic Weather		
1	COURSE CONTENT		2 TIME

7.	<p>Visibility and Atmospheric Phenomena</p> <p>a. Given problems of visibility conditions and with the aid of the FMH-1, select the prevailing visibility and associated remarks for columns 4 or 13 of AWS Form 10. STS: 2a(3), 2c Meas: W</p> <p>b. Given diagrams of readouts from visibility measuring equipment, select RVR remarks. STS: 2a(3), 2c Meas: W</p> <p>c. Given problems containing atmospheric phenomena, and with the aid of the FMH-1, select the entries for columns 5 or 13 of AWS Form 10. STS: 2a(2), 2c Meas: W</p> <p>d. From examples of precipitation registered on a measuring stick, determine precipitation amounts and select the proper measurements to the nearest .01 inch. STS: 2a(7), 2c, Meas: W</p>	<p>30 (22/8) (12)</p> <p>(1)</p> <p>(8)</p> <p>(1)</p>
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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-WB-107 (3ABR25231-WB-106B), Visibility, Atmospheric Phenomena, and Precipitation

3ABR25130-WS-105-111, 203 (105-110)

FMH-1

Audio Visual Aids

TFR 878, Landing Weather Minimum Investigations

Training Methods

Discussion (9 hrs)

Performance (13 hrs)

CTT Assignment (8 hrs)

Instructional Guidance

Lecture on prevailing, sector, variable, differing level, and runway visual range. Discuss observation methods and order of entry for tornadoes, thunderstorms, precipitation, and obstructions to vision. Show TFR 878 as scheduled. Lecture on procedures for obtaining precipitation measurements. Observe students closely, and emphasize safety.

- 8. Measurement and Critique 2
 - a. Measurement Test
 - b. Test Critique

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PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR		COURSE TITLE	
		Weather Specialist	
BLOCK NUMBER	BLOCK TITLE		
I	Basic Weather		
1	COURSE CONTENT		2 TIME
<p>9. Temperature and Dewpoint</p> <p>a. Given diagrams of the humidity-temperature set indicators, select the indicated temperature and dewpoint to nearest whole degree. STS: 2a(5), 2c Meas: W</p> <p>b. Given diagrams of psychrometers and using psychrometric calculator, determine the temperature and/or dewpoint to the nearest whole degree. STS: 2a(5), 2c Meas: W</p>			<p>8 (6/2) (1)</p> <p>(5)</p>

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PLAN OF INSTRUCTION/LESSON PLAN PART I (Continuation Sheet)

COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-WB-109, 110, 111 (107, 108, 109), Temperature, Wind, and Pressure Data
3ABR25130-WB-105-111, 203 (105-110)
FMH-1

Training Equipment

Psychrometric Calculator ML-429/UM (2)

Training Methods

Discussion (2 hrs)
Demonstration (1 hr)
Performance (3 hrs)
CTT Assignment (2 hrs)

Instructional Guidance

Discuss reading the TMQ-11 indicators. Discuss and demonstrate the correct procedures for ventilating and reading the psychrometer. Discuss and demonstrate the correct procedures for determining the dewpoint on the psychrometric calculator. Stress safety while ventilating the sling psychrometer.

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PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR		COURSE TITLE	
		Weather Specialist	
BLOCK NUMBER	BLOCK TITLE		
I	Basic Weather		
1	COURSE CONTENT		2 TIME

10.	Wind a. From a reproduction of a wind recorder chart with printed wind direction and speed traces, select the wind direction, speed, character, and remarks in columns 9, 10, 11, and 13 of AWS Form 10 at specified times within 10 degrees, 2 knots, and one minute. STS: 2a(4), 2c Meas: W	5
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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-WB-109, 110, 111 (107, 108, 109)

3ABR25130-WS-105-111, 203 (105-110)

FMH-1

Training Methods

Discussion (2 hrs)

Performance (3 hrs)

Instructional Guidance

Discuss reading the wind traces to determine the wind direction, speed, and character. Observe students closely, and emphasize safety.

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PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR		COURSE TITLE	
		Weather Specialist	
BLOCK NUMBER	BLOCK TITLE		
I	Basic Weather		
1	COURSE CONTENT		2 TIME
11. Pressure			25
a. From a diagram of the mercurial barometer scales or aneroid barometer dial compute the station pressure. STS: 2a(6), 2c, 10a Meas: W			(17/8) (6)
b. Given a station pressure and using the pressure reduction computer, correction tables and FMH-1, compute the corresponding altimeter setting to an accuracy of .01 inch. STS: 2a(6), 2c, 10a Meas: W			(3)
c. Given a station pressure and using the pressure reduction computer, correction tables, and FMH-1, compute the corresponding sea level pressure to an accuracy of .2 millibar. STS: 2a(6), 2c, 10a Meas: W			(3)
d. From a reproduction of a pressure trace on the barogram and using the FMH-1, select the appropriate pressure remarks in column 13 of AWS Form 10. STS: 2a(6), 2c Meas: W			(5)

SUPERVISOR APPROVAL OF LESSON PLAN (PART II)

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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-WB-109, 110, 111 (107, 108, 109)

3ABR25130-WS-105-111, 203 (105-110)

FMH-1

Training Equipment

Pressure Reduction Computer CP-402/UM (2)

Mercurial Barometer Vernier Scale Mockup (16)

Training Methods

Discussion (5 hrs)

Demonstration (2 hrs)

Performance (10 hrs)

CTT Assignment (8 hrs)

Instructional Guidance

Discuss procedures for reading mercurial barometers, and demonstrate procedures for computing station pressure, sea level pressure and altimeter setting. Discuss procedures for reading aneroid barometers, and applying corrections to compute station pressure, sea level pressure and altimeter setting. Discuss procedures for determining pressure remarks from the barograph chart. Observe students closely emphasize safety.

12. Measurement and Critique

2

a. Measurement Test

b. Test Critique

PLAN OF INSTRUCTION/LESSON PLAN PART I		
NAME OF INSTRUCTOR		COURSE TITLE Weather Specialist
BLOCK NUMBER II	BLOCK TITLE Observation and Instrumentation	
1	COURSE CONTENT	2 TIME
NOTE: Successful completion of measurement tests developed IAW ATCR 52-3 paragraph 5a will satisfy the achievement of objectives in Block II marked with an asterisk (*).		
1. Weather Equipment Operation Theory		18 (14/4)
*a. Select a correct response to identify the purpose of major component parts and the functions of controls necessary to receive an accurate presentation on the rotating beam ceilometer. STS: 2a(1) Meas: W		(2)
*b. Select a correct response to identify the purpose of component parts of cloud measuring equipment and the procedures for using the clinometer. STS: 2a(1) Meas: W		(2)
*c. Select a correct response to identify the purpose, operation and component parts of visibility measuring equipment. STS: 2a(3) Meas: W		(2)
*d. Select a correct response to identify the operation and purpose of component parts of temperature measuring equipment. STS: 2a(5) Meas: W		(2)
*e. Select a correct response to identify the component parts, their purpose and operation for precipitation equipment. STS: 2a(7) Meas: W		(1)
*f. Select a correct response to identify the operation, function and purpose of component parts and controls for wind measuring equipment. STS: 2a(4) Meas: W		(3)
*g. Select a correct response to identify types of pressure measuring equipment, their purpose, component parts and operation. STS: 2a(6) Meas: W		(2)
SUPERVISOR APPROVAL OF LESSON PLAN (PART II)		
SIGNATURE AND DATE		SIGNATURE AND DATE
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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

FMH-1

Training Equipment

- GMQ-13, Rotating Beam Ceilometer
- ML-119, Clinometer
- ML-121, Ceiling Light
- GMQ-10, Transmissometer
- FMN-1, Runway Visual Range Computer
- ML-24, Sling Psychrometer
- TMQ-11, Temperature Humidity Measuring Set
- ML-17, Rain Gage
- ML-75, Precipitation Measuring Stick
- GMQ-11, Wind Measuring Set
- RO-2, Wind Recorder
- ML-512, Precision Barometer
- ML-102, Aneroid Barometer
- ML-536, Barograph

Training Methods

- Discussion (5.5 hrs)
- Demonstration (3.5 hrs)
- Performance (5 hrs)
- CTT Assignment (4 hrs)

Instructional Guidance

Discuss and demonstrate the operation of the equipment with special emphasis on care and safety. Check students carefully for appropriate entries in workbook. Make daily assignment for next day's lesson.

2. Measurement and Critique.
 - a. Measurement Test
 - b. Test Critique

2

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PLAN OF INSTRUCTION/LESSON PLAN PART I

NAME OF INSTRUCTOR		COURSE TITLE	
		Weather Specialist	
BLOCK NUMBER	BLOCK TITLE		
II	Observation and Instrumentation		
1	COURSE CONTENT		2 TIME
<p>3. Types of Observations</p> <p>Use simulated weather conditions, FMH-1, psychrometric calculator, pressure reduction computer, r-value table and AWS Form 10. To:</p> <p style="margin-left: 40px;">a. Record all elements of three 1-hourly observations with at least 75% accuracy. STS: 2a(1), 2a(2), 2a(3), 2a(4), 2a(5), 2a(6), 2c, 10a Meas: PC</p> <p style="margin-left: 40px;">b. Record all elements of three 3-hourly observations to at least 75% accuracy with additive data counted as twice the weight of any other single element. STS: 2a(1), 2a(2), 2a(3), 2a(4), 2a(5), 2a(6), 2c, 10a Meas: PC</p> <p style="margin-left: 40px;">c. Record all elements of three 6-hourly observations to at least 75% accuracy with additive data counted as twice the weight of any other single element. STS: 2a(1), 2a(2), 2a(3), 2a(4), 2a(5), 2a(6), 2a(7), 2c, 10a Meas: PC</p> <p style="margin-left: 40px;">d. Select type of observation, either R, RS, S or L, and record all elements for at least ten observations to at least 75% accuracy with column 1 counted as twice the weight of any other single element. STS: 2a(1), 2a(2), 2a(3), 2a(4), 2a(5), 2a(6), 2a(7), 2c, 10a Meas: PC</p>			<p>58 (44/14)</p> <p>(8)</p> <p>(9)</p> <p>(12)</p> <p>(15)</p>
SUPERVISOR APPROVAL OF LESSON PLAN (PART II)			
SIGNATURE AND DATE		SIGNATURE AND DATE	
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COURSE CONTENT

SUPPORT MATERIALS AND GUIDANCE

Student Instructional Materials

3ABR25130-WB-203(110), Types of Observations
 3ABR25130-WS-105-111, 203(WS-105-110) AWS Form 10
 FMH-1

Training Equipment

Psychrometric Calculator ML-429/UM (1)
 Pressure Reduction Computer WBAN 54-7-8 (CP-402/UM (2)

Training Methods

Discussion (12 hrs)
 Performance (32 hrs)
 CTT Assignments (14 hrs)

Instructional Guidance

Discuss proper entries on AWS Form 10 for 1, 3, and 6 hourly weather observations. Also, outline criteria for local and special observations. Stress importance for accuracy, representativeness of observation, pressure computations and timeliness observations. Monitor students closely during class and emphasize safety with equipment.

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COURSE CHART

SER R25130	PDS CODE AXE	DATE 1 June 1976
COURSE TITLE Weather Specialist		
PRECEDES COURSE CHART R25130, 24 Mar 75		DEPARTMENT OPR 3360 Tech Tng Gp
SUCCEEDS TRAINING STANDARD 251X0, 31 May 1975		
OPR AND APPROVAL DATE S, 2 Nov 76	CENTER OPR Chanute/TTOXW	COURSE SECURITY CLASSIFICATION UNCLASSIFIED
INSTRUCTIONAL DESIGN Self-Paced	LOCATION OF TRAINING Chanute AFB, IL	TARGET READING GRADE LEVEL 12.0
COURSE LENGTH (<u>72</u> ACADEMIC DAYS)		Hours
Technical Training		550
Classroom/Laboratory (C/L)		432
Complementary Technical Training (CTT)		118
Related Training		26
Standard Traffic Safety, Course I (AFR 50-24)		9
Local Conditions, Course II (AFR 50-24)		1
Commander's Calls/Briefings (AFRs 30-1 and 190-18)		8
End of Course Appointments; Predeparture Safety Briefing (ATCM 127-1)		8
Total		576

REMARKS:
 Students progress through Blocks I and II in eight weeks and through Block IV in two weeks and two days. Block III is self-paced. Exceptionally well qualified students will be permitted to begin work on Block III objectives on a voluntary basis during Blocks I and II.

Effective date: 7 July 1976 with class 760707

TABLE I. MAJOR ITEMS OF EQUIPMENT

Learning Equipment:

typewriters, TT-8/FC Model 19
 Measuring Set AN/GMQ-11
 Direction and Speed Recorder RO-2A
 altimeter ML-512/GM
 aneroid, Precision Aneroid, ML-102 ()
 altimeter ML-563/UM
 hygrometer ML-24
 aneroid barometric Calculator ML-429/UM
 Measuring Set Humidity-Temperature AN/TMQ-11 (V)
 Projecting Light Projector ML-121
 Wind Height Set AN/GMQ-13A
 altimeter Set AN/GMQ-10
 altimeter Set, Runway Visual Range AN/FMN-1
 altimeter Radar AN/FPS-77
 precipitation Measuring Gage ML-17
 altimeter Reduction Computer WEAN 54-7-8 (CP-402/UM)
 altimeter ML-119

NOTE: Include time spent on technical training (TT) (classroom/laboratory (C/L) and complementary technical training (CTT)) and related training (RT). Exclude time spent on individual assistance (remedial instruction). A single entry of time shown for a unit is C/L time. When a double entry is shown, the second entry is CTT time.

HRS PER DAY OF TNG							
	1	2	3	4	5	6	7
1 thru 20	<u>Course Material - UNCLASSIFIED</u>					148 Hours TT	12 Hours (RT)
	BLOCK I - Basic Weather						
	Orientation, Study Techniques (4 hrs); Meteorology (19 hrs); Cloud Forms (14 hrs); Measurement and Critique (2 hrs); Sky Condition (25 hrs); Measurement and Critique (2 hrs); Visibility and Atmospheric Phenomena (22 hrs); Measurement and Critique (2 hrs); Temperature and Dewpoint (6 hrs); Wind (5 hrs); Pressure (17 hrs); Measurement and Critique (2 hrs).						28 Hours CTT
						120 Hours C/L	
21 thru 40 38	<u>Course Material - UNCLASSIFIED</u>					142 158 Hours TT	2 Hours RT
	BLOCK II - Observation and Instrumentation						
	Weather Equipment Operation Theory (14 hrs); Measurement and Critique (2 hrs); Types of Observations (46 hrs); Metar (3 hrs); AWS Mission, Airman Weather Career Field and Supply (3 hrs); Security (COMSEC/OPSEC) (3 hrs); Weather Communications (4 hrs); Measurement and Critique (2 hrs); Teletype Procedures (14 hrs) ; Weather Radar and Observations (29 hrs); Measurement and Critique (2 hrs). (Equipment Hazards and Personnel Safety Integrated With Above Subjects)						34 38 Hours CTT
						120 Hours C/L	
41 39 thru 60 58	<u>Course Material - UNCLASSIFIED</u>					158 Hours TT	2 Hours RT
	BLOCK III - Map Plotting						
	Land Synoptic Code (20 hrs); Ship Synoptic Code (18 hrs); Airways Reports (15 hrs); Rawinsonde Code (28 hrs); Reconnaissance Aircraft Reports (8 hrs); METAR Reports (4 hrs); In-Flight Weather Reports (4 hrs); Pilot Reports (8 hrs); RADAR Reports (12 hrs); Upper Winds (3 hrs).						38 Hours CTT
						120 Hours C/L	
61 59 thru 72	<u>Course Material - UNCLASSIFIED</u>					102 86 Hours TT	10 Hours RT
	BLOCK IV - Weather Station Operation						
	Groups of four students are assigned to a practice Weather Station under instructor supervision. Assigned duties are rotated so that each student performs all duties within the station. Weather Observations, Operation of Meteorological and Communications Equipment, Map Plotting, Processing Weather Data (71 hrs); Graduation (1 hr). 83						18 14 Hours CTT
	(Equipment Hazards and Personnel Safety Integrated With Above Subjects).					84 72 Hours C/L	

Technical Training

Weather Specialist

LAND AND SHIP SYNOPTIC CODES

26 May 1977



3350 TECHNICAL TRAINING WING
3360 Technical Training Group
Chanute Air Force Base, Illinois

DESIGNED FOR ATC COURSE USE
DO NOT USE ON THE JOB

OBJECTIVES

When you have completed this programmed text, you will be able to satisfy the following objectives:

1. Given Synoptic reports WB-301, 302, and Weather Codes Plotting Guide HO-300, 404, decode and plot all data through the 9-indicator group at the rate of 20 stations in 35 minutes with no more than five errors in the ten stations graded.

a. Decode the following elements from Land Synoptic coded reports:

- (1) Block and station identifier.
- (2) Sky condition.
- (3) Windspeed and direction.
- (4) Visibility.
- (5) Present and past weather.
- (6) Sea level and station pressure.
- (7) Temperature and dewpoint.
- (8) Cloud types, amount and heights.
- (9) Barometric change.
- (10) Precipitation.
- (11) Special phenomena.

b. Plot the following decoded data on a weather map according to standard practice and procedures:

- (1) Determine the location of station on map.
- (2) Sky condition.
- (3) Wind direction and speed.
- (4) Visibility.
- (5) Present and past weather.

This supersedes 3ABR25130-PT-301, 302, 11 May 1976.

OPR: 3360 TTG

DISTRIBUTION: X

3360 TTGTC-W - 100; TTVSR - 1

- (6) Sea level pressure.
- (7) Temperature and dewpoint.
- (8) Cloud types, amounts and heights.
- (9) Barometric change.
- (10) Precipitation.
- (11) Special phenomena.

2. Given Ship Synoptic reports WB-301, 302, and Weather Codes Plotting Guide HO-300, 404, decode and plot at the rate of 20 stations in 40 minutes with no more than five errors in the ten stations graded.

a. Decode the following elements from ship synoptic coded reports:

- (1) Location of ship by means of latitude and longitude.
- (2) Sky condition.
- (3) Windspeed and direction.
- (4) Visibility.
- (5) Present and past weather.
- (6) Sea level pressure.
- (7) Temperature and dewpoint.
- (8) Cloud types, amounts and heights.
- (9) Ship speed and direction of movement.
- (10) Barometric change.
- (11) Special phenomena.
- (12) Sea temperature.
- (13) Wave period and height.

b. Plot the following decoded data on a weather map according to standard practice and procedures:

- (1) Determine the location of ship.
- (2) Sky condition.
- (3) Windspeed and direction.

- (4) Visibility.
- (5) Present and past weather.
- (6) Sea level pressure.
- (7) Temperature and dewpoint.
- (8) Cloud types, amounts, and heights.
- (9) Ship speed and direction of movement.
- (10) Barometric change.
- (11) Special phenomena.
- (12) Sea temperature.
- (13) Wave period and height.

INSTRUCTIONS

This text is designed so that you will go through it step by step. Each frame or step offers you a small amount of information. Confirmation for each step is given immediately below the solidi (//////////). You should slide a mask (piece of paper) down the page until the solidi are barely exposed. Read the information and respond as you are directed. Then, slide the mask downward and confirm your response. DO NOT proceed until you have responded correctly. If you require assistance, see your instructor.

To aid you in locating weather stations on the DOD 1-10-3 plotting map, an organized station numbering system is used across the United States. A brief scan of the plotting map reveals to you that most stations are assigned a 3-digit identifier. The first, (hundreds) digit begins with the lower numbers for southern stations and increases to higher numbers for northern stations. Thus, station 200 is south of station 400.

Also, the second (tens) digit begins with lower numbers along the east coast and increases to higher numbers toward the west. Station 450 is located west of station 410.

You will undoubtedly find exceptions to this numbering system. The reason for this is the World Meteorological Organization (WMO) has assigned two block regions to the U.S. A block is simply a list of stations. Hence, the U.S. has two lists of stations (blocks 72 and 74). The numbering system above belongs to block 72 stations. Exceptions to that numbering system belong to the block 74 list.



Study the DOD 1-10-3 plotting map and then answer the following questions on the block 72 numbering system.

1. Station 531 is Rantoul, IL. In what direction from Rantoul would you search for station 340?
2. If Oklahoma City is station 353, in what direction from 353 is station 327?

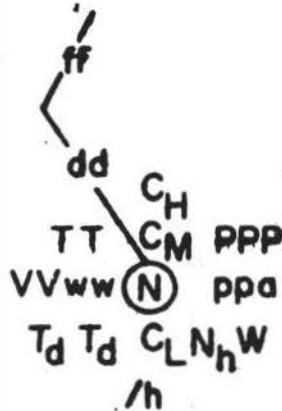


- Answers:
1. Station 340, Little Rock, Ark. is southwest of 531.
 2. Station 327, Nashville, Tenn., is east of 353.



Frame 2

Standard Synoptic Plotting Model:

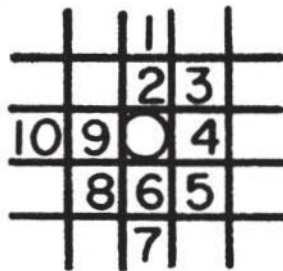


This model shows where the data is to be plotted around the station circle. Each symbol, e.g., TT, C_H, C_M, C_L, PPP, T_dT_d, /h etc., indicates some type of weather phenomena. Determine what each symbol means by using the definitions in Weather Codes Plotting Guide HO-300-404. Also notice the arrangement of the symbolic data around the station, in "Tic-Tac-Toe" fashion.

1. Place a circle around the letters of the statements listed below which are correct.

- a. TT is the dewpoint.
- b. PPP is the station pressure.
- c. N_h is a cloud type.
- d. VV is the visibility.
- e. W is the present weather.

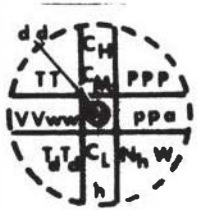
2. Given the diagram:



- a. What weather phenomena goes in symbolic form in position #3?
- b. What weather phenomena goes in symbolic form in position #9?
- c. What weather phenomena goes in symbolic form in position #1?
- d. What weather phenomena goes in symbolic form in position #7?
- e. What weather phenomena goes in symbolic form in position #10?

//////////

Answers: 1. encircle d
 2. a. PPP b. ww, c. C_H, d. /h, e. VV



Note: The dotted lines indicate the approximate size of a nickel; vertical and horizontal lines are guides.

1. You should be able to plot most of the above data under a nickel. Seems rather small, but as you learn to plot you will find this is possible.

2. The two vertical and two horizontal lines indicate the approximate placing of the data with respect to the station circle.

3. All data should be plotted with respect to the latitude and longitude lines on the map.

Select the correct statements from the list below (circle the number).

1. All data should be plotted under the approximate size of a nickel.

2. The vertical lines are shown to give guidance to size of plotting.

3. Data is to be plotted without regard to latitude and longitude.

4. The horizontal and vertical lines are to be used as guides for placement of data around the station circle.

//////////

Answers: 1 and 4

The second coded group actually begins the plotting data. Below, the symbolic example shows data placement and the actual example converts the group 83219 to plotted data.

II111 72531	Nddff 83219
----------------	----------------



SYMBOLIC



ACTUAL

Plotting procedures:

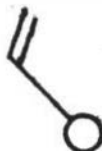
a. The total sky cover, N, is plotted inside the station circle in coded form. An N reported as 8 represents an overcast sky; an overcast is plotted as shown in the example above. The symbol for N is taken from the Weather Codes Plotting Guide Foldout #1. This table is located on the far left of the foldout #1.

b. Wind direction, dd, is plotted at the station circle as a shaft (approximately 3/8" long) oriented to one of the 36 points of the compass with 32 being 320° or northwest as in the example. The dd shows the direction FROM WHICH the wind is blowing. This direction is taken from the wind rose table at the far right of foldout #1.

c. Wind speed, ff, is plotted to the nearest five knots using the symbols explained below. The plotted speed symbols extend clockwise from the direction shaft.

(1) A barb (extending approximately 1/4" long and from the wind direction shaft) represents 10 knots. There may be a maximum of four barbs to one shaft.

Example: For a wind of 19 knots from 320° plot:



(2) One half barb represents 5 knots. There can be only one of these on a direction shaft.

Example: For a wind speed of 5 knots from 210° plot:



Notice the 1/2 barb is not plotted at the end of the shaft.

(3) A pennant (approximately 1/4" long) equals 50 knots. As many of these may be used as is necessary.

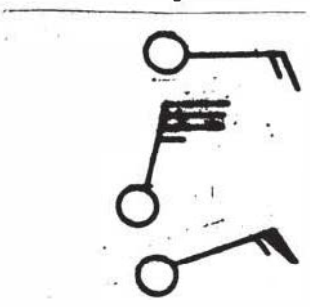
Example: For a wind speed of 50 knots from 90° plot:



d. These three symbols may be combined to plot any wind speed to the nearest five knots. Examples are:

ddff
0914

plot



0333

0857

2564



6305



0000



Note: When wind speed exceeds 100 knots, 50 is added to the coded direction.

e. The one exception is a calm wind, which of course, has no direction and is plotted by encircling the station circle as shown above.

f. When plotting other data around the station circle, keep the plotted data from touching the shaft or barb.

From the plot below, identify those statement(s) which are correct (circle letter).



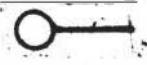


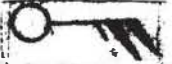
- a. Station call number 531.
- b. The sky is clear.
- c. Wind is from east.
- d. Wind speed is 25 knots.




//////////

Answers: a and d

Particular plotting procedures. Some specific plotting rules are needed to guide your plotting for situations not covered by the general rules. The next few frames discuss particular plotting procedures for the various plotted elements.

1.  sky cover (N) - if missing or garbled, plot "X" through the station circle.
2.  wind direction (dd) - if missing or garbled, estimate directions (from nearby stations) and plot "X" centered on the shaft.
3. Windspeed (ff)
 - a.  reported speeds of 01 and 02, plot shaft only.
 - b.  if missing or garbled, plot "X" at end of shaft.
 - c.  calm reported as 00. Plot a concentric circle around station circle.
 - d.  speeds over 100 knots are coded by adding 50 to direction. To plot, subtract 50 from direction and add 100 to the reported speed.
4. Wind speed and wind direction missing or garbled - make no plot for wind.

Select the correct statement/s from the list below (circle the letter).

- a. If a solidus (/) is received in the coded data for N (sky cover) you would plot an "X" through the station circle.
- b. If you receive "XX" for the coded value of wind direction, you would disregard and plot nothing.
- c. If 02 were received for the wind speed, you would plot. 
- d. A calm wind would not be plotted.

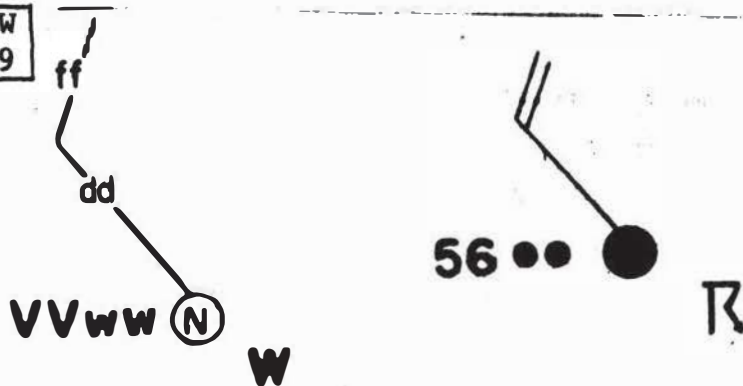
////////////////////

Answers: a, c

II111
72531

Nddff
83219

VVwwW
56619



1. Plot visibility (VV) to the left of the present weather (ww) as reported in the code, always in two digits. (For a coded value of "08" plot "08," or "00" plot "00.")

2. Plot present weather (ww = 04-99) to the immediate left of the station circle as a symbol from the Weather Codes Plotting Guide Foldout #1. The present weather, ww, from the example above can be located in the ww table as follows:

ww = 61

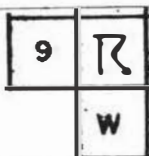
ww										
	0	1	2	3	4	5	6	7	8	9
→	60	•	••	•••	••••	•••••	~	~	*•	*••

3. Present weather 01, 02, 03, are plotted on the station circle on the map. (Do not draw another circle.)

4. If present weather is reported 00, 01, 02, 03, you may move the plotted visibility next to the station circle.

5. Plot the past weather (W) to the lower right of the station circle as a symbol from the Weather Codes Plotting Guide Foldout #1.

W = 9



Determine each of the following statements as true or false.

1. Visibility (VV) is plotted from the breakdown.
2. Present weather (ww) is plotted to immediate left of station circle.
3. Plot past weather (W) to lower right.

4. _____ Visibility is plotted to right of present weather.
 5. _____ If there is no present weather the visibility is moved next to the station circle.
 6. _____ Past weather (W) is plotted as received in the code.

/// //

Answers: 1. False 2. True 3. True 4. False
 5. True 6. False

Frame 8

Particular plotting procedures for visibility and weather.

- a. VV - Visibility - If both digits are missing or garbled, plot "M." If either digit is missing, plot "X" for the missing digit only.

VVwwW

//024 M-O
 //024 XI-O

- b. ww - Present weather.

VVwwW

- (1) ww values of 93, 94, 95 and 97.

15959

15^{o/x}R^o
 R

- (a) Plot both symbols (rain, snow, hail) as indicated on breakdown.

- (b) Plot to the left of station circle as shown in Frame 6.

- c. W - Past weather.

VVwwW

- (1) W value of 3.

15953

15^{o/x}R^o
 S/f

- (a) Plot both symbols as indicated on breakdown.

- (b) Plot to the lower right of station circle as indicated in Frame 6.

- (2) When missing or garbled plot "M."

Listed below is a series of statements; indicate true or false for each.

- a. _____ When both digits for visibility are garbled, plot nothing.
 b. _____ When the digit for past weather is garbled, plot "M."
 c. _____ When ww is 93, 94, 95 or 97, plot to right of station circle.
 d. _____ When W past weather is 3, plot both symbols indicating weather.
 e. _____ When present weather (ww) is 97, you would plot only the rain symbol.

Answers: a. False b. True c. False d. True
 e. False

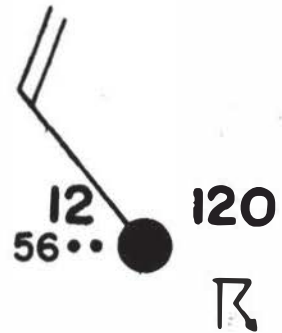
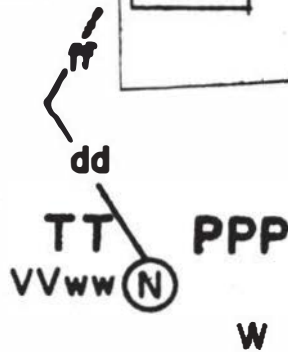
Frame 9

II111
72531

Nddff
83219

VVwwW
56619

PPPTT
12012



1. Plot the sea level pressure (PPP) as reported in millibar units to the upper right of the station circle in three (3) digits.

2. Plot the temperature (TT) as reported in degrees Celsius to the upper left of the station circle.

- a. When the coded temperature is greater than 50, subtract 50 and prefix a minus sign (-).
- b. When the coded temperature is 00-09 or 51-59 drop the first "0" and plot one digit only.
- c. When TT is encoded as 50, plot a zero (0).

Determine each of the statements listed below as true or false.

1. _____ The sea level pressure is plotted to the lower right of the station.
2. _____ The sea level pressure is in millibar units.
3. _____ The temperature is plotted to the upper left of station.
4. _____ The temperature is expressed in degrees Fahrenheit.

Answers: 1. False 2. True 3. True 4. False

Particular plotting procedures for pressure.

Example 1:

PPPTT
///33

33 ○ M

a. PPP - Sea level pressure. When all three digits are missing or garbled, plot "M." Plot "X" for any digit that is missing or garbled.

Example 2:

/0333

33 ○ X03

Particular plotting procedures for temperature.

Example 3:

PPPTT
984//

M ○ 984

b. TT - temperature. When entire element is missing or garbled, plot "M." Plot "X" for any digit that is missing or garbled.

Example 4:

984/7

X7 ○ 984

Identify the following by matching the plots in column 1 with the code groups in column 2.

1. _____

~~X~~ ~~0~~ ~~0~~ ~~0~~

a. 85915 (Nddff)

2. _____

M ○ 000

b. 80000 (Nddff)

3. _____

0000

c. /2/05 (Nddff)

4. _____

○

d. //024 (VVwwW)

5. _____

X100

e. 0/02/ (PPPTT)

6. _____

000

f. /1456 (VVwwW)

7. _____

2X00X0

g. 11201 (N_hC_LhC_MC_H)

h. /5305 (T_dT_dapp)

i. 60905 (Nddff)

Answers: 1. c 2. d 3. a 4. b 5. f 6. i
7. e

Frame 11

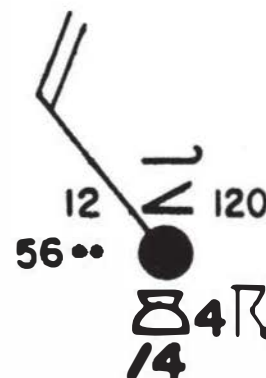
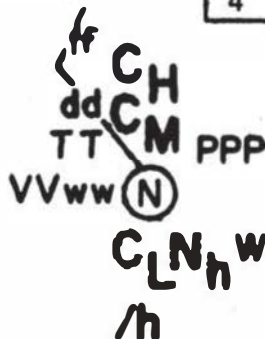
1. At this point try your hand at plotting on a map the elements you have just studied.
2. Using your programmed text, Synoptic Codes Breakdown (foldout 1), a DOD 1-10-3 map, plot from Synoptic Reports Workbook WB-301, 302, exercise 1, page 3.
3. The instructor will check 10 plotted stations to determine your accuracy, placement, size, and orientation.
4. The instructor will return your map so that you will be able to see how you are progressing.
5. DO NOT PROCEED TO THE NEXT FRAME UNTIL YOU ARE TOLD TO DO SO BY YOUR INSTRUCTOR.

INSTRUCTOR'S INITIALS

Frame 12

II111	Nddff	VVwwW	PPPTT
72531	83219	56619	12012

N_h	C_L	h	C_M	C_H
4	9	4	1	1




1. Plot the amount of the lowest cloud (N_h) to the left of W as reported. N_h refers only to low or middle cloud types and is reported in eighths. When $N_h = 9$, the sky is obscured. DO NOT PLOT 9.
2. Plot the low cloud type (C_L) immediately below the station circle and as a symbol from the breakdown.
3. Plot the height of the lowest cloud (h) directly below the low cloud type and prefix the height with a solidus (/).
4. Plot the middle cloud type (C_M) immediately above the station circle and as a symbol from the breakdown.
5. Plot the high cloud type (C_H) immediately above the middle cloud type and as a symbol from the breakdown. If there is no middle cloud type reported ($C_M = 0$), move the C_H down in its place.

6. Always plot all clouds when reported.

N_h	C_L, C_M, C_H	h, N_h
Never plot 0 or 9	Never plot 0 or /	Plot only when C_L or C_M type clouds are present

Using the code breakdown and cloud code group 49411, determine which of the following statements are correct and circle the letter of each such statement.

- The low cloud (C_L) is plotted immediately below the station.
- The height of the low cloud is 4.
- The symbol for low cloud 9 is .
- The middle cloud is plotted below the station circle.
- The amount of the low cloud layer is 4.

////////////////////

Answers: a, b, e

Frame 13

II111
72531

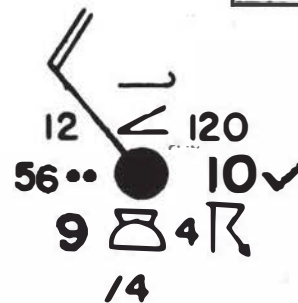
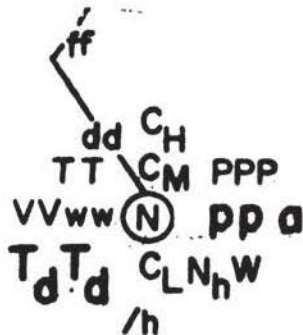
Nddff
83219

VVwwW
56619

PPPTT
12012

$N_h C_L h C_M C_H$
4 9 4 1 1

$T_d T_d app$
0 9310



1. The dewpoint, coded as $T_d T_d$, is plotted to the lower left of the station circle and is decoded in exactly the same way as the temperature (refer to frame 9, page 14). If $T_d T_d$ is missing entirely (//), plot "M." Plot "X" for any digit missing or garbled. (See temperature examples, page 15.)

2. Plot the 3-hour barometric tendency (app) to the right of station as follows:

a. Net 3-hour change (PP) will be plotted as reported to the right of the station circle.

b. Use (a) to obtain the symbol for pressure characteristic from the breakdown that will be plotted to the right of the "pp." The reported value for (a) thus determines the symbol for pressure characteristic.

c. When the 3-hour barometric change requires three digits, 99 is inserted in the place of pp and a 99xxx group follows (i.e., 799 99104), you would then plot 104.

Identify the following elements:

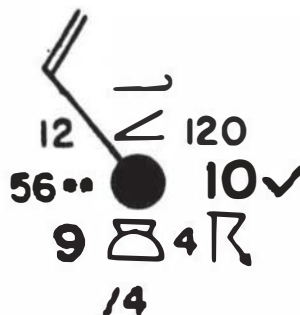
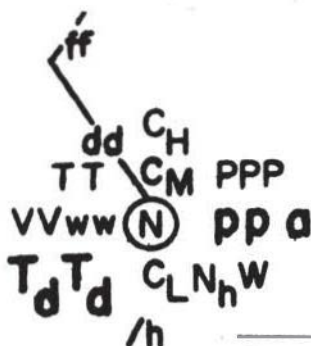
- a. app 1. _____ amount of lowest cloud
- b. $T_d T_d$ 2. _____ plotted to lower left
- c. C_H 3. _____ 3-hour barometric tendency
- d. N_h 4. _____ plotted above middle cloud
- e. h 5. _____ plotted below low cloud

////////////////////

Answers: 1. d 2. b 3. a 4. c 5. e

Frame 14

IIiii	Nddff	VVwwW	PPPTT	$N_h C_L h C_M C_H$	$T_d T_d app$	6P P P P
72531	83219	56619	12012	4 9 4 1 1	0 9310	6 9 9 8 3



1. 6P P P P is the STATION PRESSURE in millibars and tenths. In the example above the 69983 would be decoded as 998.3 mbs. DO NOT PLOT THIS DATA.

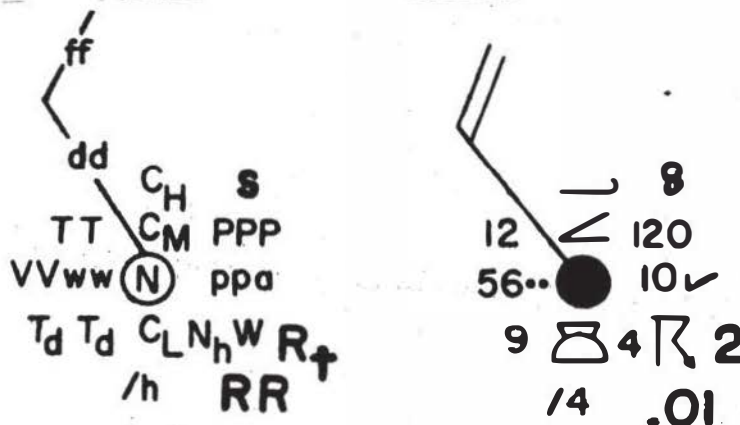
2. The final part of this frame is a self-test. Take it to determine if you have any weaknesses in matching the plotted element to its definition or plotting location.

Below you will find a matching test. Match items in Column 1 with those in Column 2.

- 1. TT 1. _____ Visibility
- 2. PPP 2. _____ Plotted to lower right
- 3. C_M 3. _____ Low cloud type

1. You have completed and had the opportunity to plot the first seven basic synoptic coded groups.
2. The next few frames turn your study to the supplemental synoptic coded groups.
3. 7RRR_ts - Precipitation group.

70128



- a. 7 - Indicator NOT PLOTTED.
- b. Plot the amount of the precipitation (RR) below the past weather (W). Prefix a decimal to show tenths and hundredths.
 - (1) For amounts over 1 inch, the whole inches are reported in plain language immediately following the 7 indicator group. (i.e., 70631 ONE - plot 1.06).
 - (2) When RR is reported as 00, plot T (trace).
- c. Plot the time precipitation began or ended (R_t) as received and to the right of the past weather (W). If R_t = 0, PLOT NOTHING.
- d. Plot the depth of solid precipitation on the ground (s) as received and above the sea level pressure (PPP). When s = 0, PLOT NOTHING.

Below are listed several statements. Select the correct ones by circling the number.

1. R_t represents the time the precipitation began or ended.
2. Coded "figure's" gives the depth of solid precipitation on the ground.
3. RR is plotted in tens and units.
4. There is no way in the synoptic code to show more than one inch of precipitation.

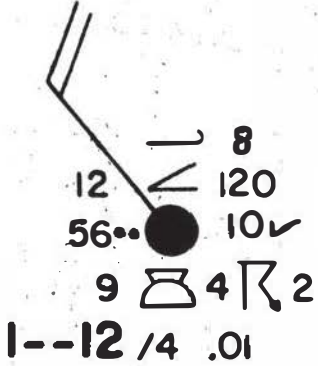
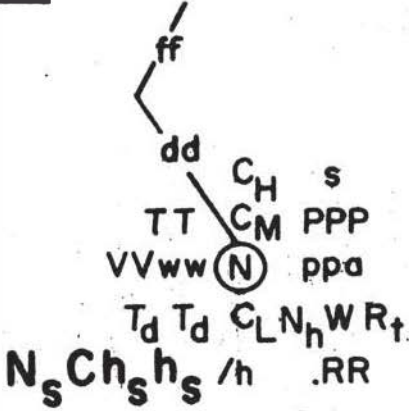
////////////////////////////////////

Answers: Encircle 1 and 2

Frame 17

7RRR_tS
701 28

8N _s Ch _s h _s
81 7 1 2



1. 8N_sCh_sh_s - significant cloud group.
 - a. 8 indicator not plotted.
 - b. N_s - amount of significant cloud, plot as reported.
 - c. C - type of significant cloud from breakdown.
 - d. h_sh_s - height of significant cloud, plot as reported.
 - e. More than one significant cloud may be reported by reporting 8 group for each significant cloud.
 - f. Plot all parts of this group to the left of the /h.
 - g. If more than one significant cloud is reported, plot the highest cloud next to the /h. Plot the others in descending order below the first plot.

Answer the following items as either true or false.

- a. 8 is the indicator for the significant cloud group.
- b. The 8-group is plotted to the right of /h.
- c. The lowest significant cloud is plotted next to station circle.
- d. There can never be more than one significant cloud group.
- e. h_sh_s is the height of the significant cloud.

- f. _____ The type of the significant cloud is indicated in the code as C.

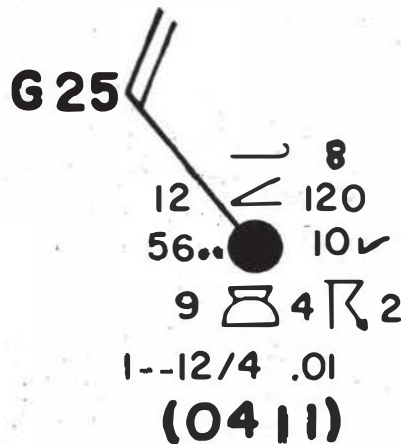
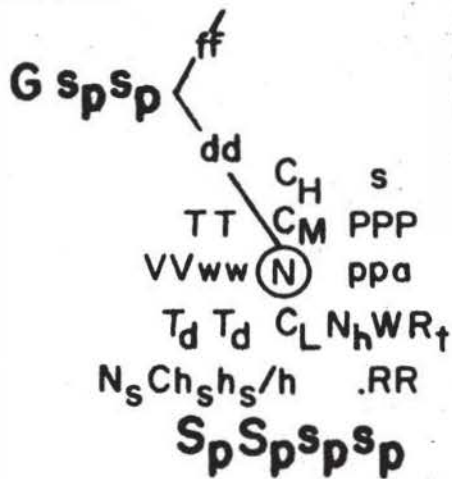
//////////

Answers: a. True b. False c. False d. False
 e. True f. True

Frame 18

1. This frame completes the land synoptic code groups that you plot.

7RRR _t S 70128	8N _s Ch _s h _s 81 7 1 2	9S _p S _p S _p S _p 90411	922s _p s _p 92225	REMARKS
------------------------------	--	---	---	---------



2. 9SpSpspsp - special phenomena group.

- a. 9 indicator not plotted.
- b. S_pS_p - Type of special phenomena coded indicator.
- c. s_ps_p - amount of special phenomena.

3. Plotted in parentheses () below all other data; omit the 9 indicator. When two (2) 9S_pS_pS_pS_p groups are given, plot both, one beneath the other.

4. ONE EXCEPTION - 922s_ps_p - Indicates gusty surface winds and is plotted as a G with the last two digits of the group at the junction of the shaft and barb parallel with all other data.

5. Plain Language Remarks - Plot below all other data as received.

6. Some other groups reported but not plotted are included for your information.

- a. 2R₂₄R₂₄R₂₄R₂₄ Group - 24 Hour Precipitation Amount

Frame 20

1. To gain the speed required in plotting land synoptic codes, exercise 4 will be plotted as a speed run. BEGIN WITH PAGE 13. To complete this exercise successfully, you must plot at least 20 stations in 35 minutes with no more than 5 errors in the 10 stations graded. Before you begin plotting, put your name and your ending time on the chalkboard. Continue plotting until you are told to stop by an instructor. After you have completed plotting the speed run, have an instructor grade your chart.

2. Unless you have questions or would like to have some procedural steps explained, this concludes the programmed text for Land Synoptic Code.

3. DO NOT PROCEED TO THE NEXT FRAME UNTIL YOU ARE PERMITTED TO DO SO BY YOUR INSTRUCTOR.

INSTRUCTOR'S INITIALS

Frame 21

THE REMAINING FRAMES BEGIN INSTRUCTION IN SHIP SYNOPTIC CODE.

A group of ship synoptic code reports are collected under a MANOP heading. A typical heading is explained below.

SMVD KWBC 081200

SM - Synoptic Main (6 hourly observation)

VD - V means mobile (W means stationary)

D means Region IV

A - Region I

B - Region II

C - Region III

D - Region IV

E - Region V

F - Region VI

KWBC - Collecting Station

081200 - Date/time group

Identify the following items:

1. SM _____
2. 081200Z _____
3. KWBC _____
4. V _____
5. D _____

/// //

Answers: 1. Synoptic Main 2. Date/time group 3. Collecting Station
 4. Mobile Ship 5. Region IV

Frame 22

Given below is an example of a complete ship report. In the following frames you will be given information pertaining to each group.

SMVD KWBC 101200

SHIP 99380 70680 10124 83219 56609 12012 49411 00310 81712 92240 05209
 11321 32203 26412

99L _a L _a L _a 99380	Q _c L _o L _o L _o L _o 70680	YYGGI _w 10124	Nddff 83219	VVwwW 56609	PPPTT 12012	N _h C _L hC _M CH 49411	D _s V _s app 00310
---	---	-----------------------------	----------------	----------------	----------------	---	--

1. The 99L_aL_aL_a Q_cL_oL_oL_oL_o groups give the location of the ship.
 - a. 99L_aL_aL_a group
 - (1) 99 is the ship synoptic code indicator - NOT PLOTTED

(2) $L_a L_a L_a$ is the latitude expressed in whole degrees and tenths. NOT PLOTTED (used to locate the ship)

b. $Q_c L_o L_o L_o L_o$

(1) Q_c - Quadrant of the globe - NOT PLOTTED

Code

Figure	Latitude	Longitude
1	North	East
3	South	East
5	South	West
7	North	West ← USED AT SCHOOL

(2) $L_o L_o L_o L_o$ is the longitude expressed in whole degrees and tenths. NOT PLOTTED (Used to locate the ship's position)

Identify the following elements:

(1) $L_o L_o L_o L_o$ _____

(2) 99 _____

(3) Q_c _____

(4) $L_a L_a L_a$ _____

(5) The 99 $L_a L_a L_a$ $Q_c L_o L_o L_o L_o$ groups are used to _____ on the map.

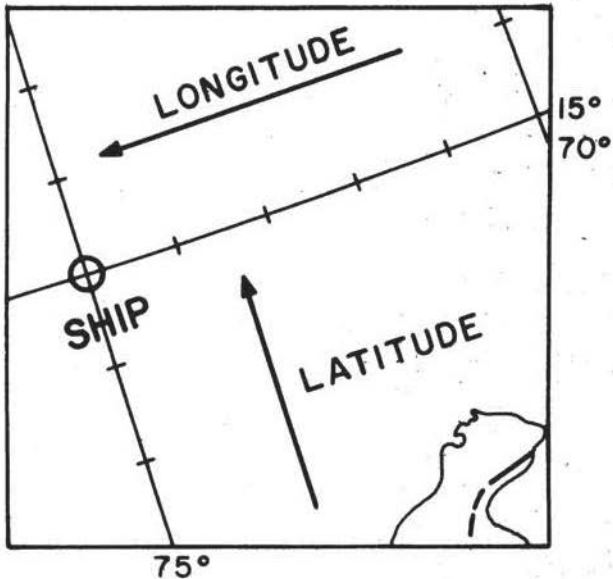
- Answers:
- (1) Longitude in whole degrees and tenths
 - (2) Ship Synoptic follows
 - (3) Quadrant of globe
 - (4) Latitude in degrees and tenths
 - (5) Locate ship's position

Frame 23

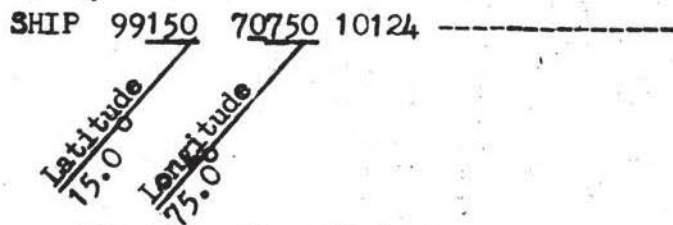
You must be familiar with the earth's grid system for locating positions. North and south of the equator concentric circles, called latitude lines, form equal spacing between the equator and pole. Also, great circles, called longitudes (or meridians), divide east from west at the 0° meridian through Greenwich, England.

On the WPC 1-10-3 map, the latitudes are the curved lines spanning between the left and right edges. The longitudes are straight lines that appear to aim toward a single point off the top of the chart.

Each latitude and longitude intersects at a single point which can be used to locate a ship.



An example of a ship position is plotted to the immediate left. You will take note of how we locate this position using the partial ship synoptic report below. Notice that the ship's name is plotted under the location.



The ship's name will be plotted after and below the complete plotted report; see frame 25, page 29.

Frame 24

Thus far you have been introduced to the first two groups of ship synoptic, mainly 99L_aL_aL_a Q_cL_oL_oL_oL_o. Now consider the next group - YYGGI_w.

99L L L a a a	Q L L L L c o o o o	YYGGI _w	Nddff	VVwwW	PPPTT	N _h C _L hC _M C _H	D V app s s
99380	70680	10124	83219	56609	12012	49411	00310

1. YY - Day of the month - NOT PLOTTED

2. GG - Time

a. A coded value which gives the actual whole hour in Greenwich Mean Time (GMT), that the ship report was completed. That time is based on a 24-hour clock and decoded using the following table:

GG	Meaning
00 to 24	Read directly as the actual completion time (GMT) of the ship report.
30 to 54	Subtract 30 first, and then read as the actual completion time (GMT) of the ship report. The $D_S V_S$ <u>app group</u> will be omitted from the ship report.
60 to 84	Subtract 60 first, and then read as the actual completion time (GMT) of the ship report. The $N_h C_L C_M C_H$ and the $D_S V_S$ <u>app groups</u> both will be omitted from the report.

b. The actual time of the observation has a bearing on the plotting procedures. Compare the difference between the actual observation time and the MANOP time and refer to the table below for action to be taken.

Difference between actual Obs time and MANOP heading time	ACTION TO BE TAKEN
No difference	Time NOT PLOTTED
1 to 6 hour difference	Time plotted just <u>above</u> the ship's name and followed by the letter "Z." (Plot in 2 digits, as 03Z)
Over 6 hours difference	<u>ENTIRE</u> ship report NOT PLOTTED.

3. i_w - Wind indicator - shows how winds are determined - NOT PLOTTED.

Determine which of the following statements are correct: (Circle the letters.)

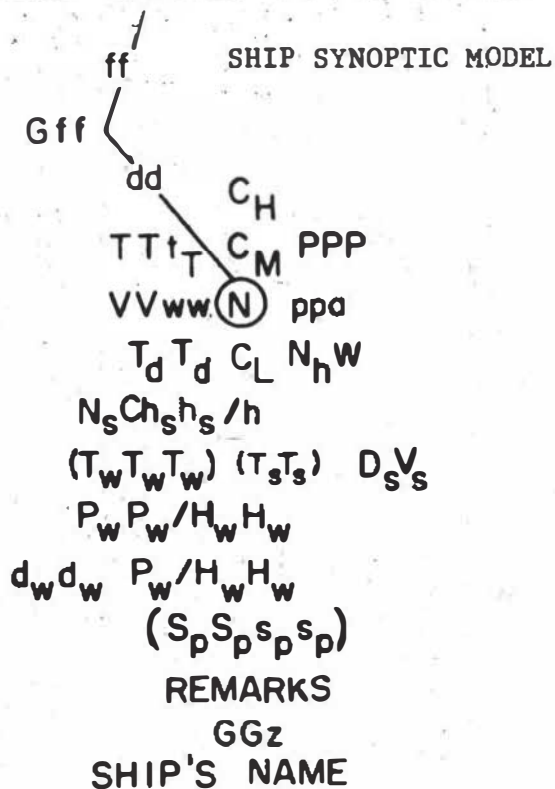
- a. i_w is plotted on wind shaft.
- b. YY is day of month.
- c. GG is local mean time.
- d. When 30 is added to time as in the following group 14423, it means there is no $D_s V_s$ app group.
- e. If the time GG is 5 hours different from the time in MANOP heading it must be plotted.

////////////////////

Answers: b, d, e

Frame 25

You have just completed the first three groups of Ship Synoptic Code. Before continuing with frame 25, turn to Exercise 5 in WB. 301, 302 and complete this exercise according to the procedures listed at top of page.



Each element indicates some type of weather phenomena, many of which you already know and have plotted.

Let us review some of the elements from the basic model:

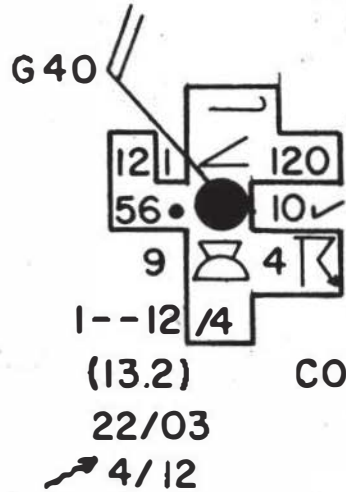
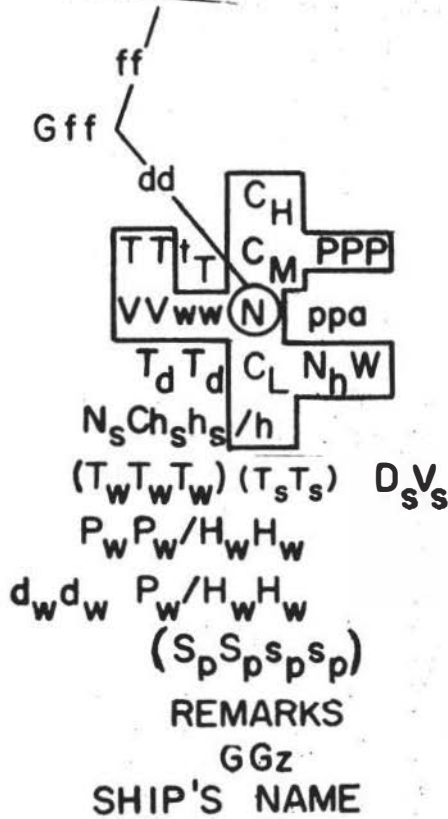
a. Identify each of the following:

- | | |
|--------------------------|---|
| (1) TT _____ | (6) T _d T _d _____ |
| (2) PPP _____ | (7) ddff _____ |
| (3) N _h _____ | (8) W _____ |
| (4) VV _____ | (9) C _L _____ |
| (5) ww _____ | (10) /h _____ |

//////////

- Answers:
- | | |
|----------------------------|------------------------------|
| (1) temperature | (6) dewpoint |
| (2) sea level pressure | (7) wind direction and speed |
| (3) amount of lowest cloud | (8) past weather |
| (4) visibility | (9) low cloud type |
| (5) present weather | (10) height of lowest cloud |

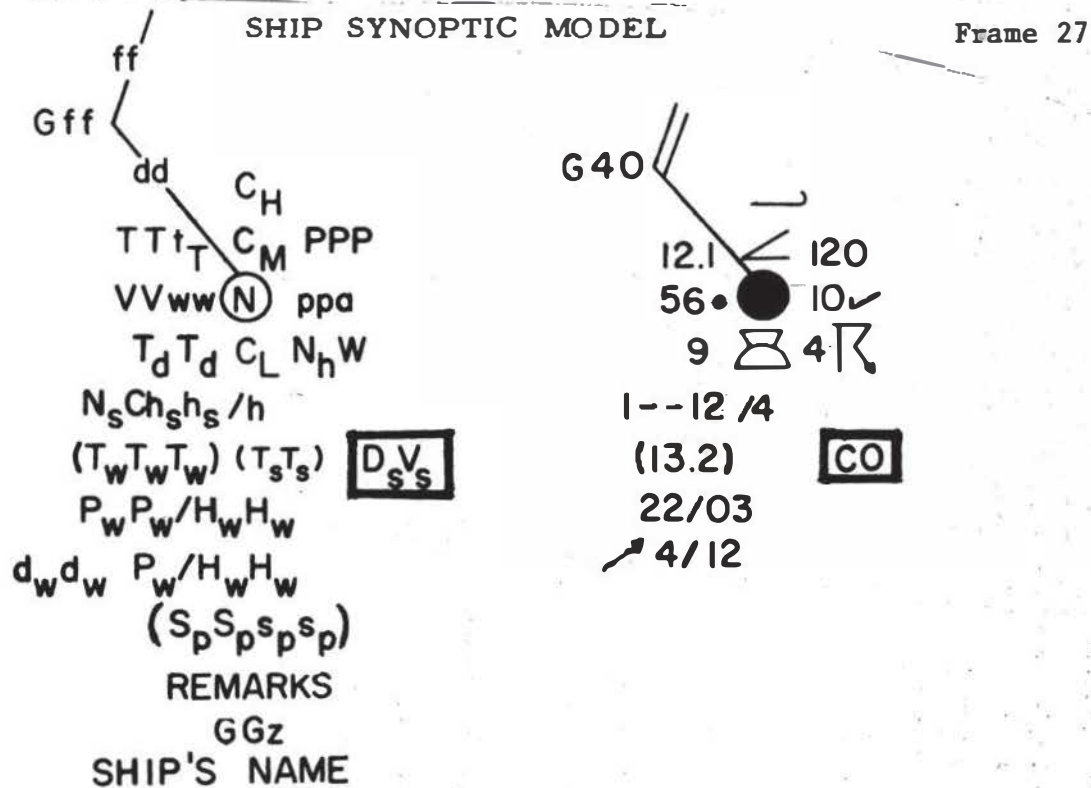
Frame 26



99L _a L _a L _a	Q L L L L	YYGGI _w	Nddff	VVwwW	PPPTT	N _h C _L hC _M C _H	D _B V _B app
99380	70680	10124	83219	56609	12012	49411	00310

1. You will remember that these are the basic synoptic groups that you have already decoded and plotted in the Land Synoptic Area. Therefore, there will be no further instruction because they are plotted in the usual manner and place in the synoptic ship model.

2. From this point there are changes in position of some of the elements in the code. There are also some new supplemental groups. (The $8N_sCh_s h_s$ and $9S_p S_p s_p s_p$ groups may also be reported in the ship synoptic code.)



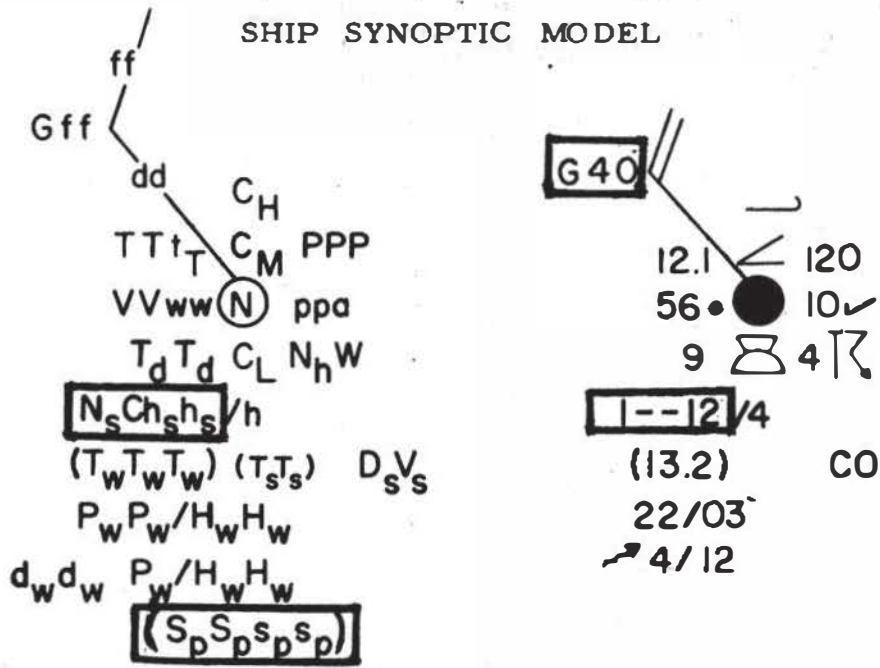
$19L_a L_a L_a$	$Q_c L_o L_o L_o L_o$	YYGGI _w	Nddff	VVwwW	PPPTT	$N_h C_L h C_M C_H$	$D_s V_s app$
99380	70680	10124	83219	56609	12012	49411	00310

$D_s V_s app$

D_s - Direction towards which ship is moving

- (1) Plotted as an arrow.
- (2) Use Column D_s on breakdown #1.
- (3) Plot to the lower right of the /h.

SHIP SYNOPTIC MODEL



REMARKS

GGz

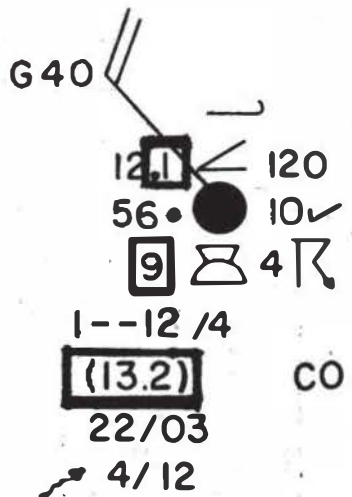
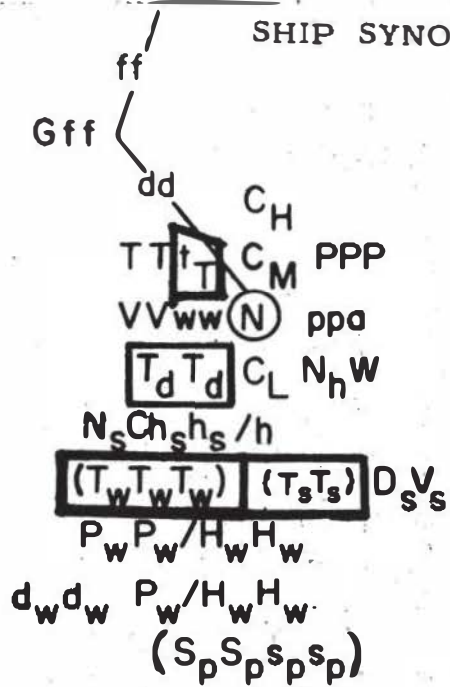
SHIP'S NAME

8N Ch h s s s	9S S s s p p p p	OT T T T d s s d d	1T T T t w w w T	3P P H R w w w w	d d P H H w w w w
81712	92240	05209	11321	32203	26412

8N Ch h 9S S s s
s s s p p p p

1. 8N Ch h - Significant cloud code group.
 - a. Plot as in land synoptic.
 - b. If reported, plot according to breakdown.
2. 9S S s s - Special phenomena.
 - a. Plot as in land synoptic.
 - b. If reported, plot according to breakdown.

SHIP SYNOPTIC MODEL



REMARKS
GGz
SHIP'S NAME

8N _s Ch _s h _s	9S _p S _p s _p s _p	0T _s T _s T _d T _d	1T _w T _w T _w t _T	3P _w P _w H _w H _w	d d P _w H _w H _w H _w
81712	92240	05209	11321	32203	26412

0T_s T_s T_d T_d 1T_w T_w T_w t_T

1. 0 - Indicator NOT PLOTTED
- 1 - Indicator NOT PLOTTED
2. T_dT_d - Dewpoint - plotted as received and directly below the VVww. (Same as in land synoptic).
3. T_wT_wT_w - Temperature of the sea - plotted as reported in whole degrees and tenths of a degree (Celsius).
 - a. Plotted in parentheses () as received, with a decimal point between the second and third "T_w." Ex. (13.2).
 - b. Plot is centered below the dewpoint (T_dT_d) when there is no 8 indicator group. If an 8 group is sent, then plot T_wT_wT_w immediately below it.
4. t_T - Tenths value of the free air temperature (TT) - Plotted to the right of the temperature with a decimal. When the 1 indicator group is not reported, the temperature value (TT) is left as plotted. When the t_T is reported as a "0", i.e., 1///0, plot it as a 0. When the t_T is reported as a "/", i.e., 1////, plot as a "X".

5. $T_s T_s$ - Air and Sea Temperature difference. Reported in half degrees Celsius. NOT PLOTTED unless the "1" indicator group is not reported (missing), or is reported with the $T_w T_w T_w$ value as missing, ie., 1///4.

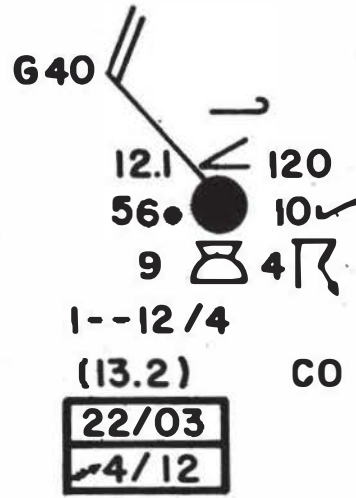
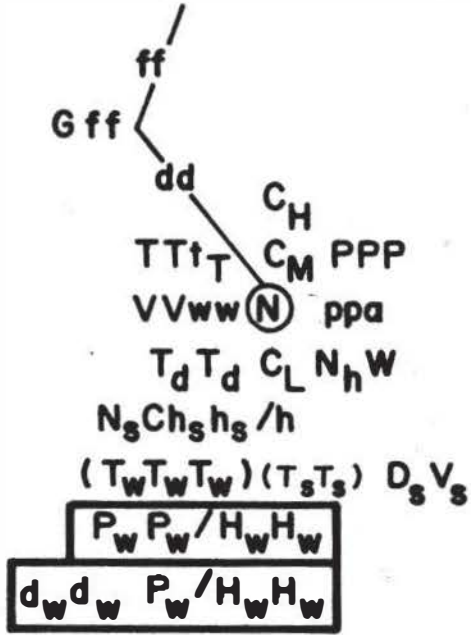
$T_s T_s$	SIGNIFICANCE AND ACTION
Under 50	1. Means that the sea is <u>colder</u> than the air. 2. Divide $T_s T_s$ by 2 and subtract the figure from the complete air temperature value. Given: $T T tT = 13.2$ $T_s T_s = 04$ Divide 04 by 2 = 02 Subt. from 13.2 = 11.2 3. Plot in parentheses () in the position of $T_w T_w T_w$. Ex. (11.2)
Over 50	1. Means that the sea is <u>warmer</u> than the air. 2. Subtract 50 from the $T_s T_s$, divide by 2, and <u>add</u> that value to the complete air temperature $T T tT$. Given: $T T tT = 12.2$ $T_s T_s = 56$ Subt. 50 from $T_s T_s = 6$ Divide by 2 = 3 Add to 12.2 = 15.2 3. Plot in parentheses () in the position of $T_w T_w T_w$. Ex. (15.2)

State which of the following statements are True or False.

- (1) The 0 of the $O T_s T_s T_d T_d$ group is an indicator and is plotted.
- (2) $T_s T_s$ is the air and sea temperature difference expressed in degrees Celsius.
- (3) $T_d T_d$ is the dewpoint.
- (4) When $T_s T_s$ is more than 50, the sea temperature is warmer than the air.
- (5) We subtract the $T_s T_s$ value from temperature (TT) when $T_s T_s$ is less than 50.

////////////////////////////////////

Answers: (1) False (2) False (3) True (4) True
 (5) False



(Sp Spspsp)
REMARKS

GGz

SHIP'S NAME

8N _s Ch _s h _s	9S _p S _p S _p S _p	0T _s T _s T _s T _d	1T _w T _w T _w t _T	3P _w P _w H _w H _w	d _w d _w P _w H _w H _w
81712	92240	05209	11321	32203	26412

1. 3P_wP_wH_wH_w - Wind wave
 - a. 3 Indicator NOT PLOTTED - WIND WAVE.
 - b. PwPw - Period of waves.
 - (1) Plot as received below T_sT_s.
 - c. H_wH_w - Height of waves in half meters.
 - (1) Plot as received.
 - (2) Plot a solidus (/) to separate the PwPw from HwHw.
 - d. If no WIND WAVE is observed, but a SWELL WAVE is, both wave groups must be reported. In this case the WIND WAVE, 3 indicator group must be reported as either 30000 or 3//// followed by the SWELL WAVE group. (Ex. 30000 27310). DO NOT PLOT WIND WAVE BUT PLOT SWELL WAVE. If the WIND WAVE is reported as 30000, DO NOT PLOT.

If either the WIND WAVE or SWELL WAVE groups contain a "/", OMIT plotting that particular group.

2. $d_w d_w P_w H_w H_w$ - Swell wave.

a. This group will be plotted below the 3 PwPwHwHw group.

b. $d_w d_w$ - Direction from which the waves are coming.

(1) Reported to 36 points of the compass.

(2) Plotted as a wavy arrow (\curvearrowright). (Use wind rose on breakdown.)

c. P_w - Successive period of waves.

(1) Plotted as received to right of the $d_w d_w$ and below the "/" of the PwPwHwHw group.

d. $H_w H_w$ - Height of waves.

(1) Plot as received to the right of P_w and prefixed by a solidus.

e. Not always reported.

3. If no waves are observed, both groups may be omitted.

Identify the following elements:

(1) P_w _____

(2) $H_w H_w$ _____

(3) $3P_w P_w H_w H_w$ _____

(4) $d_w d_w P_w H_w H_w$ _____

(5) $H_w H_w$ _____

//////////

Answers: (1) Period of wave (2) Height of waves (3) Wind wave group
(4) Swell wave group (5) Height of waves group

Frame 31

1. Begin practice plotting to gain the speed required. Exercise 6 in workbook 301, 302 provides ship reports for your practice.
2. Try to use only the breakdown and map.
3. Again the instructor will assist you when necessary. He will check your work as you plot and make any comments he deems necessary at that time.
4. Endeavor to plot your map with as much speed as possible.

INSTRUCTOR'S INITIALS _____

Frame 32

Now plot Exercise 7 in workbook 301, 302 and follow the same directions you used in plotting Exercise 6 above.

INSTRUCTOR'S INITIALS _____

Frame 33

1. To gain the speed required in plotting ship synoptic codes, exercises 8a, 8b, and 8c are offered as speed runs. One of these three exercises must be successfully completed (at least 20 stations plotted in 40 minutes with no more than five errors in ten stations graded) to meet the objective.
2. You are now ready to take your first speed run, exercise 8a. Before you begin plotting put your ending time on the chalkboard. Have an instructor check your chart after you have completed plotting.

INSTRUCTOR'S INITIALS _____

This is the questionnaire given to the instructors. Where the mean group response is now located is where the instructor was asked to respond by circling a number from 0 (Very Strongly Disagree) through 9 (Very Strongly Agree.)

	<u>Blocks I/II</u>	<u>Block III</u>
1. There is enough variety in instructor duty to keep my job from becoming routine.	5.75	3.67
2. In relation to civilians with the same occupation, my job is a good paying one.	4.50	1.00
3. I am well-satisfied with my working hours.	7.00	4.67
4. There is too much emphasis placed on details and trivia.	7.75	8.30
5. My job is interesting.	8.00	5.67
6. I wish I had more field experience before I came here.	2.50	4.00
7. I consider myself an effective instructor.	8.00	9.00
8. The student flow is too heavy to do a really good job of instructing.	6.25	5.00
9. Geographical location plays a part in my job satisfaction.	5.25	5.30
10. The fact that I am in the military (or working for the Air Force) hampers my ability to be an effective instructor.	1.00	3.30
11. Working with students is challenging.	8.50	9.00
12. I feel a part of the unit I work with.	3.00	5.67
13. My family's opinion toward my being an instructor is important.	5.50	7.67
14. My family views my duty as an instructor very favorably.	4.75	8.00
15. I was very pleased when notified of my assignment for instructor duty.	8.00	9.00

	<u>Block I/II</u>	<u>Block III</u>
16. In general I am satisfied with working conditions on the job (things like heat, light, ventilation, noise.)	4.50	5.00
17. The person who has been a technical instructor has a better chance for advancement than one who has not.	6.75	4.67
18. Instructor duty utilizes and develops my training and experience well.	8.00	3.33
19. The positive aspects of my Chanute assignment outweigh the negative aspects.	6.75	4.67
20. Almost all of the things that I do as an instructor seem to be important to me.	5.00	3.00
21. Hardly ever does my supervisor ask me to do things which I don't see a reason for.	6.00	5.00
22. I feel my job to be very important.	8.25	6.67
23. I definitely do not receive adequate recognition for my performance as an instructor.	4.25	5.33
24. I am very well satisfied with the condition of the tools, equipment, and supplies I use.	3.75	2.33
25. I feel thoroughly familiar with my duties and what is expected of me.	8.50	5.00
26. I have definitely not been trained well enough to effectively perform my duties.	1.25	1.00
27. I consider all of the members of my work unit as friends.	6.50	6.00
28. It is a good idea to maintain close friendships with fellow workers.	6.75	5.30
29. Hardly any civilians with jobs like mine have better living conditions than mine.	1.75	1.00
30. I should have more to say about things that affect my job.	6.33	8.00

	<u>Blocks I/II</u>	<u>Block III</u>
31. I am very dissatisfied about the quarters in which I am now living.	6.25	4.33
32. The Minimum Instructor Requirement is too arbitrary and too inflexible.	6.50	7.67
33. When I do an unusually good job, the right people know about it.	6.50	2.67
34. My supervisor expects me to do more than my share of the work.	3.00	5.00
35. Within reason, I am free to do my job the way I feel is best.	6.25	2.33
36. I view my job as overly routine.	1.75	5.50
37. My supervisor is one of the best at handling people.	7.25	3.00
38. I get a sense of satisfaction from being an instructor that I just can't get from most other jobs.	6.25	4.00
39. If I were just entering the Air Force (or Civil Service) I wouldn't choose the same career field I am now in.	4.00	7.33
40. My supervisor puts the welfare of his men ahead of his desire to please his superiors.	5.00	3.00
41. I am very displeased with being an instructor.	0.00	3.33
42. I find the subject matter of my course interesting.	7.00	6.67
43. I like the geographical location of Chanute.	2.50	5.33
44. I do not enjoy being an instructor.	0.00	1.33

PART B

As an instructor, I get very good results teaching students with:

45. Movies.	5.25	3.50
46. Study guides/workbooks.	7.00	6.33

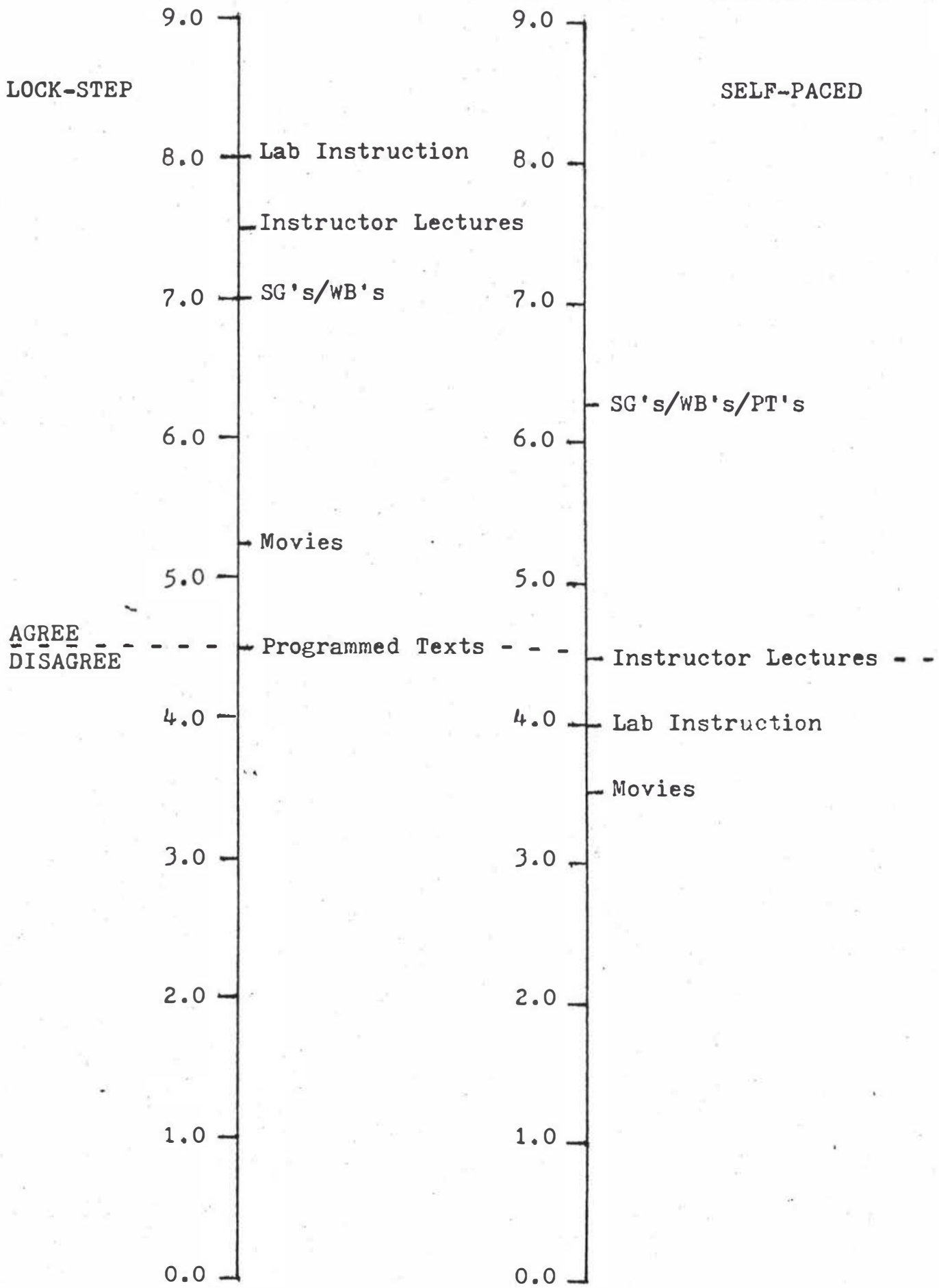
	<u>Blocks I/II</u>	<u>Block III</u>
47. Instructor lectures.	7.50	4.50
48. Programmed texts.	4.50	6.33
49. Laboratory instruction	8.00	4.00
As an instructor, I feel the best strategy to teach students is:		
50. Lock-Step.	7.50	1.33
51. Group or team-paced.	6.50	6.67
52. Self-paced.	3.00	5.67
53. I believe self-paced instruction is more effective than group lock-step.	2.75	7.00
54. Self-paced instructional materials (i.e., Study Guides/workbooks, etc.) should be written by the instructor.	7.50	6.67
55. I feel that ITP has prepared me for being a good self-paced instructor.	1.00	0.00
56. ATC has too much guidance on self-pacing and it's annoying.	5.75	1.00
57. I know what a good Programmed Text should accomplish.	5.25	8.33
58. I would/do feel a lack of effectiveness as an instructor in a self-paced course.	8.50	3.33

Working with self-pacing would be/is:

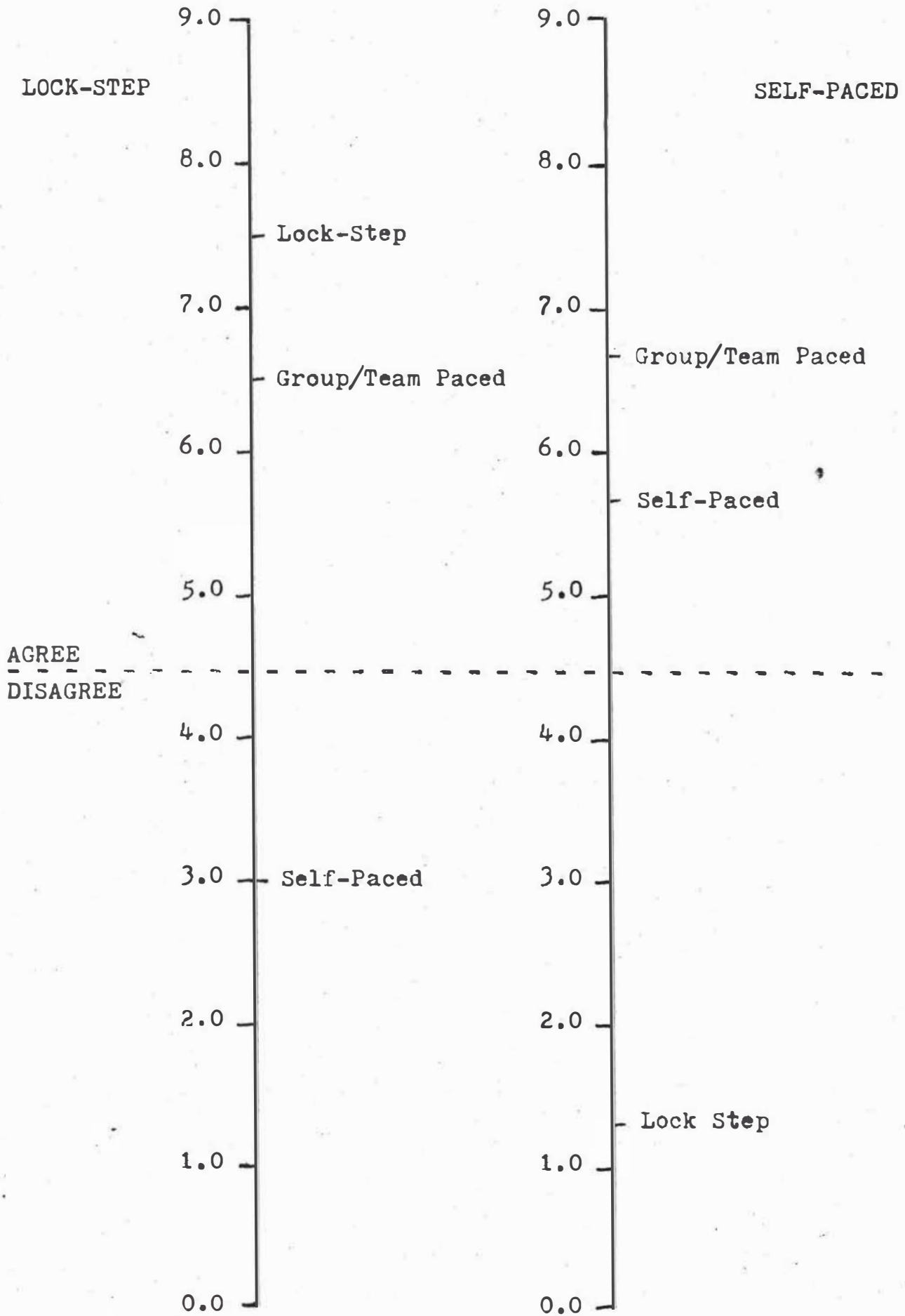
59. fun.	0.50	6.33
60. frustrating.	7.00	7.67
61. challenging.	2.75	6.67
62. annoying.	7.25	3.00
63. confusing.	7.00	1.00
64. boring.	8.00	4.67
65. relaxing.	1.25	3.67
66. depressing.	7.25	3.00
67. enjoyable.	0.75	7.33
68. de-personalizing.	8.50	2.33

	<u>Blocks I/II</u>	<u>Block III</u>
69. exciting.	3.00	4.67
70. Working with self-pacing would/does make me proud of myself.	0.75	8.00
71. I feel sure that programmed instruction will be the best means to teach the material.	1.75	7.67
72. I am "in the dark" about the change-over to self-pacing.	6.50	5.67
73. Being "in the dark" about a media change causes me to be antagonistic toward the new media (i.e., programmed instruction.)	8.25	1.00

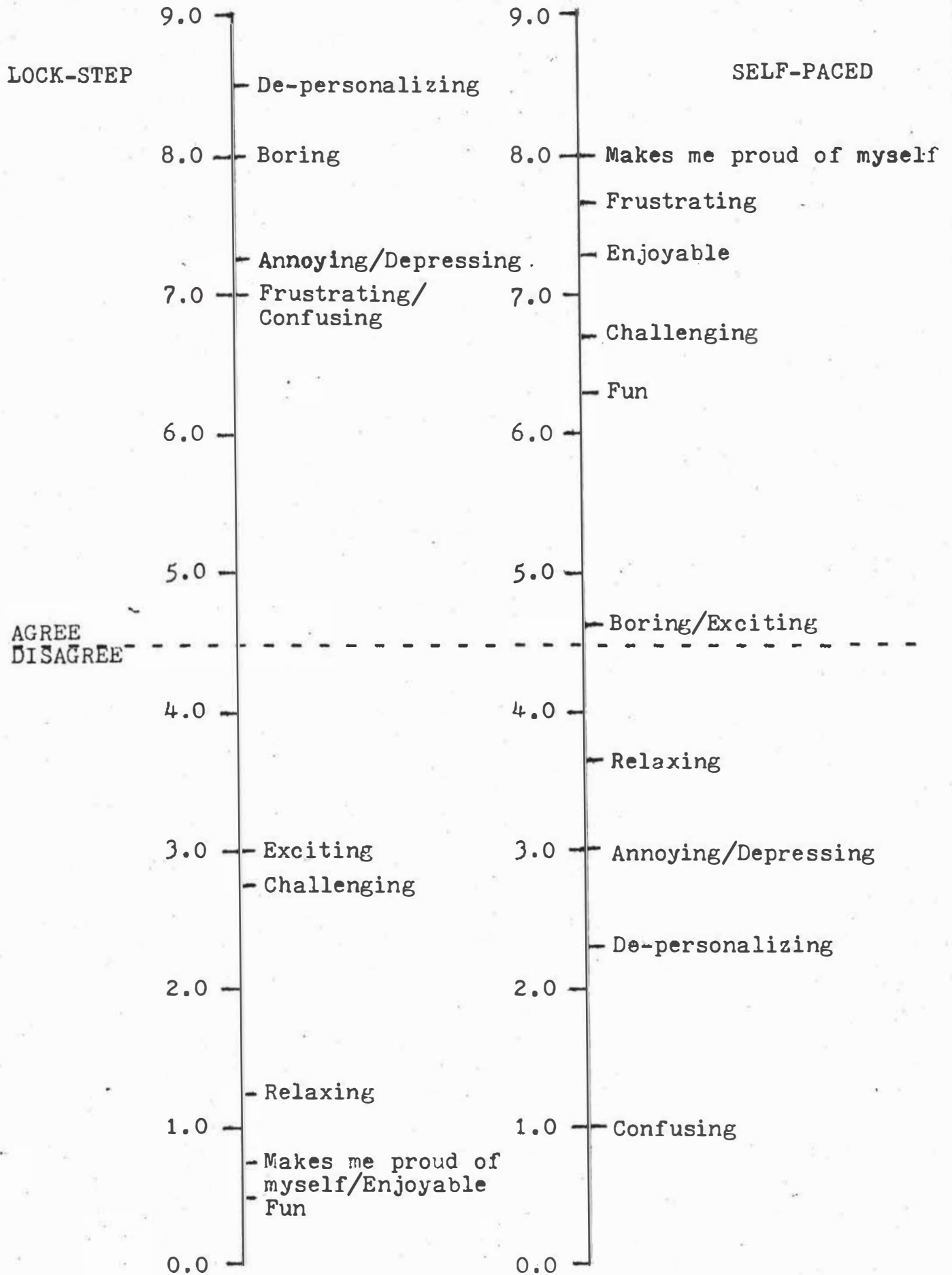
AS AN INSTRUCTOR, I GET/WOULD GET GOOD TEACHING RESULTS WITH:



AS AN INSTRUCTOR, I FEEL THE BEST TEACHING STRATEGY IS:



WORKING WITH SELF-PACING WOULD BE/IS:



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			Orientation 3 hrs Effective Study 5 hrs	Learning Process 4 hrs Instructional Methodology 4 hrs	Communicative Skills 4 hrs ISD (Concepts) 4 hrs	
	Instructional Aids 2 hrs Questioning Techniques 2 hrs ISD(Course Control Docu- ments) 4 hrs	Projection Equipment 4 hrs ISD (Objectives) 4 hrs	Lecture Method 2 hrs Lesson Plan Format 2 hrs Lesson Plng for Comm Ex I 4 hrs	Comm Exer I & Lesson Planning 8 hrs	Written Test (1) 2 hrs Lesson Planning 2 hrs ATC Measurement 4 hrs	
	Practice Teaching I 8 hrs	Discussion Method & Lesson Planning 6 hrs ATC Measurement 2 hrs	Comm Exer II & Lesson Planning 8 hrs	Counseling 4 hrs Human Relations 2 hrs Lesson Planning 2 hrs	Counseling 2 hrs Human Relations 2 hrs PT-II 4 hrs	
	PT-II 8 hrs	Auto- instructional Devices 4 hrs Demo/Per Meth & Lsn Planning 4 hrs	Comm Exer III & Lesson Planning 8 hrs	Instructional Management 4 hrs Lesson Planning 4 hrs	PT-III 8 hrs	
	PT-III 4 hrs Written Test (2) 2 hrs Blk II Orientation					

BIBLIOGRAPHY

A bibliography is not provided since no reference sources were used. All gathered material was based on information learned, notes from courses, or discussions with instructors.