CHAPTER VI

Reserve Component Units at the National Training Center

The "Total Force Policy," under which the United States' military forces had operated since the end of the Vietnam War, was a concept based on the assumption that active and reserve forces were to be considered a homogeneous whole. The concept's Army component, usually referred to as the "Total Army," encompassed maximum reliance on the National Guard and the U.S. Army Reserve as well as on Department of Defense civilian personnel. Reserve component (RC) forces were expected to be the initial and primary source of augmentation in emergencies requiring a rapid and substantial expansion of active forces under mobilization authority. The Army's program for implementing that strategy for combat units was based on a unit "roundout" concept in which designated brigade-size National Guard units would bring two-brigade Active Army divisions up to three-brigade strength. In 1983, combat maneuver National Guard units began training at the National Training Center. The experiences of these first roundout units, and later of the 48th Mechanized Infantry Brigade from the Georgia National Guard and the 155th Mechanized Infantry Brigade from the Mississippi National Guard during Operations Desert Shield and Desert Storm, brought into sharp focus the question of what the nature of reserve component training could and should be if the Total Army concept were to be supported.[1]

1. David W. Grissmer and Glenda Y. Nogami, "Retention Patterns for Army National Guard Units Attending the National Training Center," (The United States Army Research Institute for the Behavioral and Social Sciences [ARI]), April 1988, p. 4 [hereafter cited as "Retention Patterns"]. The section that folows is based heavily on this study, but uses the information gathered in a somewhat different manner.

The Total Army Concept

The practice of rounding out Active Army divisions began as one component of the policy changes that took place as the Vietnam War wound down in the early 1970s. In 1973, the United States abandoned the Selective Service System in favor of an all-volunteer force. Without the draft to fall back on in the event of war or other national emergencies, the reserves became the principal source for the rapid buildup of the active forces. The first official definition of this Total Force Policy appears to date from Secretary of Defense Melvin R. Laird's statement before Congress on the FY 1972 defense budget, delivered on 9 March 1971. The Total Force Policy was officially adopted in 1973.[2]

The roundout concept also supported the Army's effort, beginning in 1974, to increase the number of Active Army divisions from thirteen to sixteen while maintaining a constant end strength. The containment of personnel costs would allow more resources to satisfy force modernization needs. One way to accomplish that aim was to structure the Active Army divisions at less than the normal force structure of three maneuver brigades and rely on the reserves to "round out" an active division—that is, bring it up to full strength—should mobilization become necessary. The principal idea, then, was to have one brigade of several Active Army division be an RC brigade. Proponents of the roundout concept believed that more Active Army divisions would boost the confidence of U.S. allies and better support the policy of deterrence of potential enemies. The concept was also designed to cut costs based on the premise that reserve forces cost less than active forces. Many senior Army officials, including Army Chief of Staff Creighton W. Abrams, Jr. (July 1972-October 1974) believed the nation's political leadership would be more likely to support a major conflict—and would seek popular support for such a conflict—if they had to mobilize citizen-soldiers. Drawing reservists and National Guardsmen into the fighting force would also force the White House to gauge national resolve early in any future military crisis.[3]

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2. (1) "Statement of Secretary of Defense Melvin R. Laird on the FY 1972 Defense Budget," 9 Mar 71 (Washington D.C.: U.S. Government Printing Office), 21-24, 34-35, 100-01 as cited in Robert L. Goldich, "The Army's Roundout Concept After the Persian Gulf War" (Congressional Research Service Report for Congress, The Library of Congress, 22 Oct 91), p. 5, fn. 7. This report is hereafter cited as "Goldich." (2) "National Guard: Peacetime Training Did Not Adequately Prepare Combat Brigades for Gulf War" (United States General Accounting Office, Report to the Secretary of the Army, 24 Sep 91, p. 8 [hereafter cited as GAO Report, 24 September 1991].

3. (1) Goldich, pp. 5-6. (2) Rick Atkinson, "Is Guard Unit Combat Ready?," *Washington Post*, 12 Jan 91. The number of Army divisions increased to eighteen in the mid-1980s, while active Army strength (Continued)

In addition to that rationale, the reserve component separate brigades of the early 1970s were units "in search of a mission." During the period 1963-1967, the Army had inactivated nineteen Army National Guard divisions and all six Army Reserve maneuver divisions, which were severely understrength. Activated in their place were fifteen Guard and three Reserve separate combat brigades which were usually at full strength. Thus, by 1967, together with separate brigades that had existed before 1967, the Army had eighteen National Guard and three Army Reserve brigades and eight Army National Guard divisions. Because Army doctrine was based on the division as the basic large tactical unit, separate infantry and armored brigades, excepting those regionally dedicated, had no precise mission nor did they have the sustainability of full divisions. The rounding out of Active Army divisions could provide a high-profile mission of bringing active divisions to full mobilization strength. Furthermore, proponents of the roundout concept hoped that the new status for some Guard units would encourage the Army to pay more attention to all the reserves with regard to modernized equipment and better training.[4]

By the mid-1980s, six of the twelve Active Army divisions based in the continental United States had roundout brigades and three others had roundout battalions. Only four U.S.-based divisions did not require roundout units to bring them to deployment strength—and none of the four were "heavy" (armored or mechanized infantry) divisions. The emphasis on maintaining light divisions at full strength was based on the belief that rapid response contingency operations would require light forces. It was further assumed that reinforcement of Europe or conflict in Southwest Asia or the Soviet Union would come with ample warning time for the mobilization and training of the RC roundout brigades. It was against that background that the first roundout National Guard units trained at the National Training Center.[5]

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3. *(Continued)* remained at approximately 780,000 from 1974 to 1988. General Abrams never forgot President Lyndon Johnson's refusal to mobilize the reserves on any significant scale to augment the AC during the Vietnam War, a failure he believed strongly influenced negative public opinion. Lewis Sorley, "Creighton Abrams and Active-Reserve Integration in Wartime," *Parameters*, Summer 1991, pp. 35-50.

4. Goldich, pp. 6-7. For a detailed discussion of the reserves' role in the Total Army see Lt. Col. Richard A. Crossland and Maj. James T. Currie, USAR, *Twice the Citizen: A History of the United States Army Reserve, 1903-1983* (Washington DC: Office of the Chief Army Reserve, 1984, pp. 211-65.

5. Goldich, pp. 7-8. The four "light" divisions that remained at full strength were the 101st Airborne (Air Assault), the 82nd Airborne, the 7th Infantry Division (Light), and the 25th Infantry Division (Light).

The NTC and National Guard Retention Patterns

The proficiency of roundout units and of their individual soldiers was crucial to the overall readiness of the Active Army divisions they served. With that in mind and in line with the new mission of the reserve forces, the Army undertook several initiatives to raise the personnel levels and training readiness of the Army National Guard. Those initiatives included the provision of improved weapons and training equipment, increased levels of full-time manning for Guard units, increased pay and benefits in the form of enlistment and reenlistment bonuses and educational benefits, and more realistic training opportunities. In the quest to provide better training, National Guard units were scheduled to participate in mobilization exercises and in European and Korean warfighting exercises and to take part in rotations to the NTC. Those additional training requirements tended to increase the importance of questions already being asked about the ability of Guard and Army reserve units to achieve the desired level of readiness within the time officially allotted for training.[6]

The plan for training the roundout maneuver units at the NTC was that each unit would accompany its active component host brigade. The normal configuration was one active component battalion and the roundout battalion, with the remainder of the brigade slice constituted of active duty units. The two battalions cross-attached units and then participated in the rotational training. The first National Guard unit to deploy to the NTC was the 1st Battalion, 108th Armor from Georgia, a component of the 48th Infantry Brigade (Mechanized), Army National Guard, which was the roundout brigade for the 24th Infantry Division (Mechanized) based at Fort Stewart, Ga. That battalion rotated to the NTC in September 1983.[7] In the following months, the personnel strength of the unit fell by between 15 and 20 percent. When that fact was brought to the attention of General Maxwell R. Thurman, then Vice Chief of Staff of the Army, Thurman asked the Army Research Institute to look into the situation. In response to his directive, the Battelle Columbus Laboratories of Research Triangle Park, N.C., under the auspices of ARI, studied the first seven roundout battalions to train at the NTC. Those units went to Fort Irwin between September 1983 and September

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6. "Retention Patterns," p. 1.

7. Robert Dvorchak, "Reserves Better Trained and Equipped, But Are They Up to the Job?," Associated Press, 25 Aug 90.

1985. They included three battalions from Georgia and one each from North Carolina, Minnesota, Alabama, and Louisiana.[8]

The Battelle study focused on the effect that the NTC attendance requirement, and training for it, had on decisions to separate from the Guard or to transfer from the unit. The study especially addressed the additional time required. Researchers employed both interviews and data analysis to test their hypotheses. Case studies of each of the seven units were constructed through unit visits and interviews during weekend drills. Approximately 150 interviews were conducted with commanders, other officers, noncommissioned officers, and junior enlisted personnel. Interviewees also included some individuals from the active component parent units and a few former observer/controllers at the NTC. To establish the actual attrition rates for each unit, researchers analyzed computerized personnel data reflecting the composition of each unit one year prior to NTC rotation and six months after return to home station. Those data were then compared to data for "control" units that had not gone to the NTC.[9]

Commanders of most National Guard units preparing for an NTC rotation scheduled considerably more training time during the year preceding deployment to Fort Irwin than the usual 2 days of drill a month and 15 days of annual training. For that reason, a study of the experience of the

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8. "Retention Patterns," pp. 2, 4. The units other than the 1st Battalion, 108th Armor already described were:

BN (Parent Unit)	BDE	STATE	DATES
2d Bn, 136th Inf (M) (1st Inf Div (M))	**	Minn.	19 Apr-8 May 84
1st Bn, 121st Inf (M) (24th Inf Div (M))	48th Inf	Ga.	3-22 Oct 84
2d Bn, 121st Inf (M) (24th Inf Div (M))	48th Inf	Ga.	18 Mar-6 Apr 85
2d Bn, 152d Ar (5th Inf Div (M))	356th Inf	Ala.	1-20 Jun 85
2d Bn, 120th Inf (M) (4th Inf Div (M))	116th Cav	N.C.	26 Jun-15 Jul 85
3d Bn, 156th Inf (M) (5th Inf Div (M))	356th Inf	La.	15 Aug-3 Sep 85

**The 2-136 Infantry Battalion was a Separate Battalion

(1) Ibid., p. 4. (2) "Divisions of the United States Army" effective 1 October 1989, chart prepared by the Association of the United States Army.

9. "Retention Patterns," pp. vii, 5, 6.

first seven National Guard units to train at the NTC promised to offer some answers as to the effect of an increased training requirement on individuals and units. The NTC training increased the time required in three ways. First, unit members were required to deploy for at least three weeks rather than the usual two weeks for annual training. Second, all units undertook a more intense training schedule to "train-up" for the NTC. Extra drills often occurred on a Friday preceding the usual weekend drill and required that Guardsmen take time off from their civilian jobs. Last, officers and senior NCOs held many planning sessions, which could occupy two or three weekends a month or a number of weekday nights. In addition, many of those Guardsmen served on advance NTC observation teams. All the increased activity in preparation for a visit to Fort Irwin meant slackened recruiting and retention efforts.[10]

The statistical analysis of personnel data indicated that attrition levels were higher for Guard units that had participated in NTC training than for those that had not. Losses were especially high among category IV personnel and non-high school graduates. The case studies provided anecdotal evidence of a common perception among unit personnel that the loss of many unit members could be attributed to conditions arising from the NTC preparations and the rotation itself. Many respondents insisted that the additional time away from family and job caused conflicts that led to separation from the Guard or transfer to another "non-NTC" unit. Many Guardsmen told also of loss of income, the threat of job loss, and the necessity to give up vacation time for NTC activities. The desire on the part of commanders and senior officers to perform well at the NTC often led to increased performance standards that, in turn, led to the loss of marginal performers.[11]

It should be pointed out that some of the problems Guardsmen experienced were not peculiar to an NTC rotation. However, the longer length of absence from home and job exacerbated the usual problems of a limited time for training. It was clear that a fundamental tension existed between the need to increase readiness and the need to maintain unit strength. The NTC experience of the first seven Guard units to deploy to Fort Irwin seemed to bring into question some of the tenets of the Total Army concept.

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10. U.S. Army Training Board, *Training and Organization of the US Army Reserve Components*, 1988-1989, p. 1.

11. "Retention Patterns," pp. vii-viii, 34. Transfer from the unit for non-NTC units was 21.7 percent after NTC, for NTC units it was 28.1 percent. Separation from the National Guard for non-NTC units was 16.6 percent; for NTC units it was 20.8 percent. The Battelle study group did not claim its study was conclusive or definitive. Rather, one of the recommendations was that a larger study involving more units and a longer period of time be made.

Roundout Battalions and the Early NTC Experience

The primary rationale for the Battelle study was to ascertain whether the necessity for National Guard units to train at the NTC helped cause personnel attrition. However, the interviews conducted with Guard personnel also provided much other information about reactions of reserve component soldiers and units to the NTC experience. The soldiers had much to say about their perceptions of Guard relationships with their families, communities, employers, and with Active Army personnel. The interviews, while certainly not conclusive, painted a picture of the Total Force Policy in action and revealed some of the problems facing part of the total force.

Interviewers found a broad and almost unanimous consensus among the citizen-soldiers of the first seven roundout units to train at the NTC, that such training was essential to improving the combat readiness of combat units. And most of the unit officers interviewed believed their unit's readiness had improved despite personnel losses. Soldiers from the 2d Battalion, 136th Mechanized Infantry (Separate) Army National Guard, a Minnesota unit, remarked that the NTC experience had brought "pride, unity, and a sense of satisfaction" to their unit. "We did things I didn't think we could do." Other members of the unit believed that the large numbers of "casualties" incurred at Fort Irwin caused improved seriousness and professionalism in training at home station. An officer of the 2d Battalion, 152d Armor, an Alabama National Guard unit, considered the training at the NTC to be essential to preparing for mobilization missions. "We were fooling ourselves . . . that we were ready for combat."[12]

Guardsmen from the 2d Battalion, 120th Mechanized Infantry from North Carolina remarked that one of the most valuable characteristics of NTC training was the need to improvise, an opportunity not often found with the more structured exercises conducted at home station. Others believed the NTC training might be more important for National Guard units than for Active Army units because most Guard personnel remained longer with the unit and thus a unit was better able to retain its NTC-experienced personnel. Officers with the 3rd Battalion, 156th Mechanized Infantry, a unit from Louisiana, observed that the NTC training was sure to make units more hesitant about retaining marginal personnel or promoting the undeserving.[13]

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12. "Retention Patterns," pp. 1, 7, 9, 22.

13. Ibid., pp. 25, 28, 29, 33.

While the comments above focused on the positive aspects of training against the NTC's skilled OPFOR, researchers found that for most Guardsmen in the seven roundout battalions, the NTC and the necessity to train there also caused a myriad of problems. The aforementioned Alabama unit was forced to travel 500 miles to Fort Polk—home of its parent unit the 5th Mechanized Infantry Division—for gunnery training even though Fort McClellan, its usual traianing site, was only 100 miles distant. The battalion usually trained on M60 tanks at Fort McClellan, but at the NTC it would train on prepositioned M60A1 main battle tanks, which McClellan did not have. Other soldiers complained that the requirement for the extra training was unfair and broke the National Guard's commitment, at enlistment, to train only thirty-nine days a year.[14]

Once at Fort Irwin, the roundout units encountered the same obstacles that greeted Active Army soldiers. Key personnel of all seven units complained of severe fatigue from lack of sleep, a situation created by the inability of subordinate personnel to replace them. Further, the National Guard units were not accustomed to maintaining the intensity of NTC training for fourteen consecutive days. The unit from Louisiana blamed the unusually high number of serious accidents it incurred on fatigue. Many key personnel admitted they had not trained subordinates to take over for them because they had never been in a situation where it was necessary. Further, in some cases key personnel had to be transferred into less demanding positions because they lacked proper physical conditioning.[15]

Equipment-draw and turn-in was also a problem for all the units included in the study. It was also a major problem for Active Army units; but for the Guard, with its particular situation, the problem was aggravated. Ordinarily, the check-out took three days, while turn-in took four. For the Guard units, that was not to be the case. For the Alabama unit, turn-in required ten days, though delays were due to a strike by Boeing workers at Fort Irwin and a lack of spare parts. The North Carolina unit had to work twenty-four hours a day to keep turn-in time down to six days. All units complained of the lack of spare parts. Most also complained that Boeing's civilian work force performed inadequately and had a poor attitude toward the Guardsmen. Others complained of the poor condition of the equipment and poor quality of the maintenance. The 1st Battalion, 121st Mechanized Infantry from Georgia thought the equipment at Fort

14. Ibid., pp. 10, 22. The "train-up" for the NTC was more complex for armor units than for mechanized infantry because there was more equipment to transport.

15. Ibid., passim.

Stewart, home of its parent unit, was superior to that at Fort Irwin. Likewise, the Louisiana unit thought the equipment at Fort Polk was better than that at the NTC. Of its 115 tanks, 65 engines had to be pulled in three weeks. Some equipment broke down before the first battle. Maintenance, especially in the field, was difficult for units unaccustomed to the "fix forward" policy of the NTC. In addition, normal Guard operations did not put such mechanical stress on equipment.[16]

During the force-on-force maneuvers, the National Guard combat units experienced many of the same difficulties as had their Active Army counterparts. All had trouble maneuvering on the desert terrain, especially at night. Communications proved difficult for them in the unfamiliar desert environment and mountainous terrain. Command and control proved difficult for units that got little home station practice in battalion task force operations. With regard to base operations, the citizen-soldiers complained that they could not use the PX or the telephones, that there was no hot water, food quality was poor, and mail calls were late. The Georgia units, many of whose personnel had never been out of the State of Georgia, were upset that they had finally gotten to California but had no free time to enjoy it.[17]

The necessity to attend the three-week training session at the NTC and the additional training time required at home station in preparation for a rotation, added to the usual stress that being a Guardsman put on family and employer support. Many of the 150 soldiers interviewed reported resistance on the part of employers to granting additional time off for NTC training. That attitude was especially prevalent among smaller employers and the first line supervisors in larger companies. Many of the Guardsmen had to take leave without pay or lost money when military pay did not equal lost civilian pay. Some had to use personal vacation time in order to go with their units to Fort Irwin. In some cases, the legislation designed to protect Guard employment rights proved ineffective in protecting them from job loss, discrimination in promotions and overtime opportunity, and rehiring from layoffs. Most of the soldiers believed Guard activities, especially the necessity to go to the NTC, hurt employment chances.[18]

The NTC rotation was particularly a hardship for certain Guardsmen. Spending three weeks at the NTC during the school year was a

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16. Ibid., pp. 22, 25, 30.

17. Ibid., passim. These complaints were certainly not limited to the Guard units,. They were echoes of the opinions of many Active Army units during an NTC rotation.

18. Ibid., pp. 8, 10, 11, 16-17, 20, 33.

problem for teachers and students. Farmers serving with the Georgia and Minnesota units complained of tours during planting season. Extra drills and the rotation itself proved difficult for single parents and those who worked on weekends. Weekend child custody arrangements were also affected.[19]

A number of those Guardsmen interviewed pointed out that it was their opinion that the National Guard of the Total Army was a "new Guard." With the responsibility to serve as the third brigade of an Active Army division, the "beer and barbecue" days of fraternal activities had given way to an emphasis on performance and professionalism. Some lamented, however, that their families and employers still held the old image of the Guard and lacked an understanding that the Guard was a military combat organization with new training requirements, including rotations to the NTC. Those relatives or employers thus did not understand the need for or the pace of training at the National Training Center. Several guardsmen expressed the belief that more effort was needed to emphasize the new commitment of the National Guard and the reason for it.[20]

Also with regard to attitudes, members of several of the units interviewed believed that relations with their parent unit were good. That appeared to be especially true of the 2d Battalion, 120th Mechanized Infantry from North Carolina and its parent unit, the 4th Infantry Division (Mechanized). Guardsmen from some other units, however, criticized the Active Army division leadership for last minute changes in their NTC schedules that caused difficulties with both family members and employers. The same was true for the lack of adequate advance notice for drill requirements by the Active Army. Some members of the Georgia 1st Battalion, 108th Armor cited a lack of sensitivity to job and family problems on behalf of the senior leadership of their parent unit, the 24th Infantry Division (Mechanized). Other members of that same Guard unit felt the active duty personnel were "unnecessarily strident, hard-nosed and derogatory." The latter were also accused of telling exaggerated horror stories about the NTC meant to cause anxiety. In general, however, as the "train-up" for the NTC rotation proceeded, relations of all seven of the roundout battalions with their active duty counterparts appeared to improve.[21]

In sum, NTC training increased the professionalism and readiness of those roundout National Guard units that took part. General H. Norman

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19. Ibid., pp. 8, 10, 11, 16-17, 20.

20. Ibid., passim.

21. Ibid., pp. 14, 27.

Schwarzkopf, commanding general of the 24th Infantry Division during the rotations of the three Georgia battalions that made up his roundout brigade, the 48th Infantry Brigade (Mechanized) Georgia Army National Guard, asserted that

> Roundout is a fact of life . . . the 48th Brigade, Georgia Army National Guard, is the third brigade of my division . . . I expect them to fight alongside us. They have demonstrated (their capability) through three demanding rotations at the National Training . . . Center. . . they are, in fact, combat ready.

However, the requirement to prepare for and execute an NTC rotation increased the normal problems of citizen-soldiers serving in the Guard. That situation often led to separation from the Guard, transfers to other units not required to train at the NTC, or transfers to U.S. Army Reserve units where it was perceived that the job was easier and, in reality, the pay was the same. Training for and at the NTC also tended to highlight the problems of National Guard and Army Reserve personnel fitting into the Total Army-Roundout concept.[22]

The Roundouts, the Persian Gulf War, and the NTC

In November and December 1990, three Army National Guard roundout brigades were mobilized for Operation Desert Shield (later Desert Storm), the U.S. military's and the coalition forces' effort against Iraq. Mobilized at that time were the 48th Infantry Brigade (Mechanized) of the Georgia National Guard; the 155th Armored Brigade (Separate) of the Mississippi National Guard; and the 256th Infantry Brigade (Mechanized) of the Louisiana National Guard. The brigades were not ordered into active federal service until four months after Operation Desert Shield began. After mobilization, they trained first at various locations, including Fort Hood, Texas; Fort Stewart, Georgia; and Fort Polk, Louisiana. The Georgia and Mississippi units followed up with training at the National Training Center. In the end, the 48th did not deploy with its parent unit, the 24th Infantry Division, nor did the 155th deploy with its parent unit, the 1st Cavalry Division. In fact, none of the roundout brigades left the United States. The two

22. (2) Ibid., p. 33. (3) "The 48th Brigade: A Chronology from Invasion to Demobilization," *National Guard*, May 1991, p. 12.

aforementioned Active Army divisions had deployed, on 13 August and 11 September 1990, respectively, with Active Army brigades assigned as their roundouts shortly after Operation Desert Shield began.[23]

A student of National Guard brigade preparedness concluded in September 1991 that a "combination of excessive optimism, overreliance on numerical readiness ratings, and high-level inattention to the actual readiness levels of the roundout brigades before Desert Shield/Storm led many to assume that they were as ready as similar Active Army brigades." Whatever the case, the failure of the brigades to be judged ready for deployment generated much controversy about the soundness of the Total Army and roundout concepts and about the Active Army's relationship with the National Guard. Two things must be remembered with regard to the experience of the roundout units. First, National Guard roundout units were never meant to deploy without significant post mobilization training. The Army had never meant that they deploy immediately in response to a "no-notice" crisis. Second, the authority to call up combat reserves did not exist at the time the parent units deployed.[24]

The foregoing discussion provides background for an examination of the experience of the 48th Infantry Brigade (Mechanized)—and to a lesser extent the 155th Armored Brigade—at the NTC. The presence of the two brigades there generated much publicity from the news media, partially because it was the first test of roundout brigade mobilization. Public attention was especially directed at the Georgia unit, the 48th Mechanized Infantry Brigade, which would spend fifty-five days at Fort Irwin, but not deploy. In fact, the Army "validated" the brigade's training, declaring it ready for combat, on 28 February 1991, the day of the cease-fire with Iraq.[25]

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23. (1) Goldich, Summary and p. 9. (2) General Accounting Office, "Peacetime Training Did Not Adequately Prepare Combat Brigades for Gulf War," Report to the Secretary of the Army, September 1991, pp. 9-10. The third roundout brigade, the 256th Mississippi Army National Guard Brigade, was the roundout brigade for the 5th Infantry Division which did not deploy to Southwest Asia. The three Georgia battalions discussed above were battalions of the 48th Georgia Army National Guard Brigade. The 24th Infantry Division deployed with the 197th Infantry Brigade and the 1st Cavalry Division deployed with the 1st Brigade, 2nd Armored Division. For a comparison of the replacement brigades and the combat roundout brigades in terms of officer and noncommissioned officer leadership training completed, MOS qualification rates, gunnery qualification rates, and collective training events completed, see United States General Accounting Office, *Army Training: Replacement Brigades Were More Proficient Than Guard Roundout Brigades* (Washington, D.C., November 1992).

24. Goldich, Summary and pp. 10-11. The initial authority for call up of the reserves, invoked by the President on 22 August 1990, included combat support and combat service support units and excluded combat units.

25. Goldich, p. 1.

When the three roundout brigades were ordered into federal service, responsibility for the training of the Georgia and Mississippi units was assumed by Army organizations other than their parent units, those units already having been deployed. The 48th Infantry Brigade (Mechanized) was assigned to Second Army and the 155th Armored Brigade (Separate) to the 4th Infantry Division (Mechanized) and III Corps. The 256th Infantry Brigade (Mechanized) trained with its parent division, the 5th Infantry Division (Mechanized), at Fort Polk and at Fort Hood with the III Corps. Each brigade's post-mobilization training plan was based on ratings derived from its own combat readiness reports and on reports by Active Army observers based on FORSCOM criteria and executed during the unit's annual two-week training period. According to a subsequent General Accounting Office report, with which the Department of Defense concurred, the ratings were so unreliable that they failed accurately to predict the amount of time that would be required for the units to become fully combat ready. Consequently, Second Army and III Corps did independent proficiency assessments based on the results of the 155th Armored Brigade's rotation to the NTC in May 1990 and the 48th Infantry Brigade's rotation in July 1990. Based on these new assessments, Second Army and III Corps called for 91 to 135 days of post-mobilization training instead of the 25 to 40 days originally planned. That training would also include rotations to the National Training Center.[26]

Prior to deployment to Fort Irwin, the soldiers of the 48th Infantry Brigade had reported to Fort Benning or Fort Stewart to qualify in gunnery skills. Personnel from the 155th Armored Brigade from Mississippi and the 256th Infantry Brigade from Louisiana reported to Fort Hood for the same purpose. According to plan, the 48th would subsequently report to the NTC for a training period of forty days, later extended to fifty-five days. The 48th would be followed by the 155th in February and the 256th in March. The NTC could not accommodate concurrent rotations. At the training center, the 2,800 OPFOR soldiers would portray, instead of the usual Soviet or Warsaw Pact threat, the "Samaran Army," a simulation of an Iraqi regiment using Iraqi tactics and U.S. vehicles visually modified to look like their Iraqi counterparts. TO achieve the most realistic training possible, Iraqi-type fortifications and a three mile network of six-foot-deep trenches were dug across the desert floor. The NTC devoted all of its 4,100 military personnel to training the 48th and 155th brigades. The U.S. Army Training

26. GAO, "Combat Brigades," pp. 9, 24, 26. For the 48th, Second Army developed a 91 day training plan; III Corps developed a 106 day plan for the 155th and a 135 day plan for the 256th. The last unit had only recently received Bradley Fighting Vehicles and was continuing new equipment training.

and Doctrine Command provided mobile training teams composed of approximately 270 trainers.[27]

The training the 48th Infantry Brigade (Mechanized) received at the NTC would be both individual and collective, though the training center ordinarily offered only collective training. Individual soldiers would be trained with a focus on job performance and battlefield survival. Beginning at platoon level, infantrymen were taught to engage targets with individual weapons and to install anti-personnel mines. Collective training included practice for tank companies in "breaching" techniques—how to blast through an elaborate complex of barbed wire, minefields, ditches, and earthen berms. Infantrymen rehearsed trenchline assaults and the proper procedures for clearing out the fortifications once armor had broken through. The actual rotation for the 48th Infantry Brigade, which would include force-on-force maneuver and live-fire training, would take place at the end of the 48th's training period in mid-February. Meanwhile, similar "train-up" activities would take place at Fort Hood in preparation for the rotations of the other two roundout units.[28]

The 48th arrived at the NTC on January fourth, but not for the usual 20 day rotation. As previously noted, it would remain there until 28 February. The citizen soldiers from Georgia were with the same brigade whose battalions had been among the first seven roundout units to train at the NTC. One of the 48th's battalions—the 1st Battalion, 108th Armor—had just completed a three week rotation there five days before Iraq invaded Kuwait. The 48th Infantry Brigade, while training for what it believed would be deployment to Saudi Arabia, encountered many of the same problems the units had experienced in the 1983-1985 rotations, and some new ones. Some of the difficulties appeared to be the result of training deficiencies, but others had external causes.[29]

Perhaps the stumbling block that plagued the performance of the roundout brigades at the NTC most was difficulty in maintaining tracked vehicles. As with the National Guard units that had trained in the

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27. (1) GAO, "Combat Brigades,: pp. 16, 26, 27. (2) Goldich, p. 22. In all, a total of 8,970 active Army personnel were assigned to train soldiers in the roundout brigades, not including the staff at Fort Benning that trained the 48th Brigade's Bradley crews. The decision to extend the 48th's training period was made jointly by the 48th Brigade commander; the Commanding General, Second Army; the Commanding General, NTC; and the Commaner-in-Chief, FORSCOM. Before the decision was made to rotate the three roundout brigades through the NTC sequentially, the Army attempted to acquire 125,000 additional acres of land from the Bureau of Land Management. The controversy over the NTC's efforts to expand is covered in Chapter III of this study.

28. (1) GAO, "Combat Brigades," p. 110. (2) NTC PAO, Briefing, 6 Feb 92.

29. David C. Morrison, "Guard Units Not Ready," *National Journal*, 23 Feb 91, p. 460.

Soldiers of the 48th Infantry Brigade (Mechanized) of the Georgia National Guard rest in the shade of a BFV while awaiting the next engagement with the OPFOR.

mid-eighties at the NTC, Guardsmen lacked experience with field maintenance, especially in light of the aforementioned "fix forward" doctrine practiced at Fort Irwin in accordance with Army doctrine. That situation was in large measure the result of the Guard's reliance on full-time manning personnel or civilian contractors to maintain vehicles in peacetime. Although procedures varied from state to state, generally it was National Guard practice to store tracked vehicles at centralized mobilization and training equipment sites, where they were maintained by state employees who had other jobs with the Guard upon mobilization. While that system allowed Guard units to maintain their equipment in a ready status, it did not allow mechanics an opportunity to learn their jobs fully or crews to have a full understanding of their maintenance responsibilities. When the roundout brigades were mobilized, however, maintenance became the responsibility

of the unit, as in the Active Army, and the lack of experience became evident. During at least one battle at the NTC, the 48th Infantry Brigade (Mechanized) had more vehicles disabled in its support area than it had to use against the OPFOR. During another battle, only one of the unit's six scout vehicles was operational. One GAO observer reported that the average operational readiness rate for vehicles was about 50 percent compared to 85 percent to 90 percent for active units. The 155th Armor Brigade from Mississippi also experienced severe maintenance problems. During the last week of its training period, the brigade lost almost half its vehicles to maintenance problems.[30]

The fact that only 19 percent of the 48th's maintenance personnel were qualified in their MOSs added to the maintenance difficulties. A severe shortage of turret mechanics for the Bradley Fighting Vehicles put many of the BFVs out of service. Many soldiers had to be removed from their units to attend formal school courses, thereby creating leadership and training problems. While capable of cross-leveling personnel within a brigade to yield an apparently trained battalion task force, the requirement to field a full brigade brought numerous leadership, medical fitness, and MOS qualification problems to the fore. That situation, in turn, illustrated the weakness of the RC in practice while looking good on paper.[31]

Both brigades that trained at the NTC, as well as the 256th Infantry Brigade (Mechanized) of the Louisiana National Guard, had difficulty with crew-level skills such as gunnery. All three brigades had difficulty achieving the skills that would allow them to meet Army standards. That deficiency appeared to be the result of familiarity with home station targets that allowed for qualification at home but not at the NTC. Consequently, the training periods for all three brigades were extended to enable crews to achieve gunnery proficiency. In addition, while an Active Army battalion normally required a week to qualify all its crews on tank table VIII, the two armored battalions in the 155th Armored Brigade required 17 and 24 days, respectively. According to officials from the Army Inspector General's office, many Guard crews required eight attempts to qualify, while Active Army crews seldom required more than two.[32]

Other obstacles the Guardsmen from Georgia and Mississippi encountered were the incompatibility of the active component and National

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30. (1) GAO, "Combat Brigades," pp. 13-14. (2) Goldich, p. 22.

31. GAO, "Combat Brigades," pp. 10, 17.

32. GAO, "Combat Brigades," pp. 15-16.

Guard logistical and administrative systems. During peacetime, National Guard units obtained spare parts and supplies through supply systems operated by the Guard. At the NTC, supply personnel who had not been trained on the Active Army system experienced significant difficulty obtaining spare parts for vehicles. On one occasion the situation was so severe that an Active Army two-star general was detailed to find engine packs and arrange for their delivery. On another occasion, 48th Infantry Brigade personnel, lacking familiarity with the ordering procedures, mistakenly ordered parts for older M-60 tanks instead of their newer M-1 tanks. Another problem was that the National Guard used personnel management systems that were not compatible with the Active Army's automated Standard Installation-Division Personnel System (SIDPERS). In an effort to adapt to the Active Army's system, the three roundout brigades adopted a field automated data-entry system called Tactical Army Combat Service Support Computer System (TACCS). The trouble was that most of those Guardsmen responsible for personnel management had not been trained in the use of TACCS.[33]

Medical problems also plagued the Guardsmen in the desert. Two hundred fifty soldiers of the 48th had medical conditions serious enough to justify sending them back to Fort Stewart for treatment. One reason for the large number of medical problems was that the average Guardsman, particularly the noncommissioned officers (NCOs), was older than his active component counterpart. It was mostly those over forty who had medical problems. One first sergeant was fifty-eight and had served in the Guard for forty-one years without ever being called to active duty. The 48th's top NCO admitted that "there are some reservations over whether I should be here at 54." He continued, "A younger man might be better. But I'm hanging in there, trying to take care of my troops."[34]

To see how the troops were faring, especially with the public eye on them during this first test of the roundout concept, the General Accounting Office sent observers to Fort Irwin while the Georgia unit was there. The GAO had published reports in 1987, 1989 and early 1991, critical of National Guard training and readiness. Once again responding to the concerns of military planners and senior Active Army officials about the readiness of the National Guard maneuver units, the GAO observers published their report in September 1991. The observers claimed the 48th's officers lacked the leadership skills to understand and set standards, enforce discipline, and

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33. (1) Goldich, p. 22. (2) GAO, "Combat Brigades," pp. 18-20.

34. (1) GAO, "Combat Brigades, p. 21. (2) Rick Atkinson, "Is Guard Unit Combat Ready?" *Washington Post*, 12 Jan 91, p. A8.

synchronize resources and battlefield operating systems. The Active Army trainers to whom the observers talked also concluded that NCOs at all levels lacked initiative, discipline, proficiency in basic soldiering skills, and had an uncaring attitude.[35]

NTC officials identified a number of deficiencies that were not peculiar to the 48th Infantry Brigade—O/Cs had identified systemic and recurring weaknesses many times during after action reviews to Active Army units. Some units failed to identify key terrain features during battles. Others failed to conduct adequate reconnaissance. Some rotating brigades displayed an inability to effectively integrate direct and indirect fire and to use their assets together rather than in a "piecemeal" fashion. Obstacle systems were not adequately planned and emplaced. Defenders of the National Guard and the roundout concept pointed out that it was a difficult transition from a 9:00 to 5:00 civilian environment to twenty-four-hour soldiering. In addition, the 48th—unlike the OPFOR—were a long way from their familiar training environment and ranges. The Army National Guard's after action report for Desert Storm claimed that:

> The overwhelming support provided the Roundout Brigades and Battalions by the active component personnel had a counterproductive effect on unit training. Although well intentioned the large number of Active Army observer-controllers tended to take over the leadership of the units and short circuit the Roundout Brigades' chain of command.[36]

Whatever the readiness problems or the reason for them, in mid-February, the Army abruptly reassigned the 48th Infantry Brigade's commander, replacing him with the brigade's former deputy commander.[37]

Reported reactions of the Guardsmen to their mobilization and training in the desert ran the gamut from "Isn't this fun?" and "I felt it my duty to live up to my commitment" to "What am I doing here when I'm losing money at home?" It must be remembered that these were part-time soldiers who, for a variety of reasons, had chosen to be a part of the military establishment and to contribute to the readiness of their parent units. They faced the NTC experience with a mixture of competence and unreadiness,

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35. GAO, "Combat Brigades," pp. 11, 16-18.

36. (1) GAO, "Combat Brigades," p. 18. (2) Goldich, p. 7. Quotation is at Goldich, p. 22. Common difficulties units experienced during rotations are discussed in greater detail in Chapter VIII.

37. David C. Morrison, "Guard Units Not Ready," *National Journal*, 23 Feb 91, p. 460.

bravado and self-doubt. They shared a variety of opinions about their readiness for real combat. A vending machine attendant from Atlanta remarked "Sure, we look like misfits. We have some guys with long hair. Some of us are old men. But we are one family. We care about each other. We have our act together." One 19-year-old tank gunner thought differently: "we could all use a lot more training. We have a lot of motivation, but we don't have a lot of cohesion." But an OPFOR sergeant observed that the Guard soldiers had "improved 100% since they've been here" and noted that he had been "killed" twice in mock battles."[38]

Despite a shared pride in their unit, the National Guardsmen training at the NTC were far from unanimous in their opinions about their mission there. A corporal with Company A, 1st Battalion, 108th Armor, and in civilian life an automobile worker who had joined the unit from his Army Reserve unit in Kentucky, remarked: "I just happen to be one of the crazy fools that volunteered for this mess. I feel I was trained to do this job." A staff sergeant and civilian flight line mechanic from Marietta, Ga. took a different view. "I think they should let most of us get back to our regular jobs and regular lives. It gets tiresome after a while. I think I've seen enough sand to last me a lifetime." The Guardsman claimed his pay was about half what he was earning before he was called up. There were the usual complaints about boredom, bad food, showers only once every two weeks, and loneliness. A first lieutenant remembered that he "sang happy birthday to myself."[39]

The reaction of some of the Georgia Guardsmen to the belated call-up and the ultimate failure of the Department of Defense to deploy their unit, or either of the other two roundout brigades, brought mixed reactions. There was relief and disappointment. A first sergeant who worked for a construction company in Savannah spoke of the " . . . tremendous disappointment. We'd always been led to believe that when the 24th was sent, we'd go with them." Other Guardsmen hoped for an opportunity to end the tarnished legacy of Vietnam. A captain and university administrator remarked that "there's a desire to get away from the weekend warrior stigma. Nobody wants to be thought of as the old Guard. We want to be thought of as wearing the same uniform as everybody else." And there was anger. Like its parent unit, the 24th Infantry Division (Mechanized), the Georgia Army

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38. (1) Seth Mydans, "Civilian Soldiers: Limbo of MojaveTests Mettle for Hell of War," *New York Times*, 17 Feb 91, p. 20. (2) Associated Press, "Guard Unit Struggles to Gain Combat Readiness, *Los Angeles Times*, 24 Feb 91, p. 11.

39. Mydans, *New York Times*, 17 Feb 91, p. 20. All quotations from this source.

National Guard Brigade had been especially trained for combat in the Middle East, but it did not get the chance to go.[40]

As noted above, the Army validated the 48th as combat ready on 28 February 1991, the day of the cease-fire in the Persian Gulf region. After approximately ninety days of training, none of the roundout brigades deployed. Were the NTC-trained roundout units ready for combat? Even though the Army had no criteria or formal process for such an evaluation, Secretary of Defense Dick Cheney insisted that National Guard units be evaluated at the NTC before he decided whether they were adequately prepared for the rigors of possible combat. FORSCOM based the validation on the first hand observations of III Corps, Second Army, the 4th and 5th Infantry Divisions, and the NTC Operations Group. The situation intensified the questions already being asked in Congress, the Department of Defense, and the media about the Total Army concept. A perceived disparity between theory and practice touched off a politically and emotionally charged debate that threatened to shake up the future composition of U.S. military forces.[41]

In response to questions from the GAO and other agencies, Army spokesmen explained that the roundout brigades had never been meant to be deployed without post-mobilization training or in response to a short notice contingency. Department of Defense representatives explained that the six-months (90 days with a 90 day extension) of the initial reserve call-up did not leave them time enough to give the roundout units additional training and then to deploy them to the Persian Gulf. Congress responded by doubling the time in which the Pentagon could activate the roundout brigades to one year. In testimony before the Congress on 8 March 1991, the Commander in Chief, Forces Command, General Edwin H. Burba, Jr., explained the Army's position:

> The situation in the Persian Gulf appeared to require an earlier availability of these units. Thus we developed a 70-day training program focused on enhancing leadership, combined arms integration and maintenance readiness. As the situation evolved in the Gulf, it became apparent that more time was available. We took that time and further mastered the 48th Brigade's combat skills. They are now validated as combat ready against an Iraqi threat. They achieved that proficiency much faster than I originally anticipated.

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40. Atkinson, *Washington Post*, 12 Jan 91, p. A8.

41. GAO, "Combat Brigades," pp. 27-28.

However, Senator Sam Nunn (D-Georgia), chairman of the Senate Armed Services Committee, disagreed. After meeting with members of the 48th Infantry Brigade in early February, he expressed the opinion that they should receive high marks for dedication but were not ready for combat. Army officials, too, continued to insist that the 48th suffered from deficient leadership and training.[42]

Most Army National Guard officials predictably took a different view. In the National Guard After Action Report on Operations Desert Shield and Desert Storm, Guard officials asserted that the roundout brigades met Department of the Army standards of deployment when federalized and could have deployed within 30 to 60 days. After the units were federalized, the officials maintained, the deployability criteria were changed to reflect a much higher standard. Other Guardsmen believed that the Army had never intended to deploy the maneuver units for fear of triggering more public questions as to why the United States had deployed troops to the Gulf. Guard defenders accused the Department of Defense of having kept the Guard out of the fray so that active units could better justify more of a share of future appropriations. That argument went on to assert that Congress had forced the hand of the Department of Defense by increasing the deployment time limit, hoping thereby to maintain federal funds for use of the Guard units in their districts. Unlike his counterpart in the Senate, Representative Les Aspin, Chairman of the House Armed Services Committee, complained that "We've heard a number of reasons for not sending guard and reserve combat units, but they're about as solid as sand. I suspect the most important factor is the active-force prejudice against using reserve forces." Aspin believed the Persian Gulf operations were a perfect "crisis" in which to test the total force concept. One of the architects of the roundout concept agreed. Lt. Gen. Robert G. Yerks, Retired, told reporters "I really think that there has been over the years an inherent prejudice against the reserves and National Guard, a sort of feeling that they have somewhat lesser capability than those on active duty."[43]

Perhaps it would be useful here, in the face of the controversy over such a long training period for the roundout brigades, to remember that in both World Wars, Korea, the Berlin Crisis of 1961, and Vietnam, the mobilization of brigade and division size units suffered from unclear

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42. (1) Letter, Office of the Assistant Secretary of Defense to Frank C. Conahan, Assistant Comptroller General, 3 Sep 91, subj: Comments From the Department of Defense to GAO, "Combat Brigades,:" p. 48 [Burba quotation]. (2) Associated Press "Guard Unit Struggles to Gain Combat Readiness" *Los Angeles Times*, 24 Feb 91, Part A, p. 11. (3) Alex Prud'homme, "Phantom Army," *Time*, 10 Jun 91, p. 19.

43. Douglas Frantz, "Readiness of Combat Reserve Units Questioned," *Los Angeles Times*, 5 Nov 90.

deployment policies and a shortage of transportation assets and equipment. One study done at the Research Analysis Corporation in 1972 concluded that in the aforementioned conflicts, average time between the ordering into active military or federal service of reserve units and the time they were judged combat ready was at least 12-15 months.[44]

Shortly after the 48th Infantry Brigade (Mechanized) arrived at the National Training Center, former Army Chief of Staff General (Ret) Edward C. Meyer was quoted as saying that "how much reliance is placed on the National Guard and Reserve in the post U.S.-Soviet confrontational era will be written in the sands of the National Training Center or in Saudi Arabia." As the debate continued, the 48th loaded up its equipment for the return to its various headquarters at Calhoun, Dublin, and Albany, Ga., knowing that, at least this time, it would not have the opportunity to prove its mettle in Middle East combat. Despite the cease fire, the 155th Armored Brigade, Army National Guard, went on with plans to train at the NTC upon the 48th's departure. After 55 days training at Fort Irwin, which many believed had been wasted time and a detriment to their civilian careers, the opinion appears none the less to have been almost unanimous that the best training to be had in preparing roundout units to serve as the third brigade of an Active Army division was at the National Training Center. A thirteen-year veteran of a roundout battalion observed that "our . . . visits to Fort Irwin showed that some personnel and old practices had to be replaced because they could not withstand the pressures of the modern battlefield." He also believed the "NTC helped strengthen our relationship with the AC. For the first time, senior AC officers' reputation depended on the performance of an RC unit."[45]

Other U.S. Army Reserve and National Guard Training at the NTC

Roundout battalions and brigades were not the only RC units to train at the National Training Center. Both U.S. Army Reserve and "non-roundout" National Guard personnel trained there on both a unit and individual basis. On occasion, company, platoon, or detachment-size

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44. I. Heymont and E. W. McGregor, "Review and Analysis of Recent Mobilizations and Deployments of US Army Reserve Components" (McLean, Va.: Research Analysis Corporation, October 1972), cited in Goldich, p. 23. The Vietnam reserve call-up included no units higher than brigade.

45. (1) Eric Schmitt, "Now, To Find Out What the Reserves Can Really Do," *New York Times*, 11 Nov 90. (2) Maj Craig S. Chapman, "Nondeployed Roundouts," *Military Review*, September 1992, p. 21 (quotations).

combat service support (CSS) units from the Army Reserve participated in rotations in support of either the rotating battalions or the OPFOR. Those CSS units provided smoke generators, chemical, water purification, public affairs, and medical service support. The NTC also offered an "OPFOR Augmentation Program" in which approximately ten National Guard infantry companies and three engineer companies assisted the OPFOR each year. Beginning in 1991, some combat Army Reserve units also had the opportunity to play a role in the force-on-force maneuvers as part of the dreaded OPFOR. For reserve component command groups, the NTC offered the "FORSCOM Leaders Training Program." Approximately twelve reserve component division or brigade command groups participated in the program each year.[46]

In addition to unit training, several other programs offered individual reservists a chance to train at Fort Irwin. National Guard personnel trained under a program known as the Key Personnel Upgrade Program, or KPUP (pronounced "keep up"). For each rotation, an average of 60 Guardsmen, staff sergeant and below, took part in KPUP. At least half of the KPUP students were attached to a company in the OPFOR and functioned as members of that company throughout the rotation. Also during each rotation, some National Guard officers, primarily company grade, served with the division tactical operations center. In addition, personnel from the Army Reserve served as individual fillers with directorates of the Fort Irwin post staff. Individual Mobilization Augmentees (IMA) worked in the position on post that they would serve in the event of mobilization. Individual Ready Reserve (IRR) members served in some position on the installation requiring their particular MOS. Between rotations, armor units from the California National Guard practiced tank gunnery at the NTC. Increasingly, since the first roundout battalion had trained there in 1983, the NTC had offered training for the reserve components in support of their increasing role as part of the Total Army.[47]

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46. (1) "Tenant Units at the NTC," *The Monitor*, National Training Center and Fort Irwin, Calif., Summer 1988. (2) Capt. Greg Yesko and SSgt. Dennis McMahon "Pensylvanians Take the Desert by Storm," *Army Reserve Magazine*, 2nd Issue, 1991.

47. *Monitor*, Summer 1988.

CHAPTER VII

Air Warrior

The Early Years

From the beginning, General Paul F. Gorman and other National Training Center developers had envisioned an important role for the United States Air Force. If the NTC was to live up to its promise of providing the Army's most realistic training environment, soldiers had to "train as they would fight"—that is as a combined arms task force. And, indeed, it had been the Air Force's Red Flag training at Nellis Air Force Base that had inspired the NTC concept. National Training Center developers, determined to depict all dimensions of the battlefield, envisioned a close air support (CAS) role for the Air Force, in support of Army ground forces. Beginning in 1979, the TRADOC NTC Office sought to negotiate a joint agreement with the Air Force's Tactical Air Command (TAC) that would provide for Air Force participation and define the Air Force's role at the NTC.[1] In only a short time, Army negotiators discovered that writing the concept had been much easier than implementing it was going to be.[2]

The story of Air Force participation at the NTC took place against a background of continuing debate about how the close air support mission should be executed in combined arms operations. The Joint Chiefs of Staff defined CAS as air action against hostile targets that were in close proximity to friendly forces. Air Force doctrine added an important clarification: "... and which require [sic] detailed integration of

1. On 1 June 1992, reorganization actions disestablished the United States Air Force Tactical Air Command, and established the USAF Air Combat Command with headquarters at Langley Air Force Base, Va.

2. The story of the early days of Air Force-Army relations with regard to the NTC is told in Chapman, *NTC*, Vol. I, pp. 129-39.

each air mission with the fire and movement of those forces."[3] The definition seemed relatively simple, but proved to be deceptively so. The introduction of airplanes to warfare had led rapidly to their use in close support of ground troops. The employment of air power in that manner had been controversial from the first instance when bombs were dropped on ground forces during the Italo-Turkish war of 1911-1912. Ground and air commanders had differed strongly over the proper use of aviation, as technology changed air systems and defensive ground weaponry. Across the services, different systems and techniques had developed for the command and control of ground and air forces operating together.[4] Over the years, classic service rivalry fights raged in the offices of the Department of Defense, especially between the Army and the Air Force, as the Air Force pushed to develop the A-10 Thunderbolt II fixed wing aircraft to provide CAS for Army ground troops, while the Army defended its helicopter program as a supplemental answer. All the while, the Air Force insisted that strategic bombing, air superiority, and battlefield air interdiction were higher priorities than close air support.[5]

The controversy also shed light on the interservice rivalry so often present in the conception and development of large defense projects. The experiences of both services at the NTC revealed some of the problems inherent in combined arms operations on the modern battlefield. The Air Staff was concerned about airspace management, the service's continued use of the Leach Lake Range in the northern part of Fort Irwin, which provided a site for bombing practice, and the cost of support to Army training exercises. Senior Air Force officials insisted that Air Force training also had to benefit from the NTC experience if such an investment were made.

In general, the Air Force supported the concept of the NTC, which was based so heavily on its own Red Flag exercises. But from the beginning the negotiations on the nature of the two services' cooperation went slowly. It had taken the two services from January to December 1981 to finally sign a joint memorandum of agreement as to Air Force participation at the NTC.

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3. (1) U.S. Joint Chiefs of Staff, Department of Defense, *Dictionary of Military and Associated Terms* (JCS Pub 1) (Washington: Government Printing Office, 3 Jan 72) p. 61. (2) Air Force Manual (AFM) 1-1, Vol. II. Army FM 100-5 used different wording but essentially meant the same.

4. Richard H. Kohn, Foreword to Benjamin Franklin Cooling, ed. *Case Studies in the Development of Close Air Support* (Washington D.C.: Office of Air Force History, 1990), p. v.

5. For a detailed account of the interservice struggles over the development of the A-10 and the Army helicopter program, see Maj. Gen. Benjamin L. Harrison, U.S. Army retired, "The A-10: A Gift the Army Can't Afford," *Army*, July 1991, pp. 36-39. The A-10 was the only aircraft ever developed specifically for CAS. The term "battlefield air interdiction" became simply "air interdiction in the 1992 version of AFM 1-1 and the 1993 version of FM 100-5.

The agreement included a provision that the Air Force would develop and acquire a laser engagement system (LES) for high performance aircraft, that would be compatible with the MILES. Originally, the Tactical Air Command was committed to flying ninety sorties per rotation for the ten rotations scheduled for FY 1983. Air Force support included both "Red Air" and "Blue Air" with each being supported by a different type of aircraft for ease of identification. The sorties would be flown from George Air Force Base, California, at least initially. The Air Force designated the program of support for Army training at the NTC, "Air Warrior."

Bearing on the issue of Air Force support at the NTC, the Chiefs of Staff of the Army and Air Force signed, on 22 May 1984, a historic joint memorandum of agreement known as the "31 Initiatives." This major cooperative effort was designed to increase tactical coordination between air and ground forces, eliminate duplicate weapons development, and improve coordination during the budgeting process. The Army's AirLand Battle doctrine formed the conceptual basis of the battlefield on which the initiatives were based.[6] Initiative 24 of that agreement, "Close Air Support," reaffirmed the Air Force's responsibility to provide fixed wing close air support to the Army and implicitly confirmed the Air Force commitment to take part in the training exercises at the NTC.[7]

The early days of Army-Air Force exercises at the NTC were fraught with a multitude of difficulties. Among other things, the Army was unable to find a suitable vehicle for the tactical air control parties supporting the forward air controllers, to use while awaiting the receipt of HMMWVs at the NTC. Equipment often proved incompatible or simply nonexistent. The Army's UHF radios lacked the anti-jamming capability necessary to communicate with aircraft in a heavy communications jamming environment. Further, Fort Irwin lacked the capability to repair Air Force communications systems. The two services traditionally had disagreed as to the role forward air controllers should play in joint exercises, and the situation at the NTC was no improvement. But the most contentious issue between the services was the lack of MILES-compatible instrumentation for Air Force fixed wing aircraft.[8]

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6. The Army's transition from the "active defense" doctrine to AirLand Battle is treated in John L. Romjue, *From Active Defense to Airland Battle: The Development of Army Doctrine 1973-1982*, TRADOC Historical Monograph Series (Fort Monroe, Va.: United States Army Training and Doctrine Command Historical Office, June 1984.)

7. For a detailed discussion of the 31 Initiatives see Richard G. Davis, *The 31 Initiatives: A Study in Air Force - Army Cooperation*, Air Staff Historical Study (Washington, D.C.: Office of Air Force History, 1987).

8. Background Paper, TAC Current Operations Division, 14 Apr 82, subj: Multiple Integrated Laser Engagement System for the National Training Center. History Office, USAF Air Combat Command, Langley Air Force Base, Va.

Joint Operations at the NTC

Although the original agreement between the Army and the Air Force had allowed for ninety sorties per rotation, by the late 1980s the Air Force was flying 200-250 sorties per rotation, fifty percent of all CAS sorties flown in the continental United States. The six to twelve sorties flown per mission supported both the BLUFOR and OPFOR. At the beginning of Air Warrior support to NTC training, sorties were flown from George Air Force Base at Victorville, Calif., where the Air Warrior operations center was also located. In 1989, Air Warrior headquarters was relocated to Nellis Air Force Base, Nev., because of the impending closure of George AFB. Aircraft from all over the United States deployed to Nellis to take part in Air Warrior. At George AFB, and later at Nellis, the 4443rd Tactical Training Squadron provided operational control for Air Warrior until November 1991 when that function passed to the 549th Joint Training Squadron. U.S. Army officers were assigned to the Air Warrior operations center to serve as liaison officers.

As aforementioned, different types of Air Force aircraft were used for Blue and for Red Air, to aid in identification. At the beginning of each rotation, the specific aircraft to be used for each was designated and was not to be changed during that rotation. Normally A-10 units flew as Blue Air in support of the friendly forces, while F-16s supported the OPFOR. A third air unit supported the BLUFOR ground troops and Air Warrior aircrews as forward air controllers (FAC). The speed with which the battles moved made an airborne FAC (known as "nails") absolutely necessary. The airborne FACs deployed with OA-37 Dragonfly jets until most of the OA-37s were sold through Foreign Military Sales programs in the early 1990s. The Dragonfly was for a short time replaced by OV-10s which proved too slow and vulnerable for high intensity conflict and were eventually replaced with the heavily armored A-10s. During some rotations, the Air National Guard flew sorties with A-7 Corsair and F-4 Phantom aircraft, deploying out of March AFB situated sixty-five miles east of Los Angeles.[9]

The airspace over Fort Irwin was restricted to a ceiling of 35,000 feet, an altitude that allowed Air Force aircraft relatively free access. For safety reasons, the "floor" for fixed wing aircraft was 300 feet above ground level to allow passage of Army aviation. The ceiling for Army helicopters was 200 feet above ground level. At the NTC, all aircraft operated under the control of the NTC Air Coordination Center which provided the necessary coordination with NTC and Operations Group facilities. The U.S. Air

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9. (1) ARI Notebook, October 1989, p. 32. (2) NTC Rules of Engagement, p. 6.

Force 4445th Tactical Training Squadron assigned to the NTC, performed as liaison with the NTC commanding general and his staff. After November 1991, that role was assumed by Detachment 1, 549th Joint Training Squadron.[10] The squadrons assisted in exercise planning, supervised tactical fighter integration into the exercises, acted as safety observers during live-fire training, and provided command and control over CAS missions. The operations section of the 4445th, known as "Team Raven," served as O/Cs for the force-on-force exercises and provided input concerning battle damage assessment (BDA).

Tactical air control parties (TACP) were assigned to specific armored and mechanized units and served as the vital link between Army and Air Force units. A TACP included a fighter-qualified Air Force air liaison officer (ALO) who served as the eyes and ears of the fighter pilots and, as a ground forward air controller, planned for and called in air strikes. The TACP also included a Tactical Air Command and Control Specialist whose primary duty was to operate the sophisticated Air Force communications equipment and to assist in keeping track of as many as sixteen aircraft at once. Communications specialists and FACs were also assigned to the OPFOR. Appropriately enough, the OPFOR FAC call sign was "Ivan." To maintain force readiness, all CAS sorties, including those supporting the OPFOR, were executed using U.S. tactics and standard operating procedures. The Air Force used Army operating procedures, but employed the service's own tactical doctrine.[11]

One of the early problems the two services encountered with regard to joint operations was a suitable vehicle for the TACPs and FACs. The equipment for the BLUFOR TACPs was shipped to the NTC from the rotating battalions' home stations. OPFOR equipment was prepositioned at Fort Irwin. When joint operations had begun in the early 1980s, the TACPs had used MRC 107/108 jeeps which could not operate off the road in the rugged terrain of Fort Irwin, and thus the forward air controllers could not remain with the main ground forces. Many commanders of mechanized units requested tracked M113s, but that proved only a partial solution. Communications equipment in the armored personnel carriers lacked sufficient range to adequately link Army and Air Force elements. Use of portable radios made operations

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10. Det 1, 549th Joint Training Squadron was inactivated in July 1994 to be replaced by Det 1, 549th Combat Training Squadron.

11. (1) NTC *Monitor*, Summer 1988. (2) Jeffery Rhodes, "All Together at Fort Irwin," *Air Force*, December 1989, pp. 38-45. (3) NTC Rules of Engagement, p. 7.

in a chemical environment impossible. As an interim solution, additional UHF, FM, and high frequency radios were provided for the M113s. A more permanent and acceptable solution proved to be the fielding of sufficient HMMWVs for the TACPs in the mid-1980s. (Forward Air Controller vehicles were often referred to as "FAC tracks.")[12]

Another difficulty revealed during the joint maneuvers also concerned the TACP. As noted above, when working with an Army battalion, a FAC had a dual role. He worked with the commander as an advisor and liaison officer (ALO), and as a FAC he was responsible for providing final control of fixed wing aircraft, according to Air Force doctrine.[13] Thus he needed to be in a position to view both the aircraft and the target. That was seldom possible. The obvious solution was the assignment of two FACs to each battalion. The Air Force, however, did not have enough qualified pilots to assign two FACs to every maneuver battalion in the Active Army, let alone to the reserve components. That situation would be exacerbated by the Army's plans for the Army of Excellence which would increase the Army's force structure. Further, the practice of assigning Air Force FACs on a temporary basis to an Army unit preparing for exercises at the NTC often meant the unit trained with one forward air controller at home stations and worked with another during the NTC rotation. In addition, the FAC's lack of familiarity with the Army commander's operational plans could prevent the most effective use of tactical air power. Air Force personnel also complained that the Army forced them involuntarily to serve as perimeter guards, kitchen police, and monitors for Army radio networks. The Army claimed tactical air control party personnel found unwarranted excuses to return to the garrison at Fort Irwin in order to escape field conditions. (The Air Force was not bound by the Army's Rules of Engagement). Army Chief of Staff General John A. Wickham, Jr. and Air Force Chief of Staff General Charles A. Gabriel and their working groups addressed those doctrinal, personnel, and training issues during the talks that preceded the signing of the aforementioned 31 Initiatives on 22 May 1986.[14]

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12. (1) Chapman, *NTC*, Vol I, p. 134. (2) Lt. Col. William H. Hoge, "Air Warrior--The Blue Side of the National Training Center," student essay, United States Army War College, 10 Apr 86, pp. 8-9.

13. Under a 1965 agreement between the Army and the Air Force, each TACP had one ALO and one FAC. However, because of a scarcity of qualified pilots, they were often the same person. *TAC-TRADOC Air Land Bulletin* HQ TAC/TRADOC Air Land Forces Application Agency (Langley Air Force Base, Va., 31 Mar 86), p. 15 [hereafter cited as *TAC-TRADOC ALFA Bulletin*].

14. (1) NTC Vol I, p. 135. (2) Davis, *31 Initiatives*, p. 45. The official name of the 31 Initiatives was the Memorandum of Agreement for Joint Force Development.

In the memorandum for Initiative No. 25, the two services agreed to provide enhanced training in maneuver unit operations for ALOs and selected FACs. The services further agreed to conduct an in-depth "wall-to-wall" review of FAC operations at the battalion level and of the TACP structure. Initiative No. 25 and the follow-on review did not deal exclusively with the NTC. Rather they addressed Air Force close air support for the Army wherever it was necessary. It was, however, the situation at the NTC that brought the issue to the forefront. In a joint regulation of 6 June 1986 and in an agreement of 1 January 1987—between TRADOC, FORSCOM, the Military Airlift Command, TAC, and the Information Systems Command—the services spelled out the responsibilities and accountability of each. When Air Force personnel were permanently assigned to an Army installation, command and control remained with the Air Force. Air Force personnel were not to be used for purposes other than their specific assignment. The level of Air Force support was also defined. To relieve the shortage of forward air controllers, the role of enlisted personnel was expanded to that of tactical air control—a role previously reserved for officers.[15]

Although the new agreements officially addressed some of the concerns of both services, many of the tensions and resentments continued to exist as airmen resisted being sent "to the field," and soldiers thought their Air Force counterparts should share their spartan existence. One Air Force officer cautioned his subordinates that "going to the field and living a spartan existence is . . . the Army's way of training for combat. They view anyone who is supposed to support this effort and doesn't with serious reservations." And a soldier had his say: "Roughing it for a FAC/ALO is domestic mineral water with dinner and a black and white portable TV." Another airman observed that "the Army can speak complete sentences without using many normal words." An Army field grade officer, attempting to advise Air Force personnel on how to survive service with the Army wrote: "The Army and Air Force are on the same side, but the similarities end about there." Much of this was friendly bantering, but the continuous necessity to define and redefine the roles of each service in joint operations seemed to indicate that much interservice rivalry between the "fly boys" and "ground pounders" remained.[16]

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15. *TAC-TRADOC ALFA Air Land Bulletin*, 30 Jun 88.

16. (1) Lt Col Dave Barkley, USAF, "Roles and Functions of Tactical Air Control Parties (TACP), Air Liaison Officers (ALO) and Enlisted Tactical Air Command and Control Specialists," *TAC-TRADOC ALFA Bulletin*, 30 Jun 88. (2) Maj James A. Dunn, Jr. USA, "So You're Going to Work With the Army," *TAC-TRADOC ALFA Bulletin*, 30 Sep 86.

The Instrumentation Issue

Tactical Air Control Parties and interservice rivalry notwithstanding, by 1984, memoranda of understanding, policy, and procedures for conducting joint Army-Air Force training in accordance with AirLand Battle doctrine were reasonably in place at the NTC. Not so for Air Force instrumentation. As with noninstrumented Army weapons systems, casualty assessment of air strikes was left to the judgment of the observer/controllers, a situation the Army found almost as unacceptable as the aforementioned inability to adequately simulate indirect fire. Although Tactical Air Command participation in the MILES program was technically possible and desirable, the system that could be fielded for the lowest cost would not provide realistic training for aircrews, according to the Air Force. Army officials believed Air Force resistance to development of MILES-compatible instrumentation stemmed from the desire to use limited resources on instrumentation for Nellis Air Force Base where Red Flag exercises were run, rather than to serve as a "training aid" for the Army at Fort Irwin. TRADOC and TAC senior officers began a hesitant dialogue on mutual engagement simulation at the NTC, but in both the FY 1983 and FY 1984 Air Force budgets, the issue received extremely low funding priority. In the spring of 1984, the Air Staff validated a TAC statement of need for a laser engagement system, or LES as it had come to be known, but the project still ranked near the bottom on the Air Force's research, development, and acquisition list (154 of 157). At that same time, Army Chief of Staff General John A. Wickham, Jr. began to discuss the issue with Air Force Chief of Staff General Charles A. Gabriel. TRADOC commander General William R. Richardson followed suit with his counterpart at TAC, General Wilber L. Creech. Meanwhile, in June 1984, the Air Force Systems command began a year-long study aimed at development of an effective LES for fixed wing aircraft. Despite seeming progress, Wickham continued to insist the Air Force was moving too slowly to meet its commitment. Agreement on the importance to the NTC of an Air Force LES, was proving easier than its implementation.[17]

Next, the Air Force Operations Directorate suggested equipping two A-10 aircraft with MILES compatible offensive and defensive devices as an experiment. Loral Corp., developer of MILES, indicated that it could deliver offensive instrumentation—laser transmitters—in five to six weeks, but defensive capability, that is, sensors, would require considerably more time and be much more costly. Offensive laser capability alone would leave

17. Chapman, *NTC*, Vol. I, pp. 136-137.

the Army without a means of assessing air defense artillery laser hits on Air Force aircraft. The Air Force's next move was to claim that the Army's MILES was an inadequate and invalid system, while Army action officers insisted the system did provide accurate ground-to-air engagement simulation. When Air Force action officers indicated they would proceed with the offensive capability alone, the Army countered by contacting Loral and requesting cost and time estimates for adapting MILES for a few A-10s, which could then be tested at the NTC. The plan was that if the Air Force rejected the Loral estimate—$500,000 and six months—the Army as a last resort would offer the Air Force the $500,000 for its own developmental efforts. In November 1984, Loral presented a proposal for solving the hit detection problem. The Air Force quickly rejected the entire proposal, and announced plans to go ahead with only the offensive capability in the air-to-ground battle. There matters stood in December 1984 as the NTC reached the end of its initial implementation period.

The Army continued to insist that without defensive capability, ground forces received little benefit from exercises that featured the third dimension of the battlefield. The Air Force maintained that the Army, and especially the NTC O/Cs, did not value the effects of air power and ignored most of the air support provided. As early as May 1981—before the NTC opened—TRADOC Deputy Chief of Staff for Training, Maj. Gen. Frederic J. Brown, attributed the lack of Air Force support to sensibilities about the possibility of inaccurate casualty assessment. Indeed, the Air Force claimed that Army O/Cs did not give credit for the damage done by fixed wing aircraft. According to one student of Air Force participation at the NTC, during one rotation, F-16s had made 250 passes over tank columns, but only one battle damage assessment had been recorded. One problem in the assessment of damage caused by noninstrumented A-10 aircraft was that to score a hit, it did not have to fly directly over the target it attacked. As a senior live-fire task force trainer at the NTC put it, "we are missing a tremendously important piece of the battle . . . if we don't have those two capabilities married."[18]

In the absence of any agreement about defensive capability for Air Force aircraft instrumentation, the Air Force acted on the 1984 announcement that offensive capability would be provided for fixed wing aircraft. Early in 1985, the Air Force developed a "statement of need" recognizing a need for an air-to-ground laser engagement system (LES) that would be compatible with the MILES. In March 1985, at a meeting of the NTC

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18. (1) Chapman, *NTC*, Vol. I, pp. 130, 135. (2) Interview with Col Julian Burns by Maj. Beacon NTC Operations Group, Observation Division.

Executive committee, Maj. Gen. Johnny J. Johnston, the Department of the Army Director of Training, announced that "the Air Force has promised to look into a MILES defense package" for the A-10. In November of that year, TRADOC commander General William R. Richardson paid a visit to the NTC to talk with NTC commander Brig. Gen. Edwin S. Leland, Jr. and the Chief of the Operations Group, Col. Wesley K. Clark. In his trip report Richardson wrote:

> It is so apparent to me that the A-10 has difficulty surviving, but there is no way to measure this because the Air Force will not put a defensive MILES system on the A-10. What must I do to get the Air Force to come play with us with a full up MILES/AGES on the A-10?

Leland and Clark agreed that a ground-to-air instrumentation system was essential to realistic combined arms training.[19]

Later, General Richardson took up the dialogue with General Robert D. Russ, Tactical Air Command commander.[20] The Air Force continued to resist, perhaps in part because it was afraid that Richardson might be right about A-10 survivability. Whatever the case, in FY 1987, the Air Force fielded a prototype Laser Engagement System (LES) at the NTC which allowed casualty assessment only in air-to-ground engagements. Further, the system only simulated the 30-mm. GAU-8/A antitank cannon on the A-10 aircraft. "Pods" on the aircraft emitted a low-power laser beam and recorded rounds fired. A standard MILES detector system received and interpreted the pod's coded signal, as with any other MILES weapon. The pod also contained a micro-B unit and a battery power supply to allow transmission of aircraft position and firing data to the Operations Center for display, recording, and correlation. The pod could only emit, not receive, laser pulses, and thus was applicable only to air-to-ground engagements. At that time, a second phase of the LES program to simulate ground-to-air engagements was planned, beginning in July 1987. Meanwhile, O/Cs would continue to assess casualties caused by defensive weapons.[21]

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19. (1) Richardson, Trip Report, 7 Nov 85.

20. General Jerome O'Malley replaced General Creech, but died in a plane crash shortly thereafter.

21. (1) Ltr, Richardson to Russ, 25 Apr 86. The Richardson papers are located at the Military History Institute, Carlisle Barracks, Pa. (2) NTC Rules of Engagement, p. 7. (3) Army Training Support Center, Directorate of Army Ranges and Targets/Combat Training Centers (DART), "Integration of Red Flag and National Training Center Instrumentation" [hereafter cited as DART Instrumentation Study].

As efforts to develop and field a "complete" Air Warrior-NTC instrumentation system moved along slowly, the 4440th Tactical Fighter Training Group (Red Flag) at Nellis AFB (Air Warrior was still at George AFB) began conducting battlefield air interdiction and tactical air reconnaissance training missions at the NTC. The joint exercises, flown out of Nellis, were conducted once or twice per rotation. The first such exercise was conducted 2 through 11 June 1987 during Rotation 87-10 for the NTC, with the 2d Brigade, 4th Infantry Division, and rotation 87-4 for Red Flag.[22] The stated objective of the exercise was to evaluate the interoperability of NTC and Red Flag training. During NTC Rotation 87-10, the Navy and the Air Force attacked 30 to 40 moving OPFOR vehicles that were placed on the battlefield as second echelon forces to provide battlefield air interdiction targets. Air Warrior flew its usual CAS missions. It was found that the joint exercise provided the air element with realistic targets, but the impact of Red Flag on the ground commander's battle was, for the most part, transparent. Although it was hoped such exercises would produce increased cooperation between air and ground forces on the battlefield, the "focus for the long term remained the linking of the NTC and Red Flag instrumentation systems."[23]

In the spring of 1987, the Air Force Red Flag commander developed a concept for joint development of compatible Army and Air Force instrumentation systems at the NTC. Specifically, he suggested the integration of the Red Flag Measurement and Debriefing System (RFMDS)[24] and the NTC Core Instrumentation Subsystem, each of which was the central exercise control system at Nellis AFB and Fort Irwin, respectively. (The MILES-equivalent tracking subsystem was known as the Air Combat Maneuver Instrumentation, or ACMI Subsystem.) After briefing the concept to the TRADOC and TAC commanders and the Chief of Staff of the Air Force, the concept became the basis of one of the follow-on initiatives to the 31 Initiatives, Joint Force Development Initiative No. 38. On 10 August 1987, Army Chief of Staff Carl E. Vuono, who had succeeded General Wickham on 23 June 1987, and General Larry Welch, Air Force Chief of

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22. NTC rotations were numbered by fiscal year, Red Flag by calendar year.

23. NTC Exercise, 2-11 Jun 87, Executive Summary, pp. i-ii and Memo, Maj. David D. Kent thru Cdr, Operations Group to CG, National Training Center, n.d. [April 1987], subj: NTC/Red Flag Joint Operations.

24. Generally the RFMDS was to Red Flag what the Core Instrumentation System was to the NTC; the Air Combat Maneuver Instrumentation System (ACMI) was to Red Flag what the MILES system was to the NTC. However, the two terms RFMDS and ACMI were often used interchangeably. Further, as development of compatible systems continued to be addressed, the integrated sytem was referred to variously as the Air Warrior/Measurement and Debriefing System (AW/MDS); the AW/NTC system; the NTC/AW sytem; andACMI. For that reason, for the most part, the integrated system is referred to generically as the NTC or Air Warrior instrumentation system.

Staff, made a joint announcement of acceptance of Initiative No. 38, Integration of Red/Green Flag and National Training Center Exercises. The concept provided for joint development of compatible hardware systems; the adoption of measures to ensure the proper application of AirLand Battle doctrine and joint tactics, techniques, and procedures; development of a "lessons learned" mechanism to refine joint operations; and the development of a plan to expand joint operations. The joint approval of Initiative No. 38 was perhaps the high point in the saga of Army-Air Force joint instrumentation efforts.[25]

On 6 November 1987, the commanders of the Tactical Air Command and the Air Force Systems Command directed the developers of the follow-on offensive LES and the nascent defensive LES to "place the Laser Engagement System (LES) acquisition on hold and investigate the feasibility and cost of integrating the Red Flag Measurement and Debriefing System (RFMDS)" as Initiative No. 38 had directed. Two studies—one Army and one Air Force—were conducted. The Army study was conducted at the Army Training Support Center at Fort Eustis, Va. by the Directorate of Army Ranges and Targets (DART). The study proposed a "hybrid" system that expanded the MILES-based Laser Engagement System as planned but integrated some of the RFMDS's capabilities. The DART study considered only line-of-sight ground-to-air and air-to-ground engagements using a modified MILES. The Air Force study was completed by the U.S. Air Force Aeronautical Systems Division, Deputy for Range Systems at Wright Patterson Air Force Base and, like the DART study, called for integrating the RFMDS and the NTC instrumentation systems. The latter study, however, placed emphasis on using RFMDS for all weapons simulation except line-of-sight ground-to-ground engagements. It also called for air-to-air engagement simulation and an Air Force instrumentation subsystem at Fort Irwin so as not to disrupt Red Flag exercises. So predictably, each service clung to its own tactical engagement simulation system. NTC officials feared integration with the system at Nellis AFB would require the exchange of large volumes of data and necessitate costly additional computer capability. In addition, given the checkered history of the entire effort, Army officials preferred to have their own system rather than depend on Red Flag. As for the Air Force, one officer, speaking of the MILES, remarked to a reporter that "we're not big believers in line-of-sight, speed-of-light death rays." A reporter familiar with the controversy said of the Air Force that "they have

25. Msg, Generals Vuono and Welch to distr, 102000Z Aug 87, subj: CSA CSAF Joint Force Development Process (JFDP) Initiative.

never accepted the NTC doctrine that an aircraft targeted by a surface-to-air weapon has been 'killed' simply because it was illuminated by a laser."[26]

It was finally decided to establish a link between the two instrumentation systems at the NTC and at Air Warrior. Initial planning was based on the award of a contract in the fourth quarter of FY 1988. In April of that year, TAC headquarters notified TRADOC commander General Maxwell R. Thurman and all the Air Force bases concerned with the project that, because an upgrade in the MILES had encountered software difficulties, contract award would have to be moved forward to the second quarter of FY 1989. That action would, in turn, move the projected initial operations date to FY 1991. The TAC commander asked each of the addressees to protect funds for the program. During the next month, representatives of the NTC, the ATSC, the TRADOC Deputy Chief of Staff for Training, the Air Force Aeronautic Systems Division, and TAC met to consider the operational requirements for the hybrid system. The commander of the Combined Arms Training Activity approved the requirements on 18 May 1988 and requested the ATSC, which was the Army proponent for the project, incorporate them into the statement of work. In general, the operational requirements focused on the development of both offensive and defensive capabilities.[27]

The interservice rivalry between the Army and Air Force has been alluded to earlier, especially with regard to the close air support function. As the issue of the integration of the NTC and Red Flag instrumentation was debated, the controversy heated up once again over who should fly the CAS mission and with what kind of aircraft. Played out as part of congressional consideration of the defense budgets for FY 1990 and FY 1991, the debate served to place the instrumentation integration issue on hold once again.

Close air support had always been defined as a role for fixed wing aircraft and a mission of the United States Air Force and its predecessors. In April of 1948, the Key West Agreement assigned the newly formed Air Force responsibility "to furnish close air support and logistical support to the Army to include . . . interdiction of enemy land power and communications." Immediately after World War II, reduced budgets and reductions in force encouraged all the military services to protect their programs at the

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26. (1) DART Instrumentation Study, passim. (2) USAF Systems Command Armament Division, "Joint Force Development Initiative #38 (JFDI #38): Integration of Red/Green Flag and National Training Center (NTC) Exercises," 2 Dec 87. (3) J. R. Wilson, *International Defense Review*, 1 Oct 91, vol. 24, no. 10, p. 1110.

27. (1) Msg, Cdr TAC to distr, 221315Z Apr 88, subj: Link of Range Instrumentation System at National Training Center With Nellis (Red Flag Measurement and Debriefing System). (2) 1st EndATZL-TAN, 17 May 88, subj: Red Flag Integration Requirements.

expense of those of the other services. The Army and the Air Force reexamined their basic missions, and throughout the next three decades many reports, studies, and agreements emerged, all with the intent of determining how to best perform the CAS mission. With regard to the division of labor, that issue seemed to have been solved in 1957 when Secretary of Defense Charles E. Wilson awarded the entire close air support mission to the Air Force.[28]

During 1969 through 1972, the CAS debate surfaced again in the "either-or" debate over the development of the Air Force A-X (later A-10) aircraft and the Army's AH-56 Cheyenne attack helicopter. The Air Force attempted to discredit the Army helicopter program on grounds that the A-X fighter would do anything the Army thought it wanted an attack helicopter to do. The issue was settled when both programs were funded, although the Cheyenne program was later terminated.[29]

During the remainder of the 1970s and through most of the 1980s, there was relative harmony and increased cooperation between the services. The first explanation was the military's relative lack of support in segments of the public, Congress, and the press, which conceivably could have become worse in the face of public bickering among the services. Second, the relative failure of the Israeli Air Forces during the 1973 Yom Kippur War against Egyptian surface-to-air missile sites when operating independently of ground support, and Israeli air success when working in conjunction with attacks by armored columns, served to emphasize the synergistic effects of coordinated land and air power. Lastly, a dialogue between the chiefs of staff of the two services—General Creighton Abrams of the Army and General George S. Brown of the Air Force—paid dividends. Both men had seen the benefits of close cooperation in Vietnam and worked to further it. To institutionalize interservice relations as they had been in Vietnam, they turned to TRADOC commander General William E. DePuy and TAC commander General Robert J. Dixon, whose commands were near each other in Hampton, Va., and, best of all, away from Washington, D.C. and the constant presence of the Air Staff.[30]

That, then, was the situation as the services sought to fulfill the close air support role at the NTC. In the Defense Authorization Amendments and Base Closure and Realignment Act (PL 100-526) of 24 October

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28. Edgar F. Raines, Jr., "When There Was Common Ground In the Air," *Army*, March 1995, pp. 24-31.

29. Harrison, "A-10," pp. 37-38.

30. Raines, "Common Ground," p. 30, 31.

1988, the Secretary of Defense was directed to conduct an independent assessment of both Army and Air Force analyses and studies of alternative aircraft for the CAS mission. In including that tasking in the bill, the Senate Armed Services Committee noted that "the Air Force has devoted insufficient attention to the area of modernizing close air support." The Secretary's report looked at the development of new aircraft, as well as the feasibility of modifying the A-7, F-16, AV-8B, and the A-10.[31] That same Public Law tasked the Secretary of Defense with assessing the feasibility of transferring the close air support mission from the Air Force to the Army by FY 1992. Both services admitted to fearing that the congressional move might resurrect the rivalry that had existed earlier. The transfer of the CAS mission to the Army had been discussed ever since the mission had been placed in Air Force hands, but no congressional amendment had ever been passed.[32]

A year later, in November 1989, the House Armed Services Committee called for a new study of "much broader scope than that required by Public Law 100-526." The rationale for another study of CAS was the rapidly altering character of the Cold War and the fact that since World War II, technology, doctrine, and the nature of warfare had seen drastic changes. The new study was also prompted by the Air Force's request for funds to modify the F-16 and A-10 for the close air support role. According to members of the House of Representatives considering defense appropriations for FY 1990 and FY 1991, the Air Force had done little or no testing and had "effectively gutted the plan for a series of tests ordered . . . by the Congress into close air support alternatives." On 9 November, the House Armed Services committee concluded that Air Force support for CAS "is not only too limited but also declining." Why, committee members asked, if the Air Force was committed to CAS, did the service propose "to terminate the only tank-killer missile in its inventory—the Maverick missile—after it has purchased only a third of the requirements for the missile."[33]

The House—with Senate concurrence—then decided to take drastic disciplinary action against the Air Force by barring the obligation of any money for the F-16 until "the Air Force and the Army file a test plan that

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31. The A-10 had long come under criticism because it lacked the ability to fly in foul weather or during night operations.

32. (2) Barbara Amouyal, "AF, Army Officials Fear Close Air Support Transfer Will Resurrect Rivalry," *Defense News*, 22 Aug 88. (2) White Paper on CAS, TRADOC Historical Records Collection, Fort Monroe, Va. The bill that would have transferred CAS functions to the Army did not survive conference committee hearings.

33. U.S. Congress, Close Air Support, Hearings of the House and Senate Armed Services Committees, 101st Cong, 1st Sess. 9 Nov 89.

truly evaluates a broad range of alternatives." Additionally, funding for the F-16 would be barred unless "any fixed-wing aircraft operated after July 1 1990, at the National Training Center at Fort Irwin, California, is fully integrated into the range instrumentation system to the same extent as attack helicopters." In so ruling, committee members noted that the NTC was the one location in the world where near realistic evaluation of tactical close air support of Army operations could be made. The House resolution became a part of the Defense Authorization Act for Fiscal Years 1990 and 1991.[34]

The congressional action got the Air Force's attention, but not necessarily its cooperation. Not until 2 July 1990—the day after the deadline for the instrumentation of fixed wing aircraft and joint instrumentation at the NTC had passed—did the Air Force issue a preliminary request for proposal. Meanwhile, on 18 June 1990, TAC commander General Robert D. Russ announced to TRADOC, FORSCOM, the NTC, and all the Air Force bases concerned, that "TAC will cancel Air Warrior exercises at predetermined dates if congressional relief from the 1990 Defense Authorization bill pertaining to fixed wing operations at the National Training Center after 1 Jul 90 is not received." Russ's message also formally cancelled Air Warrior exercise 90-11 scheduled for 8-25 July 1990. Congress relented and amended Public Law 100-189 to give the Air Force until 1 January 1993 to comply with the terms of the original act. Meanwhile, in late winter 1990, the Aeronautical Systems Division at Eglin AFB began developing a "Program Management Plan," one of the initial steps in any major Air Force project.[35]

Finally, on 17 September 1990, the Air Force issued a formal request for proposal (RFP) for the ACMI. The RFP contained a number of special incentives to "encourage the winning contractor to meet or to beat the specified IOC [initial operating capability]." For example, one option allowed the contractor to assume operation and maintenance responsibility for the Air Warrior system for a specified time after delivery of the system. Awarding of the contract was scheduled for 28 December 1990. The contract was, however, not awarded until March 1991, more than two years after initial planning had allowed for. With an estimated value of $12 million it went to Cubic Corp. The contract called for initial operating capability by 1 January 1993; but, due to many technological problems, it

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34. U.S. Congress, House of Representatives, 101st Cong., 1st Sess, H. Con Res 225, 9 Nov 1989; Public Law 100-189, Defense Authorization Act, 29 Nov 1989. The barring of funding for the F-16 and the section of the Bill concerning the NTC were amendments to the original bill.

35. (1) USAF, National Training Center/Air Warrior Program Management Plan, (Wright Patterson Air Force Base, 2 Jan 91) [hereafter cited as PMP with appropriate page numbers]. (2) Msg, Cdr TAC to distr, 061741Z Jul 90, subj: Cancellation of Air Warrior Exercise 90-11.

was not until November 1994 that the Air Force accepted Air Warrior and the simulation came on line with the NTC instrumentation system.[36]

The new Air Warrior simulation was a ground-to-air, air-to-ground variant of the Tactical Aircrew Combat Training System used by the U.S. Navy and Marine Corps for air-to-air engagement training. Like the earlier Air Force air-to-ground system at the NTC, the Air Warrior system employed pods on the aircraft, but which were newly capable of intercepting, decoding, and downlinking signals from the MILES. The pods registered engagements and passed the information to the Air Warrior mainframe at Nellis AFB, where the computer matched the data to NTC data to identify the target and access damage. The data was then routed back to Fort Irwin to the NTC instrumentation system. There, Army officials had to convert the classified data produced by the Air Force system into a form that could be readily shared with Army combat units. That information was then passed back to the NTC Operations Center where training analysts implemented target kills through the NTC system. The Air Force instrumentation system's "no-drop" weapons scoring capability showed where ordnance would have hit the ground, while the NTC data showed what (tanks, Bradley Fighting Vehicles, etc.) was in the strike zone. Visual cues known as "smoky SAMs" (simulated surface-to-air missiles) allowed the pilot to initiate evasive action in the time it would take a real missile to reach his aircraft. In a significant advance over the Red Flag system, which displayed stick-figure mountains and aircraft, NTC Air Warrior displayed full three-dimensional aircraft and terrain. In air-to-air engagements the ground did not play much of a role, but in close air support it did.[37]

As early as 1991, before the new NTC Air Warrior instrumentation system was fully on line and only air-to-ground capability existed, Colonel Marvin Bass, Air Warrior commander, explained one reason for the Air Force's reticence to provide close air support at the NTC. With the focus on ground troops, the Air Force did not believe its personnel received superior training. If the Air Force did its job properly, the enemy force would be destroyed or substantially weakened long before a ground confrontation occurred. While that was a desired goal on a real battlefield, it would dramatically reduce training opportunities for ground forces. Additionally, the Air Force had learned that F-16 pilots were not highly proficient while performing several missions at the same time. Air Force

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36. (1) PMP, pp. 4-5. (2) "A Checklist of USAF Test and Training Programs, *Air Force*, August 1992, p. 62. (3) Wilson, "Air Warrior," p. 1110. (4) Briefing slides, CTC FY94 Significant Events, 30 Jun 94.

37. (1) TC 25-6 Coordinating Draft, p. 2-17. (2) Wilson, "Air Warrior," pp. 1110-1112.

training requirements required a major portion of the F-16 pilots' training to be in air-to-air or battlefield air interdiction type missions. Close air support was a secondary mission. As for the Army, the service believed CAS only received increased emphasis prior to an Air Warrior deployment. That situation it was thought, often showed itself in target acquisition, vehicle identification, and ordnance delivery problems.[38]

Another problem that occurred frequently during Army-Air Force joint operations at the NTC concerned "airspace coordination areas (ACA)." Airspace coordination was necessary to ensure the safety of CAS aircraft, both fixed wing and helicopters, from fragments of artillery rounds, and smoke, dust, or fire that could obscure the target, hindering accurate ordnance delivery. In addition, as the intensity of artillery and the number of aircraft involved increased, the "big sky, little bullet" theory became increasingly unacceptable to pilots. The need, in essence, was to divide the airspace over an engagement between artillery and aircraft. The establishment of ACAs left aircraft separated from surface fires. An ACA, as defined by Air Force FM 101-5-1, *Operational Terms and Symbols*, was either a formal "three dimensional box in the sky" or an informal space established at the task force level. Army personnel complained the establishment of ACAs was cumbersome and did not allow the simultaneous integration of all fire support assets. Air Force personnel believed the Army was too busy to establish the areas and planned to fight alone in a future conflict. Any solution would have seemed to involve minimum altitudes for aircraft and low angle fires for artillery. However, that solution was not in line with "train as you will fight," because it was not applicable to all types of operations. An alternative solution was to fire artillery to a specified time or event, stopping when aircraft entered the target area. That, too, was an artificial solution to training that might not be possible in actual battles. Because the close air support mission required artillery and aircraft to operate in close proximity to each other, the Army continued to monitor closely operations at the NTC while seeking a solution to the problem.[39]

Thus, attempts to establish effective and realistic combined arms training for both the U.S. Army and the U.S. Air Force moved forward by fits and starts. Problems were created by personalities and parochial interests. But to point out the continuing difficulties was not to imply a lack of commitment by either service to providing the best combined arms training possible.

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38. Wilson, "Air Warrior," p. 1111.

39. Col Robert D. Reynolds, USAF, "Artillery/Aircraft Airspace Coordination," *TAC-TRADOC ALFA Bulletin*, December 1989, pp. 3-7.

CHAPTER VIII

Data Analysis and Lessons Learned II

Data Collection and Lessons Learned

As National Training Center planners continued to seek ways of enhancing the realism of the NTC's simulated battles, neither the Army—nor the Congress—forgot the training center's secondary mission—that of using the NTC experience to improve future training, doctrine, materiel development, and the effectiveness of the force structure. Indeed, the establishment of a viable "lessons learned" system became a primary concern as the Army sought ways of amortizing—and defending—its tremendous investment at Fort Irwin.[1] The data generated and collected at the NTC provided a powerful base for potential research and was the only known capability of its type in the world. The NTC with its OPFOR, realistic battlefield environment, electronic warfare, combined arms weaponry, and sophisticated data-gathering instrumentation seemed to provide an excellent opportunity for the derivation and distribution of lessons learned. In addition, it was expected that the data generated during unit rotations would contribute to the enhancement of combat effectiveness through improvements in training at home station. If used effectively, the NTC data and the resultant lessons learned could potentially produce better trained soldiers and leaders, and allow the Army to exploit high technology to its fullest. Of special concern to many senior Army officials was the translation of lessons learned into better training methods and programs of instruction in the TRADOC Army schools. However, from the beginning, a means of employing the data produced at the NTC proved elusive.

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1. For a history of the Army's lessons learned program over time, see Chapman, *NTC* Vol. I, pp. 113-14. The problems with the establishment of a system to fully exploit the NTC experience in the NTC's early years are discussed at some length in the foregoing study.

As the NTC matured, it became increasingly obvious that in too many cases, the hoped for lesson learning was not taking place. And to the extent that lessons were being derived from unit performances, they were not being distributed to potential users Armywide. Analysts noticed that, all too often, the same mistakes were being repeated during each rotation. Top level NTC supporters also had political reasons for concern that the NTC was not accomplishing its lesson learning mission, as critics of the training center—military and civilian—questioned whether the Army was getting the most for its money at the NTC. What was critical was some means to collect, analyze, and process the lessons learned and make them a part of the Army's institutional memory. That need became more urgent in May 1983 when Congress ordered a General Accounting Office study to determine if the center was living up to its advance billing. As a result, Lt. Gen. Fred K. Mahaffey, Deputy Chief of Staff for Operations and Plans on the Army Staff, insisted that NTC officials find a way to make the results of NTC training more tangible and visible.[2]

In April 1985, Chief of Staff of the Army General John A. Wickham, Jr. wrote TRADOC commander General William R. Richardson, expressing his deep concern that "we are not capitalizing on the [NTC] experience because of our failure to establish a formal system to process the lessons learned and produce tangible results." Wickham continued:

> I want you to establish, within your current resources, a formal system for processing NTC lessons learned. This system must address the root causes of deficiencies across the broad spectrum mentioned above, [gathering, analyzing, and disseminating lessons learned] and it must assign responsibility for corrective action and provide a mechanism for timely follow-up. . . . Your system should be formalized no later then 30 September 1985.[3]

2. MFR, General William R. Richardson, TRADOC Cdr, 28 Jun 84, subj: Discussions with Lt. Gen. Mahaffey.

3. Ltr, Wickham to Richardson, 4 Apr 85.

Wickham wrote AMC commander General Richard H. Thompson a similar letter:

> . . . there appears to be little evidence of analysis of things such as equipment performance/design, consumption rates, and logistical supportability. The fact that some of our divisions are using 50 percent of their CSS [combat service support] assets to support a two battalion TF [task force] rotation deserves careful analysis. Therefore I want you to tailor AMC's activities at Fort Irwin to allow for a more active role in NTC lessons learned.[4]

In a letter to various AMC agencies concerned with logistics, AMC's Deputy Commanding General for Materiel Readiness established a program looking to identifying lessons learned in the logistics realm at the NTC.[5] Letters in the same vein went to FORSCOM commander General Robert W. Sennewald and the Department of the Army Deputy Chief of Staff for Operation and Plans.

In August 1985, in an effort to institutionalize a lessons learned system, as Wickham had prescribed, the Center for Army Lessons Learned (CALL) was established at the Combined Arms Center at Fort Leavenworth, Kansas. Small cells were also established at TRADOC's Soldier Support Center at Fort Benjamin Harrison, Ind. and the Logistics Center at Fort Lee, Va. Prior to that time, responsibility for the exchange of lessons learned—or not learned, as the case might be—by commanders at all levels, had resided with the NTC Division of the Command and General Staff College's Unit Training Support Directorate; later, on 1 July 1984, responsibility for NTC data analysis and the distribution of resulting lessons became the responsibility of the Combined Arms Center's Combined Arms Training Activity, or CATA. The Center for Army Lessons Learned was established as a directorate of CATA. At the same time, The Combined Arms Integration and Standardization Directorate of CATA added a separate team for NTC Lessons Learned. In January 1986, the NTC Team was absorbed into CALL.[6]

CALL's mission was to serve as the focal point of the Army's lessons learned system through the development of lessons from information gathered at the NTC, from major TRADOC exercises, and from actual

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4. Wickham to Thompson, 28 Apr 85; Wickham to Sennewald, 28 Apr 85; to Deputy Chief for Operations and Plans, 28 Apr 85.

5. L. F. Skibbie to distr, AMCRE-RA, 28 May 85 subj: National Training Center Lessons Learned Initiative.

6. CAC Annual Historical Review, 1986, pp. 118-19.

combat, past and present.[7] CALL was to disseminate those lessons to the Active Army and reserve components through a variety of media, including a quarterly bulletin and an automated data base accessible to users throughout the Army. In an effort to provide better data to users, the Army established a Data Analysis Center at the Army Research Institute (ARI) at the Presidio of Monterey, Calif. (ARI-POM) and a Combat Analysis Laboratory at the RAND Arroyo Center at Santa Monica, Calif. Data from the NTC, as well as that from the other combat training centers, was stored at the Presidio of Monterey. A small "cell" sponsored by CATA and known as the NTC Observations Group was established at Fort Irwin to enhance the lessons learned effort. ARI also had a Fort Irwin NTC team.

Richardson was still not satisfied. In November 1985, he visited the National Training Center and talked with NTC commander Brig. Gen. Edwin S. Leland, Jr. In his trip report, Richardson wrote:

> We agreed that the whole area of lessons learned must be accelerated and given greater visibility in the Army. They [the NTC leadership] will attempt to do this with our help through CALL and CAL [Center for Army Leadership]. We need to make more headway. I told them I would discuss this personally with COL (P) Heldstab [the new CATA commander] as soon as he is aboard. I consider this a very high TRADOC priority.[8]

The role of the Army Research Institute with regard to the Army at large was to increase unit combat performance capabilities by improving, through application of the behavioral sciences, the methods for measuring and evaluating unit performance; unit training programs and management tools; and the NTC and home station database. Thus the Monterey field unit concentrated on individual and collective training within operational units, a focus that extended to the NTC. A combination of government (both civilian and military) and private-sector employees executed ARI-POM's projects. With regard to the NTC, ARI-POM's responsibility was to establish a database, to standardize the data, and prepare it for analysis. Private sector employees worked for contractors, chief of which was BDM Corp., during the time when the failure of the Army to establish an effective

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7. TRADOC Annual Historical Review, 1 Oct 83 - 31 Dec 86, p. 21 (SECRET -- Information used is UNCLASSIFIED).

8. General William R. Richardson, Trip Report, 7 Nov 85, subj: Visit to the National Training Center, Richardson Papers, MHI, Carlisle Barracks, PA.

lessons learned program began to receive much publicity. In February 1985, ARI awarded BDM a three-year 1.5 million dollar contract to "develop performance measures, evaluate the usefulness of NTC instrumented data for analyzing exercise results, and assist in developing an analysis methodology." By early 1987, twenty-two studies had been produced.[9]

The sources of NTC data and the data gathering process have been discussed in some detail in previous chapters. To summarize here, data generated at the NTC came primarily from two general sources. First it was provided by the electronic sensing and measuring instruments that recorded unit maneuvers and weapons effects and stored that information on computer tapes. The data generated by the instrumentation system provided position location, weapons firing events, and "near miss," hit, and kill information recorded by the MILES. The electronically processed data was replayed during after action reviews and included as part of the take home package, discussed further below. Also recorded electronically, but not transmitted to the ARI computer system, were the videotapes of battle segments and of task force level AARs and radio communications tapes. The second source was data gathered non-electronically such as training scenarios, operations orders, staff journals, trip reports produced by subject matter experts from the TRADOC schools, and—most importantly—the notes taken during maneuvers by the O/Cs, the OPFOR, and the TRADOC training analysts.[10]

Approximately a month after the establishment of CALL, the relationship between CALL and ARI (and especially the Field Element at the Presidio of Monterey) was formalized. A letter of agreement (LOA), dated 16 September 1985 and signed by acting CATA commander Col. Jerome L. Haupt and ARI commander Col. William Darryl Henderson, established ARI's role in support of CATA's efforts to use information from the NTC to assess Army needs on a continuing basis, and to produce lessons learned for all elements of the Army.[11] Specifically, ARI agreed to: develop methodology for the use of NTC findings in doctrine, organization, equipment, and training development; and develop methods to improve the utility and quality of NTC data. In accordance with the LOA, ARI began to publish its

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9. (1) ARI Briefing Slides, n.d.. (2) William J. Doherty, ed. Methodology Development for Deriving Lessons Learned from the National Training Center: Progress and Future Directions, BDM Corp for ARI, February 1987. (3) CAC Annual Historical Review, CY 1986, pp. 180-81.

10. Chapman, *NTC*, Vol. I, p. 115.

11. The LOA also addressed the inclusion of data from the other combat training centers yet to be established.

own NTC studies, as opposed to contracting them out as with the BDM series. The first ARI reports focused on the performance of weapons systems at the NTC. Follow-on studies addressed unit performance measurement, development of an improved NTC database, the NTC "feedback" system, and support of the Army's lessons learned program.[12]

Another group of NTC studies was produced by the aforementioned RAND Arroyo Center, the U.S. Army's federally funded research and development center for studies and analysis operated by the RAND Corporation. The RAND Corporation was a private, nonprofit institution that conducted analytic research on a wide range of public policy matters affecting the nation's security and welfare. The Arroyo Center's role was to assist the Army with lessons learned from the NTC with regard to development of a methodology which the Army could use to derive lessons on a continuing basis. A second facet of the center's responsibility was to derive exemplary lessons, primarily but not exclusively in the area of doctrine, that would help the Army improve its combat capabilities.[13]

The Army also established several other programs it hoped would contribute to a better return on the investment in the NTC and in the other combat training centers. A "Trendline Analysis Program" specifically sought to determine the differences between force design and fielded capability, as well as to allow development and validation of improvements to doctrine, training, organization, and materiel. In a Military Studies Program established at the Army War College, students were assigned to conduct an independent review of all NTC exercises to "determine root causes of deficiencies across a broad spectrum of doctrine, tactics, organizations, equipment design (including man-machine interface), and training."[14] As noted earlier, in an oral history program established at the NTC and supervised by CALL, NTC commanders, OPFOR commanders, and observer-controllers were interviewed to capture their experiences and record their suggestions as to how the Army might benefit, across the broad spectrum of its concerns, from the successes and failures of units at the NTC.[15]

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12. Carol A. Johnson, "National Training Center Lessons Learned: Data Requirements" U.S. Army Research Institute, February 1987, p. 1.

13. Robert A. Levine, James S. Hodges, and Martin Goldsmith, "Utilizing the Data from the Army's National Training Center: Analytical Plan," RAND for the United States Army, June 1986.

14. Memo, CSA to DCSOPS, 28 Apr [85], subj: National Training Center (NTC): Lessons Learned.

15. Copies of the interviews (eighteen in number), which were conducted by the Office of the NTC Observation Division of the Observation Group at the NTC, are available in the HQ TRADOC Military History Office. In some cases no full names were provided and the dates of several interviews are missing, but most were conducted in late 1989, 1990, and early 1991.

Despite formal agreements, plans for numerous studies, and new programs, the ARI-managed NTC data continued to disappoint. The problems fell into two general categories. First, much of the data proved unreliable for a variety of reasons, discussed below. Second, ARI had much difficulty establishing a database useful and accessible to users.

From the beginning, problems developed with the collection of data, a situation that, in turn, raised questions about its reliability and the validity of data analysis. Many of the specific problems presented by noninstrumented vehicles, weapons, or personnel, and the failure of the MILES, on too many occasions, to accurately portray battlefield losses, were discussed in the first volume of this study. And while some of the shortcomings were addressed and improved in the 1984-1993 period, at the end of that period many questions remained about the use of the ARI data to improve combat readiness.

Although many more players were instrumented by the close of 1993 than had been in the fall of 1984, there were still noninstrumented players who could not be "killed," a situation that tended to skew kill ratios and firing statistics. As noted previously, the rules of engagement were explicit about the penalties for MILES "cheating," but MILES-equipped vehicles designated as killed often continued to move, or an infantry squad in an armored personnel carrier killed by a tank could exit the vehicle and continue to participate in the battle. In addition, MILES equipment often did not function accurately on a dusty and smoke-filled battlefield. "Terrain masking" was also compromising to the data collection efforts. Other major problems with data collection at the NTC had to do with the pairing of the killer weapon to the vehicle killed, the failure of which affected the validity of firing summaries. NTC planners hoped that the ongoing development of a MILES II updated system, when fielded, would eliminate many of those shortcomings.[16]

Another problem that remained at the end of 1993, was the simulation and instrumentation of indirect fire, discussed earlier. Again, planners expected that the fielding of a companion system to the projected MILES II, known as SAWE-RF (Simulated Area Weapons Effects-Radio Frequency) would resolve that shortcoming.[17] Digitized and completely objective data reflecting logistics, intelligence, engineering activities, and the effects of obstacles was difficult—if not impossible—to obtain. Instrumentation to

16. Chapman, *NTC*, Vol. I, p. 116.

17. An interim system known as CATIES, discussed in Chapter V, was fielded in the late 1980s, with mixed results.

record air-to-surface and surface-to-air encounters had improved since 1984; instrumentation to reflect air-to-air casualties was under development. The traditional paper sources of data on combat action, like the records of units in real combat, varied widely in content from unit to unit and were too erratic to form a broad database. Given the pressures being brought to bear on the Army from Congress and other federal agencies, and the pressures the Army, in turn placed on ARI, the Arroyo Center, and CALL, it was not surprising that more than one researcher concluded in frustration that "the [poor] quality of the data directly affects the quality of the research that can be based on it."[18]

The information—gathered at the NTC and held at ARI—that received the least attention from researchers, was the communications tapes, for a variety of reasons. By the late 1980s, eighty channels were recorded simultaneously. The recordings included the transmissions of both rotating task forces, the OPFOR, the observer/controllers, and the brigade. The tapes were time tagged, and the radio "traffic" could be recorded onto a cassette. The tapes were a rich source of detail and essential contextual information. They also caught the nature of NTC battles as almost nothing else could. The transcribed tape at the Appendix is dramatic evidence of the excitement—and confusion—of soldiers and officers as they attempted to prevail against the dreaded OPFOR. The major problem with using the tapes for research purposes was that it was a very labor-intensive process. In addition, there was no means of automatically synchronizing them with the graphics to form a coordinated record of what was being said at the same time as action was taking place.[19]

The collection of data at the NTC and its management by ARI, and the Army's efforts to establish an effective lessons learned system must be placed in perspective. Research and lesson learning had never been the NTC's primary mission, as training had taken center stage from the beginning. Distortions in the data were more of a concern for exercise controllers, analysts, and researchers looking for precision than they were for the soldiers in the training units who could still react to combat situations as though there were no instrumentation. Further, the pressures of battle could never be fully reproduced in any training exercise. And there was the

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18. (1) Chapman, *NTC*, Vol. I, p. 117. (2) Jack Briscoe, "Comparison of National Training Center Data Sources," BDM for ARI, January 1987, p. 30 (quotation).

19. (1) ARI Notebook, p. 57. (2) Carol Johnson, "National Training Center Lessons Learned: Data Requirements," ARI, February 1987, p. 8. (3) Chapman, *NTC*, Vol. I, p. 117.

related fact that safety constraints had to be imposed. A student of Army and NTC lessons learned defended CALL: "CALL collects experience and evaluates it, but cannot make the Army learn it." Despite shortcomings in the data and in the lessons learned system, it was undeniable that the NTC had provided, and would continue to provide, the most sophisticated and elaborate combat data collection in the world.[20]

Take Home Packages

The numerous studies completed which addressed the issue of the identification and dissemination of lessons learned based on the ARI data, were based largely on the take home packages, or THPs. THPs had been a part of the National Training Center concept from the beginning, the justification being that the information collected during a training rotation at Fort Irwin could be employed to improve training programs at home station. In addition, the Army could potentially look across THPs to identify performance trends with Armywide implications. The information in the THPs came primarily from the after action reviews (AARs) conducted after each exercise. THPs were provided for each battalion and company. The information was synthesized to provide a summary of performance trends for the entire fourteen-day rotation. Analysts assigned to the Operations Group authored the packages, in conjunction with the O/Cs who provided input from the field.[21]

The THPs were primarily in narrative form, although some battle statistics were included. A second component was the selected video and audio tapes of the AARs. Prior to 1988, format changes were frequent, as training analysts attempted to make the THPs more useful to units without the possession at home stations of the NTC's sophisticated instrumentation system. After 1988, a relatively standard format existed. The training packages contained lists of missions conducted, and a statement of the battalion commander's intent. Performance trends were identified within each of the task force's seven battlefield operating systems, Those are discussed below. The packages also contained equipment loss tables for the force-on-force maneuvers, gunnery tables for the live-fire exercises, and force casualty

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20. Dennis J. Vetock, *Lessons Learned: A History of US Army Lesson Learning*, (Carlisle Barracks, Pa.: U.S. Amry Military History Institute, 1986), p. 125.

21. Carol A. Johnson and Richard K. Williams, Jr., "National Training Center Performance Trends for the Maneuver Operating System: Relationship to Training Doctrine," (Presidio of Monterey: ARI, April 1988), p. 1.

rates. There were also positive and negative comments as to how well units conformed to doctrine.[22]

While the THP was a crucial component of the NTC experience, researchers and some unit commanders over time identified several problems with the application of the concept. First, as with the communications tapes, the take home packages were more labor intensive to use than digital data. Second, the basis for collective tactical training and evaluation in the Army was the Army Training and Evaluation Program, always known as the ARTEP. However, at the NTC, observer/controllers used the framework of the doctrinal application of the seven battlefield operating systems within which the resources of a battalion task force were organized, to evaluate unit performance. Within that framework, the O/Cs analyzed the execution, control, coordination, support, and planning activities of the task force. In short, the data analysis, and, in turn, the THPs, were not as objective as the Army's major training and evaluation tool—the Army Training and Evaluation Program (ARTEP). National Training Center "feedback" was doctrinally subjective. The extent to which the potential application of THPs was realized depended upon how easy it was to interface the information taken from the THP with other sources of information used in developing training plans. The most important additional source of information was the unit's aforementioned ARTEP which described training requirements in terms of missions and subordinate collective tasks. That situation meant that units trained in advance of a trip to the NTC with an evaluation system different from what they would encounter there. It also meant that the THPs had limited use in correcting training deficiencies after the unit returned to home station. Interviews with battalion commanders and their staffs indicated that that was the case. Developers of the NTC concept apparently had believed that the complex missions designed for a battalion task force could not readily be broken down to the task-subtask format of the ARTEP. While that dichotomy concerned many in the training development community, others strongly defended the use of the seven battlefield operating systems as a basis for NTC training evaluation.[23]

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22. (1) ARI Notebook, pp. 43, 45. (2) Thomas L. Avant and Robert S. Henderson, "Documentation for 'What Now, Captain': A Training Concept for Exporting Lessons Learned From the National Training Center," BDM for ARI, January 1987, passim.

23. (1) Johnson and Williams, "NTC Performance Trends," pp. 1-2, 5, 8. (2) Chapman, *NTC*, Vol. I, p. 118.

One would be tempted to try to describe a "typical" take home package—but no such thing existed. Researchers complained that a lack of standardization in the topics the observer/controllers commented on in the THPs caused problems both for deriving lessons learned and for the use of the THPs as guidance for home station training. In other words, there was a lack of consistency within and among O/C training teams regarding what they observed or failed to observe. In April 1988, ARI completed a study of twenty-six take home packages produced at the NTC during 1984 and 1985 for both armor and mechanized infantry units. Researchers were looking to identify performance trends. In general, they found that the lack of standardization precluded many conclusions from the "trend" data. For example, one armor task force failed to engage with its TOWs at maximum range during 1984, and five failed to do so in 1985. It could not, however, be concluded that performance declined, since the subject was not even mentioned in five of the 1984 THPs. Further, during 1984, METT-T (mission, enemy, troops, terrain, and time available) factors were always addressed in the armor THPS; they were never mentioned in the mechanized infantry THPs, a situation that precluded comparisons between armor and mechanized infantry battalions. In short, if an issue was not addressed, it was unclear whether it was not a problem or was not observed.[24]

That, then, was one school of thought regarding the NTC take home packages. Researchers, especially, found that a lack of standardization made the identification of lessons learned a frustrating, if not impossible chore. Some analysts suggested that the observations of the observer/controllers should be recorded against a checklist so that each O/C was commenting on the same actions. That, however, was not a universal opinion. Many senior Army and NTC officials—and a number of the O/Cs themselves—believed that such a system was too limiting, would detract from training, and adversely affect the O/C-unit relationship.[25]

In 1990, the question of access to THPs brought the Army into conflict once again with the General Accounting Office (GAO). From the beginning, the NTC concept, and later the CTC concept, had included stringent anonymity for units. That is, THPs were given only to the unit itself, to ARI, and a "sanitized" (no identification) version was provided to the Center for Army Lessons Learned. CALL and the combat training centers also would not publish, or allow to be published, any individual or

24. Johnson and Williams, "Performance Trends," pp. vii, 2, 20-21.

25. Ibid., p. 5.

unit-specific information. That policy was based on the determination of Army officials that the NTC always remain a place where learning took place and that the training center never become a "test" for commanders or units. When the GAO decided to conduct an audit of Army collective training evaluation systems, the agency's access to NTC (and the CTC) take home packages became an issue of some concern to the Army.

On 18 April 1990, representatives from the Department of the Army headquarters and the GAO met to review the methodology the GAO would use to conduct the audit. In a message distributed widely throughout the Army, the commander of U.S. Army Forces Command explained that

> absolutely essential to the combat training centers effectiveness is the open and frank communication that occurs between the training battalions, the OPFOR, and the observer-controllers. This communication is possible largely because the take home packets are closely held. Access to the packets by others would tend to make after action reviews and take home packets less frank, and ultimately less meaningful.

To deal with the problem, the Army and GAO reached a number of agreements. The GAO would receive a single copy of the THPs of two rotations—one involving units of the 4th and 6th Infantry Divisions at the NTC, and the other involving the 6th Infantry Division at the JRTC. After analysis of the information, the GAO would provide the results in draft form to the Army. The Army would then review the draft report to ensure that the GAO use of the data would not adversely affect the Army's training evaluation system. No other THPs would be provided until the review of the aforementioned ones had been satisfactorily concluded. The GAO was to make no additional copies.[26]

Whatever the form or disposition of the THP, it was often the situation at home station that limited the usefulness of the data contained therein. The THP was only of value to the unit to the extent it could assist in correcting deficiences identified at the NTC. Most units upon return from Fort Irwin were put in a "down cycle" with few resources to train. In addition, the tendency to high rotation levels of key personnel after an NTC rotation adversely affected training as well as unit cohesion.

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26. TRADOC Annual Command History, 1990, p. 154.

The Battlefield Operating Systems and Lessons Learned

Despite the fact that the data collection at ARI and the identification and dissemination of lessons learned continued at the close of 1993 to present a major challenge for training developers, there were certain observations—trends—that observers of NTC training remarked on, on numerous occasions. Some of those observations concerned units' successful employment of certain battlefield operating systems (BOS); more often observers' remarks noted units' failures that cost them dearly when maneuvering against the OPFOR. All too often, the intensity and realism of NTC training revealed tactical, operational, and doctrinal weaknesses in unit performance. As previously noted, both the important after action reviews and the take home packages were organized, in part, according to the BOS, which reflected the major functions of the heavy battalion task force on the battlefield. Those were the systems a task force commander dealt with in the conduct of combat operations. The seven battlefield operating systems were identified as command and control (C^2); fire support; maneuver; intelligence; mobility/counter mobility; air defense; and combat service support (CSS). Doctrinally, the seven BOS were originally identified in FM 71-2, *The Tank and Mechanized Infantry Battalion Task Force*, first published in June 1977.[27] What, then, did seasoned NTC observers and analysts have to say about units' performances with regard to the functions of a battalion task force?

Command and Control

Perhaps the most remarked upon BOS was command and control. The C^2 system of the battalion task force was the essential ingredient to the timely and effective functioning of the other systems. The command and control BOS also included communications. Comments varied widely, but there were common remarks concerning how task forces tended to execute C^2.[28] Most NTC observers commented negatively about the failure of most BLUFOR task force commanders to

27. Originally, there were eight BOS, the eighth being nuclear, biological, and chemical (NBC) functions. Later the NBC BOS became part of the mobility/countermobility system. Even later, mobility/countermobility became mobility and survivability. In the 1993 edition of FM 100-5, C^2 became battle command and CSS became logistics.

28. This section on lessons learned with regard to the execution of the seven battlefieldoperating systems is based on studies completed at various intervals from 1985 to late 1993. Those studies were: Col. Kenneth W. Simpson, Lt. Col. R. E. David, and Lt. Col. Bryan A. Sutherland, "The Training Center: A Critique of Data Collection and Dissemination." National War College Strategic Study, March 1985; *(Continued)*

At a tactical operations center—seeking some shade from camouflage nets—commanders plan the next battle.

synchronize TF functions. Synchronization, according to doctrine, was "the ability to focus resources and activities in time and space to produce maximum relative combat power at the decisive point." Part of the difficulty appeared to be the lack of a standard technique for synchronization of the seven BOSs. Improvement would be long in coming. In November 1985, TRADOC commander General William R. Richardson visited the

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(28. Continued) Memo, Brig. Gen. Edwin S. Leland, Jr. to Lt. Gen. Robert W. RisCassi, 20 Nov 85, Subj: NTC Observations [Leland wrote his observations as he prepared to turn over command of the NTC to Brig. Gen. Horace G. Taylor]; Lt. Col. Alan R. Cocks, "Objective: NTC--Some Ideas for Leaders on How to Get There from Here," Student Essay, Army War College, 28 Feb 86; "Combat Training Centers Performance Trends," 1 Sep 92 [based on TRADOC Pamphlet 11-9, Blueprint of the Battlefield, 10 May 1991]; Jon J. Fallesen, "Overview of Army Tactical Planning Performance Research," ARI, Fort Leavenworth, September 1993. Also contributing to the discussion of the BOS and lessons learned at the NTC were interviews with Brig. Gen. Paul E. Funk (1989), NTC commander; and Col. William S. Wallace in July 1991, who was then NTC Chief of Staff. Wallace later was OPFOR commander, and in 1995 became NTC commander. Other interviews drawn on were: Col. Julian Burns, Jr. (1991), senior live-fire task force trainer; Capt. Terence Tidler, an NTC O/C; and Capt. Roy Herman, a combat training analyst with the Operations Group. These interviews were a part of the aforementioned collection of interviews conducted by the NTC Operations Group, Observations Division. Copies are in TRADOC Military History Office.

NTC. Upon his return, he wrote in a memorandum for record that there were "glaring deficiencies" in C^2, especially the lack of synchronization. Seven years later, another TRADOC commander, General Frederick M. Franks also visited Fort Irwin. In his trip report, he cited command and control problems, with synchronization as a major concern. Similarly, a senior brigade O/C at the NTC would write:

> I observed twelve combined arms brigades plan and fight about a hundred simulated battles; most were force-on-force, some were live fire. They lost most of them. Only a handful of missions were ever accomplished. . . . Casualties were enormous, both in men and material. It bothers me. We've been at this over fourteen years in the Mojave desert with no substantial change in the pattern. . . . We do not have the skills and ability to *synchronize* and apply the capabilities of the combined arms team at the right time and place to achieve the outcomes we expect. . . .[29]

According to most observers who recorded their opinions on command and control and on the BLUFOR's frequent failure to accomplish the mission, a large part of the problem was the planning process. Maneuver plans tended to be too complicated and to lack flexibility. Often commanders failed to use their intelligence assets. A former OPFOR commander and later NTC commander put it bluntly:

> In the absence of [intelligence information] you're executing a plan that was made before you had any good information on what you really wanted to do. . . . [And] if new information comes in at midnight, we still execute the same old plan, even though we should recognize that there are improvements that we need to make.[30]

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29. (1) MFR, Richardson, 7 Nov 85, subj: Visit to the National Training Center. (2) Memo, Franks to distr, 15 Sep 92, subj: NTC Trip Report, 8-10 Sep 92. (3) Lt. Col. John D. Rosenburger, "The Burden our Soldiers Bear: Observations of a Senior Trainer (O/C)," *CTC Quarterly Bulletin*, No. 95-11, Sep 95, pp. I-1, I-2 (Quotation). Rosenburger blamed the problem on an incompetent officer corps, especially at the brigade and battalion levels.

30. Major Beacon, interview with Col. (later Brig. Gen.) William S. Wallace, NTC Operations Group, Observations Division, July 1991. Most of the NTC interviews are structured around the battlefield operating systems.

Brig. Gen. Paul E. Funk, NTC commander, September 1988-October 1989, termed the NTC a "warfighting academy." There was, however, room for improvement. In answer to being asked if there was anything in particular which consistently resulted in failure for the rotating units, Funk replied:

> I would say "adhocracy"; trying to make things up. . . . To try to cobble together a combination of tanks and Bradleys . . . without first training for that, is something that inevitably fails.[31]

Funk also noted the unnecessary complexity of many of the commanders' orders. "[We need to concentrate on] simple plans well executed, go back to basics. You already have enough complexity with day, night, rain, snow, dust, smoke, and all of the things that are endemic to the battlefield."[32]

One of the NTC observer/controllers who had watched twenty-five task forces rotate through the NTC, remarked on the problems with staff planning and the writing of coherent, synchronized operations orders:

> In most cases you find a battalion commander and/or S-3 that tend to go off by themselves and try to do the whole thing and then it becomes obvious . . . that systems aren't synchronized, [and] the engineer is not talking exactly right or the artilleryman is not exactly right because they were never included in it to begin with. . . . There is [sic] a lot of one man bands that come out here. . . . There is a lot of pressure on the commander to do well and a reluctance to let the other staff members do their job. . . . It's difficult being a one man band, especially for 14 days. You might get away with it for the first couple of battles, but then the sleep deprivation starts setting in.[33]

Those observers and others addressed many facets of C^2 that could affect the success or failure of battalion task forces at the NTC. Col. Wallace remarked that commanders often did not understand their own intent—that is, what they hoped to achieve—and thus could not pass it down to their subordinates. Other commanders had difficulty "seeing" the battlefield. That

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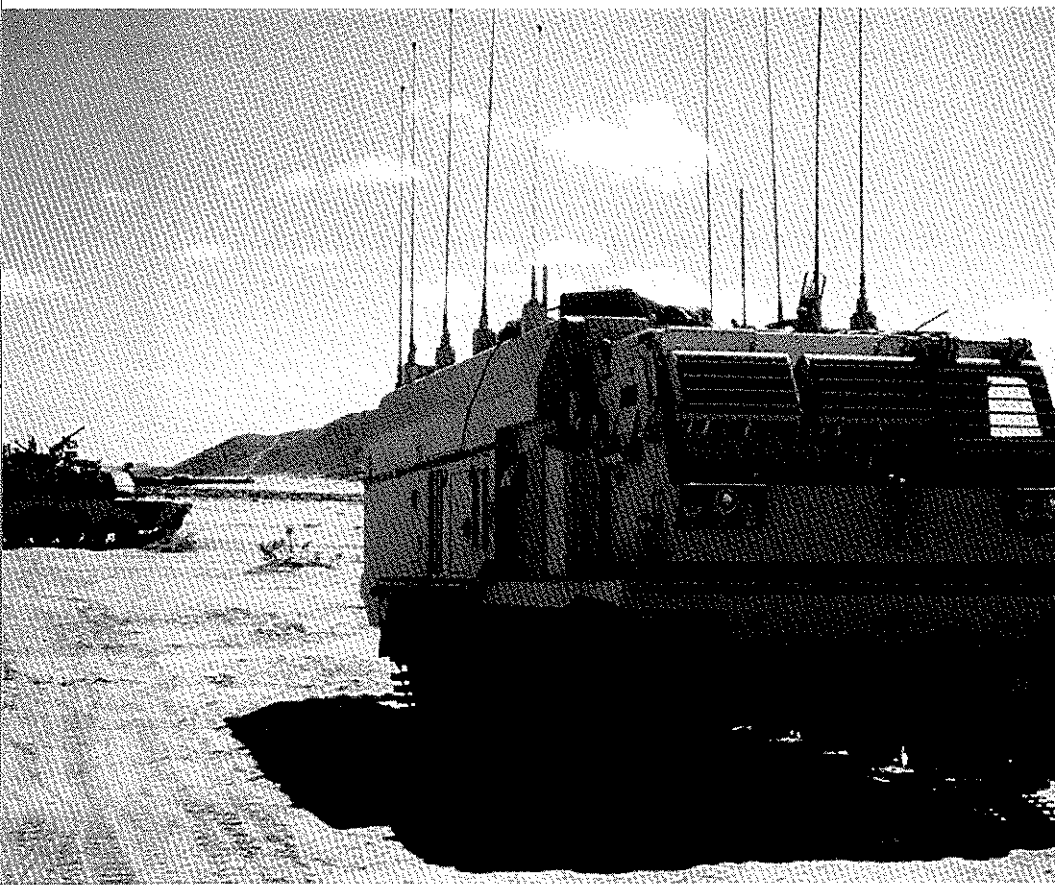
31. Maj. Jeff Marrin, interview with Brig. Gen. Funk, NTC Operations Group, Observation Division, [1989].

32. Ibid.

33. Lt. Col. Vona interview, 30 Mar 90.



The number of antennas easily identified a command and control vehicle.

is, a problem with grasping an overall picture of how they planned for the battle to unfold. Some task forces had not mastered the art of massing fires as doctrine prescribed. Bringing numerous firing systems to bear on the enemy simultaneously required good C^2. Despite the visibility of commanders' problems with command and control, nearly all observers agreed on one thing. Perhaps an NTC commander of the mid-1980s and his chief of staff said it best. Brig. Gen. Leland wrote that "Battles can be lost at any level in the chain of command, but are only won by companies, platoons, squads, and crews." In an interview shortly before leaving the NTC to command the 11th Armored Cavalry Regiment in Europe, Col. William S. Wallace put it even more succinctly when asked what lessons learned from the NTC he would take to his next assignment:

> . . . without very tactically proficient platoons, you've got nothing. You can be a Von Moltke, Clausewitz, or Rommel in command of a task force that doesn't have good platoons, you can't do a thing. He can screw up the operation all by himself, but he can't make it successful without those platoons. . . . [Platoons] can really make a battalion task force look good even when they don't deserve to, just because the platoons know their business.[34]

Maneuver

According to U.S. Army doctrine, maneuver was both an element of combat power and a principle of war. Simply put, maneuver was the movement of combat forces to gain positional advantage, usually in order to deliver, or threaten to deliver, direct or indirect fires. Maneuver referred to the employment of forces through either offensive or defensive operations. At the NTC, as well as elsewhere in the Army, tactical maneuver was employed to achieve operational results. On the battlefield, the primary responsibility of the tactical commander was winning engagements in which he executed maneuvers and fire power to achieve a specific objective.[35]

During the NTC interviews conducted in 1989 and 1990, a number of observer/controllers and members of the OPFOR addressed both the shortcomings and the positive achievements of the BLUFOR while executing maneuver. An O/C gave his opinion that "the BLUEFOR doesn't know how to mass." He continued:

> We are so hung up in the American Army over our formations that when we come out here we do pretty formations. We have the task force spread from one end of the sector to the other and we're trying to move. And it's probably great if we were about to receive a whole bunch of artillery . . . but there are times on the battlefield to mass and we don't do that at all very well.

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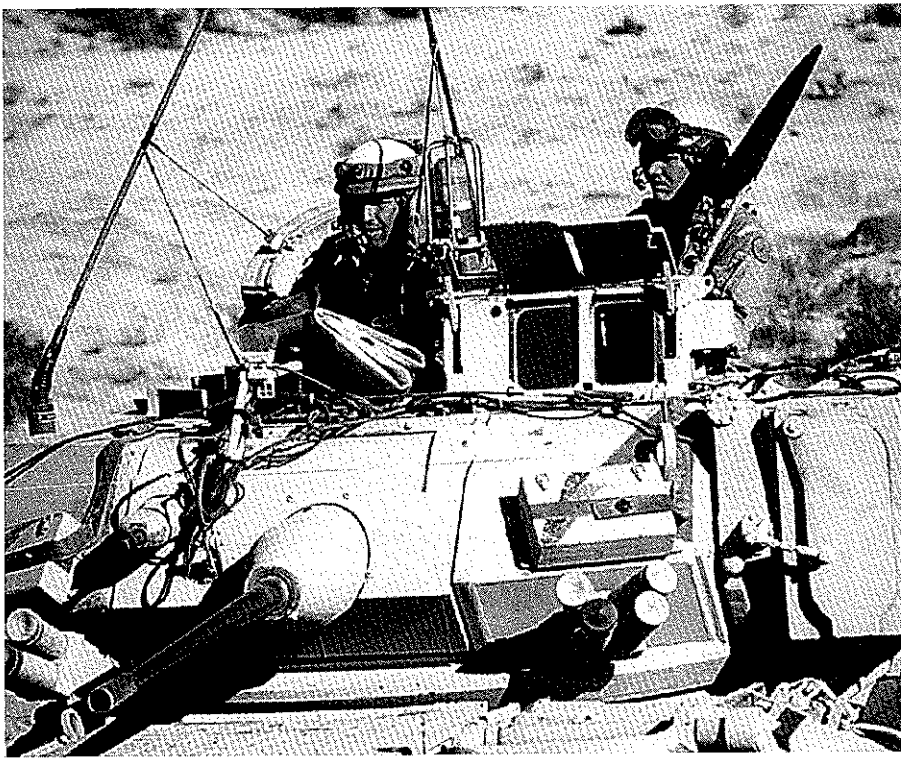
34. (1) Leland, Commanders Memorandum, NTC Lessons Learned, 20 Nov 85. (2) Interviews with Leland and Wallace.

35. FM 100-5, *Operations*, June 1993, pp. 1-3, 2-10, and 2-13.

The same O/C spoke to the matter of equipment:

> . . . we don't take advantage of our new equipment, both the M1 [Abrams tank] and the M2s [Bradley Infantry Fighting Vehicle]. Particularly it's speed. We get out there with that multimillion dollar piece of a vehicle and we still drive it like it's a 1920 truck or something, just putting along keeping ourselves in pretty formation. We don't make those dashes out there . . . [and] we just get shot to pieces. . . . The few times the blue guys have been successful is because he took advantage of his speed and he was on top of the OPFOR before they could do anything about it.[36]



A Bradley Fighting Vehicle of the 3rd Armored Cavalry Regiment sends information about the enemy's location over the NTC radio networks.

36. Lt. Col. Vona interview, 3 Mar 90.

The commander of one of the OPFOR armor battalions agreed that it was the OPFOR's expertise in mass related to the numbers of systems and mass related to the massing of fires that gave them such a big advantage on the battlefield. However, he also made some positive comments about BLUFOR improvements as generations of NTC-experienced commanders changed:

> Overall what we have done is create a generation of people that are growing with the NTC and are moving from company to battalion and on to brigade command that have a better appreciation of their battlefield skills. . . . I have seen task forces that come out here and maneuver magnificently, flow across the battlefield in good formations, well massed. I've seen others that seem to be hither and thither on the battlefield but are able to shoot as individuals very well.[37]

A Bradley Fighting Vehicle out in front of a column of M1 main battle tanks on their way to engage the OPFOR. Commanders hoped their training at home station was equal to the task.

37. Interview with Lt. Col. Etchechury by Maj. Beacon, NTC Operations Group, Observations Division, Spring 1990.

In a 1992 study of battlefield operating systems "trends," a number of observations were made with regard to maneuver at the NTC. The authors found that BLUFOR counterreconniassance forces were generally very effective in destroying OPFOR mounted reconnaissance threats. They found, however, that fire and movement at the platoon level were not practiced enough prior to a rotation. As a result, indirect fire was rarely used to suppress the enemy while the platoon used fire and movement to develop the situation. That situation usually resulted in a piecemeal, unsynchronized attack. Finally, the authors concluded that direct fire planning was a weakness in both defensive and offensive operations. Units had a difficult time in developing integrated fire plans that provided mutual support and massed fires at a desired time and place.[38]

Intelligence

According to FM 100-5, *Operations*, (1993) "intelligence operations are the organized efforts of a commander to gather and analyze information on the environment of operations [terrain, weather] and the enemy." Intelligence efforts normally began before a tactical operation and continued as the battle developed. It was the responsibility of the task force commander to provide direction for the intelligence effort by articulating intelligence and information requirements to his intelligence officer. Doctrinally, in order to provide a basis for timely tactical decisions, commanders were to plan and control intelligence operations with the same personal involvement that they devoted to combat operations. They were also to assure that intelligence and combat information was disseminated to meet the needs of subordinate units. "Intelligence preparation of the battlefield" (IPB) was to begin well before combat operations began and was to provide a continuous, integrated, and comprehensive analysis of enemy capabilities, terrain, and weather. Using overlays, graphic displays, and templating techniques, the IPB was designed to increase the accuracy of the intelligence available to the commander.[39] That, then, was the doctrinal layout of the intelligence system on the battlefield. From the NTC's beginning, however, intelligence at the training center received harsher criticism than any of the other battlefield operating systems, with the exception, perhaps, of C^2. And it was the performance of units at the NTC with regard to

38. CALL, Combat Training Centers Performance Trends, 1 Sep 92.

39. The I982 version of FM 100-5 describes IPB in some detail, pp. 6-7 and 6-8.

intelligence and lessons learned that influenced a number of changes in the configuration and mission of scout platoons.[40]

By early 1985, NTC observer/controllers, as well as other observers, routinely noted that task forces had difficulty acquiring and using reconnaissance information. As a result, from 1985-1988, five studies examined various aspects of the scouting mission at the NTC, each study building on the last. The studies were conducted by the Army Training Board (1985, published 1986); the Armor School (1986); the RAND Arroyo Center(1987); the Armor Center (1988); and the Combined Arms Center (1988).[41] All the studies found doctrinal, training, and equipment failures, organizational deficiencies, and a lack of interest in intelligence gathering on the part of many task force commanders.[42]

The CAC study of 1988 was initiated by TRADOC commander General Maxwell R. Thurman. The Combined Arms Center was tasked to conduct a complete review of the reconnaissance and surveillance capability of the brigade and battalion task force. Thurman stated his reasons for the study:

> Several studies and recent NTC experiences reveal that our brigades and battalion task forces are deficient in conducting reconnaissance, surveillance, and counterreconnaissance. My intent is to identify the root causes of these problems and implement solutions that may involve one or more of the five domains—doctrine, training, organizations, equipment, and leader development. Solutions must not be solely NTC oriented but need Armywide applicability.[43]

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40. (1) FM 100-5, *Operations*, 1993, p. 2-12. (2) FM 100-5, *Operations*, 1986, pp. 46-47.

41. The studies cited were: Capt. Dee Christensen, Capt. Robert Plummer, and Maj. Steve Stansfield, "Enhancements of Reconnaissance and Counterreconnaissance Techniques,"Army Training Board White Paper 4-86, 10 Jun 86; Maj. John D. Rosenburger, "An Assessment of Reconnaissance Counterreconnaissance Operations at the National Training Center, "U.S. Army Armor School, Fort Knox, Ky., February 1987; Martin Goldsmith and James Hodges, "Applying the National Training Center Experience: Tactical Reconnaissance (Santa Monica, Calif.: RAND Corp., Obtober 1987); U.S. Army Armor Center, "Cavalry/Reconnaissance Net Assessment Master Plan," Fort Knox, Ken., 1 Aug 88; Tasking for Combined Arms Center, Reconnaissance, Surveillance, and Counterreconnaissance Assessment and Correspondence by TRADOC commander General Maxwell Thurman to Commander U.S. Army Combined Arms Center, 15 Aug 88.

42. Maj. Terry A. Wolff, "Tactical Reconnaissance and Security for the Armor Battalion Commander: Is the Scout Platoon Combat Capable or Combat Ineffective," (Fort Leavenworth, Kan.: School of Advanced Military Studies, U.S. Army Command and General Staff College, 28 Jan 91 pp. 13-20.

43. Armor Center Master Plan, 1 Aug 88.

Meanwhile, senior Army officials looked to the force design of the scout platoon. Under the Division 86 reorganization, the division, cavalry squadron, and ACR (armored cavalry regiment) scout platoons were configured with 30 men operating six M3 Cavalry Fighting Vehicles (CFV)—the first time since World War II that scouts were placed in fewer than ten vehicles. Traditionally, the major functions of the scouts were security and reconnaissance. By 1987, the scout units' primary mission had changed to that of reconnaissance and screening operations—a change based primarily on lessons from the NTC. By 1990, the NTC experience convinced the Army to change the scout equipment once again. The success of HMMWV-mounted OPFOR scouts was embraced as a solution to the BLUFOR scout platoons' reconnaissance difficulties. At that point, ten HMMWVs replaced the six CFV in BLUFOR scout platoons. The Armor Center believed the ten-HMMWV table would prove to be a solution to the problems. The Center for Army Lessons Learned backed that view, with the provision the HMMWVs were "uparmored" versions with adequate detection equipment and armament.[44]

Not everyone shared enthusiasm for the use of HMMWVs in scout platoons. One OPFOR officer expressed the opinion that BLUFOR weaknesses in reconnaissance and counterreconnaissance sprang from inadequate fire power. Therefore, "I think that the HMMWV scout platoons are the wrong way to go. . . . I think that the lack of Bradleys in the task force reconnaissance is going to be a severe handicap." After observing tests of the 10-HMMWV scout platoon at the NTC, a senior live-fire task force trainer also voiced his doubts:

> I see that 10-HMMWV scout platoons are not coming out here with the TOE equipment that we promised they would have; so they are not capable of doing their job. . . . they are not capable of fighting their way out of a problem if they get into one. Even the most stealthy, confident scout will eventually have to fight; and right now all they have is pop guns on a very dangerous battlefield.

As 1993 drew to a close, CALL continued to identify the lessons learned at the NTC with regard to reconnaissance and the equipping of scout platoons.[45]

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44. (1) Wolff, pp. 11-13. (2) TRADOC Annual Command History, 1991, p. 107.

45. (1) Interviews with Lt. Col. Etchechury and Lt. Col., Julian Burns, Jr., NTC Operations Group, Observations Division, [1990]. (2) Fallesen, "Tactical Planning," ARI Technical Report, September 1993.

Other observations regarding the effectiveness of intelligence gathering and dissemination tended to be repeated often. Frequently remarked upon were the intelligence plans and reporting procedures. In 1992, a CALL analysis found reconnaissance and surveillance plans were "uncoordinated, unmanaged, and unfocused." Further, intelligence reporting was often "inaccurate, incomplete, and untimely." Intelligence officers had a tendency to describe the threat in broad terms that made no tactical contribution to mission analysis or course of action development. Once combat information was received, there was too little sharing unit to unit. A former executive officer of the TRADOC NTC Operations Group observed that "one thing that S-2s need to improve is being able to talk to maneuver folks." A number of other observers and analysts believed intelligence assets were too seldom included in the mission planning process. A company O/C put it succinctly:[46]

> A well-informed S-2 that generates high quality products from his initial terrain analysis through the decision support template, is as big a combat multiplier as anything on the battlefield. A sloppy S-2 produces sloppy intelligence, undermining even a good maneuver plan.

Controversy even existed over the efficiency of the aforementioned "intelligence preparation of the battlefield" process, generally considered to be the backbone of the intelligence BOS. Brig. Gen. Edwin S. Leland, in observations written after a year and a half as NTC commander, described the IPB as a common sense process that was "the biggest doctrinal improvement in my 24 years of service" which when properly done "drove tactical planning." Five years later NTC Chief of Staff and former senior armor task force trainer, Col. William S. Wallace, in a lessons learned interview, defended the IPB process, but gave a different view as to how it was sometimes applied:

> I think the real weakness [in planning] comes from not developing your maneuver plan based on your IPB. I would say about 50% of the units I've seen develop a maneuver plan before they ever look at what the S2 has produced as his prediction to where the bad guys are.[47]

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46. (1) Fallesen, "Tactical Planning," ARI Technical Report, September 1993, p. C-2. (2) Interviews with Maj. Miller, 11 Apr 90 and Capt. Terence Tidler.

47. (1) Leland, National Training Center Lessons Learned, Commanders Memorandum, 20 Nov 85, p. 1. (2) Maj Beacon, interview with Col. Wallace, NTC Operations Group, Observations Division, July [?] 1991. Wallace would later become commander of the Operations Group (1994) and then NTC commander.

The negative bent as to the problems with intelligence at the NTC presented here, should not be construed as criticism of the NTC concept, but as evidence that Army and NTC officials were increasingly concerned that the NTC experience provide maximum benefit to the whole Army.

Fire Support

The fire support system of a battalion task force had four components—mortars, field artillery, tactical air support, and naval gunfire. According to Army doctrine (FM 100-5, 1993), "Fire support is the integration and synchronization of fires and effects to delay, disrupt, or destroy enemy forces, combat functions, and, facilities in pursuit of operational and tactical objectives." Further, "the ability to employ all available fires throughout the depth of the battlefield as an integrated and synchronized whole is done through the process of fire support planning, coordination, and execution."[48] That, at least, was the doctrine. Many veteran observers of the execution of the fire support BOS at the NTC commented on what was presumably quite a different system in practice. And those lessons learned and the weaknesses identified were remarkably consistent from one observer to another and over time. The comments also tended to fault both the maneuver commander and fire support assets.

A number of NTC veterans, as well as CALL analysts, suggested that fire support was ineffectively integrated with the other BOS, and that "commanders don't know what effect they hope to achieve from artillery fire and therefore don't know when and where to call for it." Some task force commanders also had difficulty integrating direct fire systems with indirect fire systems. Another observer noted that a large part of the problem stemmed from the planning process in which the "FSOs [fire support officers] are not involved with the commander and the S-3—a sort of 'here's the problem now support it' routine. . . . The commander doesn't give a good intent of what he wants the artillery to do in that battle." That same observer placed the blame in part on the pre-command course program of instruction:

> If there is anything a task force commander can influence a fight with, it is with artillery—leaving to his maneuver commanders the use of their direct fire systems. Artillery planning is not taught well and task force commanders just don't understand . . . .what artillery can do for them and FSOs

48. FM 100-5, p. 2-13, both quotations.

> don't tell them. . . . Our artillery may be the best artillery in the world; but maneuver commanders usually do not employ it correctly with the understanding of how difficult it is to maneuver artillery and use the appropriate communications nets to request indirect fires.[49]

There were other factors operating to prevent effective synchronization on numerous occasions between maneuver commanders and fire support elements. A junior officer with the OPFOR explained that one secret of OPFOR success was that BLUFOR obstacles were not often covered by artillery. A senior officer explained the difficulties with vocabulary:

> One of the challenges at the task force level is to make certain that the fire supporter understands the maneuver plan and the maneuver commander understands the fire support plan in each others terms. . . . there's a vocabulary of artillery lingo that is not generally understood by maneuver commanders. There is also a lexicon of maneuver terms that are not necessarily understood by fire supporters. . . . They may be thinking they are communicating but they may not be.[50]

An important tenet of U.S. Army doctrine was the massing of fires or the synchronization of "all the elements of combat power where they will have decisive effect on an enemy force in a short period of time."[51] From the early days of the NTC, it had been noted that the BLUFOR too often was unable to achieve "mass." A senior NTC official stated that "of all the things that we do out here, the thing we probably do worst is massing combat power in the offense." Another senior official agreed: "We have a superior artillery. We have the best artillery in the world. [But] we don't mass fires in quantity, in accuracy, and in timeliness." An OPFOR commander of the 1st Battalion, 63rd Armor agreed: "The [BLUFOR] artillery was not prioritized or massed to hit us at the most vulnerable point and the artillery planners had not thought through the evolution of the battle so that they were prepared to attack us at the most vulnerable

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49. (1) Performance Trends, ARI, p. C-2. (2) Col. Bums, Lt. Col. Vona, and Maj. Miller interviews, 1990.

50. Interviews with Capt. Hampton (1990) and Col. Wallace (1991), NTC Operations Group, Observations Division.

51. FM 100-5, *Operations*, June 1993, p. 2-4 to 2-5.

point."[52] At least at the National Training Center, many rotating units suffered defeat by the OPFOR, in part because of a lack of coordination between fire support elements and the maneuver commanders.

Air Defense Artillery

According to Army doctrine as of 1993, the function of air defense artillery (ADA) operations was to provide the ground maneuver commander and his force with protection from enemy air attack by driving off enemy close air support aircraft, helicopters, missiles, and, increasingly, unmanned aerial vehicles. Air defense also was responsible for protection of convoys, lines of communication, and facilities critical to mission success. As with the other battlefield operating systems, the experience of rotating units at the NTC revealed some weaknesses. As with fire support, several studies concluded that often ADA assets did not achieve the commander's intent. In addition, performance trends compiled by CALL in 1992 indicated that as many as 90 percent of units failed to template enemy air avenues of approach.[53]

In September 1992, in preparation for a video teleconference on "CTC trends," CALL disseminated a document identifying some of the BOS issues as a "mark on the wall" to assist in discussion. With regard to ADA, the authors found that Stinger air defense was not emphasized and was often neglected during operations. In addition, employment of Vulcans and Stingers was often not carefully thought out, thereby leaving the rear area uncovered. "Air defense planning at the company level is practically nonexistent."[54]

Later, CALL identified other ADA issues at the NTC in a publication for distribution to the field. The authors found that there was "good dissemination of early warning throughout the STINGER platoon; however dissemination of the reaction to early warning at TF/squadron and company/team levels tends to be sporadic." They also found that units incorrectly used the air defense warning system to control the level of readiness of ADA units. As a result, ADA fire units were either at the highest level of alert or the lowest. When the readiness level was too high for the situation, fire units tended to lower their readiness levels based on fatigue rather than

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52. Interviews with Col. Wallace (1991), Col. Burns (1990), and Lt. Col. Etchechury (OPFOR) (1990), NTC Operations Group, Observations Division.

53. (1) FM 100-5, 1986, p. 51; 1993, p. 2-13. (2) Fallesen, ARI, p. C-2. None of the NTC Operations Group, Observation Division, interviews dealt with ADA issues.

54. Memo, with enclosure, Col. Huey B. Scott to distr, 15 Oct 92, subj: Video Teleconference (VTC) Combat Training Center (CTC) Trends.

the air threat. Another observation was that Bradley Stinger Fighting Vehicle squad leaders often failed to dismount the Stinger team in a timely manner, resulting in decreased air defense protection. Further, during defensive missions Stinger teams often failed to prepare fighting positions, preferring to rely on the Bradley hull for protection.[55]

Mobility and Survivability

In broad terms, mobility operations at the NTC (and elsewhere) were designed to ensure the freedom of maneuver of the rotating units. Mobility missions included breaching obstacles emplaced by the OPFOR, increasing battlefield movement, improving existing routes or building new ones, providing support for river crossings, and identifying routes around chemically contaminated areas. The mobility battlefield operating system also included limiting the maneuver of enemy forces (countermobility) and enhancing the effectiveness of friendly fires. For the BLUFOR, countermobility also included the building of obstacles and the use of smoke to hinder OPFOR maneuver. Survivability operations were designed to protect friendly forces from the effects of enemy fire and from natural occurrences. Examples of survivability missions were the fortification of battle positions, deception, and defensive chemical measures.[56]

Many observers and players over the 1984-1993 period at the NTC remarked that, generally speaking, combined arms breaching operations were poorly planned, rehearsed, and executed. Most rehearsals for such missions were sand table rehearsals conducted at dusk with limited visibility. Obstacles, also, often failed to be effectively integrated into engagement area development to achieve the maneuver commander's intent. "Obscuration" (smoke) plans seldom considered changing wind conditions. Planning for a recovery capability to remove damaged vehicles from breached lanes was seldom considered. In addition, reporting, recording, and marking of obstacles was consistently ineffective. Many units failed to report the actual locations of obstacles, lanes, and bypasses to the main command post. The marking of obstacles and breached lanes was also a problem for many rotating units. Friendly vehicles, unable to find lanes through obstacles, wandered into the obstacle, becoming casualties. A company observer/controller

55. "CTC Trends," NTC, 2QFY95, pp. II-20 to II-11.

56. FM 100-5, *Operations*, p. 2-14. During a part of the period under study, the mobility and survivavility BOS was known as mobility/countermobility/survivability.

and a veteran of twenty-three NTC rotations offered the following assessment of breaching operations at the NTC:

> . . . the biggest problem I've seen with regard to breaching is that they [units] are more concerned about the technical aspects of clearing a mine field or cutting and moving wire than they are about the enemy that is overwatching it by fire. That means they are slowed and stopped at that point. That means the enemy has done his job right, and the OPFOR tends to do it right most often.[57]

A number of NTC veterans, as well as knowledgeable visitors to the NTC, commented on the failure of many units to use their engineer assets effectively. As for the engineers, observers often remarked that when the engineers were not included in the initial planning for a mission, they were likely to be unfamiliar with the fire support plan, and thereby unable to ensure that smoke and indirect fires were effective prior to conducting the breach. Decisions for the employment of engineer assets were often slow in being resolved. As a result, work on obstacles often began more than twenty-four hours after the operations order was issued. A former member of the Operations Group and a veteran of three years at the NTC offered his explanation of some of the problems that plagued both maneuver commanders and engineer companies: "I think often times the engineer assets themselves get piecemealed away, and there aren't sufficient assets in any one place to be able to do what we need to do."[58]

Field Manual 5-103, *Survivability*, set forth requirements for the construction of "dug-in" vehicle fighting positions as essential for vehicle survival against a strong enemy attack. The CALL studies of 1992 on lessons learned according to BOS, concluded that "leaders are not enforcing the requirements." Positions were often too narrow, too shallow, or too deep to allow vehicles to remain hidden until it was time to engage the enemy. Soil left around the sides could compromise the position to enemy observation. "Planning factors and digging capabilities are not understood by maneuver commanders and engineers at the company level, so inaccurate

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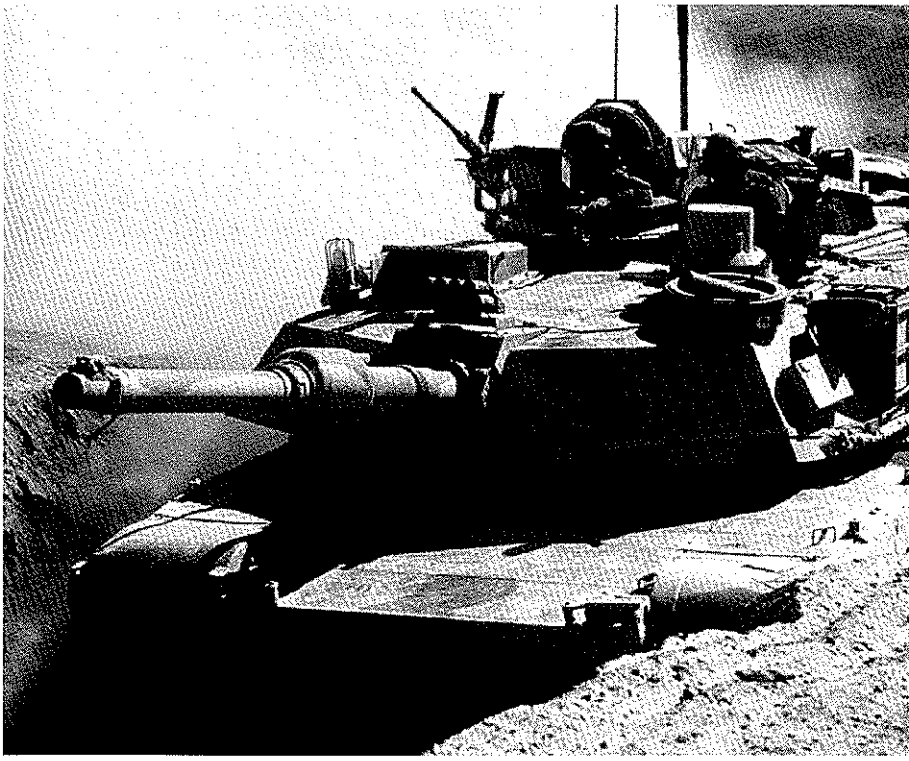
57. (1) CALL, CTC Performance Trends, 1 Sep 92. (2) Maj. Palmer, interview with Capt. J. D. Johnson, NTC Operations Group, Observations Division, [1990].

58. Maj. Beacon, interview iwth Maj. Miller, NTC Operations Group, Observations Division, 11 Apr 90 (Quotation). Especially critical of what he considered the "poor use of engineers" at the NTC, was then TRADOC commander General William R. Richardson. Trip Report, 7 Nov 85, subj: Visit to the National Training Center, Richardson Papers, Military History Institute.

The Armored Combat Earthmover, or ACE, was an engineer tractor designed to enable combat units to breach enemy obstacles, dig antitank ditches, and prepare fighting positions.



This BLUFOR M1 main battle tank rests in a newly dug defensive position. Hoffman charges above the main gun simulated cannon fire.

estimates are developed and the digging in of weapon systems are not prioritized." There simply were not enough bulldozers or Armored Combat Earthmovers to dig in all friendly vehicles on the battlefield.[59]

The aforementioned member of the Operations Group described one operation that was indicative of what an NTC rotation and the friction of battle, could be like with regard to survivability:

> The night before a DIS [Defense in Sector]. . . the task force brought the dozers forward on the HETS [Heavy Equipment Transport System], off loaded in the company/team areas and were digging positions. In the TOC [tactical operations center] we thought we had a pretty good handle on the progress . . . . Then the sun came up the next day, and the dozers were sitting out there in the middle of

59. CALL, "Performance Trends," 1992.

> one company/team's battle position. Nobody was digging at all. Come to find out that they hadn't been digging for about four or five hours. The reason was that the dozers were so low on fuel that if they operated any more, they would be completely "dry" and then we would have to prime the engines to get them started again. . . . So we lost all those blade hours and all those holes didn't get dug, and come daylight on the day of the regimental attack, we had a bunch of guys sitting up above ground instead of being in holes like we planned.[60]

Another facet of survivability training at the NTC were chemical defense operations, as discussed in Chapter V. According to the 1992 CALL study of performance trends, deliberate equipment decontamination operations were not executed in sufficient time or to established standards. Decontamination platoons, according to the report's authors, were not trained to sustain continuous operations. Units needed to place more emphasis on planning and on standard operating procedures for resupply of the platoon while forward deployed. Further, additional personnel were needed during most rotations to provide relief on the decontamination line. A live-fire O/C observed that a major problem was that some battery commanders, platoon leaders, and platoon sergeants were unfamiliar with unmasking procedures after being "hit" with a chemical agent. In addition, the washing down of contaminated vehicles was understandably difficult in the desert.[61]

Combat Service Support

Components of the combat service support (CSS) battlefield operating system included vehicle recovery, transportation, supply, mess, maintenance, administration, and medical support.[62] As the scale and complexity of Army operations increased, so did the importance of CSS to their success. At the NTC, however, the technical aspects and sheer complexity of CSS often caused elements of combat service support to break down. Senior Army officials—including Chief of Staff, General Carl E. Vuono, TRADOC

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60. Maj. Beacon, interview with Maj. Miller, NTC Operations Group, Observations Division, 11 Apr 90.

61. (1) CALL, "Procedures," 1992. (2) Capt. Jefferson Henderson interview, September 1991.

62. In the June 1993 version of FM 100-5, *Operations*, the CSS BOS was renamed with an older term, "Logistics," p. 2-14.

Personnel at the battalion support areas made major repairs to vehicles. Engines, transmissions, axles, and tracks could be removed, repaired, and replaced. Here, a maintenance crew replaces the power pack of an M1 main battle tank.

commander, General William R. Richardson, and NTC commanders Brig. Gen. Wesley Clark and Brig. Gen. Paul Funk—often commented on what were major problems in CSS. Those problems had existed since the opening of the NTC, and many still existed at the close of 1993. On the other hand, some aspects of CSS had increasingly improved.[63]

The NTC Rules of Engagement with regard to casualty evacuation were examined in Chapter V. In practice, however—according to the 1992 CALL report on performance trends—as many as 21 percent of casualties "died" of their wounds because of faulty evacuation plans. Lack of

63. (1) General Richardson, Trip Report, 6 Jun 86, subj: Visit to the National Training Center. (2) General Vuono, Trip Report, 4-5 Nov 87, subj: Visit to National Training Center and Fort Bliss. (3) Brig. Gen. Paul E. Funk interview, fall 1989, and Capt. Ferdinand Irizarry, interview with Brig. Gen. Wesley Clark, September 1991, NTC Operations Group, Observation Division.

"Casualties" (above and right) were treated at the battalion aid station according to the injuries noted on their casualty cards.

transportation was often the primary cause of untimely evacuation. An observer/controller with four years' experience at the NTC agreed:

> Batteries normally don't have the vehicles to carry casualties back to the battalion aid station or a casualty collection point. It doesn't have to be an ambulance with medics . . . . You need to be sure that people know where the battalion aid station is. There is nothing worse than being a casualty who gets thrown in the back of a HMMWV and spends the next seven hours in the back of the HMMWV trying to get to a battalion aid station because no one knows where it is.[64]

64. Capt. Jefferson Henderson interview, September 1991.

Another frequently observed problem with the CSS function at the NTC was planning for forward area refueling points (FARP). Generally, units did not provide the platoon leader with sufficient time for his troop leading procedures or adequately consider his personnel and equipment limitations. Forward area refueling personnel were often not briefed on missions, a situation that resulted in their being unprepared to refuel aircraft. Failure of commanders to consider FARP movement requirements could result in FARPs being destroyed by direct fire weapons. Similarly, some units had difficulties moving requisitions for spare parts to the rear and in bringing parts forward. Delays in the process resulted in vehicles remaining out of service for too long a period.[65]

The aforementioned CALL study also found that "CSS is seldom considered when staffs develop a field artillery support plan." In other words, logistics planning was not integrated into the orders process,

65. CALL, "Performance Trends," September 1992.

resulting in a lack of synchronization between the field artillery scheme of maneuver and CSS assets. In fact, a former Chief of the CSS trainer team at the NTC remarked that the CSS staff was seldom involved at all in the planning process:

> . . . in most cases it was simply "Here's the plan, now support it" versus "Here's the courses of action, make your estimate and give me an idea of which one you think you can support the best."[66]

Since the early days of the NTC, there had been considerable improvement in some facets of combat service support. Management of construction materials (Class IV) and ammunition (Class V), and organization of engineer forward supply points (EFSP), were often very good. Assets were allocated in the brigade operations orders, and supplies were

Rotating units were resupplied with most classes of supply before the next battle. In the background are two M901 improved TOW vehicles.

66. (1) CALL, "Performance Trends," 1 Sep 92. (2) Lt. Col. Vona interview, 3 Mar 90.

sent forward to the EFSPs using brigade and divisional transportation vehicles. Requests for supplies were funneled through the task forces to the brigade supply officer. Similarly, CALL found the support battalions responsible for most of the overall maintenance effort in the brigade to be well-organized and efficient. In like manner, aviation maintenance personnel tended to meet and exceed readiness requirements and to identify and correct minor problems before grounding conditions occurred. Lastly, Military Police units proved to be especially proficient in observing and reporting enemy activity and in giving first aid to both conventional and chemical casualties.[67]

Those then were some of the lessons learned—or at least deficiencies in training identified—by the Center for Lessons Learned through the use of the NTC data, both objective and subjective. The existence of CALL as a lessons learned system, despite a slow start, was evidence that the Army, the NTC, and the other combat training centers were dedicated to identifying weaknesses that commanders could focus on back at home station. Criticism of unit performance was clearly meant to improve what was arguably the best military training in existence. As one NTC veteran with the experience of twenty-three rotations as a company O/C put it: "Units must deal with adversity in training before they have to deal with it in a real situation and the closest thing we have right now is the National Training Center."[68]

67. CALL, Performance Trends, September 1992.

68. Maj. Palmer, interview with Capt. J. D. Johnson, NTC Operations Group, Observations Division, n.d.