Part-Task Performance Measures

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United States Army
Research Institute for the Behavioral and Social Sciences

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# Part-Task Performance Measures

**Abstract**

The purpose of this Phase I SBIR project was to define and independently evaluate a subset of Army division-level command and control performance measures derived from the Army Command and Control Evaluation System (ACCES). The subset was measures which either directly or indirectly measure planning performance. The evaluation involved a determination of the degree to which this subset agreed with the overall ACCES evaluation of a division’s planning performance and with battle outcomes. The intent was to help determine if this measurement subset was sufficiently robust to be applied independently in the laboratory to assist in evaluating planning aids. The subset was used to evaluate the performance of the G3 Plans section of a U.S. Army division during a large-scale command post exercise. The results are contained in this report.

**Subject Terms**

- Planning
- Part-task performance
- Tactical planning
- Performance measurement
- Command and control

**Distribution/Availability Statement**

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- **Abstract (Maximum 200 words)**: The purpose of this Phase I SBIR project was to define and independently evaluate a subset of Army division-level command and control performance measures derived from the Army Command and Control Evaluation System (ACCES). The subset was measures which either directly or indirectly measure planning performance. The evaluation involved a determination of the degree to which this subset agreed with the overall ACCES evaluation of a division’s planning performance and with battle outcomes. The intent was to help determine if this measurement subset was sufficiently robust to be applied independently in the laboratory to assist in evaluating planning aids. The subset was used to evaluate the performance of the G3 Plans section of a U.S. Army division during a large-scale command post exercise. The results are contained in this report.
PART-TASK PERFORMANCE MEASURES

Introduction

Various agencies are developing planning aids which will be tested in a laboratory environment where performance cannot be measured by battle outcomes or within the larger context of Division-level command and control. To support these evaluations, a set of internal performance planning measures (i.e., part-task performance measures) is required that focus on the Division-level operations planning function. These measures should closely relate to the comprehensive command and control performance measures embodied in the Army Command and Control Evaluation System (ACCES), thus providing additional credibility to the laboratory findings.

A tentative set of part-task performance measures, based on ACCES measures, has been developed. Values for these measures were calculated in conjunction with a recent ACCES application. This report provides an evaluation of these measures with respect to their suitability for the laboratory environment and their relation to battle outcomes.

Overview of ACCES

ACCES provides quantitative and objective assessment of:

- The quality of the processes (and of the systems which support the processes) by which information is used by the commander and his staff in decision-making, and
- The overall effectiveness of the decisions made and their implementation.

The essence of ACCES is a set of measures including a small number of measures covering overall command post effectiveness and a much larger menu of diagnostic measures covering specific aspects of the command and control process.

ACCES is based on a view that command posts are analogous to adaptive control systems in that they seek to influence their environment (consisting of other commanders and their staffs, plus the elements of METT-T—Mission, Enemy, Troops, Terrain, and Time) by means of the directives they issue to their subordinates. This view implies that the effectiveness of the command post can be judged by the viability of its directives. Good directives can be executed without the need for modification, beyond the contingencies built into them, and remain in effect throughout their intended period without the need for unanticipated changes. Secondarily, effectiveness can be judged by the timeliness of the processes that produce those
directives. Command posts that issue directives (i.e., changes in either missions, assets, schedules, or boundaries, or some combination of these) that prove effective (i.e., accomplish military missions) and/or permit flexible responses in rapidly developing situations (i.e., contingency planning) score well.

The measurement tool treats the command post as an adaptive control system, operating in control cycles, that seeks to keep selected features in its environment within expected boundaries. The general approach, as illustrated in Figure 1, is based on the fact that the command post performs a number of processes in order to support decisionmaking and its implementation.

Of particular significance is the fact that ACCES, in addition to measuring overall effectiveness, provides diagnostic scores for the quality with which each of the processes is performed. Figure 2 lists the processes for which ACCES provides scores, and shows attributes which are measured. In addition to individual command post scores, ACCES also provides for the evaluation of a network of command posts.

Overview of the Application

The ACCES application consisted of a command post exercise (CPX) during which a Mechanized Infantry Division operated in a Southwest Asian environment as part of a Corps in a general war situation. The CPX was a multi-level, 24 hour per day, free-play division-level exercise which lasted a total of 114 hours. The CPX was supported by the Joint Exercise Simulation System (JESS).

The Division’s mission was to receive a battle handover from the Corps Covering Force, defend in sector to retain key terrain and destroy the enemy’s first operational echelon, and then be prepared to counterattack to complete the destruction of enemy forces in sector. During the exercise the Division operated with three forward brigades (Left, Center, and Right). The exercise was characterized by steady pressure on the Right Brigade throughout the exercise, with an attempted enemy breakthrough near ENDEX; steady pressure on the Left Brigade throughout the exercise, with heightened activity on Day 4; and early, heavy pressure on the Center Brigade on Days 1 and 2, followed by little activity for that brigade the remainder of the exercise.

Performance Measures

Table 1 provides a listing and definitions of the part-task performance measures used to evaluate Division planning. These measures are based on the comprehensive command and control performance measures embodied in ACCES. A discussion of the rationale for each part-task performance measure follows.
Figure 1. The command post as an adaptive control system
MONITORING
  COMPLETENESS
  ACCURACY
  TIMELINESS
  QUERYING
  IMPACT ON PLAN
  FORECAST CORRECTNESS

UNDERSTANDING
  COMPLETENESS
  QUALITY
  IMPACT ON PLAN
  UNDERSTANDING TIME

ESTIMATE
  MULTIPLE PLANNERS
  MULTIPLE OPTIONS
  PREDICTION COMPLETENESS
  PREDICTION QUALITY
  PREDICTION TIME

PLAN
  TIME FROM DECISION
  CONSISTENCY
  NOT QUERIED

COORDINATION
  MONITORING COMPARABILITY
  UNDERSTANDING COMPARABILITY
  CYCLE TIME
  TIMELINESS
  TIME FROM DECISION
  NOT QUERIED

NETWORK
  CONFIGURATION
  MONITORING COMPARABILITY
  UNDERSTANDING COMPARABILITY
  PLANNING COMPARABILITY
  UNDERSTANDING QUERIES
  DIRECTIVE COMPARABILITY

Figure 2. Command and Control Processes Measured with ACCES
Table 1

Part-Task Performance Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding Quality</td>
<td>The number of perceptions of the situation held by the staff section scored as percentage correct, not incorrect, or incorrect.</td>
</tr>
<tr>
<td>Options</td>
<td>The number of alternative courses of action considered most likely to occur in the future.</td>
</tr>
<tr>
<td>Planners</td>
<td>The number of staff members participating in the development of alternative courses of action.</td>
</tr>
<tr>
<td>Queries Required</td>
<td>Was additional (or more complete, timely, or accurate) data required to complete the planning process?</td>
</tr>
<tr>
<td>Plan Time Less Than Understanding Time</td>
<td>Was the Plan Time less than the Understanding Time?</td>
</tr>
<tr>
<td>Option Rejection, Commander</td>
<td>Was the recommended course of action rejected by the Commander?</td>
</tr>
<tr>
<td>Option Rejection, Other</td>
<td>Was the recommended course of action rejected by someone other than the Commander?</td>
</tr>
<tr>
<td>Lead Time Adequacy</td>
<td>Was the planning lead time provided to subordinates adequate? Adequate lead time was defined by the command, in this case, twice the senior headquarter's planning time.</td>
</tr>
</tbody>
</table>
Understanding Quality

An effective staff develops a set of hypotheses about what is going on in the environment (i.e., the elements of METT-T) in order to hedge against uncertainties. An understanding can be thought of as a set of hypotheses dealing with the current situation and the subsequent situation that will occur as a result of the current situation. The quality of understanding is described as correct, not incorrect, or incorrect. If the true situation is reasonably close to what the staff considers "most likely", the understanding is correct. If the true situation is not even included in the staff’s set of hypotheses, the understanding is incorrect. An understanding is "not incorrect" if the true situation (or something close to it) is included in the staff’s set of hypotheses, but not considered "most likely".

Options

Once understandings of the situation are identified, the staff develops a set of options, or alternative courses of action. Experience with ACCES has made it clear that the better decision processes are characterized by consideration of a number of alternative courses of action that are truly different in nature.

Planners

The development of alternative courses of action can be adversely affected by having too few planners involved in the process.

Queries Required

The staff’s planning process is directly dependent on the information that is provided to it. The staff must recognize when data are incomplete, late, or inaccurate.

Plan Time Less Than Understanding Time

Understanding time refers to the period of time, extending into the future, for which the staff assesses and projects the situation; in effect, how far out in time the staff is looking. Plan Time refers to the period of time for which the plan is supposed to give direction. Plan Time must not be greater than Understanding Time, because, if it is greater, the staff is planning into an understanding void.

Option Rejection, Commander

The staff’s estimate of the situation includes evaluating alternative courses of action and recommending the optimal alternative to the Commander. A rejection of the recommendation
would indicate that the staff had either not followed the Commander's intent or had produced a recommendation that was flawed in some other way.

**Option Rejection, Other**

In addition to the Commander, the staff’s recommended course of action is generally reviewed by other personnel, e.g., the G3 and/or the Chief of Staff. They could also reject the recommendation.

**Lead Time Adequacy**

Any plan issued by the Division will require more detailed planning by the affected brigade(s) and other subordinate commands. Adequate time must be available to permit subordinates to complete their planning and prepare for implementation. The Division involved in the application described here considered adequate time to be two-thirds of the total planning time available.

**Observed Planning Process**

Throughout the application, observers were stationed in the G3 Plans Cell of the Division Main Command Post (DMAIN). In addition to their normal duties as ACCES Observers/Data Collectors, these observers completed a Planning Process Work Sheet for each observed planning event. Figure 3 provides a copy of the Planning Process Work Sheet.

The observers recorded the following ten planning events:

- **Counterattack Options.** Prepared as part of the original Division Operations Plan.
- **Support to the Center Brigade.** A surprise development when the enemy struck where the Division did not expect an attack.
- **Defense of the Left Flank.** The Division's left flank was against an international border -- an allegedly neutral country. The Division Commander was concerned that enemy forces could flow through the "neutral" country and attack the Division's flank. He issued guidance to prepare for that contingency.
- **The Size of the Right Brigade Sector.** The Division Commander was concerned that the size of the Right Brigade sector was too large for its Commander to effectively exercise control.
<table>
<thead>
<tr>
<th>Plan Number</th>
<th>1. Time Planning begins: _________</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Plan Title:</td>
</tr>
<tr>
<td></td>
<td>3. Mission Description:</td>
</tr>
<tr>
<td></td>
<td>4. Planning Stimulus:</td>
</tr>
<tr>
<td></td>
<td>5. Number of Planners participating in cycle: _________</td>
</tr>
<tr>
<td></td>
<td>6. Alternatives considered:</td>
</tr>
<tr>
<td></td>
<td>Disposition:</td>
</tr>
<tr>
<td></td>
<td>7. Contingencies considered:</td>
</tr>
<tr>
<td></td>
<td>Disposition:</td>
</tr>
<tr>
<td></td>
<td>8. Does this plan establish new critical information requirements?</td>
</tr>
<tr>
<td></td>
<td>9. Did Planners query others for missing information?</td>
</tr>
<tr>
<td></td>
<td>10. Did the Commander reject this plan? Why?</td>
</tr>
<tr>
<td></td>
<td>11. Was the Plan rejected for other reasons? Why?</td>
</tr>
<tr>
<td></td>
<td>By Whom: _______________________</td>
</tr>
<tr>
<td></td>
<td>12. Does the Plan define outcomes — victory, defeat or stalemate — and what happens next?</td>
</tr>
<tr>
<td></td>
<td>13. Analysis/wargaming description:</td>
</tr>
<tr>
<td></td>
<td>14. Time subordinates notified: _________</td>
</tr>
<tr>
<td></td>
<td>15. Time Plan scheduled to be completed: _________</td>
</tr>
<tr>
<td></td>
<td>16. Time Planning cycle ended: _________</td>
</tr>
<tr>
<td></td>
<td>Observer:</td>
</tr>
<tr>
<td></td>
<td>Process Notes</td>
</tr>
<tr>
<td></td>
<td>Participant</td>
</tr>
<tr>
<td></td>
<td>a.</td>
</tr>
<tr>
<td></td>
<td>b.</td>
</tr>
<tr>
<td></td>
<td>c.</td>
</tr>
<tr>
<td></td>
<td>d.</td>
</tr>
<tr>
<td></td>
<td>e.</td>
</tr>
<tr>
<td></td>
<td>f.</td>
</tr>
<tr>
<td></td>
<td>g.</td>
</tr>
<tr>
<td></td>
<td>Salient Points:</td>
</tr>
</tbody>
</table>

Figure 3. Planning process work sheet
Deep Strike Planning. A deep strike was needed to deny the enemy use of a tunnel which would allow him to move his attack to the right. Another deep strike was needed to deny the enemy use of a bridge on his main supply route (MSR).

Cut Enemy MSR. When the Division initially failed to close the enemy MSR in the deep strike option, a more detailed plan was proposed to deny the enemy this asset.

Attack on the Tunnel. After the deep strike option failed, another attempt to close the tunnel was planned.

Use of a Separate Infantry Brigade (SIB). After the Division had been in contact with the enemy for approximately three days, and its own forces were reduced, the Division began planning for additional forces from the Corps reserve in order to sustain the defense.

Defense of Critical Road Junction. Due to the terrain in the Division's sector, a road junction was declared to be critical terrain. The Division planned a defense of the road junction against an anticipated airborne assault.

Reconstitution of the Division Reserve. Due to the size of friendly losses and the subsequent use of the Division reserve, the Division had to take some risks in order to have sustaining combat power (including asking Corps for its reserve force). Planning for reconstituting a Division reserve was required.

Evaluation of the Planning Process

Figure 4 provides an evaluation of these individual planning events using the part-task performance measures. The figure also provides a description of both the expected and the actual battle outcomes for each planning event.

The performance of the staff, as described by the part-task performance measures, was generally excellent; this is consistent with the Division's overall planning performance as evaluated by ACCES. Their plans were always based on multiple options and prepared with the input of multiple planners. When queries were required, they were completed. Plan Time was always less than Understanding Time. The staff's recommendations were generally accepted. Also, the lead time they provided to subordinates was always adequate.
Of the ten planning events observed, four resulted in battle outcomes significantly different from the expected outcomes.

The first two cases, Defense of the Left Flank and Defense of the Critical Road Junction, are examples of pure military judgement. Both of these are contingency plans involving preparation for "worst case" scenarios. The Division Commander had decided, during the intelligence preparation of the battlefield phase, that in order to protect his forces he had to prepare these plans. Tacticians assure security by taking precautions against surprise. They must use aggressive reconnaissance and maintain security forces to build contingencies to their force’s advantage. Because this scenario had the Division spread very thin across a large piece of poor mobility terrain, movement time was figured in days, not hours. Thus, protection of the force was a very real problem. The Division Commander asked his G2 repeatedly if there were any signs of the enemy moving on the left flank or down toward the road junction. In the left flank case, there was some intelligence which caused the Division concern. First, there was a cross-border fly-over by enemy air, but no attack. Second, there was information that an enemy delegation had met with the neutral country’s government. The intelligence associated with the critical road junction was not as compelling, although there were some reports of enemy planes loading airborne forces. Neither one of these contingencies occurred.

Two plans, Deep Strike and Reconstitution of the Division Reserve contained miscalculations on the friendly side. Regarding the Deep Strike, the officers planning the mission did not understand the types of weapon mix which the US Air Force could deliver on a target and, more importantly, what reasonable damage could be expected from a weapon. In both cases, the ordinance on-board the aircraft would not have damaged either the tunnel or the bridge to the degree required by the mission. Both of these targets were reconsidered in later plans (Cut Enemy MSR and Attack on Tunnel). The MSR bridge was, in fact, destroyed. However, the airmobile artillery raid on the tunnel was aborted due to heavy enemy fire against the helicopters. The original Deep Strike planning involved some wasted planning time, but probably did not affect the larger outcome of the Division’s mission.

The planning event, Reconstitution of the Division Reserve, involved a misunderstanding of guidance.
<table>
<thead>
<tr>
<th>PLAN</th>
<th>OPTIONS</th>
<th>PLANNERS</th>
<th>UNDERSTANDING OF FRIENDLY</th>
<th>UNDERSTANDING OF ENEMY</th>
<th>QUERIES REQUIRED</th>
<th>PLANNING TIME LESS THAN 60 MIN</th>
<th>COMMANDER REACTION TIME</th>
<th>COMMANDER REJECTION OF PLAN</th>
<th>LEAD TIME ADEQUACY</th>
<th>EXPECTED OUTCOME</th>
<th>BATTLE OUTCOME</th>
</tr>
</thead>
</table>
| TITLE: Counterattack Options  
MISSION: Reestablish PL STEEL  
STIMULI: Initial planning, offensive operations  
BEGINNING TIME: Original Plan PLAN CYCLE TIME: 83h | 5 | 5 | 100 | - | N | N | Y | N | N | Y | If enemy penetrated PL STEEL, the Division would attack to restore the line. | Option MACON moved the Center Bde forward. Option was used to support the tunnel raid. |
| TITLE: Support to Center Bde  
MISSION: Stop enemy attack  
STIMULI: Enemy attack  
BEGINNING TIME: 301655 PLAN CYCLE TIME: 15h, 15m | 3 | 5 | 67 | 67 | Y | Y | Y | N | N | Y | Provide Bde with enough combat power to repel enemy attack without committing Division reserve. | As expected, a Bn TF was chopped to the Bde which repelled the attack. Division received Corps assets. |
| TITLE: Defense of Left Flank  
MISSION: Ensure Division left flank is protected  
STIMULI: Enemy capability to attack Division flank  
BEGINNING TIME: 302219 PLAN CYCLE TIME: 8h, 50m | 7 | 8 | 100 | 65 | N | N | Y | N | N | Y | Division left flank would be protected if enemy attacked. | Enemy did not attack Division left flank. |
| TITLE: Reduce Size of Right Bde Sector  
MISSION: Reduce span of control  
STIMULI: Commander guidance  
BEGINNING TIME: 011527 PLAN CYCLE TIME: 10h | 3 | 5 | 100 | - | Y | Y | Y | Y | N | Y | The right sector of the Division area would be under effective control. | Right Bde Commander maintained control of sector. |

Figure 4. Evaluation of planning events using the part-task performance measures (1 of 3)
<table>
<thead>
<tr>
<th>PLAN</th>
<th>OPTIONS</th>
<th>PLANNERS UNDERSTANDING QUALITY</th>
<th>FRIENDLY UNDERSTANDING QUALITY</th>
<th>ENEMY UNDERSTANDING QUALITY</th>
<th>QUERIES NEEDED</th>
<th>QUERIES ACCOMPLISHED</th>
<th>UNDERSTANDING TIME COMMANDER</th>
<th>OPTION REJECTION</th>
<th>LEAD TIME ADEQUACY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE: Deep Strike</td>
<td>MISSION: Deny bridge and tunnel to enemy</td>
<td>STIMULI: Protect forces</td>
<td>BEGINNING TIME: 011511</td>
<td>PLAN CYCLE TIME: 23h, 57m</td>
<td>3</td>
<td>5</td>
<td>50</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>TITLE: Cut Enemy MSR (bridge)</td>
<td>MISSION: Deny enemy use of MSR</td>
<td>STIMULI: Protect forces</td>
<td>BEGINNING TIME: 031000</td>
<td>PLAN CYCLE TIME: 19h</td>
<td>6</td>
<td>10</td>
<td>100</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>TITLE: Attack on Tunnel</td>
<td>MISSION: Deny use of tunnel to enemy</td>
<td>STIMULI: Protect forces</td>
<td>BEGINNING TIME: 031703</td>
<td>PLAN CYCLE TIME: 12h, 36m</td>
<td>6</td>
<td>8</td>
<td>100</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

Figure 4. Evaluation of planning events using the part-task performance measures (2 of 3)
<table>
<thead>
<tr>
<th>TITLE: Defense of Critical Road Junction</th>
<th>EXPECTED OUTCOME</th>
<th>BATTLE OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>MISSION: Defend against enemy airborne attack</td>
<td>Repel enemy attack on critical terrain.</td>
<td>No such attack occurred.</td>
</tr>
<tr>
<td>STIMULI: Expect airborne attack against critical terrain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEGINNING TIME: 041921</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLAN CYCLE TIME: 11h, 9m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TITLE: Use of Separate Infantry Brigade (SIB)</th>
<th>EXPECTED OUTCOME</th>
<th>BATTLE OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>MISSION: Provide combat power to Division</td>
<td>The Division would receive the SIB to increase combat power.</td>
<td>Corps began to reposition SIB closer to Division for possible employment with Division when ENDEX occurred.</td>
</tr>
<tr>
<td>STIMULI: Loss of combat power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEGINNING TIME: 031200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLAN CYCLE TIME: 48h</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TITLE: Reconstitution of Division Reserve</th>
<th>EXPECTED OUTCOME</th>
<th>BATTLE OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>MISSION: Defend</td>
<td>Reconstitute Division reserve.</td>
<td>Corps accepted risk by not chopping additional forces to Division.</td>
</tr>
<tr>
<td>STIMULI: Maintain Division combat power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEGINNING TIME: 041531</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLAN CYCLE TIME: 20h, 30m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Corps denied request for forces three times.*

Figure 4. Evaluation of planning events using the part-task performance measures (3 of 3)
coming from Corps. Corps periodically gave the Division guidance that another unit would be provided to the Division from the Corps reserve. However, each time the Division formally asked the Corps for the unit the answer was either "no" or "not yet". The Corps Commander was waiting for the situation to develop. At the end of the exercise, the Corps had begun to reposition a unit into the Division area, but had not yet given the Division operational control. Had the game continued another 6-12 hours, the unit would have become part of the Division. The Commander did maintain a small Division reserve throughout the majority of the exercise.

In three of the observed events where battle outcomes generally were consistent with the expected outcomes, the evaluation of the planning process by the part-task performance measures resulted in less than perfect scores.

Planning for support to the Center Brigade began as somewhat of a surprise. The Division did not expect to receive early fighting in the Center Brigade sector. When it occurred, the Division began to maneuver units to aid the brigade, but Center Brigade's sector was very large and the terrain was hard to negotiate, so it took some time for reinforcements to get into position. The fighting did not appear very intense. At one point, the Division Commander stated that a single battalion could handle the fight. The fight lasted less than 24 hours. The G2 advised the Commander several times that this was not the main attack. The enemy sustained some losses in this battle and did not pursue the attack in the Center Brigade sector. Throughout, the enemy showed no signs of building up forces behind those in contact. The enemy quickly abandoned this fight to pursue attacks in other areas of the Division and did not push at the Center Brigade again during the exercise.

On the second day of the exercise, the Division Commander issued guidance to reduce the size of the Right Brigade's sector. The staff developed options, but did not recommend that the Commander adopt any of the options. Both the ADC-M and the G3 advised against the plan. After discussing the situation with the Right Brigade Commander, the Division Commander dropped the idea.

The use of the Separate Infantry Brigade was closely related to the Reconstitution of the Division Reserve event. Initially the Corps planners directed the Division to plan for this unit. The Division was then
refused the use of the SIB by the Corps Commander. The same process was repeated through two more iterations. Just prior to ENDEX, Corps was positioning the SIB nearer to the Division boundary, but would not turn over operational control to the Division. The Division can not be faulted in this case as they were responding to what Corps told them to do.

Evaluation of the Part-Task Performance Measures

This application demonstrated the ability of the part-task performance measures to identify excellent performance on the part of the planning staff and to accomplish this independent of other, more comprehensive, command and control performance measures.

In those cases where the part-task performance measures identified less than optimal performance, battle outcomes were generally significantly different from the expected outcomes.

Although additional investigation is required, the results to date give indication that the part-task performance measures could be used to evaluate planning aids in a laboratory environment where performance cannot be measured by battle outcomes or within the larger context of Division-level command and control.
APPENDIX A

PLANNING PROCESS WORK SHEETS
1. Time Planning begins: Original PLAN
2. Plan Title: COUNTER ATTACK OPTIONS
3. Mission Description: REESTABLISH PLC STEEL
4. Planning Stimulus: INITIAL PLANNING
5. Number of Planners participating in cycle: 5
6. Alternatives considered:  
   - CATK LIBERTY (1st Bde)  Disposition: NOT USED
   - CATK VANGUARD (2nd Bde) NOT USED
   - CATK FREDD (2nd Bde) NOT USED
   - CATK DRACON (4th Bde) TUNNEL CAP NOT USED
   - CATK PANTHER (4th Bde)
7. Contingencies considered: Disposition:  
8. Does this plan establish new critical information requirements? NO
9. Did Planner query others for missing information? NO
10. Did the Commander reject this plan? Why? NO
11. Was the Plan rejected for other reasons? Why? W/O
By Whom: ___________________________
12. Does the Plan define outcomes -- victory, defeat or stalemate -- and what happens next?

13. Analysis/wargaming description:

14. Time subordinates notified: ______________

15. Time Plan scheduled to be completed: ______________

16. Time Planning cycle ended: 032309

Observer: ______________

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Process Notes

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Salient Points:

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<td>1. Time Planning begins:</td>
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<td>2. Plan Title:</td>
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<td>3. Mission Description:</td>
<td>REINFORCE 48 BDE</td>
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<td>4. Planning Stimulus:</td>
<td>ENEMY CONTACT</td>
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<tr>
<td>5. Number of Planners participating in cycle:</td>
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<tr>
<td>6. Alternatives considered:</td>
<td>Disposition:</td>
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<tr>
<td></td>
<td>1-10% ADV</td>
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<tr>
<td></td>
<td>3-69 AD</td>
</tr>
<tr>
<td></td>
<td>7-131 INFANTRY</td>
</tr>
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<td>7. Contingencies considered:</td>
<td>Disposition:</td>
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<td>DECEPTION PLAN</td>
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<td></td>
<td>3-69 ARMORED ADDED STRENGTH</td>
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<td>8. Does this plan establish new critical information requirements?</td>
<td>WILL ENEMY ATTACK IN EAST?</td>
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<td>9. Did Planner query others for missing information?</td>
<td>YES</td>
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<td>10. Did the Commander reject this plan? Why?</td>
<td>NO</td>
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<td>11. Was the Plan rejected for other reasons? Why?</td>
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By Whom: _________________________
12. Does the Plan define outcomes — victory, defeat or stalemate — and what happens next?

MUST STOP ENEMY AT 48KILE, MAIN
ATTACK MUST HAPPEN IN 90, OUR STRENGTH.

13. Analysis/wargaming description:

Time, Distance, Factors, and Enemy Pressure

14. Time subordinates notified: 010730

15. Time Plan scheduled to be completed: ________________

16. Time Planning cycle ended: 010814

Observer: __________________________

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Process Notes

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Salient Points:

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Plan Number 3

1. Time Planning begins: 302219

2. Plan Title: **Defense of Left Flank**

3. Mission Description: **Ensure Division's Left Flank is Protected**

4. Planning Stimulus: **CE Concern**

5. Number of Planners participating in cycle: 8

6. Alternatives considered:
   - Attack 3-69 Ar
   - Move 4x Bde
   - 2-101 Own Area 9/10
   - CATK SW
   - Push 1/2 N/W

7. Contingencies considered:

8. Does this plan establish new critical information requirements? **No**

9. Did Planner query others for missing information? **No**

10. Did the Commander reject this plan? Why? **No**

11. Was the Plan rejected for other reasons? Why? **No**

By Whom: ____________________________
12. Does the Plan define outcomes -- victory, defeat or stalemate -- and what happens next?

No well although Division maintained some forces capable of responding

13. Analysis/wargaming description:

Time distance factors of moving forces

14. Time subordinates notified: __________

15. Time Plan scheduled to be completed: __________

16. Time Planning cycle ended: 010710

Observer: ______________________

Process Notes

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<td>g. G-2</td>
<td>Intelligence</td>
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<td>ADA</td>
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Salient Points: G-2 consistently stated Enemy would not attack into final

_____________________________
1. Time Planning begins: 01/15/11
2. Plan Title: Deep Strike
3. Mission Description: Deny Bridge and Tunnel
4. Planning Stimulus: Requirement to protect forces
5. Number of Planners participating in cycle: 3
6. Alternatives considered:
   - Artillery on Tunnel
   - Artillery on Bridge
   - Chemical on Tunnel

   Disposition:
   - Attended
   - Not used
   - Used

7. Contingencies considered:
   - Laser guided Bombs on Bridge

   Disposition: Used

8. Does this plan establish new critical information requirements? No

9. Did Planner query others for missing information? No

10. Did the Commander reject this plan? Why? No

11. Was the Plan rejected for other reasons? Why? No

By Whom:
12. Does the Plan define outcomes — victory, defeat or stalemate — and what happens next?

NO — Caused much stronger planning in bridges, tunnels now it closed entry delayed for period.

13. Analysis/wargaming description:

[Blank lines]

14. Time subordinates notified: ______________

15. Time Plan scheduled to be completed: ______________

16. Time Planning cycle ended: 02/15/07

Observer: _______________________

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Process Notes

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Salient Points: ______________________

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Plan Number 5

1. Time Planning begins: 01/15/77

2. Plan Title: Size of 2nd Bde Sector

3. Mission Description: Reduce Size of 2nd Bde
   Command and Control

4. Planning Stimulus: CG - Span of Control

5. Number of Planners participating in cycle: 5

6. Alternatives considered:
   - Move 2-101 into position left of 2Bde
   - Move 3-65 and Infantry to
   - TF Palgh (Use of DIA)

   Disposition:
   - Not used
   - Not used
   - Not used

7. Contingencies considered:

   Disposition:

8. Does this plan establish new critical information requirements?
   No

9. Did Planner query others for missing information?
   Bde S-3 and DTC

10. Did the Commander reject this plan? Why?
    Yes - decided plan was not necessary after talk with Bde Commander

11. Was the Plan rejected for other reasons? Why?
    No

By Whom: ____________________________

A-10
12. Does the Plan define outcomes -- victory, defeat or stalemate -- and what happens next?

13. Analysis/wargaming description:

14. Time subordinates notified: 020130

15. Time Plan scheduled to be completed: ___________

16. Time Planning cycle ended: 020130

Observer: __________________________

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Process Notes

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Salient Points: ____________________________________________________________

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Plan Number 6

1. Time Planning begins: 031000
2. Plan Title: Cut Enemy MSR-Bridge
3. Mission Description: Deny Enemy Use of MSR
4. Planning Stimulus: Protect Forces
5. Number of Planners participating in cycle: 10
6. Alternatives considered: Disposition:
   - Artillery
   - Chemical
   - BAT
   - SAB
   - Maverick
   - GBU
   - - Would not complete action
   - - Not used
   - - Not available
   - - Not available
   - - Used
7. Contingencies considered:
   -
   -
   -
8. Does this plan establish new critical information requirements? NO
9. Did Planner query others for missing information? Air Force, Logistics, FSF, OTAC, Bde 5-8
10. Did the Commander reject this plan? Why? NO
11. Was the Plan rejected for other reasons? Why? NO

By Whom: __________________________
12. Does the Plan define outcomes — victory, defeat or stalemate — and what happens next?

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<tr>
<th>Weapon used to deny use of</th>
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<td>Bridge to enemy</td>
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13. Analysis/wargaming description:

14. Time subordinates notified: __________

15. Time Plan scheduled to be completed: __________

16. Time Planning cycle ended: 03 2000

Observer: ________________

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### Process Notes

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<td>Enemy options</td>
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<td>Options</td>
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### Salient Points:

- **AAMC**
  - Air available
- **G-2**
  - Enemy estimate
1. Time Planning begins: 03/200

2. Plan Title: USE OF SIB

3. Mission Description: PROVIDE COMBAT POWER
   THE DIVISION

4. Planning Stimulus: 60250 EXFOCS

5. Number of Planners participating in cycle: 5

6. Alternatives considered:
   - Corps Reserve
   - Move troops of Infantry Divn
   - 2nd Arm Divn Open

7. Contingencies considered:

8. Does this plan establish new critical information requirements? No

9. Did Planner query others for missing information? Corps

10. Did the Commander reject this plan? Why? No

11. Was the Plan rejected for other reasons? Why? Corps rejected options; wanted to maintain unit as corps reserve

By Whom: G-3
12. Does the Plan define outcomes — victory, defeat or stalemate — and what happens next?

13. Analysis/wargaming description:

14. Time subordinates notified: __________

15. Time Plan scheduled to be completed: __________

16. Time Planning cycle ended: 051200

Observer: ________________

Process Notes

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Salient Points: __________________________

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________________________________________
1. Time Planning begins: 031702
2. Plan Title: Attack on Tunnel
3. Mission Description: Deny enemy use of tunnel to move troops and supplies
4. Planning Stimulus: Issuing order
5. Number of Planners participating in cycle: 8
6. Alternatives considered:
   - CPS
   - B-1
   - LGB
   - Airillery
   - Other

7. Contingencies considered:

8. Does this plan establish new critical information requirements? NO

9. Did Planner query others for missing information? Did not consider this deep battle.

10. Did the Commander reject this plan? Why? NO

11. Was the Plan rejected for other reasons? Why? NO

By Whom: ___________________________
12. Does the Plan define outcomes — victory, defeat or stalemate — and what happens next?

13. Analysis/wargaming description:

14. Time subordinates notified: __________

15. Time Plan scheduled to be completed: 040537

16. Time Planning cycle ended:
   Observer: _______________________

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Process Notes

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Salient Points: _______________________

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Plan Number 9

1. Time Planning begins: 041531

2. Plan Title: **Reconstitution of Reserve**

3. Mission Description: **Division Reserve Force**

4. Planning Stimulus: **Corps pull Force Division using as Reserve**

5. Number of Planners participating in cycle: 4

6. Alternatives considered: Disposition:
   - TF 3-69 on 6 hour swing
     - CAU from reap area with request from SIR
     - FUT 3-507 on 6 hour swing
     - not used
   - CG: NO
     - corps NO
     - used

7. Contingencies considered:

8. Does this plan establish new critical information requirements?

9. Did Planner query others for missing information?
   - DTAC: LOGS/READ

10. Did the Commander reject this plan? Why?
    - NO

11. Was the Plan rejected for other reasons? Why?
    - NO

By Whom: ____________________________
12. Does the Plan define outcomes -- victory, defeat or stalemate -- and what happens next?

13. Analysis/wargaming description:

14. Time subordinates notified: 041659

15. Time Plan scheduled to be completed: 

16. Time Planning cycle ended: 051200

Observer: ______________________

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Process Notes

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Salient Points: ______________________

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P - 19
1. Time Planning begins: 041921

2. Plan Title: Defense of Critical Road Junction

3. Mission Description: Defend Against Enemy Airborne


5. Number of Planners participating in cycle: 5

6. Alternatives considered: Disposition:
   - Hold 4432
   - Move TP 101 to Y
   - Arm to good MGA

7. Contingencies considered: Disposition:

8. Does this plan establish new critical information requirements? NO

9. Did Planner query others for missing information? NO

10. Did the Commander reject this plan? Why? NO

11. Was the Plan rejected for other reasons? Why? NO

By Whom: ___________________________

Plan Number 10
12. Does the Plan define outcomes — victory, defeat or stalemate — and what happens next?

13. Analysis/wargaming description:

14. Time subordinates notified: 050830

15. Time Plan scheduled to be completed: 

16. Time Planning cycle ended: 050830

Observer: 

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Process Notes

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Salient Points:

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A-21