

NATIONAL TRAINING CENTER
AND FORT IRWIN
LAND USE REQUIREMENTS STUDY
30 AUGUST 2002



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY FORCES COMMAND
1777 HARDEE AVENUE SW
FORT McPHERSON, GEORGIA 30330-1062

21 OCT 2002

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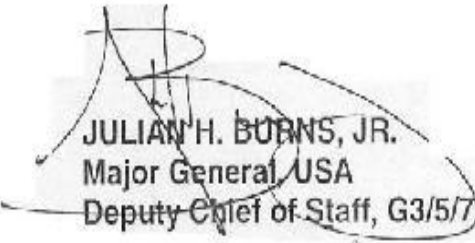
MEMORANDUM FOR Deputy Chief of Staff, G3, 400 Army Pentagon,
Washington, DC 20310-0400

SUBJECT: National Training Center and Fort Irwin Land Use Requirements Study
(LURS)

1. Reference memorandum Headquarters, National Training Center and Fort Irwin, AFZJ-DCCS, 7 Aug 02, subject as above, enclosed.
2. Forces Command reviewed enclosed land study and recommend approval of additional land purchase at the National Training Center.
3. For additional information, contact Al Sutherland, DSN 367-7110, commercial (404) 464-7110, or e-mail sutherlw@forscom.army.mil.

FOR THE COMMANDER:

Encl


JULIAN H. BURNS, JR.
Major General, USA
Deputy Chief of Staff, G3/5/7

Heartily support

LAND-USE REQUIREMENTS STUDY
NATIONAL TRAINING CENTER AND FORT IRWIN, CALIFORNIA

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Part I. Executive Summary

Preface

This Land Use Requirements Study (LURS) updates the existing 1993 LURS for Fort Irwin and examines the availability of maneuver areas for all categories of Army training within the boundaries of the National Training Center and Fort Irwin. Preparation of the LURS was conducted in accordance with Training Circular 25-1, Training Land, dated 25 June 2001. Draft copies of the LURS were distributed throughout the NTC, FORSCOM, CTCD and DAMO-TR for comment and recommendations. Their comments were consolidated and incorporated into the LURS where appropriate.

Study Summary

The National Training Center (NTC) has a single overarching mission - the combat field training of at least ten Army brigades per year. All of installation's energy, from logistics to operations, is focused on that mission. Every other activity is secondary to the "rotation," the brigade training mission that lasts for 28-35 days. Any resource needed for the rotation is dedicated to the training: the entire training area, 24-hour operations of logistical and support facilities, the labors of 750 observer-controllers (the trainers), the 2,500 soldiers of the 11th Armored Cavalry Regiment (the Opposing Force or "enemy") and the 1,300 soldiers of the Support Command (supplies and maintenance). In addition to rotational training, NTC training areas are used to support home station training for garrison units, the 11th ACR, inactive duty training (IDT) and annual training for Army Reserve and National Guard units. Over 75,000 soldiers, both Active Army and Reserve Component, travel to and use Fort Irwin's superb facilities to conduct training annually.

Fort Irwin is a unique installation within the US Army. Its size, remote location, and training infrastructure make it the only place, worldwide, where the Army has the capability to conduct live training over actual distances, for a full brigade (with actual vehicles and tactical systems) and all its supporting arms and units. Other Army installations, such as Fort Bragg, Fort Hood, or Fort Carson are either too small for such large maneuvers, or have maneuver or electronic restrictions that limit their training capability.

Each NTC rotation is a capstone training event for an Army brigade, the most rigorous training it will undergo short of war. Each rotation is structured to replicate a deployment to an overseas forward operating theater, combat operations within that theater, and then redeployment back to a unit home station. Each rotation is a five-month operation for the brigade, with four months of home station training preceding each rotation. As the Army continues its transformation, units will exploit technological advances to enhance their capabilities. By 2005, over 60 percent of the units training at the NTC will have significantly greater command and control and weapons, increasing the training land requirement. By applying the Army Training Land Management Model (ATLAM), a training land requirement of 1,200,906 acre-days was identified. The NTC currently encompasses 642,731 acres, with 350,304 acres available for rotational training. Available acres were determined by subtracting all non-maneuverable land from the total area of the NTC. These non-maneuverable acres include: the Goldstone Deep Space Communications Complex, the NTC cantonment area, permanent live fire impact areas, and environmentally and historically sensitive areas.

Training land shortfalls identified by the ATLAM process are based on the largest acreage requirement for a brigade maneuver event. On this basis, the digital brigade deliberate attack against a motorized rifle brigade defense in a security zone requires 624,471 acres, a shortfall of 274,167 acres over

the number currently available. Based on emerging doctrine, the same mission conducted by the Stryker Brigade Combat Team (SBCT), will require 1,853,250 acres.

As the Army continues its transformation from the Interim to Objective Force the training land requirement will change. The combination of technological advances allowing soldiers to identify and engage threats at increasing distances, and the new Contemporary Operating Environment where the enemy is lighter, more dispersed, and more capable necessitates this increase. By addressing this shortfall we will allow the Army to train as it would fight increasing effectiveness and protecting our Nation's security.

The NTC has developed into a superb training facility over the past twenty years, providing Army units with the opportunity to train in the most realistic environment possible. The investment in personnel and infrastructure has paid off in the current readiness of our Nation's Army. Additional training land must be obtained to maintain the current training standards expected of the NTC. With the increase in available maneuver acreage the NTC will continue to provide the quality of training for which it is known worldwide well into the future.

Part II. Land Use Requirements Study

Section 1. Introduction

1.01 General: Since its founding in 1940, the mission of Fort Irwin has continually evolved to meet the needs of the Army. Today, the Fort Irwin installation hosts three types of training: Army brigades training under the auspices of the Combat Training Center (CTC) Program; home station training for the units stationed at Fort Irwin; Reserve Component training, both as part of the CTC program and as annual and weekend training for reserve units. However, with the large increase of the Fort Irwin training mission, the physical boundaries of Fort Irwin have not changed. With over 642,000 acres, the Army has set aside over 43,830 acres for cantonment areas and another 33,406 acres to protect endangered species, and preserve historically / culturally, and environmentally sensitive areas found on the installation. In addition there are 292,427 acres unsuitable for training. This study identifies rotational maneuver acreage requirements based on existing and emerging Army training doctrine, and accounts for CTC rotations, home station training, and the expanded role of the Army Reserve and National Guard.

1.02 Purpose: The purpose of this study is to assist the installation commander in assessing the adequacy of available training areas on Fort Irwin. It validates the requirement for additional training land, and provides the basis for the installation's preparation to acquire additional training land. It provides the necessary documentation for review and concurrence by Forces Command, Department of the Army, and others concerned with the Army's acquisition and use of land for training at Fort Irwin.

1.03 Scope: This study analyzes the existing training areas on the installation and addresses the adequacy of these areas to meet current and future Army training requirements.

1.04 Assumptions:

a. Fort Irwin will continue to train brigade combat teams with a focus on task force operations, with at least three ground combat maneuver task forces conducting operations simultaneously. Rotation sizes will continue to be approximately 5,000 soldiers and 1,400 vehicles, assigned to seven battalions. The Opposing Force (OPFOR) will field 2,500 soldiers and 700 vehicles for the force-on-force portion of the rotation. The OPSGRP accounts for an additional 750 personnel, utilizing 658 light-wheeled vehicles, 60 tracked vehicles, 14 heavy wheeled vehicles, and 10 helicopters. The training rotations will continue to be focused on multi-echelon collective training events.

b. Fort Irwin will continue to conduct 10 training rotations per year with additional focus on deep shaping operations. Additional joint exercises will occur every other year.

c. The current linear, vignette-based training scenario will change to a scenario based on non-contiguous, non-linear and continuous operations.

d. The requirement to use improved organic weapon systems at extended ranges, and increased command and control capabilities will increase training land requirements.

e. Emphasis on Homeland Defense will increase National Guard and Reserve Component use of Fort Irwin training lands and facilities.

f. NASA's Goldstone Deep Space Communications Complex, at its present size, will continue use of Fort Irwin land.

g. Leach Lake Training Range will remain a jointly used permanent impact area, covering 93,304 acres.

h. Units will not conduct tactical missions repeatedly over the same terrain during a rotation. Units must operate over doctrinal distances.

i. Increased use of computer simulation exercises will occur, but this will not eliminate the need for soldiers to gain hands-on training in a realistic field environment. Computer simulations are a supplement to field training, and an enhancement to enable field use of long-range digital intelligence systems, but they do not replace field training.

j. Limitations imposed to protect natural and historical areas will not be reduced to facilitate the increased land requirements.

1.05 Methodology: This study follows the guidelines established in the Army Training Circular 25-1, Training Land, dated 25 June 2001. The Army Training Land Analysis Model (ATLAM) was the model used to determine the adequacy of Fort Irwin's training land capabilities for training the Legacy Force. Current ATLAM guidelines were tailored to account for Interim and Objective Force training requirements (See Appendix C). (These training requirements were identified using the FCS Organizational and Operational Concepts dated April 2000 and December 2000 respectively.)

1.06 Issues and Questions: After reviewing the TC 25-1 dated 25 June 2001, it was determined that the increased capabilities of the Interim and Objective forces were not taken into account. However, the methods used in determining land use requirements provide an accurate model for determining future requirements at the National Training Center. Data used in this study was gathered from several independent sources. The first source was historical documents created after the Division Capstone Exercise (DCX) to identify land and training requirements for the Digital Division and the second source was the IBCT and FCS Operational and Organizational Concepts.

1.07 Definitions.

BLUFOR – Blue force, a term used to identify army units undergoing training at the NTC.

COB - Civilians On the Battlefield, civilian role-players used to enhance the NTC training experience.

Constructive Simulation - Mathematical models used as a tool to support collective training (battalion commanders and staffs through Army Theater -- CBS, CSSTSS, BBS) and in individual leadership training (Janus) and analytical applications (Janus and EAGLE). May be used with or without human interaction. Sometimes referred to as “war game” models.

Deep Shaping Operations - Use of division level aviation assets to strike the enemy and force them to change their chosen course of action.

Digitized Forces - Army units that utilize state of the art electronic equipment for communication and command and control.

Force-on-Force Training - Force-on-Force Training (FOFT) utilizes a live, thinking enemy to oppose the Army training unit. FOFT normally uses the Multiple Integrated Laser Engagement System (MILES), a laser tag simulator, as the weapons simulator during this training.

Home Station - The geographic location associated with a unit. For example Fort Bragg, North Carolina is the home station for the 82d Airborne Division.

Interim Force - The force structure of selected US Army brigade-sized units in the second phase of the transformation of the US Army to the Objective Force.

Legacy Force - US Army structures and equipment of light and heavy force capabilities that will remain through the Army Transformation until the Objective Force is fielded.

Live Fire - Training which utilizes the use of live ammunition.

Live Simulation - Soldiers and equipment operating in the field, such as an exercise at the National Training Center, but short of actual conflict.

MSR - is a Main Supply Route used by a unit to move personnel and equipment to and from the battlefield.

Objective Force -The end state of the US Army at the completion the Army's Transformation.

OPFOR - Soldiers and equipment used to facilitate the training of Army units at the NTC.

Rotation - term used to describe the training period for an Army brigade at the NTC. This period lasts 28-35 days for each brigade-sized unit (from earliest arrival to departure of the last element).

UNHRC - United Nations Human Rights Commission.

Virtual Simulation - Form of simulation in which entities exist in effect or in essence. Sensing of other entities must be via a distributed interactive simulation (DIS) protocol unit stream. Operational examples are the M1 and M2 Conduct of Fire Trainers, and the Combined Arms Tactical Trainer.

Section 2. Threat

2.01 Emerging Threat.

Based on current trends, domestic factors, and worldwide potential for various forms of conflict, the United States can expect to remain heavily engaged on a global basis. The US will likely have to respond to serious threats to its national interests from failing states, regional or state-centered threats, transnational entities, and several potential major military competitors. Today, the proliferation of information and weapons technologies, coupled with asymmetric application of conventional and non-military capabilities, may enable even regional adversaries to effectively oppose US interests and military forces. The United States must be prepared to respond to a wide variety of potential threats. A major theater war (MTW) represents the most serious conventional military scenario the Army may face. Although current assessments project MTW as the least likely to occur, current regional powers that could pose a substantial challenge to the US, possibly with little warning, include Afghanistan, North Korea, Iraq, and Iran. Conflicts with these powers would likely begin as a major regional contingency (MRC) and grow rapidly into an MTW.

On the other hand, small-scale contingencies (SSCs) ‘the numerous local and regional conflicts among lesser military forces’ are more likely to occur. Given spreading influence of regional and global powers, SSCs can escalate quickly into MRCs or a major war. In general, SSCs present a set of conditions that require combat operations or the presence of combat forces to stabilize and contain the crisis. However, stabilization tends to be linked to the speed with which effective combat forces are able to arrive in the area; the slower the response, the more difficult it normally will be to defuse the crisis quickly.

The operational environments in which the Legacy, Interim and Objective Force are committed will be more complex, more interconnected, more dynamic, and more volatile than those of the recent past.

The international security environment these forces can anticipate encountering are characterized by:

- Extreme fluidity, with continually changing coalitions, and the rise of new actors appearing and disappearing from the scene.
- The proliferation of advanced warfighting capabilities
- The growing presence of influential private, non-governmental, and international organizations within conflict areas, each with their own unique set of interests and objectives, complicating the security environment.
- Complex terrain and urban environments comprise the areas where decisive action must be taken to resolve crises.
- The global flow of information technologies and interdependent infrastructure creating a fruitful environment for all facets of information-based warfare.
- Cultural and demographic factors that transcend borders, making conflict resolution a complicated and lengthy process.

2.02 US Army Tactical Doctrine.

Analysis of the emerging operational environment identifies the following predominant characteristics of current and future military operations:

- *Operations in Complex and Urban Terrain.* Future adversaries will focus on urban areas and complex terrain to negate technological advantages held by the US, (with respect to intelligence, maneuver, precision fires, etc) to create strongholds, cause unacceptable US casualties, find sanctuary, and prolong conflict. These environments hinder the effective application of advanced weapon systems. They are manpower and supply intensive operations, which may include collateral damage requiring significant restraint.

- *Information Warfare/Information Operations.* The steadily increasing spread of information capabilities with military applications and the associated vulnerabilities introduced through that process, coupled with the struggle to achieve information superiority will insure that future combat operations include emphasis on information warfare.

- *Power Projection from CONUS.* In the past, the threat centered on interdicting air and sea lines of communications to degrade US power projection. The threat focus is now changing to attacks against air and seaports of debarkation that would be used by friendly forces. Many potential future adversaries are investing in capabilities for terrorism, special operations, and weapons of mass effects (WME).

- *Limitations on Capabilities of Committed Forces.* Political restraints will dictate the size, composition, and timetable of forces deployed and may include significant restraints, particularly for initial deployments.

- *Rules of Engagement.* Restrictive rules of engagement in SSCs will constrain the application of US combat power. Adversaries will seek to exploit the opportunities presented by these restrictions and to extend those restrictions further through the exploitation of media and/or information operations that attack national will and coalition sensitivities.

- *Asymmetry.* Adversaries, unable to match the US in terms of capabilities and power will employ asymmetric capabilities, strategies, tactics, and techniques to negate US advantages and exploit perceived weaknesses. Several of the characteristics cited above are also examples of asymmetric warfare, e.g. use of urban terrain, terrorism, and information operations.

- *Force Protection.* Future adversaries will certainly seek to attack a perceived vulnerability for the US—aversion to significant casualties. Accordingly, any future conflict will likely be characterized by operations intended to inflict large numbers of US casualties quickly by means of WME, terrorism, rockets/artillery, and other means.

Military operations in response to smaller scale contingencies (SSCs) will be further characterized by:

- *Weak National Infrastructures.* In the recent past, SSCs have occurred in regions with large urban areas, diverse weather patterns, and weak economic and transportation infrastructures (e.g., Haiti, Panama, Somalia, and Kosovo). This will increase the potential for displaced civilians and civilians on the battlefield, increasing the likelihood of conducting combat operations under austere conditions.

- *Mixed Force Structure.* SSC threats usually combine mid- to low-end industrial age forces (mechanized and motorized), supplemented by a pervasive presence of paramilitary, police, militia, and special purpose forces. They may also tie guerrilla and criminal/terrorist organizations into an asymmetric approach to operations.

- *Sustained Operations.* Most SSC threat forces are not capable of long term, sustained, high tempo operations. Instead, they will normally conduct limited duration, limited objective operations with conventional forces, while unconventional elements retain capability for long-term, small-scale, decentralized operations.

- *Exploitation of Advanced Technologies.* Within the construct outlined above, SSC threats may also prove skillful in the application of niche capabilities based on advanced technologies in the areas of communications, night operations, information operations, and other counters to US capabilities.

Future adversaries will be astute students of US military capabilities and doctrine. They can also be expected to be adaptive, innovative, and creative, particularly with respect to combining conventional and unconventional capabilities, exploiting the non-military elements of power, and applying asymmetric approaches to the battlefield. It is reasonable to expect future threats to focus on developing capabilities that enable them to execute the following operational methods and goals.

- *Deny US Entry Into the Theater.* Denying or delaying US intervention is one of the best means for an adversary to assure his own success. Denial operations for SSCs will normally include: astute use of diplomacy to forestall US access to regional bases/ports; pressure and or threats against members of an emerging, US-led coalition; media manipulation; actual attack against APODs, SPODs, and arriving forces by a variety of means (special operations forces, paramilitary elements, long-range strike, terrorists, and WME).

- *Neutralize US Technological Advantage.* The threat is likely to focus on critical US advanced systems, the destruction of which would result in an operational or psychological advantage. Adversaries will also seek to degrade or deceive US information-based capabilities, employing inexpensive counters when possible (e.g., GPS jammers), while preserving own capabilities through low-tech means or imaginative Tactics Techniques and Procedures (TTP). Extensive internal and external information operations and system attack will be carried out. The enemy will seek to retain initiative with respect to force-on-force battles and to choose the environment in which those battles will take place, particularly trying to move the fight into urban areas, where US superiority is more easily negotiated.

- *Control the Tempo.* At the beginning of an SSC, time is on the side of the aggressor; he will seek to control the tempo of operations to suit his objectives at any point in time. Prior to US intervention, the aggressor will prefer a high operational tempo in order to achieve his objectives as rapidly as possible. The greater the delay in US response, the better the chances of the enemy to succeed. Once the US intervenes, the threat can be expected to try to prolong operations, aiming to take advantage of the possibility of a lack of commitment within the US or the coalition.

- *Change the Nature of Conflict.* The adaptive, asymmetric threat will recognize the strengths and weaknesses of the opponent (US) and adjust strategy and tactics accordingly.

The enemy will reduce his exposure to superior US combat capabilities and take sanctuary as described earlier, requiring the US to risk time and higher casualties to defeat him. By attempting to change the nature of conflict once the initial deployment of US forces takes place, the adversary will endeavor to make the deployed force inappropriate to the new conditions that exist. In addition, different criteria for victory may exist; stalemate may be good enough for the adversary to achieve his base goals. Reversing a stalemate could prove too costly for the US in terms of time, resources, political support, etc.

The growing complexity of operations, the global proliferation of technologies with military application, the increasing sophistication and effectiveness of asymmetric techniques, and other factors cited above are combining to create a very demanding operational environment for US forces. Accordingly, US forces must be capable of rapid strategic response and battlefield dominance across the full spectrum of military operations as articulated in the Army Transformation Vision.

2.03 Training Implications. The NTC OPFOR currently replicates a threat motorized rifle regiment, and is undergoing changes to incorporate the new threat doctrine defined in the TRADOC Contemporary Operating Environment (COE). The COE places emphasis on smaller, more lethal forces capable of applying asymmetrical advantages over US forces. Evolving US doctrine requires Army units to fight in a widely dispersed area in all types of terrain. The NTC training focus will remain at the MRC to MTW(-) level, but must take SSCs into account. It is becoming increasingly difficult to replicate the appropriately sized area of operations within the current boundaries of the NTC; not only for BLUFOR units but for OPFOR units as well. This has a negative impact on the training value obtained by BLUFOR units as they train at the NTC. This is particularly significant training challenge with aviation and logistics operations. Flight times/transportation times and distances from rear staging/supply points to forward deployed units or enemy positions are unrealistically reduced, which introduces artificiality in to the training. Attempts to achieve correct distances with the use of simulation can be effective, but cannot replace the effect of soldiers training "in the dirt." Current land constraints cause the NTC to develop scenarios that train units without stressing their full operational capability. This risks training units in bad habits and imbeds false expectations as to true battlefield conditions.

2.04 Summary. Evolving US Army doctrine places emphasis on combined arms operations over increasingly large areas of the battlefield, with fewer units dispersed over a wider area. Additionally, modernization of equipment capabilities and breakthroughs in automation, electronics and communications technology enhance weapon system lethality at extended ranges and the commander's ability to control and influence widely dispersed units. Following the Army philosophy that we train as we fight, the physical confines of the NTC no longer facilitates the training requirements of units training at the NTC. Leaders must practice the techniques of orchestrating the dynamics of combat over wide areas. Training must simulate actual battlefield conditions as closely as possible. To meet these needs today and in the future, additional maneuver training acreage is necessary.

Section 3. Unit Training Requirements

3.01 Background.

To win on the modern battlefield, the Army must train in peacetime to support the National Military Strategy of the United States. The end of the Cold War and advances in technology have changed battlefield dynamics and, in turn, caused the Army to change the way it trains soldiers. The Army's training focus continues to support training for the first battle of the next war. Leaders must practice the techniques of orchestrating the human and technological dynamics of combat throughout the entire spectrum of war. True readiness demands that soldiers achieve and maintain maximum proficiency within their assigned military occupational specialty in a wide variety of environments. Training must replicate actual battlefield conditions as closely as possible, and must be mentally challenging, physically strenuous and difficult. Computer-driven simulation cannot force leaders to take environmental considerations into account during the planning and execution of training. These factors influence the capabilities of soldiers and their equipment, something that simulation cannot replicate.

In 1995 the National Training Center transitioned to full brigade operations for the duration of the rotation. Contingency operations involving up to 8,000 active duty, National Guard and Reserve Component personnel are fully integrated into the fiscal year rotational schedule. Attack helicopter deep attack operations are also incorporated into rotational training. This unique capability allows the Army brigade to train as a combined arms team while taking full advantage of all the combat, combat support, and combat service support assets available to the commander. Aviation brigade headquarters receive unmatched training in the planning and execution of concurrent operations in support of ground forces. At present the NTC is a brigade battlefield with battle focus at the battalion level. Future operations will include portions of division, corps and joint operations. Currently units average 8,000 (5,000+2,300 (OPFOR) + 700 OCs) personnel and 2,274 vehicles on the battlefield per rotation. These numbers may decrease slightly as Objective Force requirements evolve. However, technological advances in equipment and the art of command and control require the NTC to increase the size of its maneuver training land area in order to maintain a highly trained force.

3.02 Baseline Requirements.

a. Unit Level Training Acreage.

(1) Maneuver Areas.

(a) Requirements. It was demonstrated during the Division Capstone Exercise in March 2001 that land requirements increased dramatically during a digital rotation at the NTC. Data was collected and analyzed and the data revealed that a fully digitized brigade conducting an attack requires 1,200,906 acres for maneuver (see Appendix A and Appendix B). The digitized brigade conducted several deliberate attack missions against a motorized rifle division defense. An aviation attack battalion conducted deep attack operations in support of training, this requiring an additional 123,550 acres. These types of rotations will become the norm as the Army continues its transformation. By 2003, there will be four digital rotations per year.

(b) Actual Experience. Because of terrain constraints, the National Training Center is generally divided into three east - west corridors used for the conduct of combined arms tactical operations (see figure 1). The northern corridor is used primarily for brigade live-fire operations. This is a free play live-fire exercise where the enemy is represented by a sophisticated array of over 1,600 computer-controlled targets. Due to the complex target array and unexploded ordnance in the area, this corridor is not suitable for the conduct of regular force-on-force operations.

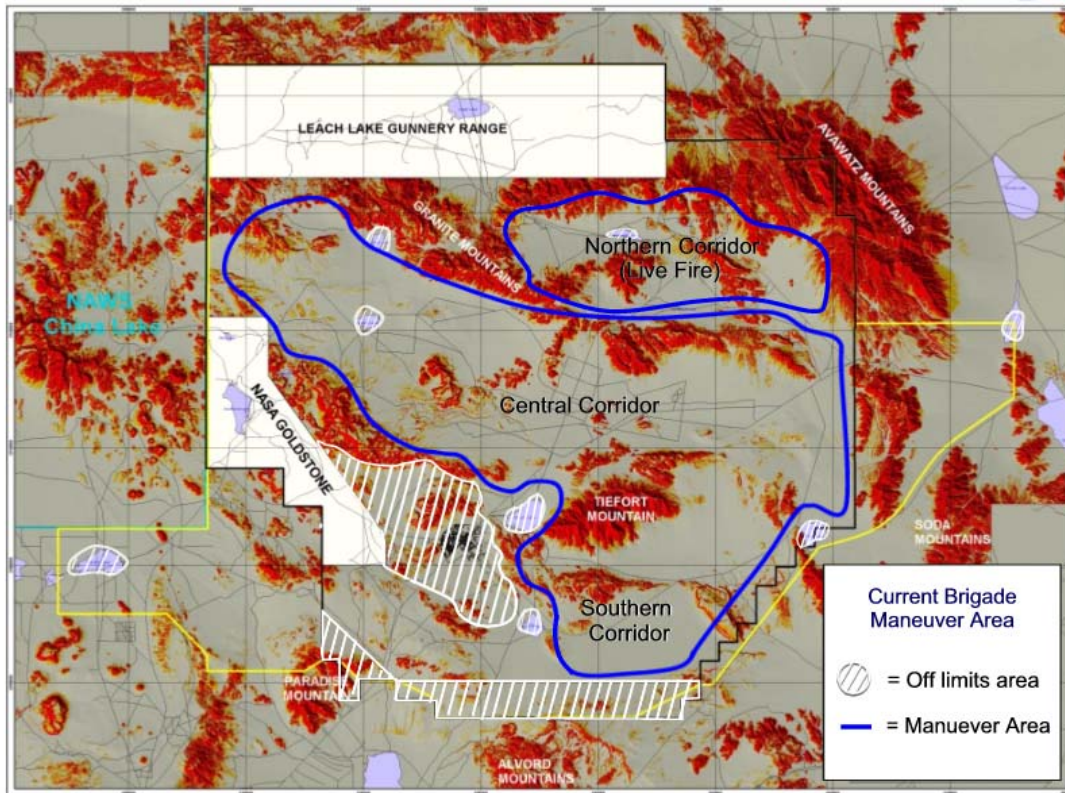


Figure 1. Current maneuver area at Fort Irwin.

The central corridor is the most frequently used area for rotational maneuver training. Tactically, this becomes a problem. Units are unable to deploy using doctrinal distances during training. This, combined with the artificiality of deploying combat support and combat service support assets within the maneuver corridor, negatively impacts the training. Environmental deterioration of the landscape is also a concern; minimizing the repeated use of the same terrain will assist the NTC in complying with established Army guidelines for the training of combat support and combat service support assets, and facilitate limited environmental remediation of the training corridor. These shortcomings apply to the Opposing Force (OPFOR) as well. Without proper maneuver acreage, the OPFOR cannot properly array its forces over the depth of the battlefield. This negates training in the use of the intelligence gathering assets available to rotational training units. OPFOR logistics areas are frequently positioned in close proximity to BLUFOR logistics area as a direct result of a lack of depth of the battlefield. This presents a serious breach in the fidelity of the training scenario.

The southern corridor has increased limitations over the central corridor. The southern training corridor tapers to a width of four kilometers in the western end, too narrow for brigade employment of forces. This effectively relegates the southern corridor to the role of a staging area for operations into the central training corridor.

(c) Reconciliation of Differences. The shortfall of available maneuver area places severe limitations on training units and rotational scenario development. Mitigation of this shortfall includes the repetitive use of training land and the increased use of simulation. These measures fall short of providing a long-term fix to the training challenges faced by the Army. Stresses placed on the training land due to repetitive use have compounded negative effects on the environment, and detract from the realism of the training. Obtaining additional training land will alleviate much of the stress placed on the current NTC training area and allow the Army to train its soldiers in a realistic environment.

(2) Live Fire Ranges.

(a) Requirements. The increased lethality and accuracy of emerging weapon systems require the development of a live fire range which allows soldiers to engage targets at the maximum effective range of their weapon systems. Increasing the depth of the live fire area will allow units to utilize all of the capabilities afforded to them through the use of emerging technologies. Training soldiers on the proper use of these weapons, and instilling the confidence required to be successful on the modern battlefield, is essential.

The NTC must safeguard its ability conduct live fire operations at the brigade level. The climax of a rotation is the unit's live fire training. Leaders and soldiers are putting all they have learned to the test, and bring this knowledge to bear in an exercise where weapon systems are utilized at their full potential against a complex series of targets. This capability is unique to the NTC and provides an invaluable experience for units as they prepare for potential combat.

Home station, National Guard and Army Reserve units utilize numerous familiarization and qualification ranges within the cantonment area during rotations to meet their training requirements. This training involves the use of a range of weapons from small arms through Bradley and Tank Table VIII (crew qualifications) and XII (platoon qualification). Small arms requirements include: familiarization, qualification and advanced marksmanship training. Examples of the weapons used on these ranges include all weapons from the M9 pistol, and M203 Grenade Launcher to the M2 Machine Gun. A hand grenade familiarization and qualification range is also included.

Bradley Fighting Vehicle and tank training tables are required for vehicle crews to remain qualified on their specific weapon system. Tank and Bradley Tables VIII-XIII are an annual requirement established by the Department of the Army to insure soldiers remain trained and prepared for possible deployment. Urban operations training facilities capable of supporting company level live fire training, are being designed and built at the NTC as part of the Army's Combined Arms MOUT Task Force initiative. These sites will be built within the NTC cantonment area and will be used by the Active, Reserve and National Guard components. The training requirements used for individual and crew level live fire training were captured as part of the cantonment non-maneuverable area, and will be used concurrently with rotational training.

(b) Actual Experience. Brigade live-fire operations at the NTC are conducted primarily in the northern maneuver corridor. This corridor consists of approximately 136,953 maneuver acres. Live fire operations are free play exercises against a sophisticated,

computer-controlled target array. These exercises are joint, combined arms operations incorporating all of the air, ground, and Army aviation combat multipliers available to a commander.

(c) Reconciliation of Differences. Expansion of the existing Live Fire training area will be made possible with the acquisition of additional maneuver training land. It is understood that live fire training will not occur in the proposed expansion areas, however force on force missions can be moved from the central corridor to areas further south. This enables more of the central corridor to be used for live fire training.

b. Unit Level Training Days.

(1) Maneuver Areas.

(a) Requirements. A standard rotation at the NTC follows a 28-day cycle, one week of preparation, two weeks of field training, one week of recovery. During this cycle, rotational units execute a 14-day continuous training exercise in the maneuver training area utilizing all of the assets available to an Army maneuver brigade. During this maneuver period, units undergo force-on-force training against a highly trained OPFOR utilizing a sophisticated Multiple Integrated Laser Engagement System (MILES) to assess casualties/losses. They also conduct live fire operations at the brigade level. Up to four maneuver task forces operate simultaneously for extended periods during the 14-day training exercise. The NTC conducts ten training rotations annually for a total requirement of 180 training days, including preparation, training and recovery days.

(b) Actual Experience. Using a digital brigade template (two mechanized infantry task forces, one armored task force, and one attack aviation battalion) as the tool to dissect a rotational training exercise, a breakout of actual training days follows. Training events include all four task forces unless specified (see Appendix B for training summaries from the digital rotation). The Opposing Force consists of four combined arms battalion organizations. OPFOR battalions will maintain at least a signature in the field for 11 of the 14 training days.

The following summary is an example of each training rotation.

1 Receiving, Staging, Onward Movement and Integration (RSOI) Day 1: All BLUEFOR training units prepare for deployment from the cantonment area. OPFOR conducts limited reconnaissance in staging area.

2 RSOI Day 2: All training units continue preparation for deployment. OPFOR conducts mounted reconnaissance of staging area. Civilians on the Battlefield (COBs) request humanitarian assistance, and relief mission is conducted.

3 RSOI Day 3: All training units continue preparation for deployment, BLUEFOR artillery conducts preparation field training. BLUEFOR conducts a Theater Ballistic Missile (TBM) strike rehearsal. Protests by civilians are held in and around the staging area. OPFOR deploys to the maneuver box and conducts rehearsals.

4. RSOI Day 4: All training units continue preparation for deployment, BLUFOR scouts, COLTS and Forward Observers conduct observed fire training. OPFOR infiltrates staging area and drive-by shooting occurs in the vicinity of the staging area.

5 RSOI Day 5: All training units continue preparation for deployment. Displaced civilians are relocated from contested area and the BLUFOR convoy is ambushed. Biological agent casualties are brought to the staging area for treatment. Staging area is attacked using indirect fires.

6 Training Days 0-2: During Battle Period 1 (BP1), BLUFOR unit deploys and conducts a hasty defense throughout entire sector, and prepares for possible spoiling attack. OPFOR begins deployment of the Motorized Rifle Brigade to attack BLUFOR. The OPFOR attack is stalled and BLUFOR prepares for offensive operations, while conducting attack helicopter deep attack operations against OPFOR follow on forces. Host nation police stop a BLUFOR convoy enroute to the logistics area. Refugees are introduced into the battlefield.

7 Training Days 3-5: During BP 2, BLUFOR Conducts offensive operations to defeat the OPFOR and reestablish the provincial border. Numerous events utilizing COBs are conducted: refugees continue moving through the area, UNHRC inspects BLUFOR logistics base, and mass grave is reported to the brigade headquarters.

8 Training Days 6-8: During BP 3, BLUFOR continues offensive operations. Attack helicopters execute deep attacks against artillery and missile facilities at China Lake. COBs conduct a roadblock on major MSR. OPFOR guerrillas attack BLUFOR enroute to logistics base. BLUFOR discovers weapons cache.

9 Training Days 8-9: During BP 4, BLUFOR continues offensive operations. Aviation units execute deep attack against ADA facilities and OPFOR follow on forces (simulated) at China Lake. Truck "bomb" explodes at the BLUFOR headquarters. COB "Mayor" demands a meeting with the BLUFOR commander, and a drunken civilian causes a disturbance at a major BLUFOR communications node.

10 Training Day 10: BLUFOR transitions to live fire training. Field Artillery battalion conducts battery lane training. Aviation assets conduct door gunnery and aviation gunnery training. Second truck bomb explodes at BLUFOR headquarters, and UNHCR conducts second inspection of the logistics base. OPFOR units return to the cantonment area.

11 Training Day 11: BLUFOR prepares for a live fire movement to contact, begins live fire engagement of OPFOR reconnaissance assets. Aviation unit conducts a downed aircraft recovery team (DART) exercise into China Lake, while conducting a deep attack against OPFOR artillery (simulated).

12 Training Day 12: BLUFOR conducts a movement to contact with the potential of continuing the attack based on BLUFOR success. Aviation assets support BLUFOR. COB "injured" by BLUFOR seeks medical assistance at the logistics base.

13 Training Day 13-14: BLUFOR establishes a defense in sector and prepares to conduct counterattack. Aviation unit conducts a Downed Aircraft Recovery Team (DART) exercise into China Lake, while conducting a deep attack against OPFOR units (simulated). Military Police secure urban live fire training site. Aviation unit conducts forward arming and refuel point (FARP) live fire. BLUFOR fires live stinger missiles.

14 Regeneration Day 1: Unit moves to tactical assembly area and begins preparation for movement back to the cantonment area.

15 Regeneration Days 2-8: Unit conducts logistics and recovery operations, turns in equipment, moves equipment to the railhead, and redeploys to its home station.

3.03 Projected Future Requirements.

a. Unit Changes. The Army requires an area to train its forces - the current Legacy Force, the Interim Force, and the future Objective force in large unit operations. Technological advances have increased the lethality and capability of weapons and equipment. These advances allow our soldiers to accomplish their mission in a more efficient manner. However, the ability for the Army units to conduct multi-echeloned training at home station is limited, by resource constraints and a lack of training land. The National Training Center is the only area in the United States with the capability to train brigades using the full complement of combat power available to a commander. Conducting this training in a fully instrumented training area adds to the value of the NTC experience. Units deploying to the NTC are afforded the opportunity to train, as they would fight, using current doctrine against a highly trained and motivated OPFOR. The ability for the NTC to replicate a non-linear, non-contiguous, asymmetrical battlefield is essential for successful training. The Interim and Objective Forces bring a force to the NTC that is more maneuverable, and capable of leveraging state of the art command and control, and weapon systems to expand its influence in a complex environment. Interim and Objective Force units operate over substantially larger terrain areas, due to their intelligence capability and advanced weaponry. In the future, deep attack operations utilizing corps aviation assets will become a common occurrence at the NTC. Joint operations will continue to be a part of the NTC training environment, with an ever-increasing role. All of these factors, combined, make realistic training at home station more challenging.

b. Impacts on Unit Level Baseline Requirements. The significant shortfall of training land availability will drastically inhibit the NTC in its ability to train the Army. Changing from a vignette-based, linear-training model to a scenario-based model using twenty-four hour operations will increase unit level training day requirements. The NTCs training focus will remain at the medium to high intensity conflict. This change in training strategy will tax unit leadership as it fights continually during a fourteen-day period. Units will need to adapt and develop tactics, techniques, and procedures that allow their soldiers to perform in this type of environment. The amount of increase the Objective Force will have on maneuver training area requirements at the NTC is uncertain. It is anticipated that force- on-force maneuver requirements will increase, but the doctrine defining this requirement is currently under development.

3.04 Other Considerations.

a. The Leach Lake Training Range encompasses about 93,304 acres of the total Fort Irwin land area. It has been used since 1981 for live-fire exercises by the Army and as a live ordnance bombing range for the Air Force. The NTC considered use of Leach Lake to help meet its additional training land needs: The following factors make use of the area for ground training infeasible.

(1) Training Value. Leach Lake is an essential component of the Air Force Air Warrior Program. Air Warrior trains aircrews in the same way that the NTC trains mechanized and support units. During a training scenario, the NTC incorporates all the various facets required to realistically replicate actual battlefield conditions. Such realism includes incorporation of Air Force sorties in support of the training units (BLUFOR) and the opposing forces (OPFOR) to simulate air support and attack. Air Warrior allows both Army and Air Force units to train as they would fight, as part of a combined arms team.

(2) Cost. The US Army Corps of Engineers estimated the cost of clearing unexploded ordnance from this site at \$200 million. This cost does not include costs associated with moving this training to another area, where the infrastructure would have to be built.

b. The Desert Tortoise off-limits area encompasses approximately 23,178 acres along the entire length of the installation southern boundary. The actual off limits area, with its associated buffer zone, significantly reduces training unit maneuver options during tactical operations. Maneuver within the NTC southern corridor was eliminated in 1993 to comply with NTC restrictions established to protect the Desert Tortoise.

c. The National Aeronautics and Space Administration's Deep Space Communications Complex, at Goldstone, occupies 33,030 acres of Fort Irwin's training acreage along NTC's western boundary. Access through this area is severely restricted to protect Goldstone's deep space monitoring missions. This significantly limits traffic into the central maneuver corridor. Occasionally, units are required to access the center of the maneuver training corridor through Goldstone, contributing to the artificiality of the tactical scenario and detracting from the training mission.

d. The Army has addressed the training land shortfall by considering the co-use of China Lake Naval Air Weapons Center with the Navy. However, the Department of the Navy conducted a Compatibility of Use Study in 1993, outlining various factors rendering joint use infeasible. These factors include: rotational schedules, conflicting radio frequencies, air space interference between Air Warrior and Army aviation assets with on-going Navy missions, and geographic obstacles between the two installations that limit access. The 1993 study was updated in June 2002 by the Navy, and came to the same conclusion on the lack of training compatibility.

3.05 Summary.

Current maneuver training acreage at the NTC is insufficient to realistically meet the needs of digitized Legacy Force units training at the NTC. Training land requirements will drastically increase as the Army moves toward its Interim and Objective forces. The use of modern equipment allows units to expand their areas of influence and sphere of command and control, compounding the need for additional maneuver training acreage.