THE AIR ASSAULT RAID: A MISSION FOR THE NEW MILLENNIUM

A MONOGRAPH
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This monograph discusses the role of the air assault raid as a tactical mission in the twenty-first century. It centers on the air assault brigade task force directed air assault raid employed across the full spectrum of conflict. This monograph assesses the current state of the air assault raid in U.S. Army training and doctrine, its weaknesses, and its potential for the future.

The monograph first examines current air assault raid doctrine and FORCE XXI objectives to establish the fundamentals of the air assault raid and the goals of the twenty-first century Army. Next, the anticipated nature of twenty-first century warfare by Army futurists is discussed. Then, the paper summarizes air assault raid training results from National Training Center and Joint Readiness Training Center rotations to provide a basis for determining doctrinal and training weaknesses with the air assault raid. Each of these elements is then analyzed to determine whether the air assault raid has a role to play in tactical operations of the next century.

The principal findings of this study indicate that the air assault raid is conducted rarely at the training centers and few units understand air assault raid doctrine. Additionally, loss of surprise and poor intelligence preparation of the battlefield surfaced as key weaknesses in air assault raid training, resulting in prohibitively high casualties. An assessment of emerging technologies offers hope in correcting these weaknesses. The monograph calls for an increased interest by the Army in training and developing the air assault raid as a tactical mission for the next century.

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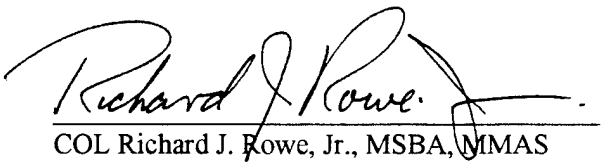

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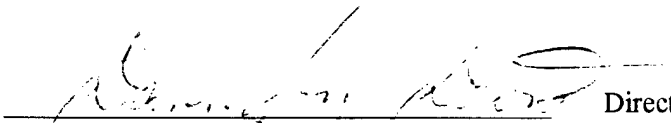

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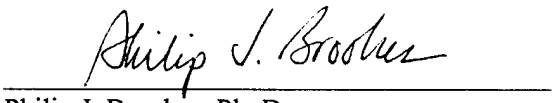

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The Air Assault Raid: A Mission for the New Millennium

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ABSTRACT

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I. Introduction

It had been 107 minutes since his air assault force had crossed the river 70 kilometers to the west. The objective had only been 75 kilometers north of the river, and now his Apache-escorted aircraft approached friendly airspace in almost total darkness. He could see the suppression of enemy air defense units beginning along the river up ahead, a scintillating repeat of the fires which had enabled his aircraft to penetrate the enemy's missile and electronic defenses. The preliminary reports he had received from the Blackhawk's command console and reviewed on his helmet's heads-up display indicated that the mission had so far been a success, thanks in the most part to the accurate intelligence preparation for the mission. They had captured two enemy commanders and numerous documents, and had destroyed a mid-level command and intelligence cell. Unfortunately, his element had been on the objective for 32 minutes, forcing the assault aircraft to stay on the pickup zone for three minutes. This was unacceptable, and he knew they had been lucky this time. The artillery battery had broken up a counterattack by a previously undiscovered company of infantry bivouacked in the forest near the objective. The mini-remotely piloted vehicle flying three minutes ahead of the lead Apaches had found two tank platoons, which had been neutralized before the first Blackhawk had reached the release point. He smiled to himself, recalling that luck and preparation are often considered synonymous. Though still he pondered, replaying the raid in his mind searching for an elusive answer. Well, the after action review and debrief would uncover it, and tomorrow he would ensure that the same mistake would not occur the next time, a little more than 40 hours away . . .

This scenario illustrates several of the tenets of Army operations found in Field Manual (FM) 100-5, *Operations*, particularly the depth, synchronization, and versatility of the air assault raid.[1] A casual reading of the scenario leaves one wondering when and where it occurs. What is the level of conflict involved? What are the dispositions, compositions, and strengths of the forces involved? The reader is free to insert those details as the air assault raid is an operation

which transcends the spectrum of conflict. This monograph's purpose is to discuss the applicability of the air assault raid to anticipated military operations of the U.S. Army as it enters the new millennium.

FM 101-5-1, *Operational Terms and Graphics,* defines the terms *air assault* and *raid,* and they are presented here as a starting point for defining the *air assault raid.* First,

> *Air assault* – operations in which air assault forces (combat, combat support, and combat service support), using the firepower, mobility, and total integration of helicopter assets in their ground or air roles, maneuver on the battlefield under the control of the ground or air maneuver commander to engage and destroy enemy forces or to seize and hold key terrain.[2]

FM 90-4, *Air Assault Operations,* states that "air assault operations are not merely movements of soldiers, weapons, and material by Army aviation units and must not be construed as such. They are deliberate, precisely planned, and vigorously executed combat operations ...."[3] They are as much a state of mind as an organizational structure. Air assault forces are those which habitually train as a combined arms team in air assault operations.[4] As an example, the subordinate brigade task forces of the 101st Airborne Division (Air Assault) meet the requirements for air assault forces. They habitually conduct air-ground operations as combined arms teams consisting of ground maneuver, attack and assault aviation, air assault capable fire support, engineer, air defense, combat support, and combat service support elements.[5]

FM 101-5-1 defines a raid as:

> *Raid* – a type of deliberate attack, usually small scale, involving a swift penetration of hostile territory to secure information, to confuse the enemy, or to destroy his installations. It ends with a planned withdrawal upon completion of the assigned mission.[6]

In this monograph, the *air assault raid* is a combined-arms tactical operation of short duration in which ground forces are on the objective for no more than thirty minutes, and on the ground for no more than 120 minutes. Typically, the location of landing and pick-up zones is on or near the objective, there is a planned withdrawal, and the raiding force has security, support, and assault elements. The *brigade-directed air assault raid* is conducted by an air assault brigade task force

consisting of company or battalion-sized air assault raids. Ideally, the brigade conducts a series of raids during periods of limited visibility over a period of 36 to 48 hours before it needs 24 hours for recovery and sustainment. This is an operation that is too complex for non-air assault forces and too dynamic for special operations forces. Past studies have centered on unique uses and structures of air assault forces[7] or on the use of air assault forces to complement operational maneuver.[8] This study will center on the future applicability of the air assault raid conducted at the tactical level of warfare by combined-arms air assault brigade forces.

In the introduction to the June 1996 Field Manual 71-100-3, *Air Assault Division Operations,* MG Keane, the commanding general of the 101st Airborne Division (Air Assault) sets the tone for the anticipated use of the division in the twenty-first century army. He states that the real power of the air assault division is its attack helicopters. The Apaches penetrate deep to destroy the enemy, while the "close combat forces" are used for two reasons: to establish a secure gas station for the Apaches, or to clean up after the Apaches are finished.[9] This attitude is prevalent throughout FM 71-100-3, and clearly the emphasis is on mid-to-high intensity conflict. Perhaps this is appropriate given the Division's recent combat experiences in Southwest Asia. During DESERT STORM, the 101st Airborne Division (Air Assault) used its "close combat forces" to establish a brigade-sized forward operating base (secure gas station) and brigade blocking positions along the Euphrates, far to the northwest from the major engagements of the war.[10] Though the Division practiced the specialized air assault raid mission during the late 1980's, this mission was not used during the war.

It is difficult to discuss air assault operations such as the air assault raid without referring to the 101st Airborne Division (Air Assault). FM 71-100-3 states that the "air assault division is unique"[11] and charges its maneuver brigades with integrating the combined arms team which makes air assault operations possible.[12] From the re-designation to the 101st Airborne Division (Air Assault) in 1974, the U.S. Army has been involved in helicopter-assisted assaults into Iran

(1979), Lebanon (1983), Grenada (1983), Panama (1989), Iraq (1991), Somalia (1992-93), and Haiti (1994). The air assault division has only participated in the one non-low intensity conflict of the period. Clearly, the image of hell-firing attack helicopters and smoldering armor formations does not dominate modern military actions. Only non-specialized air assault forces conducted air assault combat operations during this period.

In light of the above, this monograph explores whether the air assault brigade task force-directed air assault raid has a role to play on the anticipated battlefield of the twenty-first century. The combat power of the air assault raid is a fast-acting, hard-hitting action that combines the firepower of attack helicopters, close air support, and field artillery; the maneuver of close-combat forces; the protection of surprise and invisibility; and the leadership of American soldiers who can think at 120 knots, 50 feet off the ground. This operation has tremendous potential for assisting in the accomplishment of American objectives in future U.S. Army operations.

The monograph discusses the current doctrine of the air assault raid, the objectives of FORCE XXI (the U.S. Army's journey into the future), and the anticipated nature of warfare in the twenty-first century. It reviews air assault raid training results as detailed in the Center for Army Lessons Learned database. This database includes two 101st Airborne (Air Assault) Division exercises at the NTC, ten exercises conducted by the 101st, 7th Infantry Division, 25th Infantry Division, 82d Airborne Division, and 75th Ranger Regiment at the JRTC, and a 29th Infantry Division BCTP exercise all conducted since 1989. An analysis of doctrine, training, FORCE XXI objectives, and the nature of future warfare addresses whether the air assault brigade task force-directed raid has a role in twenty-first century warfare.

II. Air Assault Raid Doctrine

FM 90-4, *Air Assault Operations,* provides the primary U.S. Army doctrine source for the air assault raid. Additional documents include assorted manuals produced internally by the

101st Airborne Division (Air Assault) and the recent FM 71-100-3, *Air Assault Division Operations*. It is particularly interesting to note the relative emphasis placed on the air assault raid as defined in this paper before and after Operation DESERT STORM. The 1 August 1988 *Air Assault Division and Brigade Operations Manual* for the 101st Division states that the air assault raid "is an essential and frequently used operation for the air assault brigade."[13] The June 1996 FM 71-100-3 states that "*most typically*, the division employs *attack aviation* raids to destroy enemy forces in EAs (engagement areas). The division *may* order an *artillery* raid ... *Finally*, the division *may* execute *rifle company* raids or even battalion raids..." (emphasis added).[14] The Army published FM 90-4 in March of 1987, so much of the doctrine presented here pre-dates the Persian Gulf War.

There are typically four elements in the organization of the raiding force: command and control, security, support, and assault.[15] The command and control element consists of the air assault task force commander (AATFC) who commands from a command aircraft while the force is being transported to and from the objective area. The AATFC may command from the ground during actions on the objective. The security element consists of attack helicopters and ground forces that isolate the objective area, provide suppressive fires during withdrawal, and secure the assaulting aircraft while they are on the ground. The attack helicopters also provide route security for the assault aircraft in transit. The support element consists of ground units in the objective area that utilize direct fires and indirect mortar fires to neutralize the objective. Additionally, indirect artillery fires from remote landing zone firing sites prepare the objective prior to the assault and provide suppressive fires during objective area extraction. The assault element, consisting of infantry and engineer forces, secures the objective, collects information and prisoners, and initiates demolitions to complete the destruction of the objective.[16]

The air assault raid is inherently dangerous because it typically is conducted behind enemy lines or at a minimum requires movement over hostile territory. As such, the air assault

raid requires detailed and exact planning to enhance its success.[17] The planning process includes a detailed warning order, operations order, air mission briefing, and extensive rehearsals. The intelligence preparation of the battlefield is crucial to the success of the raid. Planners and commanders must obtain extensive and accurate intelligence concerning the air routes to and from the objective as well as the landing zones, pick-up zones, and objective itself. Just as crucial is the integration of all participants in the planning and preparation for the raid and in the development of contingency plans.[18] Consequently, key leaders from infantry, aviation, artillery, engineer, intelligence, signal, and logistics units must be involved in all briefings and rehearsals. The raiding force must conduct exacting and detailed rehearsals during daylight and at night.[19] Because of the extent of the planning process, the numbers and types of personnel involved, and the requirement for thorough rehearsals, only dedicated air assault units can adequately conduct the air assault raid.

The air assault raid mission has three distinct phases: insertion of the raiding force, actions on the objective, and extraction of the raiding force. The insertion includes the air routes to the objective, suppression of enemy air defenses along the routes, and the landing zones (LZs) to be used. The air routes to the objective typically cross the forward line of troops or at a minimum pass over hostile forces. As such, planners must choose the routes to minimize the distance to the objective while maximizing the survivability of the assaulting aircraft. Air assault planners accomplish this by choosing terrain-masked routes that avoid heavy air defense artillery sites, and placing suppressive indirect artillery or attack helicopter fires on suspected air defense sites along the route. Additionally, the raiding force uses non-lethal electromagnetic spectrum warfare to deceive and disrupt the enemy. Planners determine the number and size of LZs using METT-T.[20] Typically, a supporting artillery battery requires an LZ along the route within range of the objective so that suppressive fires can reach the objective area. If the objective has a relatively immobile enemy with a weak air defense capability, the assault force may land directly

on or very near the objective depending on the location of a suitable landing zone.[21] When this occurs, actions on the objective should last no more than thirty minutes. If the threat assessment of the objective is such that landing on it is too dangerous, the raiding force will land as close to the objective as METT-T allows.[22] Actions on the objective in this case should last no longer than two hours or so. If necessary, the security, support, and assault elements on the ground may have different LZs, enabling each to reach its assigned position as quickly as possible. Once the assault helicopters have disgorged their loads, they move to a semi-secure laager site under attack helicopter escort. The laager site may include a forward arming and refueling point and a ground security force.

The actions on the objective phase proceeds much the same as for any raid, regardless of the means of delivery and extraction. The air and ground security elements isolate the objective by blocking ingress and egress routes to the objective. Of particular importance is the halting and destruction of any reaction forces which may attempt to intercept the raiding force. The security element also ensures that no one escapes from the objective. The support element suppresses the objective with direct fires, indirect mortar fires, and artillery fires while the assault element fires and maneuvers its way across the objective. Once the assault is complete and the objective is secure, special teams collect information, prisoners, and prepare demolitions for completely destroying the objective. On completion of the raid and on signal, all elements withdraw to the pick-up zone (PZ) and prepare for extraction. Should air extraction not be possible, the raiding force must be prepared for exfiltration on the ground. This is one of the key dangers of the air assault raid, and may result in the loss of the raiding force to subsequent enemy actions.[23]

The extraction of the raiding force begins upon withdrawal from the objective. The assault helicopters leave their laager site and move to the PZ. The PZ may be the same site as the LZ or it may be on the far side of the objective depending on METT-T. The raiding force elements posture for pick-up and immediately load the aircraft on the PZ. The attack helicopter

security elements and the artillery battery provide overwatch and suppressive fires during the extraction. The extraction route is typically a different route back to the forward line of troops or to the raiding force's home base. The same considerations apply along the extraction route as did along the insertion route, and friendly suppression of enemy air defenses operates on suspected enemy sites along the route. After the raiding force has cleared the PZ, assault aircraft extract the inserted artillery battery back to its home base, escorted by the overwatching attack helicopters.[24]

Chapter Six will analyze current air assault raid doctrine to determine if it supports the objectives of the twenty-first century Army. From the previous discussion, the following points will facilitate the analysis:

(1) Organization
(2) Planning
(3) Insertion
(4) Actions on the objective
(5) Extraction.

III. FORCE XXI Intent and Goals

The U.S. Army is an organization that continually strives to ensure that America's Army is the best manned, trained, equipped, and sustained force in the world. As the U.S. Army looks to the future, it journeys along a path to FORCE XXI, its destination as the Army of the 21st century.[25] The vision for FORCE XXI is to have "America's Army, trained and ready, a strategic force, serving the nation at home and abroad, capable of decisive victory . . . into the 21st century."[26] The keystone to FORCE XXI is information – using developing technologies to exploit information and gaining information superiority on the battlefield.[27] If the air assault raid is to have any future for U.S. Army operations, it must be a part of meeting the intent and goals of FORCE XXI.

In 1994, then Chief of Staff of the Army, GEN Gordon R. Sullivan, set forth his intent for FORCE XXI: "We will use a rolling baseline to focus our efforts, and make all key fielding

and support decisions for the operating force and our Title 10 functions by the year 2000. Information-age technology for battle command, battle space, depth, and simultaneous attack, early entry, and combat service support will underwrite our capabilities to project and sustain the force, dominate maneuver, win the information war, conduct precision strikes, and protect the force across the continuum of military operations."[28] The strategic goal for FORCE XXI is: "A force for the 21st century that is more lethal, survivable, capable of sustained high tempo operations, deployable, versatile and sustainable, and with increased joint and combined connectivity."[29]

The current Chief of Staff of the Army, GEN Dennis J. Reimer, reinforces this vision: "FORCE XXI projects our quality soldiers into the 21st century and provides them the right doctrine and organizations, the most realistic training, an adequate and predictable sustainment package during both peace and war, and the best equipment and weapons systems that we need and our nation can provide."[30]

The Chief of Staff of the Army's intent coupled with the goals of FORCE XXI provides another analysis tool for determining the validity of the brigade-directed air assault raid in the near future. A synthesis of the above provides five objectives of the 21st century Army: dominate maneuver, project and sustain, conduct precision strikes, win the information war, and protect the force.[31]

Dominating maneuver is significant to the continued dominance of the U.S. Army on the modern battlefield, since the Army is a "maneuver-oriented" force. For FORCE XXI, the ability to move physically from one location on the battlefield to another will not differ much from the Army's ability to move in DESERT STORM. Cross-country speeds of 45 kph and helicopter speeds of 150 knots appear to be the near-term physical limits. Maneuver will be greatly affected, however, by the increased information capabilities provided by new technologies. Assuming commanders will be able to "see" the battlefield in real time means that they can

anticipate movements and destinations earlier, allowing maneuver forces to make more efficient and timely moves. In essence, this enhanced maneuver capability will allow Army forces to out-position the enemy faster and more effectively than in the past. This capability might be called "information mobility."

Projecting and sustaining Army forces becomes increasingly important as the U.S. Army becomes more of a power-projection Army than a forward-deployed force. Additionally, the various and sundry missions that the Army has accomplished since DESERT STORM seem to provide a blueprint for many FORCE XXI missions. Experience has shown that this requires an Army with "more modular forces that can be more readily reconfigured for a variety of missions."[32] Sustaining these diverse contingency forces becomes more difficult with an increased variety of personnel and equipment, but information technologies contribute to improving the efficiency of logistics systems and procedures.

Conducting precision strikes has a vital role to play on the battlefields of the future, especially with a public inculcated during DESERT STORM that precision strikes are doable and effective. As one looks to emerging technology, one must believe that precision-guided munitions can only become more effective and deadly while continuing to minimize collateral damage. Additionally, improved information collection and dissemination systems will improve intelligence gathering. This in turn will allow better target detection, increasing the pool of targets available to precision strikes. Another aspect of precision strikes is the ability to send small raiding forces, such as those provided by the brigade-directed air assault raid, deep into "enemy" territory. These types of precision strikes are invaluable when human interaction with the target is necessary.

Winning the information war is crucial for several reasons. First, it allows the U.S. Army to gain information superiority over any enemy.[33] Second, it enables exploitation of different forms of media for deceiving an adversary about the battle force's true objectives and intentions.

Third, it fulfills the intelligence requirements needed to meet the objectives of dominating maneuver and conducting precision strikes. Clearly, information superiority helps set the conditions for precise and information-intensive missions such as the air assault raid.

The last objective of FORCE XXI, *protecting the force*, will continue to be a mainstay of U.S. Army operations. The American public has come to expect victory at the expense of few casualties. Operations in the 21st century will demand smaller, more mobile forces which can rapidly assemble for short duration tactical missions and disperse immediately afterward. Invisibility, because of electromagnetic spectrum domination and information mobility, will be the greatest aid in protecting the force. A common Army phrase in the 1970's said that "if it can be seen, it can be hit; if it can be hit, it can be killed." Emerging technologies, coupled with appropriate doctrine and training, will transform this phrase in the 2000's to "if it can't be seen, it can't be hit; if it can't be hit, it can't be killed."

FORCE XXI will undoubtedly provide America with the premier force of the 21st century. If the air assault raid is to be a part of that force, it must meet the above objectives. Chapter Six assesses the following points to determine if the air assault raid is a viable and contributing mission in the 21st century Army:

(1) Dominate maneuver
(2) Project
(3) Sustain
(4) Precision strike
(5) Information superiority
(6) Protection.

IV. Twenty-First Century Warfare

Writing about the future is a difficult task because one hesitates to make unqualified statements which might be misconstrued as prediction. Consequently, this chapter will not make predictions about what warfare will be like in thirty years, or even ten years. Instead, the purpose

of this chapter is to make a best guess of the prospective technological capabilities and the most likely environment for warfare that will affect the U.S. Army in the early twenty-first century. The chapter relies on the work of noted military and civilian futurists who believe that future battlefields "will be characterized by forces capable of detecting enemy forces at extended ranges, engaging the enemy while remaining invisible to detection, and delivering fires from over the horizon."[34]

Undoubtedly, emerging technologies will have a significant impact on twenty-first century warfare. As the world proceeds into the information age, military futurists and theorists expect warfare to shift towards the third wave, dominated by information acquisition and processing.[35] As such, third-wave warfare is expected to pose significant challenges to the U.S. Army, as indicated in Army Focus 94: "Future battlefields will be different and more complex than 20th century battlefields. Advanced technology will yield new combat capability options which promise to revolutionize future battlefields in five key areas: lethality and dispersion; volume and precision of fire; integrative technology; mass and effects; and invisibility and detectability."[36]

The first of these five areas is the increased *lethality* of weapons systems and the greater *dispersion* of forces on the future battlefield. The trend toward dispersion started with the introduction of the rifled-musket and the minie ball in the middle of the nineteenth-century, and increasingly lethal weapon developments have continued to add to the "empty battlefield."[37] Most theorists expect this trend to continue. Improved detection, targeting, and delivery systems will add to the *volume* and *precision* of direct and indirect fires. Consequently, these fires will be more lethal and result in the increased dispersion of opposing forces.

Integrative technology will affect each of the seven battlefield operating systems. Maneuver units will be able to move more efficiently, engaging more often and accurately, while maintaining protective dispersion. These technologies will enhance the accuracy and

survivability of fire support units, while air defense units will be able to acquire and engage air threats more effectively. Intelligence gathering will provide accurate, near "real-time" information, shortening commanders' decision cycles. Improved communications will enhance command and control, and the friendly situation will be much better "known" than in the past. Better integration of mobility assets with maneuver units will make obstacles and fortifications less of a threat. Mobility forces will be able to respond to and reduce battlefield obstacles more rapidly. Logistical operations will benefit greatly with integrated technologies which improve in-transit visibility and support "just-in-time" supply operations. On the whole, combat, combat support, and combat service support elements will be well integrated and inter-operable.[38]

Emerging technologies should provide smaller, more dispersed units the improved capability to *mass* the *effects* of their combat power. Improved coordination and real-time information will allow commanders to minimize their exposure to the enemy's effects while maximizing friendly effects. Electromagnetic spectrum domination will enhance the *invisibility* of friendly units and *detectability* of enemy units.

The expected environment of twenty-first century warfare can best be summarized as a complex and chaotic one. In the wake of the Cold War, the "new world order" is one in which the nation-state is weakening and is being replaced by ethnic and religious "trans-national" identities.[39] Environmental abuse, population explosion and migration, international economic competition, emerging extra-national crime syndicates, and even rogue nation-states seeking weapons of mass destruction all occupy bandwidths in the political-threat spectrum of the twenty-first century. As former Army Chief of Staff General Gordon R. Sullivan puts it: "Rather than a single, focused threat, America's twenty-first century Army faces a broad range of challenges."[40] The current Chief of Staff, General Reimer, echoing his predecessor's comment, envisions being able "to defeat an enemy armed with machetes and rifles as well as those armed with tanks, planes, and weapons of mass destruction."[41] Coupled with this broad spectrum of political issues

is the anticipated composition of possible military threats. Humanitarian disaster relief, illegal immigration, drug and crime syndicate "armies," terrorism, poorly trained internal security forces, first-wave infantry-based armies in the third world, second-wave armored-mechanized armies, and third-wave complex, adaptive armies span the spectrum of military threats to the United States.[42] The only certainty about the future is the "accelerating rates of change" making "the future environment more unpredictable and less stable."[43]

In an effort to deal with these threats, the Army expects the dominant aspects of twenty-first century warfare to be: battle command, extended battle space, simultaneity, spectrum supremacy, and the rules of war.[44] *Battle command*, the art of battle decision making and leading,[45] will be enhanced with technological advances in information, communications, and management systems.[46] *Battle space*, the conceptual physical volume in which a commander seeks to dominate the enemy,[47] will be extended in length, width, depth, and height due to the increasingly empty battlefield.[48] Due to technological improvements, campaigns will consist of *simultaneous* operations and battles throughout the battle space, perhaps obviating the need for campaign plans with sequential operations.[49] Controlling the electromagnetic *spectrum* will be of supreme importance, not only for acquiring and denying intelligence, but also for maintaining and understanding the increasing importance of the news media to the world audience.[50] Finally, the *rules of war* appear to be changing as non-nation state elements become more of a threat and rogue nation states behave in uncivilized ways – taking hostages, supporting terrorism, securing weapons of mass destruction, and spurning world opinion.[51]

Chapter Six will examine the prospective technological capabilities of:

(1) Lethality and dispersion
(2) Volume and precision of fire
(3) Integrative technology
(4) Mass and effects
(5) Invisibility and detectability

in relation to air assault raid doctrine and training to determine the ability of emerging technologies to enhance the brigade-directed air assault raid. Additionally, the chapter will analyze air assault doctrine and training in conjunction with the five elements of the expected battlefield environment of the twenty-first century:

(1) Battle command
(2) Extended battle space
(3) Simultaneity
(4) Spectrum supremacy
(5) The rules of war.

V. Air Assault Training Results

In the past two decades, the high-tech playgrounds of the National Training Center (NTC) and the Joint Readiness Training Center (JRTC) have provided U.S. Army units with outstanding training opportunities. The Center for Army Lessons Learned has captured many of the after-action reports (AAR) generated by observer-controller teams as different units have rotated through the centers. The Center for Army Lessons Learned maintains a database of these AARs, and it is this database that forms the foundation of this chapter. Unfortunately, the generic and often bland comments found in AARs make assessing training a difficult task. In particular, from 1989 through 1996, only seven unit rotations prove to have merit for this study.[52] The air assault raid is not a popular operation and, even in these seven rotations, two have misnamed air assault attacks as raids.[53] Significantly, none of these training rotations involves an air assault brigade task force. This chapter summarizes the results from these seven training rotations, while Chapter Six analyzes the results.

The operation closest to the ideal as set forth in Chapter One was NTC rotation 89-08.[54] Fortunately, it has the most complete AAR and training assessment as well. This rotation had an air assault battalion task force from the 101st Airborne Division (Air Assault) attached to the 197th Mechanized Infantry Brigade as part of a heavy/light rotation. The mission of the

reinforced air assault rifle company was to conduct a "deep cross-FLOT air assault raid on an OPFOR division TAC to destroy it, gain valuable intel[ligence], and to disrupt division command and control."[55] The air assault commenced with an H-hour of 2130 hours, as air cavalry AH-1s provided escort, fired a five-minute preparation of the objective, and blocked a motorized rifle company reaction force. Fire support assets fired suppression of enemy air defenses along the air route, but were not part of the raiding force due to a lack of assault aircraft. Company 60mm mortars provided supporting fires on the objective. A last minute LZ change due to new intelligence about air defense artillery assets on the objective caused confusion on the LZ, but the company assaulted and destroyed the objective. Due to delays caused by the confusion, the unit missed the 2200 hours PZ extraction time, the Air Cavalry could not stop the motorized rifle company, and the remnants of the company had to escape and evade off the objective. The raiding company had 26 killed in action and 46 wounded, while 24 survivors escaped to an alternate PZ. The unit considered the raid expensive though successful, and the primary problems encountered were due to a loss of surprise, a poor intelligence preparation of the battlefield as well as intelligence about the objective, a lack of anti-armor weapons in the raiding force, and an absence of supporting artillery.

The 75th Ranger Regiment has conducted two Joint Readiness Training Center rotations that include air assault raids since 1989. The first was conducted in 1989 (JRTC 89-5) by a ranger battalion task force and included several air assault raids.[56] The initial mission required the task force to destroy a communications site and capture personnel and equipment from an airfield with H-hour set for 2100 hours. One reinforced company was to destroy the commo site while another company secured the airstrip for extraction. The third company minus was the task force reserve. AC-130 gunship fires suppressed the objective while assault aircraft mistakenly placed the raiding force on an LZ 2200 meters from the objective. The airstrip force landed on the airstrip after missing its LZ. The unit destroyed the communications site after H+4 hours, and

the last element left the PZ at H+8 hours. The task force had 34 killed in action, 75 wounded, and 15 who died of wounds. The second air assault raid mission required the task force to rescue prisoners-of-war with an H-hour sometime before midnight. One reinforced company was to assault the prisoner-of-war compound while another company isolated the objective area. The third company minus was the task force reserve. AC-130 gunships provided suppressive fires on the compound while the assault force fast-roped into the compound. Part of the assault force had to be landed in a nearby LZ due to positioning difficulties. The rangers secured the prisoners-of-war at 2358 hours and evacuated them at 0024 hours. Aircraft extracted the raiding force several hours later after the task force had suffered 130 casualties. The last air assault raid conducted during this rotation had the task force raiding to destroy three air defense artillery sites and snatching an Eastern block prisoner. A reinforced company was to destroy an SS-21 site while the other two companies destroyed SA-8 sites to the north and west of the SS-21 site. H-hour was 2238 hours. AC-130s provided fire support while only the northern company landed in the right LZ. Each force eventually located and destroyed its respective objectives, but not without suffering a total of 24 killed in action and 60 wounded. Inclement weather forced two of the companies to remain in the objective area until extraction the next morning. Overall, the problems in this rotation were a loss of surprise, poor intelligence of the objective areas, and poor air assault planning.

The second ranger JRTC rotation involving an air assault raid was JRTC 94-3.[57] A ranger task force conducted at least one air assault raid and possibly four others. The AAR does not provide specific details about each of these missions, but presents a general summary. The ranger task force air assaults in JRTC 89-5 and 94-3 were generally successful. General problems for the rangers were the lack of surprise, poor air assault planning, poor intelligence preparation of the battlefield and objective area, and poor extraction planning and execution.

Typically, air assault raids conducted by infantry and airborne units at the JRTC occur during the search and attack phase of the rotation. In 1990, the 7th Infantry Division sent a battalion task force to participate in JRTC rotation 91-1.[58] A reinforced rifle company was to conduct an air assault raid (0140 H-hour) to destroy an enemy battalion supply point and exfiltrate on foot. Poor planning and leadership helped doom this raid from the start. The assault aircraft inserted one platoon into an LZ a kilometer from the objective, then returned for a second platoon and deposited it in a different LZ. The raid quickly became a hasty attack as the two-platoon company spent five hours working on becoming combat ineffective. This raid was extremely unsuccessful, and, as a result, the company had 21 killed in action, 37 wounded, and 20 dead of wounds. The most severe problems were the loss of surprise, poor air assault planning, inadequate fire support, poor command and control, and poor intelligence of the objective area.

A battalion task force from the 82d Airborne Division conducted an air assault raid during JRTC rotation 90-5.[59] H-hour was at 0300 hours, and the mission was to "conduct an air assault raid, landing on/adjacent to the objective, rapidly assaulting the objective using a task organized assault, follow and support, extraction, and command and control teams."[60] The AAR lacks specificity, but the raid was successful. The hot LZ was 75 meters from the objective, so the raiding force achieved surprise. There was no mention of fire support apart from the indigenous 60mm mortars. Unfortunately, the company did not secure the PZ and spent 90 minutes waiting to be extracted. This contributed significantly to the 15 killed and 20 wounded soldiers. The recorded problems included poor air assault planning and poor PZ/LZ operations.

As noted above, two rotations misnamed air assaults as air assault raids. The first occurred during JRTC rotation 90-1.[61] In this exercise, a task force from the 7th Infantry Division conducted an "air assault attack"[62] to destroy an enemy resupply point. From the AAR description, it is difficult to determine whether this operation was an attack or a true air assault

raid. In any case, a company conducted the air assault, landed in several unplanned LZs, encountered command and control problems, suffered heavy casualties, but finally destroyed the objective. The problems were a loss of surprise, poor intelligence about the objective, and poor air assault planning. The other rotation with a misnamed air assault raid was NTC rotation 90-07, a heavy/light rotation.[63] The heavy brigade headquarters tasked an attached battalion task force of the 101st Airborne Division (Air Assault) to seize key terrain. The supposed air assault raid involved a company which conducted a night air assault to seize and hold a mountain trail in order to pass a mechanized force at daybreak. The company achieved maximum surprise by landing on the objective, but lost the initiative with a lack of supporting artillery and aviation fires, eventually losing 80% of the company.

The above training exercise results indicate several key trends about the air assault raid. First, in the past seven years, very few units have conducted air assault raids in the training environments that best support combined arms operations. The air assault division, especially, is neglecting this operation. Second, even if air assault raids are successful, they exact a heavy price in human casualties. Third, non-air assault forces have a difficult time with the air assault portion of the raid. Fourth, the air assault raid has several weaknesses which hamper its effectiveness. The inability to gain surprise and achieve accurate, timely intelligence are serious weaknesses. Fifth, and most significantly, most "air assault raids" are not being conducted in accordance with the Army's written doctrine. Perhaps there is some truth to the old saying that doctrine is what 50% of the field army is doing. Table 5-1 contains a summary of the problems encountered in the above training exercises. Chapter Six will analyze the weaknesses identified in Table 5-1 with respect to possible technological solutions and the anticipated nature of warfare in the twenty-first century.

VI. Analysis

The determination of the future role of the brigade-directed air assault raid, if any, rests upon the answers to several questions. First, does current air assault doctrine support the intent and objectives of FORCE XXI? Second, do air assault training exercise results indicate that the air assault raid meets the goals of FORCE XXI? Third, can the weaknesses identified in training exercises be mitigated by applying emerging technologies? Finally, does the air assault raid provide a means of meeting the military challenges anticipated in the new millennium? This chapter explores the answers to these questions.

Table 5-1: Air Assault Raid Training Weaknesses

Training Rotation	Unit	Loss of Surprise?	Poor Intelligence/ IPB?	Ineffective Fire Support?	Poor Air Assault Planning?	Loss of C^2?	Casualties
NTC 89-08	**101st**	**Yes**	**Yes**	**Yes**	No	No	**75%**
JRTC 89-5	**75th**	**Yes**	**Yes**	No	**Yes**	No	**25%**
JRTC 94-3	**75th**	**Yes**	**Yes**	No	**Yes**	No	**NA**
JRTC 91-1	**7th**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**88%**
JRTC 90-5	**82d**	No	No	**Yes**	**Yes**	No	**47%**
JRTC 90-1	**7th**	**Yes**	**Yes**	No	**Yes**	**Yes**	**~40%**
NTC 90-07	**101st**	No	No	**Yes**	No	No	**80%**

Comparison of Doctrine and FORCE XXI Objectives

One must examine current air assault doctrine in light of FORCE XXI objectives to answer question one above. Chapter Two, "Air Assault Raid Doctrine," explored the following analysis points: organization, planning, insertion, actions on the objective, and extraction. Comparing these points to the FORCE XXI objectives found in Chapter Three, "FORCE XXI Intent and Goals," determines the usefulness of current air assault doctrine for the future. The FORCE XXI objectives are: dominate maneuver, project, sustain, precision strike, information superiority, and protection.

Dominating maneuver is the primary purpose behind the air assault concept.[64] The organization and equipment used in the air assault raid is a maneuver enthusiast's dream come true. Nothing moves men and material around the tactical battlefield faster or more adroitly than the helicopter. Free of terrain limitations, assault and attack aviation elements enable the U.S. Army to place raiding forces deep into an enemy's "rear" subject only to fuel and maintenance constraints. In particular, the air assault brigade task force has the infantry, aviation, fire support, engineer, and command and control assets to perform the air assault raid better than any other unit except the air assault division itself. The detailed and exact planning required by the air assault raid is well met by the "information mobility" advantages of FORCE XXI. The established doctrine dictates that the insertion and extraction phases of the air assault raid minimize PZ to LZ distance while maximizing protection. This greatly enhances maneuver, allowing the raiding force to gain positional advantage over the target objective. Clearly, air assault raid doctrine meets the objective of dominating maneuver.

Projecting an air assault brigade task force from the continental United States to foreign battlefields is much less difficult than projecting the entire air assault division. The air assault brigade task force is well-suited for carrying out air assault raids at the company and battalion levels, negating the need to deploy the entire division in order to gain the advantages of the air assault raid.[65] As such, the air assault brigade task force fits well into the "modular" concepts of twenty-first century units. *Sustaining* the air assault raid becomes a matter of supporting preparations and after-operations recovery for each raid. The raid should last no more than perhaps six-hours from initial PZ time until the return of the raiding force to the final LZ. Thus, it is self-sustaining during the raid. The air assault task force, however, requires extensive maintenance for its aircraft and personnel in order to sustain continuous operations after 24 hours.[66] The advantage here is that sustainment of the raiding force occurs in "friendly" territory.

By its very nature, the air assault raid is a *precision strike*. Unlike precision guided munitions which minimize collateral damage (in theory) without endangering human operators, the air assault raid places American soldiers in harm's way. As has been stated before, there are occasions when the U.S. Army has no substitute for having personnel "on the ground." These instances are the purview of the air assault raid: when target destruction must be ensured, when prisoners must be captured, and when hard, physical intelligence must be gathered. The air assault raiding force is ideally suited to accomplish this strike. It has the firepower and mobility to move rapidly and accurately to and from the objective. Once again, the precise information required to conduct such "deep" strikes is becoming more accessible with the improving acquisition techniques of emerging technologies. The air assault raid definitely supports the twenty-first century requirement for precision strikes.

By gaining *information superiority*, the U.S. Army greatly improves the probability of air assault raid success. A key to successful performance is the timely and complete intelligence picture of the infiltration and exfiltration routes, as well as the objective area. This is sometimes called having "favorable conditions" for the raid, and when favorable conditions do not exist, the air assault brigade task force must establish them.[67] Information superiority goes a long way towards establishing favorable conditions for the air assault raid.

Protection is the Achilles' heel of the air assault raid. Placing a small force deep in hostile territory induces sweaty palms, not only in the raiders, but also in the leaders who commit them to possible annihilation. As such, air assault raid doctrine appears to be built around the concept of protection. The raiding force is a highly mobile combined-arms team with extensive internal and supporting firepower. The requirement for detailed planning exists to ensure nothing is forgotten.[68] The insertion and extraction routes are well-seeded with suppressive lethal and non-lethal fires to prevent engagement of the exposed column of aircraft. Even the time in the objective area is maximized to ensure accomplishment of the mission and minimized to reduce

the threat of counterattack by reaction forces. In theory, at least, protecting the raiding force is a major concern of air assault raid doctrine.

In short, air assault raid doctrine of the late twentieth century meets the objectives of the twenty-first century Army. Table 6-1 relates the elements of air assault raid doctrine to the objectives of FORCE XXI.

Comparison of Training and FORCE XXI Objectives

In Chapter Five, "Air Assault Training Results," the results of training rotations at the NTC and JRTC indicate a number of problems and weaknesses with the air assault raid. This section will analyze the training results to understand these problems and discover their meaning with respect to FORCE XXI objectives. This in turn will assist in determining if the brigade-directed air assault raid has a role in twenty-first century warfare.

Table 6-1: FORCE XXI Objectives Supported by Air Assault Raid Doctrine

Elements of Doctrine	**FORCE XXI Objectives Supported**
Organization	• *Dominate Maneuver* • *Project* • *Precision Strike* • *Protection*
Planning	• *Dominate Maneuver* • *Precision Strike* • *Information Superiority* • *Protection*
Insertion	• *Dominate Maneuver* • *Precision Strike* • *Protection*
Actions on the Objective	• *Protection*
Extraction	• *Dominate Maneuver* • *Precision Strike* • *Protection*

Overall, the training center results for air assault raids conducted since 1989 indicate five problem areas:

(1) Army units conduct few air assault raids.
(2) Air assault raids produce heavy casualties.
(3) Non-air assault forces plan and execute air assault operations poorly.
(4) Loss of surprise and poor IPB are the primary weaknesses of the air assault raid.
(5) Army units fail to conduct the air assault raid IAW written Army doctrine.

Before determining what the implications of these weaknesses are to FORCE XXI objectives, one must examine each problem area to gain insight about the problem. Unfortunately, the after action report records are not complete enough to determine precisely the causes of each problem, but there is enough data to appreciate the problems.

The first problem trend noted was the paucity of air assault raid missions at the training centers. A quick Fermi calculation may help understand the problem.[69] If ten rotations occur each year at the training centers, and each rotation has five missions, over a six-year period there are 300 missions at the NTC and 300 missions at the JRTC. In the same time there were only two air assault raids at the NTC, one of which was actually an attack, and only eleven (if one counts eight raids in 75th Ranger rotations 89-5 and 94-3 and the air assault attack in JRTC 90-1) at the JRTC. At best, 0.7% (2/300) of the NTC missions and 3.7% (11/300) of the JRTC missions since 1989 have been air assault raids. If nothing else, the lack of practice helps explain a number of this mission's weaknesses. Even worse, the 101st Airborne Division (Air Assault) accounts for only one true air assault raid in 600 missions, a meager 0.17%. It is significant to note that the air assault division's last air assault raid at a training center occurred during rotation heavy/light NTC 89-08, before Operation DESERT STORM. Chapter Five noted this particular mission as being the closest to the ideal air assault raid. Since this time, as discussed in Chapter One and as evidenced by FM 71-100-3, *Air Assault Division Operations,* the Division has focused on the Southwest Asian Armageddon with its attack helicopter "raids" and close-combat

clean-up personnel. Practice makes perfect, and the U.S. Army does not practice this mission. This makes it difficult to say that the results of training support *dominate maneuver* and *precision strikes*.

The second problem trend that arises from training center air assault raids is the unacceptably high number of casualties sustained. Considering the limited information in the AARs, the most probable cause is the immense amounts of time the raiders spend in the objective area. The expected reaction time for the enemy to recover from his initial surprise provides the rationale for actions on the objective lasting no longer than thirty minutes if the LZ is on the objective or 120 minutes if the LZ is away from the objective. In virtually every case studied, the raids metamorphosed into attacks with the raiding force holding the ground around the objective rather than rapidly departing. Based on the AARs, the average time in the objective area was about 4.5 hours.[70] Another contributing factor to the high casualty rate was the almost universal inability to land in the proper LZ.[71] To their credit, every unit conducted their raids during darkness, IAW doctrine. Unfortunately, disgorging from aircraft on the wrong LZ at night causes increased confusion as the ground maneuver force must spend time reorienting themselves. This is time lost to the enemy, and in most cases precludes the raid from being accomplished within time standards. The heavy casualty rates among the assorted raids indicate that *sustaining* and *protecting* the force are certainly not supported by training center results. It is difficult to imagine an army that *dominates maneuver* by sustaining excessively high attrition rates.

The inability of non-air assault forces to plan and execute air assault operations appears to be a third training trend determined by NTC and JRTC rotation results. In each AAR that involved a non-101st Airborne Division (Air Assault) unit, observer/controller comments indicated that air assault planning and execution needed improvement. Perhaps this is due in part to the perception that air assault weaknesses are "safe" comments for non-air assault units. More probably, the observations are due to the misperception many units have of air assault operations.

These are intricate combined-arms operations that require detailed planning and rehearsal. not simply the shotgun marriage of helicopters and infantry. The air assault concept does not represent another means of "getting to the battlefield." Unless the combined-arms team of infantry, aviation, field artillery, engineer, air defense, intelligence, and signal elements plan, rehearse, and execute together, air assault becomes air mobile. The only way to become proficient at air assault operations, such as the air assault raid, is to train as a combined-arms team with all the components. As such, the air assault division is currently the only unit capable of adequately preparing, training, and developing doctrine for the air assault raid. Additionally, the air assault brigade task force is the only brigade element capable of organizing, equipping, planning and executing tactical air assault raids in the U.S. Army. This is why the emphasis of this paper is on the air assault brigade task force-directed air assault raid. Unfortunately, as noted above, the only division capable of providing such brigade task forces is virtually ignoring the air assault raid. Small wonder that the training results in this paper demonstrate the inability of the U.S. Army to perform the air assault raid. The inability of a unit to plan and execute the air assault raid does not contribute to the idea of *dominating maneuver* with its inherent information mobility requirements. The air assault division alone can *project* the modular, task-organized force required for conducting air assault raids. Only air assault units can adequately organize, plan and execute *precision strike* air assault raids that enhance *protection* of the raiding force.

The loss of surprise and the inadequate intelligence picture of the infiltration and exfiltration routes and the objective area are the most serious weakness trends indicated by NTC and JRTC training results. As already noted, the loss of surprise contributes greatly to the number of casualties sustained in the objective area. Surprise, "striking the enemy at a time or in a manner for which he is unprepared,"[72] is vital to the success of the air assault raid. According to FM 7-85, *Ranger Unit Operations,* any successful raid is "ensured by – launching the raid at an unexpected time or place ... avoiding detection ... timing the operation ... using all available

support ... performing quick, violent, precise, and audacious actions ... disengaging quickly ... and withdrawing swiftly."[73]

One could argue that units cannot achieve true surprise at the training centers, especially not in terms of the air assault raid. In order for a unit to conduct the raid, the OPFOR must build an objective. Though those on the objective may not know exactly when it will be "hit," the OPFOR personnel do not sit on an objective for weeks waiting for something to happen. One gets the impression that the OPFOR occupies the objective after darkness on the night of the raid and a motorized rifle company reaction force sits in its idling vehicles pointed towards the objective waiting for a 911 call. It is sufficient to say that training centers simulate combat and thus must simulate surprise. The fact remains that the friction of war conspires against the air assault raiders. Simple things such as landing in the wrong LZ, becoming disoriented, and losing communications and control contribute to the loss of surprise. Surprise, being able to strike the enemy unexpectedly, is certainly an aspect of *dominating maneuver*. The air assault raid is a *precision strike* that does not work without surprise. In fact, surprise might be considered the most important aspect of *protecting* the raiding force. Being unable to gain and maintain surprise for short-duration air assault raids is ultimately an admission that the raiding force does not have *information superiority* over the enemy since information superiority implies not only knowing more than the enemy, but being able to prevent the enemy from discovering knowledge about friendly intentions. Later, the ability of emerging technologies to assist in gaining surprise will be discussed.

The Army could blame poor intelligence preparation of the battlefield on commanders and their staffs, citing poor training and understanding of the process. Most probably, the true cause behind poor IPB is the inability to acquire real-time, accurate information about the infiltration route, the objective area, and the exfiltration route situations. In virtually every case studied, the AARs indicate that the mental picture the raiders had of the objective and its true

character were significantly different. Most military professionals recognize that this is the normal state of affairs. True, but for the air assault raid, the importance of surprise, moving swiftly and under cover of darkness, magnifies the requirement that mental pictures be nearly identical to the actual situation. The entire point of the twenty-first century army is to redefine the normal state of affairs in combat. Later, the problem of acquiring real-time, accurate intelligence will be explored in relation with emerging technologies. Poor intelligence acquisition and processing are symptoms of information mismanagement, no matter whether they occur at the tactical, operational, or strategic levels. The results of these training air assault raids indicate that the U.S. Army is far from winning the information war through *information superiority*. Proper intelligence preparation of the battlefield is vital to the success of the air assault raid, and this will never become a mission to *dominate maneuver* without real-time, accurate intelligence.

The fifth and most significant training trend identified in this study is the fact that in the rare occasions that units conduct air assault raids, they fail to conduct them in accordance with written Army doctrine as specified by FM 90-4, *Air Assault Operations*, as well as other documents. Once again the training center AARs provide little detailed information about the air assault raid missions. From the writing, one does not feel certain that the observer/controller knew the doctrine any better than the units themselves. Even so, one can make some general comments about the organization and planning of the missions themselves.

Overall, only the Rangers had adequate supporting fires on the objective in the form of AC-130 gunships. Since most air assault raid objectives are outside the range of main battle area artillery units, either aviation, air force, or air assault capable artillery must provide the appropriate firepower on the objective. In NTC 89-08, the 101st battalion task force employed Air Cavalry AH-1s for preparing the objective and providing aerial security. This unit would have employed a battery of towed 105mm howitzers, but the exercise director denied the aircraft

to assault them to a firing position past the FEBA. As has been stated earlier, this unit provided the closest to the ideal air assault raid and may have been able to meet the H+30 min PZ time had it been allowed to employ its artillery support. The other units involved in air assault raids were either unable to employ artillery assets or did not plan for them. Only the 101st battalion task force in NTC 89-08 employed aviation security for the infiltration and exfiltration routes as well as aerial security teams in the objective area. Additionally, only NTC 89-08 and JRTC 91-1 make reference to engineers accompanying the raiding force for the purpose of demolition on the objective.

In terms of planning, the most significant violations of doctrine are those due to poorly executed air assault operations as discussed above. Typically, units fail to include the entire combined-arms team in the planning process, fail to resource adequately the LZs and PZs, and neglect the development of foreseeable contingencies. As presented above, air assault raid doctrine is adequate enough to support FORCE XXI objectives. It becomes obvious then that unless units follow the doctrine, *dominating maneuver*, conducting *precision strikes*, gaining *information superiority*, and *protecting* the force will become difficult to accomplish. The training center results demonstrate the truthfulness of this statement.

A lack of resources was a significant cause of many of the problems noted above. This points to the need for the proper composition of command and control, combat, combat support, and combat service support elements in order to conduct the air assault raid adequately. None of the training center raids were conducted by an air assault brigade task force. The NTC rotations involved reinforced air assault battalion task forces attached to heavy brigades while the JRTC rotations involved battalion task forces reinforced with aviation, combat support, and combat service support elements. The air assault raids discussed above would have been more successful with the resources available to the air assault brigade task force.

The implications the above problems have on FORCE XXI are significant. In general, as seen earlier, air assault raid doctrine supports the U.S. Army's journey into the new millennium. Unfortunately, air assault raid training results indicate the opposite. Table 6-2 presents a summary of training center results mapped to FORCE XXI objectives.

Comparison of Weaknesses and Possible Technological Solutions

Chapter Four, "Twenty-First Century Warfare," presented five areas of interest for emerging technologies IAW FORCE XXI expectations. They were:

(1) Lethality and dispersion.
(2) Volume and precision of fire.
(3) Integrative technologies.
(4) Mass and effects.
(5) Invisibility and detectability.

Table 6-2: FORCE XXI Objectives Not Supported by Air Assault Training Results

Training Results	FORCE XXI Objectives Not Supported
Few AASLT Raids Being Conducted	• *Dominate Maneuver* • *Precision Strike*
Heavy Casualties	• *Dominate Maneuver* • *Sustain* • *Protection*
Non-AASLT Force Planning	• *Dominate Maneuver* • *Project* • *Precision Strike* • *Protection*
Weaknesses:	
– Loss of Surprise	• *Dominate Maneuver* • *Precision Strike* • *Information Superiority* • *Protection*
– Poor Intel	• *Dominate Maneuver* • *Information Superiority*
Not IAW Doctrine	• *Dominate Maneuver* • *Precision Strike* • *Information Superiority* • *Protection*

It is beyond the scope of this paper to predict and offer specific technological solutions to the weaknesses and problems of the air assault raid. Rather, each identified weakness will be examined in light of the above areas of technological interest to determine if possible solutions and aids are on the technological horizon. Technologies tend to develop where there is a need. As a caution for the air assault raid mission, unless the U.S. Army determines that this mission has validity and importance in the twenty-first century, no technological aids will be developed for it. The reader should recall the disinterest discussed previously. Technology is a two way street, of course, and an implicit assumption of this paper is that the U.S. Army's journey to the twenty-first century will allow it to continue its military dominance in the world. It is beyond the scope of this paper to determine whether others could perform air assault raids against U.S.

forces, or even to speculate on developments such as directed energy weapons that might prevent the Army from conducting air assault raids. Naturally, the same developments may render tanks and aircraft obsolete as well, but the United States seeks to improve tanks and aircraft. As such, no attempt will be made to determine how emerging technologies might hinder the air assault raid. Rather, this section will focus on how emerging technologies might improve the air assault raid.

Fortunately, the two most significant weaknesses with the air assault raid, loss of surprise and heavy casualties, have the best prospects for being aided by twenty-first century technologies. Each of the five technology areas above bears some impact on each of these weaknesses. Increased *lethality and dispersion* of raiding forces will assist in preventing the enemy from discovering and quickly responding to the raid. The *volume and precision* of direct and indirect *fires* will enable supporting forces to better prepare the objective area according to tight time schedules and will provide a more flexible response to reaction forces. *Integrative technologies* will enable the raiding force to maneuver better in the objective area, minimizing navigation mistakes and linking each individual raider into a technologically-enhanced cohesive element. This should allow the objective to become an orchestrated dance of destruction performed with precision. The improved *mass and effects* of combat power will improve the raiders' moral ascendancy over the enemy – on the objective as well as along the infiltration and exfiltration routes. Most significantly, improved *invisibility* of the raiding force coupled with the improved *detectability* of enemy forces will most probably provide the greatest opportunities for gaining true surprise. The enemy will know less about the raiding force, even after H-hour, while the raiders have a better mental picture of the objective area.

Emerging technological assistance should also reduce heavy casualty rates significantly. Emerging technologies will assist the raiding force in meeting the time standards for actions on the objective. This, according to the training results, will significantly reduce the number of

casualties. *Lethality and dispersion* as well as the increased *volume and precision of fires* will provide the air assault raiders with the ability to locate and kill threats faster than the enemy can acquire and engage smaller, dispersed air assault units. *Integrative technologies* will provide better accountability of raiding force personnel and reduce the possibility of fratricide. Additionally, better communications between all personnel will assist in overcoming the friction that cannot be eliminated. This in turn will assist in reducing the confusion that contributes the most to staying in the objective area too long. The improved ability to *mass the effects* of supporting fires will be a great help in stopping and destroying reaction forces which are often the raiders' bane. Improved *invisibility* will make the raiders less susceptible to accurate counterfire while improved *detectability* of the enemy will provide the raiding force with early warning of emerging threats. This will allow the combined-arms raiding team to prioritize and eliminate the most dangerous threats while filtering out non-lethal threats, thereby minimizing the enemy's ability to hurt the force.

Emerging *integrative technologies* can provide better real-time, accurate intelligence about the enemy situation. The ability to find the enemy by "seeing" the battlefield will enable commanders and their staffs to build realistic mental models for the planning and execution of air assault raids. Detecting the enemy has always been a problem, and emerging technologies probably will not eliminate uncertainty. Even so, improved *detectability* of the enemy and his intentions will greatly reduce the problem of poor intelligence. Employing better intelligence can only enhance the ability of air assault raiders to rapidly and accurately move to and from a well-defined and understood objective.

The increasing *lethality*, *volume*, and *precision of fires* should reduce, if not eliminate, ineffective fire support. Of course, ineffective fire as a result of poor planning is a problem that only training can remedy. The same can be said for air assault raid planning in general. No amount of technology will replace the need for the trained expertise of the air assault

professional. *Integrative technologies* can assist air assault units in planning air assault raids. Automated planning techniques and virtual-reality rehearsal aids, such as terrain and objective models, will help ensure that the combined-arms air assault team has the best possible understanding of the mission.

A common perception in the U.S. Army about the twenty-first century Army, and FORCE XXI in particular, is that technology is the panacea for solving command, control, communications, computers, and information problems. Whether this is true or not, improving *integrative technologies* can not make command, control, communications, computers, and information problems any worse, unless the Army misapplies and misuses them. In terms of the air assault raid, the ability of the air assault task force commander to "see" the operation throughout its phases will greatly enhance command and control.

Overall, the dawn of the new millennium shines favorably on enhancing surprise and reducing objective area times which lead to reduced casualty rates. Emerging technologies offer solutions for solving the most severe shortcomings of the air assault raid. Table 6-3 summarizes the weaknesses of the air assault raid and possible solutions offered by emerging technology domains.

Comparison of Doctrine, Training, and Weaknesses and the Anticipated Nature of Warfare

Chapter Four, "Twenty-First Century Warfare," described the emerging battlefield environment as one with five key elements: battle command, extended battle space, simultaneity, spectrum supremacy, and the rules of war. This section will compare the elements of doctrine and training previously discussed to these five elements to determine how well the air assault raid meets the expected nature of the battlefield in the new millennium. To facilitate the analysis, Table 6-4 combines the elements of doctrine and training weaknesses.

Table 6-3: Possible Technological Domain Solutions to Air Assault Raid Weaknesses.

Air Assault Raid Weaknesses	Possible Technological Domain Solutions
Loss of Surprise	• *Lethality and Dispersion* • *Volume and Precision of Fire* • *Integrative Technologies* • *Mass and Effects* • *Invisibility and Detectability*
Poor Intel/IPB	• *Integrative Technologies* • *Invisibility and Detectability*
Ineffective Fire Support	• *Lethality and Dispersion* • *Volume and Precision of Fire*
Poor AASLT Planning	• *Integrative Technologies*
Loss of C^2	• *Integrative Technologies*
Heavy Casualties	• *Lethality and Dispersion* • *Volume and Precision of Fire* • *Integrative Technologies* • *Mass and Effects* • *Invisibility and Detectability*

In terms of battle command, the *organization* of the brigade air assault task force provides the commander with a flexible and agile force, well-equipped to conduct all phases of the air assault raid. Additionally, air assault raiding forces develop an inherent sense for understanding the commander's intent born from the need for independent action deep in hostile country. The air assault brigade headquarters is well-versed in air assault operations and commanders can expect it to quickly *plan* an air assault raid to doctrinal standards.

Table 6-4: Elements of Air Assault Doctrine and Training Weaknesses Combined

Elements of Doctrine		Training Weaknesses		Doctrine and Training Elements
Organization			=	Organization
Planning	+	Poor Air Assault Planning	=	Air Assault Planning
Insertion Extraction			=	Insertion and Extraction
Actions on the Objective	+ + +	Poor Intel/IPB Loss of Surprise Heavy Casualties	= = =	Technologically Enhanced Actions on the Objective
		Few AASLT Raids Conducted + AASLT Raids Violate Doctrine	=	Air Assault Raid Training

The air assault raid supports the extended battle space concept very well. The air assault brigade task force expects to conduct raids up to 150 kilometers across the forward edge of the battle area. It is *organized* to do so, and can *plan* and resource such operations. The ability of the air assault force to penetrate enemy defenses, safely infiltrate along an air corridor, *insert* the raiding force, *extract* it, and exfiltrate to its home LZ assists the commander in extending his battle space for humans as well as for missiles and aircraft. *Actions on* a remote *objective* enable the tactical commander to impact enemy command, control, communications, computers, and information and logistics operations. Extensive *training* and rehearsals of air assault forces provide the commander with the ability to execute such deep operations on short notice.

An ideal use of the air assault raid is as part of the simultaneous conduct of air interdictions, ground offensives, and deep attacks. The *organization* of the air assault brigade task force provides the personnel and equipment to *plan* and conduct deep air assault raids without siphoning additional resources from other battle space efforts. By *inserting* raiding forces deep in an enemy's rear while simultaneously striking elsewhere, the commander can disrupt the enemy's decision cycles and can impart confusion. In battles against narcoterrorists, insurgents, or trans-national first wave armies, simultaneous air assault raids on widely scattered *objectives* helps the commander portray a type of omnipresence while minimizing the exposure of friendly personnel in unsecured terrain.

A battlefield in which U.S. forces have spectrum supremacy is ideal for the air assault raid. Control of the electromagnetic spectrum enhances the invisibility of the raiding force so important in minimizing casualties on the *objective*. Additionally, better intelligence is available about prospective targets which results in better air assault *planning*. Planners can optimize the effects of the air assault raid, striking only at the decisive points that lead to the tactical, and ultimately operational, center of gravity.

The changing nature of conflict appears to be changing the rules of war. The air assault raid is a versatile operation, having application across the full spectrum of conflict. The beauty of the air assault raid, enhanced by technological solutions to its problems, is that it can impact the enemy on the land where he lives while not occupying that land.[74] No matter the threat, the air assault raid's *organization*, its ability to *insert and extract* personnel over any type of terrain, and its extensive range enable the air assault force to conduct actions on virtually any *objective*.[75] In a practical sense, whatever type of war the enemy wants to fight, the air assault raid is flexible enough to play on the same field.

The expected nature of warfare in the twenty-first century appears to be an environment with many prospective targets suitable for the air assault raid. Table 6-5 is a summary of how

well the doctrine and training elements of the air assault raid support the elements of twenty-first century warfare.

Table 6-5: Air Assault Training and Doctrine Support of 21st Century Warfare

Elements of Training and Doctrine	Elements of 21st Century Warfare Supported
Organization	• *Battle Command* • *Extended Battle Space* • *Simultaneity* • *Rules of War*
Air Assault Planning	• *Battle Command* • *Extended Battle Space* • *Simultaneity* • *Spectrum Supremacy*
Insertion and Extraction	• *Extended Battle Space* • *Simultaneity* • *Rules of War*
Technologically Enhanced Actions on the Objective	• *Extended Battle Space* • *Simultaneity* • *Spectrum Supremacy* • *Rules of War*
Air Assault Raid Training	• *Extended Battle Space* • *Rules of War*

VII. Conclusions and Recommendations

The air assault raid, and in particular the brigade-directed air assault raid, is a little used and understood operation in the U.S. Army today. NTC and JRTC training results indicate that very few units have conducted air assault raids in the past seven years. Most significantly, the 101st Airborne Division (Air Assault) has not conducted an air assault raid at the training centers since 1989, prior to its employment in DESERT STORM. If any unit should be conducting this operation, it is the air assault division. FM 71-100-3 indicates that the Division is fixated on southwest Asia by emphasizing attack helicopter operations against massed armor formations. Perhaps this is warranted by the National Command Authority, but this analysis has indicated that

even specialized air assault forces fail to resource, plan, and execute the air assault raid adequately. If the air assault division ignores training and developing doctrine for this vital mission, the air assault raid may disappear as an option for tactical and even operational commanders.[76] Undoubtedly, subordinate units of the 101st Airborne Division (Air Assault) occasionally conduct air assault raids,[77] but no air assault brigade task force air assault raids have been conducted at the training centers.

In support of the air assault raid, the written doctrine of the late 1980's appears to support the objectives of FORCE XXI quite well. In terms of this study, the paucity of air assault raid data indicates that the doctrine in theory is very good. Unfortunately, the mission is so little used that most units that have attempted to execute it have encountered numerous problems. From the after action reports, it is often difficult to determine whether the problems occurred as a result of friction, lack of training, lack of understanding the doctrine, or poor doctrine.

The down side of the study was the training results themselves. The clear indication taken at face value is that the air assault raid is an expensive operation with minimal returns. One could say this about all of Operation DESERT STORM if the United States had not dedicated the 1980's to resourcing, training, and developing the best force in the world. Only the 75th Ranger Regiment task force conducted more than one air assault raid during its rotation. Not surprisingly, the unit became more proficient with each successive mission. Until air assault units dedicate themselves to resourcing, training, and developing the air assault raid, the training results will indicate that the air assault raid is a useless sideshow.

One can cull the weaknesses of the air assault raid from the trends indicated in the training results. Heavy casualties caused most often by a loss of surprise and poor intelligence about the objective area are serious problems for the air assault raid. Fortunately, an analysis of on-the-horizon technology initiatives indicates that most of the air assault raid's weaknesses can be countered and reduced with emerging technologies. Considering FORCE XXI expectations

for technology assistance, surprise can be enhanced, real-time and accurate intelligence can be acquired, and casualties can be reduced by the increasing invisibility of friendly forces.

As one looks towards the expected nature of conflict and the battlefield environment in the next few decades, the air assault raid matches well with expectations. By improving training, acquiring weakness-correcting technologies, and validating and improving doctrine, the air assault raid can be a most effective precision strike operation against a wide range of targets – division command posts to drug factories.

In light of the above conclusions, the U.S. Army should consider doing the following: First, seek and develop technologies that can correct the weaknesses of the air assault raid. Second, task a unit, preferably the 101st Airborne Division (Air Assault), with developing the air assault raid as a tactical operation. Third, conduct air assault brigade task force training rotations at the NTC and JRTC that emphasize the air assault raid including as a minimum three air assault raid missions.

Technological solutions to the air assault raid's weaknesses are possible, but only if there is a true need for development. Until the Army sets its mind to developing this mission and produces specific requirements for technology, the air assault raid will continue to suffer from an inability to gain and maintain surprise, a lack of real-time, accurate intelligence, and, consequently, prohibitively heavy casualties.

An Army division, preferably the 101st Airborne Division (Air Assault), should dedicate at least one brigade task force to developing air assault raid doctrine and specializing in raid training. The brigade should consider making the "brigade-directed air assault raid" one of its mission essential tasks, complementing other air assault tasks. Additionally, the brigade should deploy to the NTC as an air assault brigade task force, ensuring that at least three air assault raids are performed during the rotation. Also, the brigade could deploy to the JRTC minus two of its maneuver battalions as a less expensive alternative that explores the air assault raid's use in low

intensity situations. Only in this manner can appropriate data be collected to separate training deficiencies from doctrinal deficiencies.

In conclusion, the air assault brigade-directed air assault raid can play a major role in twenty-first century warfare. The current doctrine meets the objectives of FORCE XXI; technology can mitigate the air assault raid's problems; the mission works well in the expected environment of battle; and with additional emphasis on training the air assault raid can produce significant tactical results.

VIII. Summary

This purpose of this paper was to examine air assault raid doctrine and training in light of twenty-first century Army objectives, emerging technologies, and the anticipated nature of future conflict to determine whether the brigade-directed air assault raid has a role in the new millennium. The study shows that there is a role for the air assault brigade task force-directed air assault raid, but only if the U.S. Army determines to support it.

The methodology used to make this assessment involved reviewing U.S. Army doctrinal documents, U.S. Army philosophical works concerning the twenty-first century Army, and combat training center after action reports contained in the Center for Army Lessons Learned electronic database. The monograph summarized and compared air assault raid doctrine and training results from the National Training Center and the Joint Readiness Training Center to the objectives of FORCE XXI. From the training assessment a number of trends developed indicating serious deficiencies with the air assault raid, specifically: heavy casualties, loss of surprise, and poor intelligence about the objective area. The paper then compared these weaknesses to emerging technological domains in an attempt to determine if emerging technology could negate or mollify the weaknesses. Subsequently, the study compared the

doctrine and technologically corrected weaknesses to the anticipated nature of the twenty-first century battlefield.

The analysis demonstrated that current doctrine meets FORCE XXI objectives, air assault raid weaknesses can be mitigated by technological applications, and the doctrine and corrected weaknesses can meet the requirements of the twenty-first century battlefield.

As a result of this study, it is apparent that the air assault raid is a poorly understood and little used operation. Non-air assault forces perform the air assault raid inadequately. The lack of emphasis on the air assault raid in FM 71-100-3 indicates that the air assault division is ignoring this special mission which only this division is resourced and trained to accomplish currently. Unless the air assault division begins to emphasize air assault raid training, develop doctrine, produce technological requirements, and practice the mission, the air assault raid could die as a tactical operation. This is not to say that soldiers will not be put in harm's way deep in the enemy's rear by helicopters, but in so doing, the Army should expect the same kind of results in combat from untrained combined-arms teams as were garnered by untrained combined-arms teams in training from 1989 to the present.

NOTES

[1] *Operations FM 100-5* (Washington, D. C.: Headquarters, Department of the Army, 14 June 1993), 2-6 – 2-9.

[2] *Operational Terms and Graphics (Final Draft) FM 101-5-1* (Washington, D. C.: Headquarters, Department of the Army, 15 July 1995), 1-6.

[3] *Air Assault Operations FM 90-4* (Washington, D. C.: Headquarters, Department of the Army, 1 March 1987), 1-1.

[4] Ibid., iii.

[5] *The Air Assault Division and Brigade Operations Manual* (Fort Campbell, KY: Headquarters, 101st Airborne Division (Air Assault), 1 August 1988), 6-2.

[6] *FM 101-5-1,* 1-223.

[7] See for instance *The Air Dimension and the Heavy Division: The Utility of an Organic Light Infantry Air Assault Battalion in the Heavy Division* by MAJ James E. Sikes; *The Corps Air Assault Brigade* by MAJ George R. Van Belanger; and *Air Assault Forces in the Counterpenetration Role* by MAJ James A. Helis.

[8] See for instance *Raids at the Operational Level – To What End?* By MAJ Harry E. Mornston; *The Role of the Air Mechanized Raid in Operational Maneuver* by MAJ Jerry R. Bolzak; *The Air Attack Division* by MAJ Edward J. Sinclair; and *An American OMG?* By MAJ Robert H. Drumm, Jr.

[9] *Air Assault Division Operations FM 71-100-3* (Washington, D. C.: Headquarters, Department of the Army, June 1996), xiii.

[10] MG John E. Miller and MAJ Daniel P. Bolger, "Going Deep: Division Air Assault Operations," *Military Review* Vol. 73, No. 4 (April 1993): 2-12.

[11] *FM 71-100-3,* xii.

[12] Ibid., 1-4.

[13] *The Air Assault Division and Brigade Operations Manual,* 7-36.

[14] *FM 71-100-3,* 8-10. *Emphasis* added.

[15] *FM 90-4,* 4-7.

[16] Ibid.

[17] *The Air Assault Battalion Task Force: "How To Fight"* (Fort Campbell, KY: Headquarters, 101st Airborne Division (Air Assault), 1984), 6-2.

[18] CPT Barrett F. Lowe, "Air Assault Planning," *Infantry* Vol. 80, No. 2 (March-April 1990): 31.

[19] *FM 90-4,* 4-7.

[20] Mission, Enemy, Troops, Terrain, and Time available.

[21] *FM 90-4,* 4-6.

[22] *"How to Fight,"* 6-4.

[23] *FM 90-4,* 4-7.

[24] *"How to Fight,"* 6-5.

[25] *Force XXI...America's Army of the 21st Century* (Fort Monroe, VA: Office of the Chief of Staff. Army, 15 January 1995), 3.

[26] Ibid.

[27] GEN John M. Shalikashvili, "Joint Vision 2010: America's Military – Preparing for Tomorrow." *Joint Forces Quarterly* (Summer 96): 39-41.

[28] *Force XXI . . .,* 22.

[29] Ibid.

[30] *Force of Decision ... Capabilities for the 21st Century* (Washington, D. C.: Department of the Army, 15 April 1996), 15.

[31] Ibid.

[32] *Force XXI...,* 8-9.

[33] Shalikashvili, 39-41. Information superiority is defined as "collecting, processing, and disseminating an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same."

[34] *Army Focus 94 FORCE XXI: America's Army in the 21st Century* (Fort Monroe, VA: Office of the Chief of Staff, Army, September 1994), 13-14.

[35] Toffler, Alvin and Heidi, *War and Anti-War* (New York: Warner Books, 1993), 19-21. As presented by the Tofflers, the history of mankind can be divided into three major "waves". The first wave was the development of agrarian society which dominated world affairs into the nineteenth-century. The second wave dawned with the Industrial Revolution and is in its last gasps in the western world. The third wave is the emerging information age. All three waves exist to some extent in the world today. Cambodia is clearly a first-wave, or agrarian, society; while Iraq is a second-wave, or industrial, society; and the United States is an emerging third-wave, or information, society.

[36] *Army Focus 94,* 11.

[37] James J. Schneider, *Vulcan's Anvil: The American Civil War and the Emergence of Operational Art* (Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 16 June 1991), 6-11.

[38] *Army Focus 94,* 12-13.

[39] Robert D. Kaplan, *The Ends of the Earth* (New York: Random House, 1996), 272.

[40] *FORCE XXI Operations TRADOC Pamphlet 525-5,* (Fort Monroe, VA: Headquarters, United States Army Training and Doctrine Command, 1 August 1994), 2-1.

[41] *Force of Decision ...,* 16.

[42] *TRADOC PAM 525-5,* 2-3 – 2-5.

[43] *Joint Vision 2010* (Washington, D. C.: Office of the Joint Chiefs of Staff, 1996), 8.

[44] *TRADOC PAM 525-5,* 2-8.

[45] *FM 101-5-1,* 1-30.

[46] *TRADOC PAM 525-5,* 2-8.

[47] *FM 101-5-1,* 1-31.

[48] *TRADOC PAM 525-5,* 2-9.

[49] Ibid., 2-9 – 2-10.

[50] Ibid., 2-10.

[51] Ibid.

[52] The following table summarizes the rotations studied and the included missions:

Center	Rotation	Unit	Mission	Comment
NTC	89-08	101st Air Assault Div	#3: Air Assault Raid	
	90-07	101st Air Assault Div	#7: Air Assault Raid	Air Assault Attack
JRTC	89-5	75th Ranger Regt	Phases I, II, III: Air Assault Raid	
	89-9	101st Air Assault Div	Air Assault Raid	No Air Assault Raid
	90-1	7th Infantry Div	Phase II: Air Assault Raid	Air Assault Attack
	90-5	82d Airborne Div	Phase II: Air Assault Raid	
	90-8	82d Airborne Div	Air Assault Raid	Raid Canceled
	91-1	7th Infantry Div	Air Assault Raid	
	91-5	25th Infantry Div	Air Assault Raid	Raid Canceled
	92-7	25th Infantry Div	Air Assault Raid	No Air Assault Raid
	93-8	82d Airborne Div	Air Assault Raid	No Air Assault Raid
	94-3	75th Ranger Regt	Air Assault Raid	
CMTC	92-10	Berlin Brigade	Air Assault Raid	Insufficient Data
	94-1	Vincenza	Air Assault Raid	Insufficient Data
BCTP	95-09	29th Infantry Div	Air Assault Raid	Insufficient Data

[53] See NTC 90-07 and JRTC 90-1 in the table above.

[54] The data presented in the following paragraph is found in the National Training Center Operations Group file for FY 89 as part of the CALL database, *NTC 89-08* (Fort Leavenworth, KS: Center for Army Lessons Learned Database, 1996), 6, 7, 15, 16, 24, 30, 31, 39, 40, 48, 49, 54, 55, 68, 93, and 94.

[55] Ibid., 15.

[56] The data presented in the following paragraph is found in the Joint Readiness Training Center Operations Group file for FY 89 as part of the CALL database, *JRTC 89-5* (Fort Leavenworth, KS: Center for Army Lessons Learned Database, 1996), 3 - 9.

[57] The data presented in the following paragraph is found in the Joint Readiness Training Center Operations Group file for FY 94 as part of the CALL database, *JRTC 94-3* (Fort Leavenworth, KS: Center for Army Lessons Learned Database, 1996), 148-150.

[58] The data presented in the following paragraph is found in the Joint Readiness Training Center Operations Group file for FY 91 as part of the CALL database, *JRTC 91-1* (Fort Leavenworth, KS: Center for Army Lessons Learned Database, 1996), 125, 126, and 183-187.

[59] The data presented in the following paragraph is found in the Joint Readiness Training Center Operations Group file for FY 90 as part of the CALL database, *JRTC 90-5* (Fort Leavenworth, KS: Center for Army Lessons Learned Database, 1996), 252, 271-273.

[60] Ibid., 271.

[61] The data presented in the following paragraph is found in the Joint Readiness Training Center Operations Group file for FY 90 as part of the CALL database, *JRTC 90-1* (Fort Leavenworth, KS: Center for Army Lessons Learned Database, 1996), 14-18, 96.

[62] Ibid., 14.

[63] The data presented in the following paragraph is found in the National Training Center Operations Group file for FY 90 as part of the CALL database, *NTC 90-07* (Fort Leavenworth, KS: Center for Army Lessons Learned Database, 1996), 27, 28,36, 37, 44, 45, 52, 72, 73, 79, 80, 91, 92, 109, 110, 133, and 134.

[64] Memorandum from Secretary of Defense Robert S. McNamara to Army Secretary Elvis J. Stahr, Jr., 19 April 1962: "I do not believe that the Army has fully explored the opportunities offered by aeronautical technology for making a revolutionary break with traditional surface mobility means. Air vehicles operating close to, but above, the ground appear to me to offer the possibility of a quantum increase in effectiveness. I think that every possibility in this area should be explored." Shelby L. Stanton, *Anatomy of a Division* (Novato, CA: Presidio Press, 1987), 15.

[65] *The Air Assault Division and Brigade Operations Manual* (Fort Campbell, KY: Headquarters, 101st Airborne Division (Air Assault), 1 August 1988), 6-1 and *Air Assault Division Operations FM 71-100-3* (Washington, D. C.: Headquarters, Department of the Army, June 1996), 1-4.

[66] *FM 71-100-3,* 1-4.

[67] Ibid., 8-13.

[68] "Don't forget nothing" is the first standing order of Roger's Rangers, an organization that conducted deep raids against the French and Indians in the French and Indian War circa 1760. *Ranger Handbook SH 21-76* (Fort Benning, GA: Ranger Training Brigade, July 1992), A-3.

[69] Enrico Fermi (1901-1954) is considered one of the twentieth-century's greatest physicists. He was famous for making mental calculations based on orders of magnitude using common sense approximations. For instance, he once calculated the number of piano tuners in New York city without any data. By assuming the number of people in the city, how many owned pianos, how many piano tunings per year, etc., he determined that there were about 500 piano tuners in the city. This form of calculation gets one "in the ballpark." "Fermi Questions and Order of Magnitude", *Physics 201 Course Notes, Lesson One* (West Point, NY: Department of Physics, Fall 1992), 1-3.

[70] Average based on the following:

Rotation	Time in the Objective Area	Comments
NTC 89-08	~ 1 hour	LZ changed, H+30 min PZ canceled, Force E&E
JRTC 89-05	8 hours	Missed LZ
JRTC 89-05	~ 3 hours	Unplanned LZ
JRTC 89-05	8 hours	2 wrong LZs, 1 right LZ
JRTC 91-1	5+ hours	Wrong LZ, 2d turn, different LZ
JRTC 90-5	2+ hours	Right LZ, LZ on OBJ
Average	4.5 hours	

[71] See table above.

[72] *Operations FM 100-5*, 2-5.

[73] *Ranger Unit Operations FM 7-85* (Washington, D. C.: Headquarters, Department of the Army, 9 June 1987), 5-4.

[74] Sir Julian Corbett, a naval historian and war theorist of the early twentieth-century, stated that armies will always be superior to navies, or, later, even air forces. He attributed this to the fact that armies operate in the medium where people live. Since humans live on solid ground, not in the air or sea, occupying terrain is key to defeating an enemy. The air assault raid seeks to destroy key enemy installations or positions without occupying terrain. Only time will tell, assuming the air assault raid becomes a decisively used tactical operation, whether the enemy can be defeated without occupying his terrain. Corbett, Sir Julian S. *Some Principles of Maritime Strategy* (Annapolis, MD: Naval Institute Press, 1988), 16.

[75] In certain threat environments, the range of the raiding force can be extended by providing forward arming and refueling points (FARPs) for the assault aircraft. As the threat environment increases, the propensity to do this becomes less.

[76] The 101st Airborne Division (Air Assault) has a mandate to develop air assault doctrine. "In quest of its rendezvous with destiny, the division has been chosen to develop and exploit the doctrine of air assault --Tomorrow's Division in Today's Army." "A History of the 101st Airborne Division (Air Assault)," Fort Campbell Homepage [on-line] (Ft Campbell, KY: Headquarters, 101st Airborne Division (Air Assault), 01 November 1996, accessed 4 December 1996): available from http://www.campbell.army.mil/101HIST.htm.

[77] See for instance LTC Robert L. Caslen, Jr., "The Company Air Assault Raid," *Infantry* Vol. 85, No. 6 (November-December 1995): 16-19.

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