

APPENDIX C

Criterion Assessment Scales

AT-SAT Rating Instructions

This booklet contains ten categories you will use to make assessment ratings as part of the AT-SAT project. Each category contains:

1. A *Category Definition* provided immediately below the category title.
2. *Rating Standards* provided above the seven-point rating scale. These broad summary statements describe air traffic controller proficiency at different effectiveness levels to help make your ratings more objective.

Making Your Ratings

For each category, read the category definition and rating standards. Then, compare the controller's *current effectiveness* with the rating standards for that category.

If you feel that the middle statements describe the controller's *most typical* effectiveness, choose a "4." If the statements describing high effectiveness on the right of the scale closely match the controller's most typical behavior, choose a rating of "6" or "7." Likewise, if the statements on the left of the scale match the controller's most typical effectiveness, choose a rating of "1" or "2."

If the controller behaves as described in the low statements some of the time *but* performs like the middle statements more of the time, a rating of "3" would be best. Similarly, if both the middle and high level statements describe a controller at various times but the high statements are more descriptive, the fairest rating to give the controller is probably a "6."

Please use these statements to help make your ratings more objective.

Once you have selected a rating, make your rating by blackening the appropriate circle on the Criterion Assessment Rating Sheet. Please make no marks in this booklet.

Important Points to Remember

1. Try not to give a controller the same rating for all ten categories. Most people will perform well in some categories and less effectively in others. Your ratings should show the controller's strengths and weaknesses, as appropriate.
2. If you are rating multiple controllers, try not to give all of them the same rating within each individual category. Instead, your ratings should indicate who is performing more effectively and who is performing less effectively in each category.
3. Avoid being influenced by such things as appearance, family background, and other personal characteristics that are not directly related to performance.
4. Please rate independently (do not confer with others).
5. The *most* important point is to make your ratings as accurate as possible. This is the best way to help us validate the new selection procedures.

A. Maintaining Safe & Efficient Air Traffic Flow

How effective is each controller at maintaining safe and efficient air traffic flow?

<p>Sometimes fails to maintain minimum separation or to recognize and resolve potential conflicts.</p> <p>Uses control actions that fail to resolve potential conflicts or that result in excessive workload (e.g., waits until potential conflicts are critical before taking action, fails to take wind into account, etc.)</p> <p>Does not always sequence aircraft adequately or ensure proper spacing between aircraft; may cause excessive and unnecessary delays by choosing poor control actions, waiting too long to provide needed commands, unnecessarily vectoring or rerouting aircraft, etc.</p>	<p>Typically uses appropriate control actions to maintain proper separation or to resolve potential conflicts.</p> <p>Resolves simple conflicts and traffic flow problems without causing unnecessary delays.</p> <p>Generally uses correct procedures to sequence and space aircraft safely; maintains smooth traffic flow, but may not use the most efficient control actions (e.g., may not always take aircraft types into account).</p>	<p>Consistently maintains safe, efficient, and orderly traffic flow, even under difficult or unusual circumstances (e.g., extremely heavy traffic, bad weather, etc.)</p> <p>Consistently recognizes potential problems or conflicts well in advance and takes highly effective action to maintain separation and efficient air traffic flow.</p> <p>Sequences and spaces traffic effectively and efficiently, even when extremely busy (e.g., by taking aircraft types into account); always maintains proper separation while minimizing delays (e.g., avoids delaying vectors as appropriate).</p>			
<p>①</p> <p>⑦</p>	<p>②</p>	<p>③</p>	<p>④</p>	<p>⑤</p>	<p>⑥</p>

B. Maintaining Attention & Vigilance

How effective is each controller at maintaining attention and vigilance?

<p>Has a tendency to focus too narrowly on one air traffic problem and sometimes fails to scan the radar scope for other potential problems with conflicts, traffic flow, weather, etc.</p> <p>Often does not recognize that an action is required; is often lax in watching the radar scope and tends to significantly reduce vigilance during slow periods.</p>	<p>For the most part, properly scans the scope and monitors aircraft to maintain awareness of air traffic events, potential problems, etc.</p> <p>Is attentive to the radar scope and maintains vigilance, especially during rush periods; may occasionally be less attentive when traffic is light.</p>	<p>Consistently recognizes potentially dangerous conditions such as errors made by pilots (e.g., wrong turns, descending or climbing through assigned altitudes, etc.).</p> <p>Always monitors the radar scope to ensure that clearances and other instructions to pilots are followed; remains highly vigilant, even during slow periods.</p>			
<p>①</p> <p>⑦</p>	<p>②</p>	<p>③</p>	<p>④</p>	<p>⑤</p>	<p>⑥</p>

C. Prioritizing

How effective is each controller at prioritizing?

<p>Has difficulty recognizing which air traffic problems are the most pressing; may deal with problems in chronological order, or take the easy ones first.</p> <p>Often fails to prioritize activities, acting on air traffic problems without evaluating the possible consequences of own actions.</p> <p>Puts off decisions and actions that should be taken right away.</p>	<p>Generally recognizes the most important air traffic problems and handles them before the less pressing ones.</p> <p>When prioritizing own actions, normally looks ahead to assess potential air traffic problems that might result from own actions.</p> <p>Usually takes early or prompt action to deal with air traffic problems.</p>	<p>Always recognizes which air traffic problems need immediate attention and handles them before less pressing ones; consistently uses appropriate priorities for control actions.</p> <p>Prioritizes activities with extreme effectiveness, consistently looking ahead and accurately predicting problems that will result from revised clearances, rapidly degrading weather, etc.</p> <p>Invariably takes early or prompt action to resolve air traffic problems.</p>
<p>①</p> <p>⑦</p>	<p>②</p> <p>③</p> <p>④</p>	<p>⑤</p> <p>⑥</p>

D. Communicating & Informing

How effective is each controller at communicating and informing?

<p>Is consistently too wordy, imprecise in phraseology, or uses slang inappropriately during transmissions to pilots, other controllers, TMU, etc.; may be difficult to understand.</p> <p>Is frequently careless about informing pilots concerning circumstances that affect them such as weather, nearby traffic, etc.</p> <p>Often fails to ensure that own instructions are understood; is not very good at picking up on errors in pilot readbacks of clearances, course changes, etc.</p>	<p>Radio and interphone communications are almost always easy to understand; occasionally may be somewhat wordy or use ambiguous phraseology on the air.</p> <p>Is normally good at informing pilots about situations and conditions that affect them (e.g., safety-related weather, nearby traffic, etc.); gives adequate relief briefings to relieving controllers.</p> <p>For the most part, checks to be certain that own instructions are understood; only occasionally fails to pick up on inaccurate readbacks from pilots.</p>	<p>Always uses clear and concise phraseology when talking to pilots or other controllers; is very easy to understand.</p> <p>Consistently provides pilots with the information they need, such as timely safety alerts, weather advisories, warnings about unpublished obstructions, etc.; gives complete and thorough relief briefings to relieving controllers.</p> <p>Communicates in a highly effective manner, always ensuring that own instructions are clearly understood; conscientiously attends to pilot readbacks of clearances, assigned altitudes, course changes, etc.</p>
<p>①</p> <p>⑦</p>	<p>②</p> <p>③</p> <p>④</p>	<p>⑤</p> <p>⑥</p>

E. Coordinating

How effective is each controller at coordinating?

<p>Is often ineffective in receiving or initiating hand-offs (e.g., may often fail to contact controller in adjacent sector even when a hand-off is clearly required).</p> <p>When coordination is required, often fails to contact appropriate persons (e.g., pilot, other controllers, tower, etc.) or does so too slowly, sometimes causing traffic problems, delays, or worse.</p>	<p>Is generally good at hand-offs and pointouts, but may be somewhat slow in using hand-off line when very busy.</p> <p>When the situation calls for coordination, usually contacts all appropriate persons and coordinates properly with others.</p>	<p>Always coordinates hand-offs and pointouts appropriately, both initiating and receiving them very effectively and efficiently, even when very busy.</p> <p>Even in a tight time frame or difficult circumstances, always contacts and works with other controllers and pilots, as appropriate; effectively and efficiently coordinates to correct and avoid traffic problems or to reduce confusion and workload.</p>
<p>①</p> <p>⑦</p>	<p>②</p> <p>③</p>	<p>④</p> <p>⑤</p> <p>⑥</p>

F. Managing Multiple Tasks

How effective is each controller at managing multiple tasks?

<p>Has difficulty keeping track of several aircraft at the same time; may focus too narrowly on some aircraft while ignoring others.</p> <p>Is ineffective at performing multiple tasks simultaneously, even when the tasks are fairly routine (e.g., talking to pilots and writing on strips); prefers to “deal with one thing at a time.”</p> <p>Interruptions and distractions often cause him/her to forget about some of the immediate air traffic problems; may be slow in recalling what he/she intended to do with the traffic before the interruption</p>	<p>Is usually able to keep on top of movement of several aircraft simultaneously, while also dealing with pilot communications, the flight strips, etc.; when very busy, may have to simplify the situation (e.g., vector aircraft, put off some communications, etc.)</p> <p>Is able to perform two or more routine tasks at the same time (e.g., monitoring the screen, talking with pilots, and handling strips.)</p> <p>After an interruption, does not usually have much trouble handling the air traffic problems remaining from prior to the interruption.</p>	<p>Is extremely adept at keeping track of many aircraft while at the same time handling pilot communications, strip work, etc.</p> <p>Effortlessly performs two or more complex tasks simultaneously (e.g., sequencing arrival traffic, dealing with holding aircraft and approaches, conducting non-radar procedures. etc.)</p> <p>After an interruption, immediately remembers where aircraft are or should be, what he/she was doing with traffic before the interruption, how the intended control strategy for aircraft was to be carried out, etc.</p>
<p>①</p> <p>⑦</p>	<p>②</p> <p>③</p> <p>④</p>	<p>⑤</p> <p>⑥</p>

G. Reacting to Stress

How effective is each controller at reacting to stress?

<p>Becomes shaken and ineffective in emergency situations.</p> <p>Reacts poorly and performance suffers under stressful air traffic conditions.</p> <p>Does not maintain his/her composure when serious problems arise.</p>	<p>Remains calm and cool in most emergency situations.</p> <p>Stays calm, focused, and functional under busy and/or somewhat stressful conditions.</p> <p>Shows professional cool in handling routine problems.</p>	<p>Remains very calm and cool and reacts effectively even in very serious emergency situations such as in-flight emergencies, lost pilots, VFR pilots in IFR conditions, etc.</p> <p>Stays calm, focused, and very functional in busy, and very stressful conditions (e.g., sudden weather problems that severely reduce usable airspace).</p> <p>Handles even serious problems with professional cool.</p>
<p>①</p> <p>⑦</p>	<p>②</p> <p>③</p>	<p>④</p> <p>⑤</p> <p>⑥</p>

H. Adaptability & Flexibility

How effective is each controller in the area of adaptability and flexibility?

<p>Does not adjust well to unusual and difficult air traffic situations.</p> <p>Rarely displays good “fall-back” strategies for dealing with unanticipated air traffic problems.</p> <p>Is ineffective at handling air traffic situations with no clearly prescribed procedures.</p>	<p>Is usually able to adapt effectively to most situations such as worsening weather, equipment problems, etc.</p> <p>Frequently, but not always, has effective contingency strategies for unforeseen or unanticipated air traffic problems when they arise.</p> <p>For the most part, is good at handling air traffic situations that have no “textbook answers,” but does better with the more routine problems.</p>	<p>Reacts expediently and effectively to even the most complicating events (e.g., quickly devises and executes a complex re-route plan for several aircraft when thunderstorms begin forming).</p> <p>Is very adept at using effective contingency or “fall-back” strategies when unforeseen or unanticipated air traffic problems arise.</p> <p>Deals effectively with even very difficult air traffic situations where there are no clearly prescribed procedures.</p>
<p>①</p> <p>⑦</p>	<p>②</p> <p>③</p>	<p>④</p> <p>⑤</p> <p>⑥</p>

I. Technical Knowledge

How effective is each controller in the area of technical knowledge?

<p>Is not very good at remaining current on new letters of agreement, revised air traffic procedures, etc.</p> <p>Sometimes makes errors related to not knowing aircraft limitations.</p> <p>Is unfamiliar with some of his/her equipment and how it works.</p>	<p>Is usually knowledgeable about and up-to-date on most information relevant to controlling traffic (e.g., letters of agreement, air traffic procedures, etc.)</p> <p>Has adequate knowledge of different aircrafts' capabilities and applies that knowledge to avoid most errors associated with not knowing aircraft limitations.</p> <p>Is reasonably familiar with his/her equipment and how it works.</p>	<p>Always keep up-to-date on letters of agreement, all pertinent procedures and policies, any sector-specific changes (e.g., revised restricted area boundaries), etc.</p> <p>Is an expert regarding different aircrafts' capabilities and, as a result, never makes errors such as climbing an aircraft beyond its limits, making an inappropriate speed assignment, requiring an impossibly tight turn, etc.</p> <p>Is extremely knowledgeable about and familiar with his/her equipment and how it functions.</p>
<p>① ⑦</p>	<p>② ③</p>	<p>④ ⑤ ⑥</p>

J. Teamwork

How effective is each controller in the area of teamwork?

<p>Ignores traffic flow in adjacent sectors and the impact own traffic flow may have on co-workers; avoids pitching in to help fellow controllers, even in high load situations such as loss of radar or poor weather conditions.</p> <p>Often waits until the last minute to take hand-offs; frequently dumps air traffic in adjacent sectors so as to reduce own workload; rarely volunteers to take on additional responsibility to help co-workers.</p> <p>Becomes extremely defensive, even belligerent, if constructive feedback is offered by supervisors or co-workers; may belittle co-workers, sometimes in front of others; rarely works well with others.</p>	<p>Is usually willing to assist co-workers who become extremely busy (e.g., by assuming hand-off and coordination duties).</p> <p>Is generally considerate of co-workers; adjusts own traffic flow to ease workload of adjacent sector when there are obvious problems.</p> <p>For the most part accepts constructive criticism from supervisors or co-workers; is usually able to refrain from criticizing other ATCSs; generally works well with other controllers.</p>	<p>Is always alert to traffic in other sectors and pitches in to help co-workers (e.g., by accepting additional airspace or assuming hand-off and coordination duties).</p> <p>Is always considerate of co-workers, working to ensure smooth and timely traffic flow between adjacent sectors; whenever possible, adjusts own traffic flow to ease workload of next sector (e.g., when traffic in adjacent sectors becomes heavy).</p> <p>Is always open to feedback from supervisors or co-workers, accepting criticism in a positive, constructive, and professional manner; never belittles co-workers; always works harmoniously with other controllers.</p>
<p>① ⑦</p>	<p>② ③</p>	<p>④ ⑤ ⑥</p>

Overall Effectiveness

The scales you have just made ratings on represent 10 different areas important for air traffic controller effectiveness. This scale asks you to rate the *overall effectiveness* of each controller, taking into account behavior related to all 10 of the previous categories.

Performs poorly in important effectiveness areas; does not meet standards and expectations for adequate controller performance.	Adequately performs in important effectiveness areas; meets standards and expectations for adequate controller performance.	Performs excellently in all or almost all effectiveness areas; exceeds standards and expectations for controller performance.
① ⑦	② ③ ④ ⑤	⑥

APPENDIX D

Rater Training Script

Conducting the Rating Sessions

It is likely that you will have to conduct many rating sessions in order to accommodate different raters' schedules. The facility management will schedule these sessions, with help and input from the data collection team. Please conduct these sessions as efficiently as possible, so the raters can get back to their jobs as quickly as possible.

At the beginning of each rating session, you will need to have the following rating materials for *each* rater. You will also need the Criterion Assessment Master Roster and the Master List.

1. One Biographical Information: Assessor sheet (for those assessors who are not also participants)
2. The Criterion Assessment Rating Sheet prepared for each rater (Up to five controllers can be rated per answer sheet, therefore, some raters may have more than one sheet if they are rating more than five controllers)
3. One copy of the Criterion Assessment Scales
4. Two sharp pencils with erasers
5. One "Confidential" envelope
6. One Project Overview (for those Assessors who are not also participants)

When raters arrive for their rating sessions, check the raters who arrive against a roster of those you expect in a given session. Give each rater the appropriate code number card, and ask them to hang onto it.

When conducting rating sessions, follow the steps below exactly as they are presented. Instructions that you should give to the raters appear in italics. Special instructions for administrators appear in regular type.

Introductory Briefing

If you have not already done so, begin by introducing yourself. Then begin by saying:

TA NOTE: The first two paragraphs below may be skipped if the assessors are also participants.)

[We are asking you to participate in a study the FAA is conducting to develop a new entry-level selection system for Air Traffic Controllers. The goal of this project is to develop a testing system that will identify the best qualified applicants for the controller job.

As part of this study, we need to collect assessment ratings to determine how well the new selection tests are working. To do this, we are asking peers and supervisors of the controllers who are participating in our study to rate these controllers' job effectiveness. If individuals who score higher on the experimental tests are also performing better in their jobs, these tests will be useful for identifying individuals who are likely to be successful as new Air Traffic Controllers.]

The ratings you provide will be used for research purposes only and are confidential. No one in the FAA will see the ratings. These ratings will only be used to evaluate the experimental selection tests. In fact, we have gone to great lengths to ensure confidentiality. At the end of the session, we'll tear off the bottom of the rating sheet with the names on it. The database will contain only code numbers.

It is very important that you complete the ratings accurately. In fact, if we don't get accurate ratings the validation process basically falls apart. Again, the results of this study will make a big difference in the selection of future controllers. So, it is very important that you complete your ratings as accurately as possible.

Emphasize that the information they are providing will help improve the quality of new controllers they will likely have to train and/or work with. Make sure they know that accurate assessments are necessary for this to happen.

Hand out one Project Overview to each assessor who is not a participant and tell them that this sheet contains more detail concerning the project if they are interested.

The raters will sometimes have a variety of questions or comments concerning topics such as the purpose of the study, what is wrong with the old selection test, etc. In order to enhance cooperation, it is best to discuss any questions and concerns, even though this will take up some additional time. However, if the questions and discussions become too extensive, inform the group that there are several forms that need to be completed. Also, tell them you would be willing to stay after the session to answer questions.

Completing the Criterion Assessment Rating Scales

Before beginning the ratings, have those assessors who are not also participants complete a Biographical Information: Assessor sheet. Point out that the form is double-sided.

Check to make sure that these are completed correctly and that no items are left blank. Make sure they have entered the correct code number in the upper right corner and that they have completed the back of the form. Collect the completed forms, and keep them secure.

Then hand out the Criterion Assessment Rating Sheets (with the Rater code number, Ratee code number(s), and Ratee name(s) already recorded) and read the script on the following pages:

*Here are the Criterion Assessment Rating Sheets. At the bottom of these rating sheets are the names of the controllers you will be rating; the code numbers that have been assigned to each of these controllers appear near the top. You will mark your ratings for each controller in the column above his or her name. **Your** code number should also appear at the top of the rating sheet.*

Look at the names listed on the bottom of your rating sheet. These should be controllers you have worked closely with, that is, you are very familiar with how they do their jobs. By this we mean controllers who have worked in your area for at least 6 months, and who you have observed working traffic at least 10 times a month, on average, during those 6 months. If you do not meet these criteria for one or more of the controllers listed at the bottom of your rating sheet, please let me know now.

If a rater does not strictly meet these guidelines for a ratee, but clearly knows the ratee's performance (e.g., worked with him/her for several years up to three months ago), go ahead and have that rater rate that ratee. If raters are clearly not qualified, make any corrections necessary on both the rating sheets and on your Criterion Assessment Master Roster.

Now, at the top portion of the rating sheet, you will see spaces to indicate the length of time you have worked with each controller you are rating. (Point to this area on the form). Please fill these out.

Finally, please think back over the past 6 months and estimate how many times, per week, you have worked with each of these controllers. This should be the number of times you actually sat down and worked traffic together, which could be more than once a day. Record this number in the space provided.

TA NOTE: If the experience with the controller was not in the past 6 months, ask them to indicate how many times per week they worked with the controller during the time they were working together.

Allow raters time to enter this information. Check around the room to be sure each person is following your instructions. Then hand out the Criterion Assessment Scales and say:

Now, we're going to start the assessments that I told you about a few minutes ago. I'm distributing a booklet that contains the rating scales. Please read the instructions on the first page, and then I'll have a few more points to make before getting you started.

Give them a few minutes to read the instructions. Make sure they don't start making their ratings until after you complete the briefing.

OK, please open your rating booklet to the first category entitled, **Maintaining Safe & Efficient Air Traffic Flow** (hold this page up to the group).

The most important parts of these rating scales are the Rating Standards that describe exactly what we mean by exceptional (point to the statement on the far right), fully adequate (point to the middle statement), and below average (point to the statement on the far left) effectiveness in each category. These behavioral statements or benchmarks should make the ratings more objective because we are asking you to compare the performance of each controller you are rating with the behavioral benchmarks on the scales.

Now I'd like to go through a few examples of how this comparing or matching process should proceed. Let's look again at the category of **Maintaining Safe & Efficient Air Traffic Flow**. If you believe that the middle (point to them) statements best describe the controller's most typical effectiveness in this area, then you should give that person a rating of "4." If the statements on the far right (point to them) best match the controller's most typical behavior, choose a rating of "7." Likewise, if the statements described on the far left (point to them) match the controller's most typical behavior, choose a rating of "1." However, we have found that often this matching doesn't line up that simply.

For example, you may feel that the middle statements and the low statements describe the controller's effectiveness at times, but that his or her typical effectiveness is more like the middle statements. If this is the case, an evaluation of "3" would be best. As a final example, if the controller has most often performed like the high statements but at times performs at the middle level as well, a "6" would be the best rating.

The main point here is that for each category, you are to compare your observations of each controller's effectiveness to the behavioral statements or Rating Standards and then select the number that best reflects the controller's effectiveness.

One thing I'd like to bring to your attention is that the performance described in the high statement is truly outstanding. For a controller to be rated a "6" or "7," he or she should perform as described in the high statements most of the time. I am not suggesting that there are no truly outstanding controllers, simply that you should reserve these ratings, especially the "7", for the very high performing controllers.

Once you have selected a number, blacken the appropriate circle on the Criterion Assessment Rating Sheet.

Does anyone have any questions?

Now let's go through the "Important Points to Remember" when making your evaluations. (Hold up a rating booklet and show them what you are referring to.)

The first point to remember is, try not to give a controller the same rating for all ten categories. It is unlikely that any one person performs at exactly the same level in all ten rating categories. Instead, most people will be more proficient in some categories and less proficient in others. Your evaluations should reflect each controller's strengths and weaknesses.

TA Note: You can skip the following paragraph if no one in the session is rating multiple controllers.

[The second point is if you are evaluating multiple controllers, try not to give all of them the same rating within an individual category. Again, it is unlikely that all of the people you are evaluating perform at the exact same level of proficiency within a given category. Thus, your ratings should show who is more and less effective within each rating category.]

Another thing that can happen is that raters sometimes let things that have nothing to do with performance affect their evaluations, such as friendship or simply liking the controller. These assessment scales target only job performance and that's what you should base your ratings on.

Now that I have gone through some possible rating problems, there's one last point I want to stress. That is, the most important guidance is to be as accurate as possible in your evaluations. If you really believe, for example, that three controllers should be given the same rating in a category or that one person performs at, let's say, the "5" level in several categories, then you should rate them in this way. However, where there are strengths and

weaknesses for a controller you are rating or differences between controllers, it is important that your ratings reflect these strong points, weak points, and differences between controllers.

TA Note: You can skip the following paragraph if no one in the session is rating multiple controllers.

[If you are rating more than one controller, it will be easiest for you to rate each one on Category A, then go to Category B and rate everyone on that category and so on.]

Walk around and check the ratings; make sure they are filling in the answer forms correctly (dark marks and circles filled). Note obvious problems such as all ratees being evaluated at exactly the same level, and, if possible, ask if this is what the rater intends. That is, if a rater is rating all controllers at the same level of performance on many categories, ask him or her if these individuals really do perform at the same level.

Encourage raters, as appropriate -- “looking good”, “looks like you’ve got it,” etc.; answer individual questions as they arise. Make sure they are rating all controllers on one category before proceeding to the next category.

Some raters may indicate that they have not observed performance sufficiently in one or more of the categories to make a rating. Encourage the rater to make a rating if at all possible. If the rater still feels incapable of making a rating, tell the rater to leave that category blank.

The raters will likely finish their ratings at different times.

As you collect the Criterion Assessment Rating Sheets, check to make sure the code numbers are correct. Also check that the peer/supervisor distinction and “length of time worked with” the ratee was completed on each rating sheet and that one rating was filled in for each category. Make sure any errors are corrected before collecting the rating forms. Once you are comfortable that the forms have been filled in correctly, ask the rater to remove the ratee names. The rating sheets are perforated, so the bottom portion that lists the ratee names should tear off easily.

Then, give each rater a Confidential Envelope, and ask them to insert their rating sheets into this Confidential Envelope, and seal the envelope. Collect the rating booklets separately, as they can be used again. Collect all materials that have been handed out during the session, including the ratee names (removed from the rating sheet) and the code number cards. Check off on your Criterion Assessment Master Roster that the ratings are “DONE” for the individuals rated.

APPENDIX E

**AT-SAT High Fidelity Simulation
Over the Shoulder (OTS)
Rating Form**

AT-SAT High Fidelity Simulation Over The Shoulder (OTS) Rating Form

Administrative Information - Page 1

Scenario Number: HFG 1 2 3 4 5 6 7		Lab Number: 1 2
Position: 1 2 3 4 5 6 7 8 9 10	Participant ID Number:	Rater ID Number:

AT-SAT High Fidelity Simulation Over The Shoulder (OTS) Rating Scales

	Rating Scale		
Rating Dimensions	Below Average	Fully Adequate	Exceptional
A. Maintaining Separation	① ②	③ ④ ⑤	⑥ ⑦
<ul style="list-style-type: none"> • Checks separation and evaluates traffic movement to ensure separation standards are maintained • Detects and resolves impending conflicts • Applies appropriate speed and altitude restrictions • Analyzes pilot requests, plans and issues clearances 	<ul style="list-style-type: none"> • Considers aircraft performance parameters when issuing clearances • Establishes and maintains proper aircraft identification • Properly uses separation procedures to ensure safety • Issues safety and traffic alerts 		
B. Maintaining Efficient Air Traffic Flow	① ②	③ ④ ⑤	⑥ ⑦
<ul style="list-style-type: none"> • Accurately predicts sector traffic overload and takes appropriate action • Ensure clearances require minimum flight path changes • Controls traffic so as to ensure efficient and timely traffic flow 	<ul style="list-style-type: none"> • When necessary, issues a new clearance to expedite traffic flow • Reacts to/resolves potential conflicts efficiently 		
C. Maintaining Attention and Situation Awareness	① ②	③ ④ ⑤	⑥ ⑦
<ul style="list-style-type: none"> • Maintains awareness of total traffic situation • Recognizes and responds to pilot deviations from ATC clearances • Listens to readbacks and ensures they are accurate • Assigns requested altitude in timely manner • Keeps data blocks separated 	<ul style="list-style-type: none"> • Reviews and ensures appropriate route of flight • Scans properly for air traffic events, situations, potential problems, etc. • Remembers, keeps track of, locates, and if necessary orients aircraft • Descends arrivals in timely manner • Accepts/performs timely handoffs 		
D. Communicating Clearly, Accurately, and Efficiently	① ②	③ ④ ⑤	⑥ ⑦
<ul style="list-style-type: none"> • Issues clearances that are complete, correct, and timely • Makes only necessary transmissions • Uses standard/prescribed phraseology • Properly establishes, maintains, and terminates communications • Avoids lengthy clearances 	<ul style="list-style-type: none"> • Communicates clearly and concisely • Uses correct call signs • Uses appropriate speech rate • Listens carefully to pilots and controllers • Issues appropriate arrival and departure information 		

AT-SAT High Fidelity Simulation Over The Shoulder (OTS) Rating Form - Page 2

Rating Dimensions	Rating Scale		
	Below Average	Fully Adequate	Exceptional
E. Coordinating	① ②	③ ④ ⑤	⑥ ⑦
<ul style="list-style-type: none"> • Performs handoff and pointout procedures correctly • Effectively coordinates clearances, changes in aircraft destinations, altitudes, etc. • Provides complete/accurate position relief briefings • Performs required coordinations effectively • Initiates and receives handoffs and pointouts in an efficient and effective manner • Processes flight plans/amendments as required 			
F. Performing Multiple Tasks	① ②	③ ④ ⑤	⑥ ⑦
<ul style="list-style-type: none"> • Shifts attention between several aircraft when necessary • Keeps track of a large number of aircraft/events at a time • Prioritizes activities effectively • Communicates in a timely fashion while performing other actions • Returns to what he/she was doing after an interruption 			
G. Managing Sector Workload	① ②	③ ④ ⑤	⑥ ⑦
<ul style="list-style-type: none"> • Handles heavy, emergency, and unusual traffic situations effectively • Stays calm, focused, and functional in busy and stressful conditions • Responds to imposed airspace restrictions • Responds to traffic management constraints/initiatives • Handles unexpected situations effectively (e.g., computer/communication failures) • Deals effectively with situations for which there may not be clearly prescribed procedures • Uses contingency or "fall-back" strategies effectively 			
H. Overall Performance	① ②	③ ④ ⑤	⑥ ⑦

APPENDIX F

Behavioral and Event Checklist

**HFG1
Behavioral and Event Checklist**

Event	Aircraft identity	Totals
Operational Errors (Write both call signs in one box)	5.	
1.	6.	
2.	7.	
3.	8.	
4.	9.	
Operational Deviations/SUA violations (Write call sign in each box)	5.	
1.	6.	
2.	7.	
3.	8.	
4.	9.	
Behavior	Number of events	Totals
Failed to accept handoff		
LOA/Directive Violations		
Readback/Hearback errors		
Failed to accommodate pilot request		
Made late frequency change		
Unnecessary delays		
Incorrect information in computer		
Participant ID Number:	Rater ID Number:	
Lab Number:	Position Number:	

APPENDIX G

AT-SAT High Fidelity Standardization Guide

AT-SAT High Fidelity Standardization Guide

The following rules and interpretations of rules have been agreed to and will be used in evaluations by all AT-SAT Raters in addition to rules set forth in FAA Handbook 7110.65, Aero ARTCC and Tulsa ATCT Letter of Agreement, Aero ARTCC and McAlester ATCT Letter of Agreement, and Aero ARTCC, Memphis ARTCC, Kansas City ARTCC, Fort Worth ARTCC Letter of Agreement.

General Stuff

All aircraft have to be vectored for straight-in ILS approach to MLC.

If aircraft goes into TUL airspace then back out, just rate performance for the first time the aircraft is in your airspace.

If you make a mistake when filling out any of the forms, either erase the mark or draw a squiggly line through the incorrect mark.

If participant fails to say "Radar service terminated," don't mark any Remaining Actions, but consider when making OTS ratings.

If the pilot makes a mistake that results in an OE or OD, mark on behavioral checklist, put an asterisk next to indicator, and explain circumstance. If pilot causes OE or OD, the 1/2 rule does not apply (1 OE = OTS rating of 2 in Category A, 2 OES = OTS rating of 1).

Behavioral Checklist

Operational Errors

An Operational Error is considered to occur if a non-radar clearance **does not** provide for positive separation, regardless if controller corrects error prior to loss of radar separation.

If the participant makes one Operational Error, the rater shall assign a rating no higher than 2 in the Maintaining Separation (A) category on the OTS rating form. If the participant makes two Operational Errors, the rater shall assign a rating no higher than 1 in the Maintaining Separation (A) category on the OTS rating form. If participant makes no OEs, rater may assign any number for category A. Making an operational error will not necessarily affect ratings for other categories except that if a participant is rated low on A (Maintaining Separation) on the OTS form, they will also probably be rated low on C (Maintaining Attention and Situation Awareness).

If an aircraft is cleared off an airport, is auto-acquired off the departure list, but the participant is not yet talking to the aircraft, it is **NOT** an OE if another aircraft is cleared for approach into that same airport.

If an aircraft is cleared below the MIA, it is an OE.

If an aircraft is cleared for approach without telling the pilot to maintain a specific altitude, it is an OE.

If an aircraft without Mode C doesn't report level, the participant doesn't determine a reported altitude, and the aircraft flies over another aircraft, it shall be scored as an OE. Also, if the participant doesn't enter a reported altitude in the computer, it shall also be scored as Incorrect Information in Computer.

Operational Deviations

An Operational Deviation is considered to occur if there is a violation of published MEAs.

An Operational Deviation is considered to occur if an aircraft comes within 2.5 miles of the airspace of another facility without being handed off. If the scenario freezes before the aircraft gets within 2.5 miles of another facility's airspace and it hasn't yet been handed off, count as Make Handoff under Remaining Actions.

An Operational Deviation occurred if the participant failed to point out an aircraft to the appropriate sector or if the participant issued a clearance to an aircraft while it is within 2.5 miles of the airspace boundary. Raters should check the location of the aircraft when a clearance is issued to see if it is within 2.5 miles of the boundary. If it is, an OD should be counted.

Special Use Airspace Violation

A Special Use Airspace violation is considered to occur if an aircraft does not remain clear of P57 or if an aircraft does not clear Restricted Area R931A by either 3 NM or 500 feet of altitude.

Accepted Handoff/Pointout Late

Acceptance of a Handoff/Pointout will be considered late if the radar target is within 2.5 NM of 1) Tulsa Approach boundary if the aircraft is exiting Tulsa Approach airspace or 2) crossing the Aero Center boundary if the aircraft is transiting En-Route airspace.

LOA/Directive Violation

A violation of the Tulsa Letter of Agreement is considered to occur if a jet aircraft is not established at 250 knots prior to crossing the appropriate arrival fix, if an aircraft is not level at prescribed arrival altitudes at appropriate arrival fix, even if a different altitude, etc., was coordinated, or if aircraft are not appropriately spaced.

There will be no blanket coordination of altitude or speed restrictions different than those specified in the LOA. For specific circumstances when pilots aren't going to meet crossing restrictions, if that is coordinated, it won't be counted as an LOA violation.

Count as LOA/Directive Violation if a frequency change is issued prior to completion of a handoff for the appropriate aircraft, if the participant changes frequency but did not terminate radar, or if the participant flashed the aircraft too early.

Count as LOA/Directive Violation if the participant failed to forward a military change of destination to FSS.

Count as LOA/Directive Violation if the participant makes a handoff to and switches the frequency to the incorrect facility.

Count as LOA/Directive Violation if the participant drops a data block while the aircraft is still inside the airspace.

Count as LOA/Directive Violation if the participant fails to inform the pilot of radar contact.

If participant has an LOA/Directive Violation, also mark as Coordination error. If mark several violations, consider marking down Coordination and overall categories.

Failed to Accommodate Pilot Request

Participants shall be rated as failing to accommodate a pilot request if the controller never takes appropriate action to accommodate the request, if the controller says unable when he/she could have accommodated the request, or if the controller says stand by and never gets back to the pilot. This situation applies if the rater determines that the controller could have accommodated the request without interfering with other activities. Rater must balance failing to accommodate pilot requests or other delays against factors involved in Managing Sector Workload.

If another facility calls for a clearance and the participant fails to issue it unnecessarily, counts as Delay, not as Failure to Accommodate Pilot Request.

Unnecessary Delay

An unnecessary delay is considered to occur if a pilot request can be accommodated and the controller delays in doing so, if the participant levels any departure at an altitude below the requested altitude and there was no traffic, or if an aircraft previously in holding due to approaches or departures at MIO and MLC airports is not expeditiously cleared for approach.

If the participant leaves an aircraft high on the localizer it is considered a delay if the pilot/computer says unable. If the pilot/computer does not say unable but the participant could have descended the aircraft sooner, count down on category C (Maintaining Attention and Situation Awareness).

If another facility calls for a clearance and the participant fails to issue it unnecessarily, counts as Delay, not as Failure to Accommodate Pilot Request.

Incorrect Information in Computer

If an aircraft does not have Mode C, the participant shall enter the reported altitude 1) when the pilot reports it, 2) prior to handoff, or 3) by the end of the scenario. If this does not happen, count as Incorrect Information in Computer, Also, see OE.

Incorrect Information in Data Block

Altitude information in data blocks shall be considered incorrect if and when reported altitude differs by 1000 feet or more from assigned altitude displayed in same data block.

OTS Rating Form

Coordinating

In the event any information needs to be passed to a supervisor, the AT-SAT Rater shall be considered acting as same supervisor. Coordination of climbing aircraft shall NOT be required as long as the aircraft's data block/flight plan correctly displays the aircraft's assigned altitude.

If participant doesn't enter computer information (for example, change in route), enters incomplete information, or enters information in the computer for the wrong aircraft, rate them down under OTS Category E (Coordination).

Don't mark the Behavioral Checklist or use the Remaining Actions form. This is not to be rated as an OD.

If participant didn't coordinate a WAFDOF for aircraft within 2.5 miles of sector boundary, it counts as a coordination error (Category E on OTS). If scenario freezes before coordination occurred but there was still time to accomplish coordination within 2.5 miles of sector boundary, doesn't count against Coordinating category (E) on the OTS. Instead count as Required Coordination on Remaining Actions form.

For specific circumstances when pilots aren't going to meet crossing restrictions, if that is not coordinated, it will be counted as an LOA violation and coordination error.

If participant has an LOA/Directive Violation, also mark as coordination error. If mark several violations, consider marking down Coordination and overall categories.

Managing Sector Workload

If participant doesn't meet TMU in-trail restriction, count under G (Managing Sector Workload).

APPENDIX H

Pilot Test Rater Comparisons

Differences Between Rater Pairs by Ratee and Scenario for Each OTS Dimension and the BEC													
Ratee #	Scenario #	Rater 1 Code #	Rater 2 Code #	A_DIFF ¹ Score	B_DIFF Score	C_DIFF Score	D_DIFF Score	E_DIFF Score	F_DIFF Score	G_DIFF Score	H_DIFF Score	O_DIFF ² Score	BC_DIF ³ Score
1	hfg1	8	6	.00	.00	1.00	.00	2.00	.00	.00	.00	.00	.00
1	hfg2	5	7	1.00	3.00	3.00	3.00	1.00	4.00	2.00	2.00	2.00	.00
1	hfg3	9	12	.00	.00	.00	4.00	.00	1.00	.00	.00	.00	1.00
1	hfg4	14	10	.00	2.00	.00	2.00	2.00	1.00	1.00	1.00	1.00	.00
2	hfg1	1	11	.00	1.00	1.00	1.00	.00	.00	2.00	.00	1.00	2.00
2	hfg2	6		2.00	1.00	1.00	1.00	1.00	3.00	2.00	1.00	1.00	4.00
2	hfg3	7	4	.00	.00	1.00	.00	1.00	1.00	1.00	.00	.00	2.00
2	hfg4	9	13	1.00	1.00	.00	2.00	3.00	2.00	3.00	.00	1.00	1.00
2	hfg5	10	12	.00	.00	1.00	1.00	1.00	.00	.00	.00	1.00	.00
2	hfg6	2											
2	hfg7	8	1	1.00	1.00	1.00	1.00	1.00	1.00	.00	.00	1.00	2.00
3	hfg1	2	3	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00	.00
3	hfg2	1	11	.00	.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00
3	hfg3	8	6	2.00	.00	.00	.00	2.00	.00	1.00	1.00	1.00	2.00
3	hfg4	4	7	.00	.00	2.00	.00		2.00	.00	.00	.00	.00
3	hfg5	9	2	1.00	1.00	1.00	1.00	2.00	1.00	2.00	1.00	1.00	.00
3	hfg6	10	12	1.00	1.00	3.00	3.00	.00	1.00	1.00	1.00	1.00	.00
3	hfg7	3	13	1.00	1.00	.00	2.00	2.00	1.00	1.00	1.00	2.00	2.00
4	hfg1	10	14	.00	1.00	.00	1.00	.00	2.00	1.00	1.00	.00	2.00
4	hfg2	3	2	3.00	.00	1.00	1.00	1.00	.00	1.00	1.00	2.00	5.00
4	hfg3	11	1	.00	1.00	.00	.00	2.00	.00	1.00	1.00	.00	3.00
4	hfg4	6	12	.00	1.00	2.00	1.00	1.00	1.00	1.00	.00	.00	1.00
4	hfg5	4	7	.00	1.00	1.00	1.00	.00	1.00	1.00	1.00	1.00	1.00
4	hfg6	3	9	2.00	1.00	.00	2.00	1.00	3.00	1.00	.00	1.00	3.00
4	hfg7	10	12	.00	.00	2.00	1.00	1.00	1.00	2.00	2.00	1.00	.00

Differences Between Rater Pairs by Ratee and Scenario for Each OTS Dimension and the BEC (continued)

Ratee #	Scenario #	Rater 1 Code #	Rater 2 Code #	A_DIFF ¹ Score	B_DIFF Score	C_DIFF Score	D_DIFF Score	E_DIFF Score	F_DIFF Score	G_DIFF Score	H_DIFF Score	O_DIFF ² Score	BC_DIFF ³ Score
5	hfg1	9	13	.00	.00	1.00	.00	1.00	1.00	.00	.00	1.00	1.00
5	hfg2	10	14	1.00	1.00	2.00	2.00	2.00	3.00	.00	2.00	2.00	1.00
5	hfg3	2	5	.00	3.00	2.00	1.00	1.00	.00	1.00	.00	.00	.00
5	hfg4	1	11	.00	1.00	.00	1.00	1.00	2.00	.00	.00	1.00	4.00
5	hfg5	6	13	1.00	.00	.00	.00	1.00	.00	1.00	.00	.00	1.00
5	hfg6	7	4	.00	.00	1.00	.00	.00	2.00	.00	1.00	.00	8.00
5	hfg7	9	2	.00	.00	1.00	1.00	.00	1.00	1.00	2.00	1.00	1.00
6	hfg1	7	4	.00	.00	.00	.00	1.00	.00	1.00	.00	.00	2.00
6	hfg2	12	13	1.00	.00	1.00	1.00	1.00	1.00	.00	.00	1.00	.00
6	hfg2	10	14	.00	2.00	.00	.00	1.00	.00	1.00	.00	1.00	1.00
6	hfg4	5	3	.00	1.00	1.00	.00	1.00	4.00	1.00	.00	.00	3.00
6	hfg5	8	1	1.00	.00	.00	.00	2.00	1.00	1.00	2.00	1.00	3.00
6	hfg6	6	13	.00	.00	2.00	.00	1.00	.00	3.00	1.00	2.00	.00
6	hfg7	7	4	2.00	2.00	2.00	.00	.00	1.00				

¹ The numbers in columns A_DIFF through O_DIFF reflect the magnitude of the difference between the two raters' ratings on the 7-point rating scales for each of the OTS rating scales.

² Overall rating scale for the OTS.

³ Behavioral and Event Checklist. This number reflects the difference between the 2 raters in total number of behavioral actions on the checklist.

APPENDIX I

Sample Cover Letter and Table to Assess the Completeness of Data Transmissions



Human Resources Research Organization
66 Canal Center Plaza, Suite 400 • Alexandria, VA 22314-1591
(703) 549-3611 • Fax: (703) 549-9025 & 548-5574
27 June 1997

Dear AT-SAT Test Site Manager,

With testing winding down, this is a good opportunity to compare the data that we have currently processed from your site with the information contained in your records. To this end, please find enclosed two tables.

The first table lists the transmission numbers and the date of those transmissions that we have already processed from your site. As you might imagine, there is a lag in the time between the date that a packet of data is transmitted to us and the date that we process it and add it to our data base. Therefore, please do not be concerned if a transmission that you have already sent us is not listed on this table; even an early transmission may be missing from this list if we are still waiting for some additional information from you or if we only recently processed it. This first table is enclosed to help you work through the second table, which lists the participants you have tested by the tests and forms that they have completed.

Specifically, an asterisk on this second table indicates the presence of predictor and CBPM tests for participants *from the transmissions listed in the first table*, as well as presence of SSN Request and BioData Forms. A blank cell on this second table indicates that we do not have the corresponding tests/forms *from the transmissions listed in the first table*. Because of the data processing time lag, you may see some SSN Request and Bio Data Forms from transmissions that are not listed on the first table.

Please review both tables carefully. For each blank cell on the second table, please provide the date that you *transmitted* the information to us in the cell itself. In addition to missing information, please review participant identification numbers for accuracy and completeness. If required, please provide additional explanations on a separate sheet of paper. Please fax all this information to me at (703) 706-5623 by July 7, 1997. Your time, hard work, and diligence is greatly appreciated.

Sincerely,

Ani S. DiFazio

Senior Scientist
AT-SAT Data Base Manager

Friday, June 27, 1997

THE TABLE ON THE NEXT PAGE LISTING EXAMINEE ID NUMBERS BY TESTS/FORMS COLLECTED WERE CONTAINED IN THE FOLLOWING TRANSMISSIONS RECEIVED FROM YOUR SITE

SITE=08 NAME=Los Angeles

TRANSMISSION NUMBER	TRANSMISSION DATE *
1	05/12/97
2	05/13/97
3	05/14/97
4	05/15/97
5	05/16/97
6	05/17/97
7	05/19/97
8	05/20/97
9	05/21/97
10	05/22/97
11	05/23/97
12	05/24/97
13	05/26/97
14	05/31/97
15	06/02/97

* If a range of dates was listed on the Data Transmittal Form, the first in the range is listed here

Table I-1 Table of Examinees and Tests/forms Received for Data Processing Site=08

ID NUMBER	ST	DI	SN	LA	AM	SC	AN	AY	ME	AT	EQ	MR	TW	PL	CBPM	SSN	BIO
08003	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*
08004	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08006	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
08011	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
08016	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*
08017	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08019	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08021	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08022	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08023	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08024	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08025															*	*	*
08027	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08028	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08029	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08030	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
08031	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08033	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08034	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08035	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08036	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08038															*		*
08039	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08040	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
08042	*	*	*	*	*	*	*	*	*	*	*	*	*	*			*
08043	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08046	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08050	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08054	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08055	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08056															*		*
08058	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08060	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08063	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08065	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08066	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08069															*		*
08070	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08072	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08073	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

An * indicates the presence of a test or form for that examinee in one of the transmissions listed in the previous table. A blank indicates that no test or form was received.