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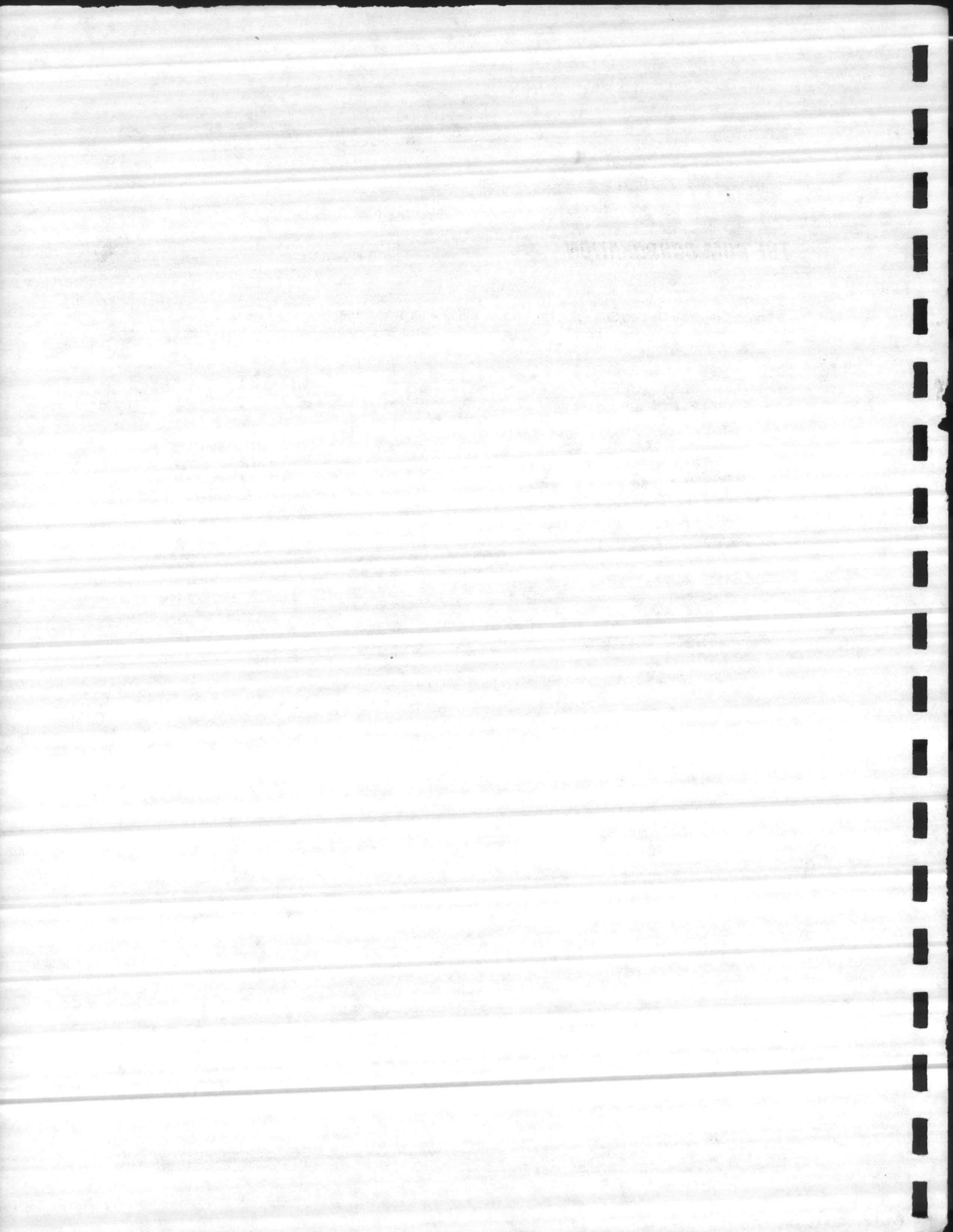
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FINAL REPORT
FOR MARINE CORPS FMF LAND AND TRAINING
AREA REQUIREMENTS (LATAR) (FY 1990-2004) STUDY
(PHASE I, PROBLEM DEFINITION)

September 30, 1987

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FOREWORD

The LATAR Study (Phase I - Problem Definition) Final Report was prepared by The BDM Corporation for the Commanding General, Marine Corps Development and Education Command (MCDEC), Code D081, Quantico, Virginia 22134-5080, in response to the provision of paragraphs 6.1.4 and 6.2.4 of the Statement of Work (SOW) for Delivery Order 0010, as modified by Amendment 02, under the Indefinite Quantities Contract (IQC) M00027-84-D-0031.

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CHAPTER I
INTRODUCTION

A. PURPOSE

Phase I, Problem Definition (Subtasks 1.1, 1.2, and 1.3), of the Marine Corps Fleet Marine Force (FMF) Land and Training Area Requirements (LATAR) Study provides data on range availability, live fire range requirements, maneuver area availability, maneuver area requirements, and existing Marine Corps standards for ranges and maneuver areas. Also provided as part of Subtask 1.2, is a detailed list of proposed live fire ranges and maneuver area standards developed from an analysis of the collected data. Subtask 1.3 presents the architecture for the LATAR Data Base.

B. BACKGROUND

The cost of maintaining the Marine Corps' training infrastructure continues to rise. The introduction of new weapons systems demands more effective use of existing land and training facilities. It also demands that the Marine Corps have a comprehensive plan to ensure a training infrastructure that is adequate for present and future requirements. The Marine Corps' current ability to devote sufficient resources to develop land use standards to support requirements is extremely constrained. A thorough understanding of current and future land use needs, coupled with well-defined standards, will result in a more intelligent use of Marine Corps assets. Moreover, such an understanding will assist in justifying the land and facilities needed to support the training of operationally ready Marine Corps forces.

C. SCOPE

This report presents the results of the data collection effort, an analysis of the live fire range and maneuver area data received, and a determination of live fire range training standards (LFRTS) and unit training and maneuver area standards (UTMAS). Chapter II discusses LATAR survey findings as they relate to live fire and maneuver areas currently available, specific user requirements, interrelationships between facilities, and U.S. Marine Corps standards, or lack of standards. Chapter III presents the proposed live fire range standards, and Chapter IV outlines the proposed maneuver area standards. Chapter V presents the architecture for the LATAR Data Base. Appendix A provides a bibliography of sources used for the study and a list of site visits and interviews conducted. Appendix B provides a complete list of U.S. Marine Corps available live fire range resources, and Appendix C is a composite list of Marine Corps available maneuver areas. Appendix D is a consolidated list of both formal and informal inter-Service and inter-agency agreements effective at FMF installations or with Selected Marine Corps Reserve (SMCR) units. Appendix E lists a cross-reference of all LATAR Data Base requirements to the architecture described in the Statement of Work. Appendix F lists the names of the files within each module, provides a brief description of the files associated with each of the submodules, and provides a brief description of the records contained in the files. Appendix G contains a description of the data elements within each of the data files.

D. DATA COLLECTION CONCEPT AND METHODOLOGY

1. General

In order to clearly define the scope of this study, a major data collection effort was necessary. This effort was accomplished through a comprehensive literature search and site

visits and interviews with range and maneuver area providers and users. This procedure followed the parallel path methodology which includes both top-down and bottom-up analysis approaches: top-down reflects Marine Corps policy and understanding of the issues involved, and bottom-up reflects the perceptions of and realities in the field.

2. Literature Search and Data Collection Instruments

The initial data collection effort required the Study Team to conduct a comprehensive review of government documents to define the current status of Marine Corps live fire range resources, training area facilities, perceived requirements, and problem areas. The results of this literature search were used to develop the data collection instruments, approved at a Study Advisory Committee Meeting on February 5, 1987. In addition to use of the data collection instruments, interviews were conducted with key personnel involved in defining requirements and managing land resources.

3. Site Visits

The Study Team conducted comprehensive site visits at major East Coast, West Coast, and Hawaii Marine Corps installations to obtain user and provider information on current land use, live fire range definitions and requirements, established training standards, and maneuver area requirements. During these visits, the Study Team met with key personnel (Training, Operations, Readiness, and Training Facility Officers) of bases, stations, and tenant commands. A visit was also conducted at 4th Marine Division (MarDiv) and Headquarters, 4th Marine Aircraft Wing (MAW) to ascertain their requirements.

4. Data Entry and Requirements Synthesis

Data received from data collection instruments, literature search, and site visits was entered into an information data base. It was then analyzed, and where necessary, synthesized to identify, define, and categorize live fire range and ground unit maneuver area requirements, existing

Marine Corps standards for live fire ranges and maneuver areas, and the absence of Marine Corps standards, where applicable.

5. Development of LFRTS and UTMAS

Subtask 1.2 required the development of LFRTS and UTMAS for Marine Corps weapons and units projected for Fiscal Year (FY) 1990-2004. Data base information pertaining to user requirements and existing live fire range and maneuver area standards was consolidated and categorized for a comprehensive analysis. This analysis led to the development of functional and meaningful standards based on training requirements as stipulated in Marine Corps Order 1510.35A relative to weapon firing, the Marine Corps Combat Readiness Evaluation System (MCCRES), or contingency requirements.

6. Development of LATAR Data Base

The information on each data collection instrument was extracted and saved on floppy disks in a format to allow for convenient storage, retrieval, and update of each individual data sheet. The information on the floppy disks was then read into a Data Base format pertaining to each category of data sheets (i.e., UTMAS-U, UTMAS-P, LFRTS-U, LFRTS-P). Sorting and comparisons could then be performed on the Data Base for analysis of the information.

CHAPTER II
LATAR SURVEY FINDINGS

A. GENERAL

Phase I, Problem Definition, of the Land and Training Area Requirements (LATAR) Study survey findings are based on literature search, analysis of data collection instruments, site visits, and interviews with key personnel of major staffs, facilities, and Fleet Marine Force (FMF) units. The scope of the study includes Continental United States (CONUS) and Hawaii-based FMF air and ground units. The study does not address formal Marine Corps schools, entry-level training requirements, or Marine Corps air-to-air mission training requirements.

The information in this chapter is the culmination of the Task I-1 data collection effort to define the problem by identifying live fire range facilities and maneuver areas currently available and the requirements for their use within the FMF. Coupled with this is an analytical evaluation to determine the lack of standards for both the live fire ranges and maneuver areas as they currently exist and a summary of the other Service methodologies and techniques used to establish land requirements to support ranges and maneuver areas.

The principal vehicle utilized to obtain data was the LATAR data collection forms completed by both users and providers of range facilities and maneuver areas. As was anticipated, FMF units (users) reported or identified range and maneuver area requirements that varied considerably. They interpreted and completed the LATAR forms in a diversified manner that often required an extensive review to extrapolate meaningful data. The installations (providers) were more consistent and uniform in their input.

U.S. Army range type definitions were provided to LATAR survey respondents to offer a broader selection of ranges. Although some of the range types are not currently U.S. Marine

Corps assets, they were included to support a requirement or desire for their use.

Interviews were conducted to obtain an overview of current and anticipated base status, requirements, restrictions, limitations, and inter-Service agreements.

B. SURVEY METHODOLOGY

The parallel path methodology employed in this study includes both top-down and bottom-up analysis approaches: top-down reflects Marine Corps policy and understanding of the issues involved, and bottom-up reflects the perceptions and realities in the field. The data collection instruments were furnished to a command-designated point of contact (POC), who issued the instruments and instructions for their completion to command-identified respondents. The data collection instruments were collected by the command POC and were returned to the Study Team members during scheduled site visits, when Study Team members reviewed the data to identify areas requiring clarification. Additionally, the Study Team interviewed key personnel at each location to obtain specific information on land and air space use, as well as current and projected range and maneuver area requirements. Respondent data was entered on an IBM PC microcomputer for use in a data base structured for automated information retrieval and comparison operations.

In order to ensure consistency in and compatibility of data, certain assumptions are made and terms defined. Requirements are based on the assumption that all resources required for proper training (such as petroleum, oil, and lubricants (POL), ammunition, manpower, and range time) are available. The term "Range Day" is used as the unit of measure and is defined as a full eight-hour day or portions thereof.

The LATAR survey findings are presented principally in tabular form. The majority of the information in the tables in

self-explanatory, but certain column headings require additional clarification, such as:

- (1) Range Days Available: The data in this column is based on the number of training days in a training year, less holidays and weekends. This equates to 242 days. To obtain total range days available for a range, the range non-available days, due to weather and range maintenance, was subtracted from the baseline 242 days. If there were more than one of a particular range, the total number of ranges was multiplied by the number of range days available.
- (2) Range Days Required: This is the sum of the days required by the number of units requesting a particular type range.
- (3) Prescribed Standard Size: This is a determination of required maneuver area sizes to accommodate a particular tactical exercise. These figures are based on U.S. Army data or on a subjective evaluation by the Study Team of training area requirements.

C. LATAR FINDINGS FOR ACTIVE DUTY FMF INSTALLATIONS

1. MCB, Camp Lejeune

Marine Corps Base (MCB), Camp Lejeune is the principal FMF installation on the East Coast for ground maneuver elements. FMF major tenant commands occupying the base are 2d Marine Division (MarDiv), 2d Force Service Support Group (FSSG), II Marine Amphibious Force (MAF) Headquarters, 6th Marine Amphibious Brigade (MAB), 22d Marine Amphibious Unit (MAU), and 24th MAU. These tenant units form two-thirds of FMFLANT. (The 2d Marine Aircraft Wing (MAW), located at three other East Coast bases, is the remaining one-third of FMFLANT.) The principal units utilizing range and maneuver areas at Camp Lejeune are the above listed elements together with the following:

M
C
B
C
L
R
C

- (1) School of Infantry,
- (2) Rifle Range Detachment,
- (3) Selected Marine Corps Reserve units,
- (4) MCAS, New River,
- (5) MCAS, Cherry Point.

The Camp Lejeune complex is located on the coastal plain region of eastern North Carolina. The irregular shaped base extends from the city of Jacksonville approximately 15 miles east to border the Atlantic Ocean along a 14-mile frontage paralleling the Intracoastal Waterway (ICW). Its elevation ranges from sea level to 72 feet, however, most of the land is from 20 to 40 feet above sea level.

a. Live Fire Ranges

1) Availability

There are some 55 direct fire ranges at Camp Lejeune, with an additional 34 gun positions for mortar and artillery firing. There are 3 designated impact areas: one is basically for small arms or infantry direct fire weapons, and the other two support indirect fire weapons, including artillery, mortar, tank (direct fire), and aerial bombing and strafing. The specific ranges available and the weapon types or unit sizes they are capable of supporting are listed in Table II-1.

2) Requirements

The projected annual FMF live fire user requirements for Camp Lejeune, based on current weapons systems, are listed in Table II-2.

3) Considerations

FMF units participating in the LATAR Study indicated a need or desire for two types of ranges not currently available at Camp Lejeune. They were the Multi-Purpose Range Complex-Heavy (MPRC-H) and the Tank Platoon Battle Run (Table IX). The MPRC-H is basically designed for tank, mechanized infantry, and helicopter gunnery exercises requiring

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TABLE II-1. CAMP LEJEUNE LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Pistol Qualification	2	100	9-mm, .38-cal, .45-cal, shotgun	stationary, turning	484	
Known Distance	3	150	M16A2	standard, stationary	726	
25-Meter (Zero)	2	106	M16A2	zero, stationary	484	
Field Firing (Infantry)	5	109	all infantry weapons	stationary, none	908	TOW can only be fired on Ranges G-3 and G-5.
Hand Grenade	2	12 pits	M67 fragmentation grenade	none	469	
Grenade Launcher	3	31	MK19, M203, 40-mm	stationary, moving	696	
Sniper	1	4	M40A1	standard, stationary	294	Has 1,000-yd firing line.
Field Artillery Scaled	1	12	M31 pneumatic device	none	227	Combined with night field fire for M16A2.
Tank Subcaliber	1	15	tank subcaliber devices, .22-cal	pop-up, stationary	237	No moving target capability.
Antiarmor Tracking Live Fire	2	NA	TOW, Dragon	none	434	No moving targets or tracking run.
Tank Gunnery Table VI	2	30	up to 105-mm tank, 25-mm, TOW	pop-up, stationary	434	No moving target capability.
Tank Gunnery Table VII or VIII	1	1 tank run	up to 105-mm tank, 25-mm, TOW	pop-up, stationary	217	No moving target capability.
Demolition	4	NA	explosives (50-lb max)	NA	928	
Offensive	6	108	LAW, up to M60, 81-mm	stationary, pop-up	808	Assault of Fortified Position Range B-14, blanks only.
Moving Target	1	7	M16A2	moving	232	

TABLE II-1. CAMP LEJEUNE LIVE FIRE RANGES AVAILABLE (CONTINUED)

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Helicopter Gunnery	1	NA	M60	stationary	237	
Reaction	2	27	small arms	pop-up, stationary	454	
Surface-to-Air Missile	1	unlimited (on beach)	STINGER, HAWK	drone	237	
Military Police Pistol	1	12	small arms	pop-up, stationary	227	
M257 Smoke Launcher	1	NA	M257 smoke grenade	none	237	M257 mounted on tracked vehicles.
Bombing and Target	3	NA	all indirect fire weapons, CAS (250 lbs max)	stationary	726	
LAW Range	3	61	M72 LAW, M73 LAW, SMAW	stationary, moving	681	
Transition	1	19	small arms	pop-up	227	
Basic Techniques of Fire and Mortar Field Firing	1	6	up to M60, 60-mm, 81-mm	stationary	237	
Infiltration and Individual Movement	1	12	blanks only	NA	222	
MOOT Tire	1	2	small arms	none	227	temporary facility
MOOT Assault	1	14	small arms	pop-up, stationary	227	temporary facility
Field Artillery Gun Positions	24 pos	6 guns ea	105-mm, 155-mm, 8-in	none	5568	
Mortar Gun Positions	4 pos	6 guns ea	81-mm, 60-mm	none	928	
RSOP Gun Positions	6 pos	6 guns ea	RSOP only	none	1392	
Fire Control	1	10	rifles, pistols, SAW	pop-up	227	

TABLE II-1. CAMP LEJEUNE LIVE FIRE RANGES AVAILABLE (CONTINUED)

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Cover and Clear	1	6	small arms	pop-up, stationary	232	

TABLE II-2. CAMP LEJEUNE LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
25-Meter	yes	M16A2	28	193	484	
Automated Field Fire	no	M16A2	22	183	0	
Automated Record Fire	no	M16A2	19	121	0	
Sniper	yes	M40A1	7	58	294	
Machine Gun 10-Meter	see Remarks	M60, M2	28	136	484	No specific 10-meter machine gun ranges are available, but can modify 25-meter rifle range to accomplish required training.
Machine Gun Transition	see Remarks	M60, M2	34	277	484	No machine gun transition range with electric elevating targets for machine gun fire. Range K-321 is a transition type range, but is designed for small arms.
40-mm Machine Gun MK19 Qualification	yes	MK19	13	148	242	Field fire range only. Cannot meet moving target training requirements.
Grenade Launcher	yes	M203 M79	1 20	155	696	
Urban Obstacle Course	yes	small arms	16	156	227	Facility is temporary until MOUT Collective Training Facility is constructed (possibly 1988).
Michelin City	yes	small arms	12	77	227	Facility is temporary until MOUT Collective Training Facility is constructed (possibly 1988).

* Live fire range days required if fully utilized each day

TABLE II-2. CAMP LEJEUNE LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Combat Pistol	see Remarks	9-mm, .45-cal	34	242	454	Ranges F-5 and K-321 have electric elevating targets and can be used as combat pistol ranges.
Tank Subcaliber	yes	tank subcaliber devices	1	72	237	No moving target capability.
MPRC-L	no	25-mm cannon, infantry weapons	4	11	0	No MPRC-type ranges programmed for construction at Camp Lejeune.
MPRC-H	no	105-mm tank gun, helicopter, infantry weapons	5	131	0	No requirement was received from a tank battalion for current Tank Gunnery Tables VI-VIII, which MPRC-H replaces. No MPRC-type ranges programmed for construction at Camp Lejeune.
Tank Gunnery Table VI	yes	105-mm tank gun, 25-mm cannon, TOW	1	20	434	LAV battalion requests 20 hours on this type range (see MPRC-H remark).
Tank Gunnery Tables VII and VIII	yes	105-mm tank gun, 25-mm cannon, TOW	1	60	217	LAV battalion requests 60 hours on this type range (see MPRC-H remark).
Tank Platoon Battle Run Table IX	no	105-mm tank gun, 25-mm cannon	2	90	0	None available. Comparable exercise can be conducted at MCAGCC, even though no moving target capability exists there.
Known Distance	yes	M16A2	see Remarks	682	882	Requalification requirement for KD is approximately 23,000 and B Modified 5,300.
Machine Gun Field Fire	yes	M60, M2	28	318	908	
Hand Grenade	yes	hand grenades	34	212	469	

* Live fire range days required if fully utilized each day

TABLE II-2. CAMP LEJEUNE LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
M72 LAW	yes	M72	19	130	681	
Mortar	yes	60-mm, 81-mm	6	260	928	
Mortar Scaled Training	no	M32 pneumatic device	5	49	0	No specific range so designated, but because of simple range layout and the small area required, any field fire range could be used.
Field Artillery Scaled	yes	M31 pneumatic device	3	25	227	
Antitank Tracking and Live Fire	yes	TOW, Dragon	12	325	434	No moving target or tracking run.
Field Artillery Indirect Fire	see Remarks	105-mm, 155-mm Howitzers; 8-in gun	7	506	5568	No specific field artillery indirect fire range, but 24 gun positions are available, each of which can accommodate 6 to 8 guns (batteries currently have 8 guns). Field artillery units use Fort Bragg in addition to local firing facilities.
Air Defense Firing	yes	STINGER, small arms	9	28	237	
Demolition	yes	demolitions	28	434	928	
Pistol and Shotgun Qualification	yes	.45-cal, 9-mm	see Remarks	531	588	Requalification requirement is approximately 6,550 personnel.
Aircraft Bombing and Strafing	yes	all indirect fire weapons, CAS, bombs (250 lbs max)	18	353	726	
Helicopter Gunnery	yes	M60	11	104	237	

* Live fire range days required if fully utilized each day

fire and maneuver. It requires an area approximately 4.5 kilometers (km) long and 1 km wide. The Tank Platoon Battle Run (Table IX) is a tank gunnery range used to conduct tank firing exercises in conjunction with tactical maneuver training and requires a maneuver and firing area of 3.5 km by 3 km with an appropriately sized impact area. Space is not available at Camp Lejeune for either facility, and no plans to construct this type facility were provided to the LATAR Study Team.

Infantry small arms weapons systems can be fired with no restrictions on a variety of ranges at Camp Lejeune. Recent emphasis on special operations has necessitated the construction of two intermediate type small arms ranges, namely Michelin City and the Military Operations on Urbanized Terrain (MOUT) Assault Course. These facilities are temporary and will be replaced by a standardized MOUT facility incorporating features of both. The standardized MOUT facility is scheduled for construction in Fiscal Year (FY) 1988.

Because of their high velocity and effective range, direct fire weapons (infantry and tank) require the use of the most extensive range areas, which necessitates firing toward open water from the only direct fire ranges currently available at Camp Lejeune. Direct fire ground weapons primarily utilize Ranges G-5, G-6, and G-7 to conduct firing exercises. These ranges, located to the west of the ICW, have safety firing fans and impact areas to the east over the Atlantic Ocean. The ICW is a major obstacle, and control of firing requires a high level of coordination. Boat traffic can interrupt firing exercises for considerable periods of time.

In addition to the unique situation described above, Ranges G-5, G-6, and G-7, the only gunnery training ranges available to the tank and Light Armored Vehicle (LAV) battalions at Camp Lejeune, are not designed for achieving full tank gunnery proficiency. As a result, completion of tank gunnery firing exercises must be conducted at U.S. Army installations at Fort Pickett, Virginia, or Fort Benning, Georgia.

Indirect fire weapons systems firing conventional warheads can be fired at Camp Lejeune. The relatively small area available for tactical movement of field artillery units, and the relatively few gun positions available at Camp Lejeune, however, result in some six weeks of firing exercises being conducted at nearby Fort Bragg. Fort Bragg has more extensive maneuver areas, sufficient for an artillery regiment to fire as an entity, and its various training sites provide more effective diversified training.

b. Maneuver Areas and Beaches

1) Availability

The 40 designated maneuver areas and their limitations for use for tactical exercises and field training at Camp Lejeune are listed in Table II-3. Almost all areas outside impact and containment areas are used for maneuver training. The available training areas, with basically flat terrain covered with moderate to heavy vegetation and swamps, includes some 50,662 acres. The two major areas available for maneuver are north and southwest of Impact Area G-10. These two areas are not contiguous; the largest contiguous area available for maneuver purposes to the southwest is a 4 km by 4 km tract. To the north is a maneuver area approximately 7 km by 6 km. Because Camp Lejeune is located in a region with a mild climate, training areas are available on a year-round basis. Maneuver areas are generally adjacent to impact areas and live fire ranges so that it is feasible for units to conduct tactical training followed by a live fire phase without interruption.

Amphibious training can be conducted at Camp Lejeune at Onslow Beach (Area E) with its approximately 7 km of landing sites. Area E is extremely narrow, about 500 meters (m) at its widest point, and egress routes are restricted by the Intracoastal Waterway.

TABLE II-3. CAMP LEJEUNE MANEUVER AREAS/BEACHES AVAILABLE

AREA DESIGNATION	SIZE (SQ KM)	% PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	ADJACENT TO LIVE FIRE RANGES	LIMITATIONS/REMARKS
LA	4.5 X 2 = 9	80% rolling	small unit tactics	yes, 3	If base Rifle Range (used every day) and Range 5 are firing, only extreme western edge of area can be used, 1.5 X 1.5 km.
LB	4 X 4 = 16	80% rolling	small unit tactics	yes, 2	If base Rifle Range (used every day) and Range 5 are firing, only extreme western edge of area can be used, 1.5 X 1.5 km.
LC	2 X 2.5 = 5	100% rolling	small unit heliborne operations	no	Hazardous waste area located within area.
MA	2.5 X 1.25 = 3.125	65% rolling	small unit tactics	no	railroad divides area
MB	1 X 2.5 = 2.5	60% rolling	small unit tactics	no	ASP located within area
MC	2 X 3.5 = 7	50% rolling 40% level	small unit heliborne and parachute operations	no	environmental (woodpecker habitat)
MD	2.5 X 2.5 = 6.25	60% rolling 40% level	small unit tactics	no	environmental (woodpecker habitat)
MF	3 X 1.5 = 4.5	80% rolling	small unit tactics	yes, 8	If base Rifle Range and L-5 are firing, southwest portion loses about 1.5 km.
K	3 X 2 = 6	60% level	small unit heliborne operations	yes, 11	Loses 1 sq km if Range D-29 is firing.
BC	2 X 1.5 = 3	60% swamp	bivouac, scouting, patrolling	yes, 2	If Ranges B-12 and B-14 are firing, only 40% of area is usable for maneuver.
BD	.7 X 1.2 = 0.84	60% swamp	bivouac, scouting, patrolling	yes, 1	If Range B-14 is firing, only 50% of area is usable for maneuver.
DB	1.5 X 2.5 = 3.75	70% level	small unit heliborne operations	no	Area is isolated by built-up areas and water.
RA	1.5 X 1.5 = 2.25	60% level	small unit tactics	no	Area is bounded on 2 sides by major roads, built-up areas.

TABLE II-3. CAMP LEJEUNE MANEUVER AREAS/BEACHES AVAILABLE (CONTINUED)

AREA DESIGNATION	SIZE (SQ KM)	% PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	ADJACENT TO LIVE FIRE RANGES	LIMITATIONS/REMARKS
RB	2 X 1.5 = 3	50% level	small unit tactics	no	Administrative area covers 1 sq km.
FA	4.5 X 3 = 13.5	80% rolling	company-level tactics, gun positions	yes, 4	If 4 ranges are operating, area cannot be used for tactics training.
FB	2 X 2.5 = 5	20% swamp 60% rolling	small unit tactics, gun positions	yes, 1	Woodpecker habitat covers 1 sq km.
FC	3 X 4 = 12	60% level	company-level tactics, gun positions	yes, 1	If Ranges F-3 and F-4 are firing, 50% of area is not usable.
FD	2 x 2 = 4	50% level 50% rolling	parachute operations, gun positions, LZ	yes, 1	environmental (woodpecker habitat)
QA	5 X 1 = 5	80% level	small unit tactics, LZs (2)	yes, 1	environmental (woodpecker habitat)
QB	2 X 2.75 = 5.5	50% rolling	small unit tactics, gun positions (3)	yes, 1	Restricted on north and east by impact area, buffer zone.
GF	4 X 2 = 8	20% swamp 80% rolling	gun positions (4), LZ	yes, 2	
GG	3 X 3.5 = 10.5	60% rolling	gun positions (3), LZs (2)	no	Gas and chemical use restricted.
GI	.5 X 2 = 1	100% rolling	bivouac areas, movement to firing ranges	yes, 2	Gas and chemical use restricted.
HA	3 X 3 = 9	15% swamp 70% rolling	small unit tactics	no	
HB	2 X 3 = 6	50% swamp	scouting, patrolling, LZs (2), gun positions (2)	no	environmental (woodpecker habitat)
HC	2 X 4 = 8	75% rolling	small unit tactics	yes, 1	If range is operational, approximately 1 sq km is not usable.
HD	2 X 1 = 2	80% rolling	small unit tactics, LZ	no	environmental (woodpecker habitat)

TABLE II-3. CAMP LEJEUNE MANEUVER AREAS/BEACHES AVAILABLE (CONTINUED)

AREA DESIGNATION	SIZE (SQ KM)	% PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	ADJACENT TO LIVE FIRE RANGES	LIMITATIONS/REMARKS
HE	2 X 1.5 = 3	90% swamp	scouting, patrolling	no	environmental (woodpecker habitat), terrain type
HF	2 X 3 = 6	50% swamp	small unit tactics, gun position	no	environmental (woodpecker habitat)
IA	2 X 2 = 4	60% rolling	small unit tactics	no	environmental (woodpecker habitat)
IB	3 X 1.5 = 4.5	25% swamp 75% level	gun positions (3), LZ, parachute operations	no	
IC	3 X 2.5 = 7.5	20% swamp 80% rolling	small unit tactics	no	
ID	1 X 1 = 1	70% rolling	LZ, gun position	no	
IE	2.5 X 2 = 5	70% rolling	gun position, small unit tactics	no	environmental (woodpecker habitat)
IF	3 x 1 = 3	80% rolling	LZ, gun position	no	
JA	1 X 1.2 = 1.2	80% rolling	small unit tactics	no	
JB	.6 X .6 = 0.36	80% rolling	small unit tactics	no	
JC	1 X 1 = 1	25% level 50% rolling	gun position, small unit tactics	no	
JD	.5 X 1.5 = 0.75	90% rolling	small unit tactics	no	Surrounded on 3 sides by water.
E	3 X 2 = 6	80% beach	LZ, DZ, amphibious operations	no	Gas, chemical, and environmental restrictions. Area has limited egress routes. Bounded by ICW.
Total sq km		205.02			
Acres		50,662			

Air training for both fixed-wing and helicopter aircraft is supported at Camp Lejeune through the use of restricted air space, drop zones, confined area landing (CAL) sites, designated landing zones (LZs), and the G-10 Impact Area.

2) Requirements

The principal tactical training activities for FMF battalion-sized units are determined by the Marine Corps Combat Readiness Evaluation System (MCCRES) and contingency mission requirements. MCCRES prescribed levels of tactical proficiency for infantry and tank units require the largest maneuver areas. Contingency missions require tactical training to be conducted in diversified weather and terrain environments, such as cold weather, mountain, jungle, and desert environments, and Camp Lejeune units must rotate to locations where this practical contingency type training can be conducted. Table II-4 presents an overview of maneuver area requirements for assigned FMF units.

3) Considerations

U.S. Army Training Circular 25-1 indicates that the maneuver area requirement for a notional infantry division consisting of eight infantry battalions and one tank battalion would be 69,188 acres located in a contiguous configuration. Camp Lejeune has approximately 50,662 acres available for maneuver or tactical training for a force of approximately the same size; however, a land planning and environmental study effort has been approved by Headquarters, U.S. Marine Corps for the possible acquisition of 40,000 additional acres adjacent to the southwest portion of Camp Lejeune. If all study recommendations are approved and funding is provided, purchase of the area is planned by FY 93. In addition to the current acreage deficiency, maneuver areas are not contiguous, which forces segmented training and a subsequent loss of realism and flow of training exercises. For example, the principal maneuver areas north of the G-10 Impact Area, Areas R, F, and Q, comprising 13,843 acres, are limited by the

TABLE II-4. CAMP LEJEUNE MANEUVER AREA/BEACH REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
INFANTRY BATTALION MCCRES Training Tasks Surface Assault	8	beach, LZ, river	yes	5 X 6	2.5 X 3	7 X 5	Egress routes to adjacent maneuver areas are very limited.
Helicopterborne Assault	5	LZ, wooded, open	yes	12 X 26	4 X 4	3 X 5	Requested area size is excessive; size available is adequate.
Movement to Contact	4	wooded, open	yes	10 X 6	2 X 10	no	No maneuver area extends more than 8 km.
Attack	8	wooded, open	yes	20 X 14	2.5 X 5	4 X 4	Lack of varied terrain and heavy vegetation limit area effectiveness.
Night Attack	4	varied	yes	20 X 30	2 X 4.5	2 X 4	Requested area size is excessive; size available is adequate.
Defense	5	wooded, open	yes	13 X 36	3 X 3	4 X 4	Lack of varied terrain and heavy vegetation limit area effectiveness.
Retrograde	5	wooded, open	yes	13 X 36	28 X 10	4 X 4	Size, lack of varied terrain, and heavy vegetation limit area effectiveness.
Tank Infantry Operations (Combined Arms Exercise)	7	open, desert	no	9 X 17	30 X 20	no	Terrain and vegetation not conducive to tank infantry operations. Conduct at MCAGCC.
Operational Training Tasks Military Operations on Urbanized Terrain	5	combat town	yes	5 X 5	3 X 3	3 X 2	

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TABLE II-4. CAMP LEJEUNE MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
Raid Special Operations Capability	1	LZ, beach, building complex	yes	4 X 10	4 X 10	7 X 4	Training objective can be met.
TANK BATTALION							
Tank Battalion Tactics	1	open, wooded	yes	25 X 25	20 X 10	no	Tank tactical training is extremely limited (to trails/roads); unrealistic.
Tank Company Tactics	1	open, wooded	yes	12 X 10	7 X 4	8 X 5 see Remarks	
Tank Platoon Tactics	1	open, wooded	yes	5 X 5	4.5 X 1.5	8 X 5	
ASSAULT AMPHIBIAN VEHICLE BATTALION							
Amphibious Operations (Ship-to-Shore)	1	beach	yes	8 X 1	2.5 X 3	3 X 2	Egress routes are limited.
Combat Support	1	coastal piedmont	yes	33 X 55	4 X 4	8 X 5	Requested area size is not realistic.
Riverine Operations	1	river		3 X 25	Undetermined	2 X 20	
LIGHT ARMORED VEHICLE BATTALION							
Light Armored Vehicle Battalion Tactics	1	not specified	NA	10 X 20	11 X 19	5 X 5	Training area for mounted reconnaissance/security missions at battalion/company level not available.
Light Armored Vehicle Company Tactics	1	not specified	NA	10 X 20	6 X 4	5 X 5	Training area for mounted reconnaissance/security missions at battalion/company level not available.

TABLE II-4. CAMP LEJEUNE MANEUVER AREA/BEACH REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
INFANTRY BATTALION MCCRES Training Tasks							
..... Surface Assault	8	beach, LZ, river	yes	5 X 6	2.5 X 3	7 X 5	Egress routes to adjacent maneuver areas are very limited.
Helicopterborne Assault	5	LZ, wooded, open	yes	12 X 26	4 X 4	3 X 5	Requested area size is excessive; size available is adequate.
Movement to Contact	4	wooded, open	yes	10 X 6	2 X 10	no	No maneuver area extends more than 8 km.
Attack	8	wooded, open	yes	20 X 14	2.5 X 5	4 X 4	Lack of varied terrain and heavy vegetation limit area effectiveness.
Night Attack	4	varied	yes	20 X 30	2 X 4.5	2 X 4	Requested area size is excessive; size available is adequate.
Defense	5	wooded, open	yes	13 X 36	3 X 3	4 X 4	Lack of varied terrain and heavy vegetation limit area effectiveness.
Retrograde	5	wooded, open	yes	13 X 36	28 X 10	4 X 4	Size, lack of varied terrain, and heavy vegetation limit area effectiveness.
Tank Infantry Operations (Combined Arms Exercise)	7	open, desert	no	9 X 17	30 X 20	no	Terrain and vegetation not conducive to tank infantry operations. Conduct at MCAGCC.
Operational Training Tasks Military Operations on Urbanized Terrain	5	combat town	yes	5 X 5	3 X 3	3 X 2	

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TABLE II-4. CAMP LEJEUNE MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
Raid Special Operations Capability	1	LZ, beach, building complex	yes	4 X 10	4 X 10	7 X 4	Training objective can be met.
TANK BATTALION							
Tank Battalion Tactics	1	open, wooded	yes	25 X 25	20 X 10	no	Tank tactical training is extremely limited (to trails/roads); unrealistic.
Tank Company Tactics	1	open, wooded	yes	12 X 10	7 X 4	8 X 5 see Remarks	
Tank Platoon Tactics	1	open, wooded	yes	5 X 5	4.5 X 1.5	8 X 5	
ASSAULT AMPHIBIAN VEHICLE BATTALION							
Amphibious Operations (Ship-to-Shore)	1	beach	yes	8 X 1	2.5 X 3	3 X 2	Egress routes are limited.
Combat Support	1	coastal piedmont	yes	33 X 55	4 X 4	8 X 5	Requested area size is not realistic.
Riverine Operations	1	river		3 X 25	Undetermined	2 X 20	
LIGHT ARMORED VEHICLE BATTALION							
Light Armored Vehicle Battalion Tactics	1	not specified	NA	10 X 20	11 X 19	5 X 5	Training area for mounted reconnaissance/security missions at battalion/company level not available.
Light Armored Vehicle Company Tactics	1	not specified	NA	10 X 20	6 X 4	5 X 5	Training area for mounted reconnaissance/security missions at battalion/company level not available.

TABLE II-4. CAMP LEJEUNE MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
FIELD ARTILLERY HOWITZER BATTALION	5						
Field Artillery Battalion Tactics	5	open with roads	yes	13 X 14	4 X 7	4 X 7 see Remarks	Standard size and roads are available; user required size is not realistic.
Field Artillery Battery Tactics	5	open with roads	yes	.6 X .6	1 X 1	4 X 7	
Combined Arms Exercise	5	open, desert	no	32 X 34	30 X 20	no	Must be conducted at MCAGCC due to terrain type and size required.
Mountain/Cold Weather	5	mountains	no	25 X 25	8 X 8	no	Must be conducted at MWTC.
Amphibious	4	beach, gun positions	yes	8 X 8	3 X 2.5	7 X 5	Egress routes are limited.
Jungle	3	jungle	no	20 X 20	varied	no	Conducted in Panama.
Command Post Exercise	1	varied	yes	3 X 5	15 X 15	see Remarks	CPX requires no maneuver area. A 3 X 5 area to test commo capability is adequate within battalion.
RECONNAISSANCE BATTALION 2D MARINE DIVISION	1						
Reconnaissance Missions		flat, wooded	yes	25 X 30	varied		
Helicopter Inserts		flat, wooded	yes	25 X 30	4 X 4	3 X 5	
Boat Operations		island, marsh	yes	25 X 30	5 X 5	5 X 7	
Mountain/Cold Weather		mountains	no	25 X 30	varied	no	Conducted at MWTC.
Jungle		jungle	no	25 X 30	varied	no	Conducted in Panama.

TABLE II-4. CAMP LEJEUNE MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
HEADQUARTERS BATTALION 2D MARINE DIVISION	1						
Infantry Tactics		open	yes	1 X 3	1 X 3	4 X 4	
Military Operations on Urbanized Terrain		combat town	yes	1 X 3	1 X 1	3 X 2	
COMBAT ENGINEER BATTALION 2D MARINE DIVISION	1						
Infantry Tactics		not specified	NA	3 X 3	3 X 3	4 X 4	
Mobility		not specified	NA	3 X 3	4 X 4	4 X 4	
Counter Mobility		not specified	NA	3 X 3	4 X 4	4 X 4	
Survivability		not specified	NA	2 X 3	2 X 2	4 X 4	
General Engineer		not specified	NA	2 X 3	1 X 2	4 X 4	
FORCE SERVICE SUPPORT GROUP	10						
Combat Activities							
Rear Area Security	9	open, wooded, flat	yes	2.5 X 2.5	4 X 4	4 X 4	
Convoy Procedures	6	roads, cross country	yes	12 X 4	12 X 1	12 X 1	
Military Operations on Urbanized Terrain	3	combat town	yes	2 X 2	3 X 3	3 X 2	
Command Post Exercise	2	flat, wooded	yes	4 X 4	see Remarks	3 X 2	CPX requires no maneuver area. A 4 X 4 area to test communications capability is adequate.
Electronic Warfare Training	2	flat, wooded	yes	5 X 5	5 X 5	4 X 4	

TABLE II-4. CAMP LEJEUNE MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
Helicopter Drop	1	LZ	yes	.5 X 1	.5 X 1	16 tactical LZs available	Requested by 2d ANGLICO.
Mountain	2	mountain	no	4.5 X 4.5	varied	no	Conducted at MWTC.
Jungle	1	jungle	no	12 X 12	varied	no	Requested by 2d ANGLICO.
Amphibious	6	beach	yes	4 X 4	2.5 X 3	3 X 2	
Riverine	1	river	yes	12 X 12	undetermined	2 X 20	accessible bank area
Combat Service Support							
Engineer Support	1	clear, wooded	yes	8 X 10	4 X 4	4 X 4	Size is adequate if need is met by prescribed standard.
Bridging	1	water, dry gap	yes	8 X 10	4 X 4	3 X 3	Size is adequate if need is met by prescribed standard.
Supply	1	flat, wooded	yes	4 X 4	4 X 4	4 X 4	
Motor Transport	1	varied, roads	yes	30 km of roads	12 X 1	30 km of roads are available	
Maintenance	1	wooded, roads	yes	10 X 10	4 X 4	4 X 4	Size is adequate if need is met by prescribed standard.
Beach Support	1	beach, LZ, pier	yes	2 X 3	2.5 X 3	3 X 2	
Medical	1	open	yes	1 X 1	1 X 1	4 X 4	
2D FORCE RECONNAISSANCE COMPANY FMFLNT	1						
Amphibious (Reconnaissance)		beach	yes	10 miles	varied	5 X 7	
Riverine Operations		river, ICW	yes	50 miles	varied	2 X 20	

TABLE II-4. CAMP LEJEUNE MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE AT LEJEUNE (KM)	LIMITATIONS/REMARKS
Desert		desert	no	60 miles	undetermined	no	
Jungle		jungle	no	30 miles	10 X 10	no	
Mountain		mountain	no	30 miles	8 X 8	no	
Parachute		LZ	yes	1 X 1	undetermined	1 X 1	
MARINE AMPHIBIOUS UNIT	1						
Special Operations Capability Exercise		varied	yes	50 X 25	varied	no	
Marine Amphibious Unit Exercise		varied	yes	25 X 25	varied	no	
Mountain		mountain	no	not stated	varied	no	Conducted at Camp Dawson, WV.
Military Operations on Urbanized Terrain		urban	yes	1 X 1	3 X 3	yes	
Amphibious Raids		coastal, over horizon seg	yes	5 X 2	varied	yes	
Jungle		jungle	no	10 X 10	varied	no	

installation boundary on two sides, a major highway, and the Impact Area, leaving only a limited tactical ingress and egress capability. Additionally, when ranges in these areas are firing, the available acreage for tactical training decreases by approximately 70 percent. The area south of the G-10 Impact Area, which constitutes the second major tactical training area available, is also limited by New River, French's Creek, the ICW, and the G-10 Impact Area.

In addition to the segmented nature of the area, the flat terrain and moderate to heavy vegetation density do not allow for maximum effective command and control of tactical formations. Unit commanders have difficulty observing exercises and making quick corrections. This is particularly true for the division tank and LAV battalions. In addition to these limitations, portions of Camp Lejeune, particularly Maneuver Area H, are woodpecker habitats and are not available to tracked vehicles. Camp Lejeune serves as the major amphibious training site on the East Coast. The beach area (Area E) for the actual assault phase is very good, but the landing area is isolated by the ICW which restricts egress and detracts from training effectiveness for continuing tactical operations further inland.

2. MCAS, Cherry Point

a. General

Marine Corps Air Station (MCAS), Cherry Point has live fire facilities and maneuver areas within its local operating area. Areas for live ordnance delivery are practically non-existent on the East Coast, but inert weapons delivery is permitted. Cherry Point is the primary user of Restricted Air Space R-5306 and Warning Area W-122. The scheduling agency for R-5306 is MCAS, Cherry Point, and the scheduling agency for Warning Area W-122 is Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFAC VACAPES). Primary air-to-ground delivery areas are BT-3 at MCB, Camp Lejeune, and BT-9 and BT-11 at Cherry Point. The Tactical Aircrew Combat Training

System (TACTS) provides realistic air-to-air and no drop bombing training. The Mid-Atlantic Electronic Warfare Range (MAEWR) will provide electronic warfare (EW) training within the special use areas.

1) Live Fire Ranges

a) Availability

A list of live fire range facilities available at MCAS, Cherry Point is provided in Table II-5. Principal areas are BT-9 and BT-11. The BT-9 ship hulks area is 28 nautical miles (nm) northeast of Cherry Point and is unmanned and not controlled. It allows for strafing and 100 pounds TNT equivalent or inert ordnance up to 1,000 pounds. The BT-11 Multi-Purpose Target Complex, 22 nm east of Cherry Point, has 12 fixed and 3 mobile targets to allow for inert ordnance delivery training as well as helicopter gunnery. Laser operations are authorized at BT-9 and BT-11. Small arms and demolitions training are also available at MCAS, Cherry Point.

b) Requirements

MCAS, Cherry Point has a full range of live fire requirements, which are listed in Table II-6. For aviation units, strafing, bombing, rocket, and missile training ranges are required. Ground units require small arms and heavier ordnance ranges.

c) Considerations

In general, MCAS, Cherry Point is aviation-oriented. It does have small arms training for ground elements, but the principal mission is aviation-related. Aviation training areas are limited at Cherry Point, which requires training at other bases.

BT-9 is unmanned and without controlled air space in the ship hulk target area. Ordnance is restricted to strafing and 100 pounds TNT equivalent or inert general purpose bombs to 1,000 pounds. When BT-11 is hot, flight patterns are required to remain west of NKT 059 radial. Blast forecast restrictions apply.

TABLE II-5. CHERRY POINT LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Known Distance	1	30	M16A2	stationary-stationary	236	FY 91: Electronic scoring
Pistol Qualification	1	25	.38-cal, .45-cal, shotgun	stationary-stationary	236	FY 88: Electronic target for 9-mm
Demolition	1	NA	150 lbs HE	NA	156	
Multipurpose	2	NA	MK76, MK106, 2.75-in rockets, 5-in rockets, 30-mm, .50-cal, inert MK81, inert MK82	boat, bullseye, SAM, airstrip, fuel farm, MLT, SEPTAR, vehicles	484	

TABLE II-6. CHERRY POINT LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Multipurpose Target	yes	MK76, BDU45, rockets, MK83, MK84, inert ordnance, BDU43, BDU57, BDU61	10	566.5	484	
Close Air Support and Combat Training	yes	5-in ZUNI, 20-mm, MK76, MK81, MK82, MK83, MK84, 25-mm, rockets, conventional bombs, MK77	8	269	484	
Electronic Warfare	yes	chaff, flares	9	162	242	Increasing number of simulators.
Known Distance	yes	M16A2, M4	21	138	236	
Combat Pistol	no	.38-cal, .45-cal	2	7	0	
Pistol Qualification	yes	.38-cal, .45-cal, 9-mm	21	107	236	
Machine Gun Transition	no	M60, M2	5	17	0	
Air Defense Firing	no	HAWK, STINGER	2	18	0	
Machine Gun Field Firing	no	M60, M2	1	14	0	
High Altitude Level Bombing	yes	conventional bombs	5	123	484	
Strafing	yes	25-mm, 20-mm	5	90	484	
Loft Bombing	yes	conventional bombs, BDU43, BDU57, BDU61	7	151	484	
Aerial Mining	no	MK52 inert	7	56	0	
Guided Missile	no	AGM65, LGB, SHRIKE, HARM	7	91	0	

* Live fire range days required if fully utilized each day

TABLE II-6. CHERRY POINT LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Automated Record Firing	no	shotgun, M16A2, .45-cal, 9-mm	2	10	0	
Hand Grenade	no	M76	1	6	0	
Demolition	yes	linear rockets, M68A1, inert	2	5	156	
Basic 25-meter	no	M16	1	1	0	
Machine Gun 10-Meter	no	M60	1	1	0	
Shotgun Familiarization	yes	M870	1	5	236	

* Live fire range days required if fully utilized each day

Only inert ordnance is authorized on BT-11. Flechette rounds, high explosive ammunition, fuel air explosives (FAE), or other exploding ordnance is not authorized. When BT-9 is hot, flight patterns are required to remain southeast of NKT 059 radial.

Restricted Area R-5306D at MCB, Camp Lejeune contains Impact Areas BT-3, N-1, G-10, and K-2 for day or night close air support. Blast forecast restrictions apply, and explosive ordnance is limited to 250 pounds TNT equivalent. MCB, Camp Lejeune is considered local although it is approximately 35 nm from MCAS, Cherry Point.

2) Maneuver Areas

a) Availability

The Chief of Naval Operations (CNO) has designated the BT-11 area to become the primary Navy-Marine Corps EW training range on the East Coast. During FY 87, BT-11 will also incorporate a 36-aircraft capable TACTS. The first EW emitter arrived during FY 85, and by FY 89, 30 or more emitters are programmed for BT-11 and the surrounding area. These emitters, as well as TACTS remote sites, will be dispersed on Piney Island. During unmanned/uncontrolled operations, the Barge Target is the only BT-11 target authorized for ordnance delivery. All other BT-11 targets, including the strafing banner, are closed when Range Control is not controlling the range via UHF radio. Maneuver areas available at Cherry Point are listed in Table II-7.

b) Requirements

MCAS, Cherry Point maneuver area requirements are listed in Table II-8. The only aviation maneuver area requirements at Cherry Point are for TACTS training.

b. Interrelationships with Other Facilities

1) Formal Agreements

The primary agreement between MCAS, Cherry Point and the Georgia Air National Guard provides coordination of

TABLE II-7. CHERRY POINT MANEUVER AREAS AVAILABLE

AREA DESIGNATION	SIZE (NM)	PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	LIMITATIONS/REMARKS
R-5306A W-122	30 X 30 150 X 100	water, marsh	TACTS, NDBS instrumented	Add Emitters
R-5306A BT-11	30 X 30 9 X 9	water, marsh	MAEWR	FY 88-92: 38 Emitters

TABLE II-8. CHERRY POINT MANEUVER AREA REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER SQDN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REPORTED (KM)	LIMITATIONS/REMARKS
AIRCRAFT SQUADRON T&R Manual/MCCRES Electronic Warfare	9	wooded, mountainous	wooded, flat	22 X 15	
Air-to-Ground Simulation	8	wooded	wooded, flat	15 X 15	No drop bombing.

the use of the Townsend Range in Garden City, Georgia. This range can be used for strafing, rockets, and inert bombs and has vehicle, strafing panels, and bull's-eye targets. Laser designation is authorized on this range which comprises approximately 3,362 acres and is located approximately 263 nm southwest of MCAS, Cherry Point.

2) Informal Agreements

Day and night helicopter operations are conducted by mutual consent at Dawson Army Airfield, West Virginia; Plattsburgh Air Force Base, New York; Mosby Army Airfield, Camp Merrill, Dahlonga, Georgia; Fort Stewart, Georgia; Fort Bragg, North Carolina; Fort Pickett, Virginia; and Fort Lee, Virginia. Day and night air-to-ground inert ordnance delivery is conducted at Dare County, North Carolina; Fort Stewart, Georgia; and Pointsett-Sumter, South Carolina.

3. MCAS, New River

a. General

Marine Corps Air Station (MCAS), New River is significantly dependent on training areas and facilities provided at other locations. Because there are no live fire ranges or maneuver areas at New River, Camp Lejeune is the principal facility used to conduct live fire and maneuver training. Helicopter/OV-10 operations and support are the primary missions of MCAS, New River. Flights typically include aircraft familiarization, air/ground tactical support missions, external lift maneuvers, and instrument training.

1) Live Fire Ranges

a) Availability

There are no live fire ranges at MCAS, New River. MCB, Camp Lejeune, Helicopter Outlying Field (HOLF), Oak Grove, Old Camp Davis, and Marine Corps Air Landing Facility (MCALF), Bogue Field are the principal training areas.

b) Requirements

MCAS, New River live fire training requirements are for helicopter gunnery, infantry weapons firing, and OV-10 weapons delivery and are listed in Table II-9.

2) Maneuver Areas

a) Availability

New River has no maneuver areas.

b) requirements

New River maneuver area requirements are listed in Table II-10. No maneuver area requirements were submitted for combat support, vertical support, or helicopter resupply (including mountain area landings).

c) Considerations

Mountain area landings and desert terrain training must be conducted elsewhere.

b. Interrelationships with Other Facilities

1) Formal Agreements

MCAS, New River has a lease with the International Paper Company to conduct touch and go landing and night vision goggle (NVG) training at the Old Camp Davis Airfield located approximately 16 nm south of New River. HOLF, Oak Grove, located approximately 19 nm northeast of New River, is used on a routine basis to conduct helicopter operations.

2) Informal Agreements

Camp Mosby, Georgia; Plattsburgh Air Force Base, New York; Marine Corps Air Ground Combat Center (MCAGCC), 29 Palms, California; and MCAS, Yuma, Arizona are used for mountain area landing training on a first come, first served basis. Navy Dare County, North Carolina; MCAS, Cherry Point, North Carolina; and MCAGCC, 29 Palms, California, are used for OV-10 weapons training.

TABLE II-9. NEW RIVER LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Known Distance	no	M16A2	17	122	0	
Pistol Qualification	no	.38-cal, .45-cal, 9-mm	17	191	0	
Automated Record Fire	no	.45-cal, 12-gauge, M16A2	1	9	0	
Machine Gun Transition	no	M60, M2	1	9	0	
Hand Grenade	no	M76	1	6	0	
Demolition	no	demolition, rockets	1	4	0	
Shotgun	no	12-gauge	1	4	0	
Combat Pistol	no	.45-cal, 9-mm	1	4	0	
Basic 25-Meter	no	M16A2	1	2	0	
Grenade Launcher	no	M203	1	2	0	
MOUT	no	.45-cal, 9-mm, M16A2	1	4	0	
Helicopter Gunnery	no	.50-cal, 7.62-mm, 20-mm	11	104	0	
Electronic Warfare	no	chaff, flares	12	40	0	
Field Artillery Firing	no	M198, 105-mm	2	20	0	
Multipurpose Target	no	MK76, 7.62-mm, 2.75-in, 5-in rockets, MK81, MK82	2	54	0	

* Live fire range days required if fully utilized each day

TABLE II-10. NEW RIVER MANEUVER AREA REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER SQDN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REPORTED (KM)	LIMITATIONS/REMARKS
MARINE WING SUPPORT SQUADRON T&R Manual/MCCRES Infantry Tactics	1	varied	none	2 X 2	
Combat Service Support	1	trees, shrubs, slopes	none	7 X 5	

4. MCAS, Beaufort

a. General

MCAS, Beaufort, South Carolina, is dependent on training areas and facilities provided at other locations. Other than Pistol Qualification and Demolitions Ranges, all other training live fire or maneuvering is conducted at other facilities. Ground units train primarily at MCB, Camp Lejeune, and aviation units requiring ranges and maneuver areas conduct training at Camp Lejeune; Cherry Point; Naval Air Station (NAS), Fallon; 29 Palms; and Yuma. There is an extremely limited number of ranges for live ordnance drops on the U.S. East Coast; therefore, Yuma, 29 Palms, or Navy facilities are most often used for this training. This arrangement is inconvenient, yet it does provide the opportunity to conduct air-to-ground live fire delivery.

1) Live Fire Ranges

a) Availability

Pistol Qualification and Demolitions Ranges are sufficient to support MCAS, Beaufort requirements; however, the manual operation of targets on the pistol ranges results in a nominal down time of 50 percent. Range availability is presented in Table II-11.

b) Requirements

MCAS, Beaufort live fire requirements are listed in Table II-12. The listing includes both existing requirements and projected requirements based on higher authority directives and commanders' prerogatives. MCAS, Beaufort units have no unique weapons training requirements.

c) Considerations

The extremely limited facilities at MCAS, Beaufort require units to transit to other bases to conduct training, which is expensive and inconvenient.

TABLE II-11. BEAUFORT LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Pistol Qualification	1	10	.38-cal, .45-cal, shotgun	stationary-stationary	261	Daylight use only.
Demolition	1		high explosives (20 lbs max)		242	Daylight use only.

TABLE II-12. BEAUFORT LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Known Distance	no	M16A2	9	62	0	
Pistol Qualification	yes	.38-cal, .45-cal	9	58	242	
Multipurpose/Strafing	no	20-mm, MK76	6	324	0	
Loft Bombing	no	MK76	6	24	0	
Close Air Support and Combat Training	no	MK84, 20-mm, 5-in ZUNI rockets	6	216	0	
Guided Missile	no	HARM, LGB, WALLEYE, MAVERICK	6	144	0	
Electronic Warfare	no	chaff, flares	6	24	0	
Machine Gun 10-Meter	no	M60, M2	1	4	0	
Machine Gun Transition	no	M60, M2	1	10	0	
Combat Pistol	no	.45-cal	1	2	0	
Automated Field Firing	no	M60, M2, M16	1	8	0	
Machine Gun Field Firing	no	M60, M2	1	4	0	
Air Defense Firing	no	M60, M2	1	2	0	
Demolition	yes		1	4	242	
Hand Grenade	no	M76	1	10	0	
Automated Record Firing	no	.45-cal, M16, shotgun	1	10	0	

* Live fire range days required if fully utilized each day

2) Maneuver Areas

a) Availability

Beaufort has no maneuver areas.

b) Requirements

MCAS, Beaufort maneuver area requirements are provided in Table II-13. Maneuver areas for aviation units are limited to those necessary for aviation ordnance delivery, air control, and the use of EW assets.

c) Considerations

Aircraft routinely transit to other bases to conduct maneuver area training.

b. Interrelationships with Other Facilities

MCAS, Beaufort has an agreement with Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina to conduct requalification and familiarization fire using the M16A2.

5. MCAS, El Toro and MCAS, Tustin

a. General

For the purposes of this survey, MCAS, El Toro and MCAS, Tustin are combined because they are close in proximity, both have virtually no ranges or maneuver areas, and both use the facilities at other bases, such as MCB, Camp Pendleton; MCAS, Yuma; NAS, Fallon; MCAGCC, 29 Palms; Naval Air Facility (NAF), El Centro; and Naval Weapons Center (NWC), China Lake.

1) Live Fire Ranges

a) Availability

Pistol qualification on .38- and .45-caliber revolvers/pistols can be conducted during daylight hours at the MCAS, El Toro outdoor range, listed in Table II-14. There are no other live fire facilities at MCAS, El Toro, and there is no live fire capability at MCAS, Tustin.

b) Requirements

MCAS, El Toro and MCAS, Tustin live fire requirements are listed in Tables II-15 and II-16, respectively. These are existing requirements based on higher authority directives and commanders' prerogatives. In some cases, the

TABLE II-13. BEAUFORT MANEUVER AREA REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER SQDN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REPORTED (KM)	LIMITATIONS/REMARKS
MARINE WING SUPPORT SQUADRON MCCRES					
..... Field Exercise	1	varied	varied	5 X 5	
Vehicle Maneuvering	1	varied	varied	1 X 1	
Target Detection	1	flat	flat	1 X 1	
MARINE AIR CONTROL SQUADRON MCCRES					
..... Field Exercise	1	varied	varied	1 X 1	

TABLE II-14. EL TORO LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Pistol Qualification	1	25	.38-cal, .45-cal,	stationary-stationary	242	1987: Need 9-mm capability.

TABLE II-15. EL TORO LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Basic 25-Meter	no	M16A2	16	17	0	Use Camp Pendleton facilities.
Known Distance	no	M16A2	16	77	0	Use Camp Pendleton facilities.
Pistol Qualification	yes	M10, .45-cal	16	47	242	
Combat Pistol	no	M9, M10	2	10	0	Use Camp Pendleton facilities.
Automated Field Firing	no	M16, M60	1	4	0	Use Camp Pendleton facilities.
Machine Gun 10-Meter	no	M2, M60	1	4	0	Use Camp Pendleton facilities.
Machine Gun Field Firing	no	M2, M60	2	10	0	Use Camp Pendleton facilities.
Machine Gun Transition	no	M2, M60	1	4	0	No capability at El Toro or Camp Pendleton.
Hand Grenade	no	M69	1	2	0	Use Camp Pendleton facilities.
MOUT Tire House	no	M9	1	4	0	Use Camp Pendleton facilities.
Strafing	no	20-mm	4	20	0	Use Camp Pendleton, 29 Palms, Fallon, China Lake, Yuma.
Close Air Support and Combat Training	no	general purpose bombs	4	182	0	Use Camp Pendleton, 29 Palms, Fallon, China Lake, Yuma.
Guided Missile	no	SHRIKE, HARM	3	30	0	Use Camp Pendleton, 29 Palms, Fallon, China Lake, Yuma.
Loft Bombing	no	inert ordnance	4	73	0	Use Camp Pendleton, 29 Palms, Fallon, China Lake, Yuma.
High Altitude Level Bombing	no	general purpose bombs, inert ordnance	3	12	0	Use Camp Pendleton, 29 Palms, Fallon, China Lake, Yuma.
Multipurpose Target	no	inert bombs, rockets	4	348	0	Use Camp Pendleton, 29 Palms, Fallon, China Lake, Yuma.

* Live fire range days required if fully utilized each day

TABLE II-15. EL TORO LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Aerial Mining	no	inert mines	4	4	0	Use Point Mugu OP area.
Shotgun Familiarization	no	M870	1	4	0	Use Camp Pendleton facilities.
Electronic Warfare	no	chaff, flares	4	33	0	Use Fallon or China Lake.
Demolition	no		1	2	0	Use Camp Pendleton facilities.
Air Defense Firing	no	STINGER	1	16	0	

* Live fire range days required if fully utilized each day

TABLE II-16. TUSTIN LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Known Distance	no	M16A1, M16A2	13	48	0	
Pistol Qualification	no	.38-cal, .45-cal	13	43	0	
Helicopter Gunnery	no	.50-cal	11	50	0	
Electronic Warfare	no	chaff, flares	11	72	0	

requirements of a model squadron were selected as representative of training requirements because some survey responses were inconsistent with the responses of similar units in the same location. These requirements were used as the basis for submissions from other squadrons with the same aircraft model, mission, and size. Others were averaged, if possible, to determine requirements based on the knowledge of the LATAR Study Team Member and a U.S. Marine Corps representative, such as the Marine Aircraft Group (MAG) 16 Operations Officer. MCAS, El Toro and MCAS, Tustin have no unique weapons training requirements and both have few facilities of their own on which to train.

c) Considerations

With only a pistol qualification range, the facilities at both stations are extremely limited. Transportation to and from other bases' facilities is time consuming, costly, and inconvenient.

2) Maneuver Areas

a) Availability

There are no maneuver areas at MCAS, El Toro or MCAS, Tustin.

b) Requirements

MCAS, El Toro and MCAS, Tustin maneuver area requirements are listed in Tables II-17 and II-18, respectively. Aircraft maneuver area requirements are not as clearly defined as those of ground units. As described in the LATAR Statement of Work (SOW), maneuver areas for aviation units are limited to those necessary for delivery of aviation ordnance, air control, air defense, and use of EW assets. Some mission area training, therefore, is not addressed, although it may be a valid training requirement. Examples of this training include air combat maneuvering (ACM), NVG training, and terrain flight. In some cases, survey responses were inconsistent with the responses of similar units in the same location, and responses were refined based on averaging and guidance from Marine Corps

TABLE II-17. EL TORO MANEUVER AREA REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER SQDN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REPORTED (KM)	LIMITATIONS/REMARKS
AIRCRAFT SQUADRON T&R Manual/MCCRES Engineering	1	varied	none	10 X 10	Uses targets of opportunity.
BDA	1	desert	none	50 X 50	Surface to 12,000 AGL air space required.
Electronic Warfare	6	mountainous, flat	none	50 X 70	Use NAS, Fallon or NWC, China Lake. Surface to 10,000 AGL air space required.
Combat Service Support	4	hills, stream, moderate vegetation, rough off-road	none	5 X 10	FARP, convoys, fording, driving
ATC	1	desert	none	40 X 40	Surface to 7,000 AGL air space required.
MARINE AIR GROUP T&R Manual/MCCRES Combat Support		varied	none	8 X 20	Battlefield illumination and aerial delivery. Surface to 20,000 AGL required.
Infantry Tactics	4	varied	none	6 X 6	Airfield defense maneuvers.

II-45

TABLE II-18. TUSTIN MANEUVER AREA REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER SQDN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REPORTED (KM)	LIMITATIONS/REMARKS
HM SQUADRON T&R Manual Combat Support, Vertical Assault, Resupply	11	mountainous, hills, beach	none	50 X 20	

representatives. Ground units at MCAS, Tustin did not specify any maneuver area requirements.

c) Considerations

With no local maneuver areas, fixed-wing and helicopter aircraft routinely transit to other bases to conduct training. Ground units transit mainly to Camp Pendleton for training. Aviation units primarily use MCAGCC, 29 Palms or MCAS, Yuma.

b. Interrelationships with Other Facilities

1) Formal Agreements

a) MCAS, El Toro

In an agreement with MCAS, El Toro, the Department of Agriculture provides nine CAL sites, 200 feet in diameter, in the Cleveland National Forest to conduct CAL training. The agreement is effective for an indefinite period and is provided at no direct cost. The agreement also permits the U.S. Army National Guard, Los Alamitos use of the CAL sites. (The Marine Corps has scheduling priority.)

b) MCAS, Tustin

In agreement with MCAS, Tustin, the Department of the Army provides a helicopter landing area in the Prado Flood Control Basin. The agreement, provided at no cost to using units, expires December 31, 1988. Tustin also has two agreements with a private firm for other landing sites, in Black Star Canyon and Orange County. Black Star Canyon is provided at an annual cost of \$312.00, and the renewable agreement expires September 30, 1987. Orange County provides two sites for helicopter landing practice, each approximately 6,000 square feet, at a cost of \$1.00. This agreement expires May 31, 1989.

2) Informal Agreements

Daily routine flight operations at other facilities can usually be arranged by message, speed letter, or by telephone. Larger exercises require a formal, written request from the Officer Conducting the Exercise (OCE). Although use of other bases' facilities is normally kept within Navy-Marine Corps

assets, aviation units use all facilities available to them, including Army and Air Force facilities. For example, VMFA-211 (El Toro) uses the Electronic Warfare Range at NAF, Fallon, and VMA-542 (Cherry Point) uses Chocolate Mountain Impact Area at MCAS, Yuma, with no standing formal or informal agreement. Transient units abide by the base and range regulations of the host activity and normally are not charged for the cost of range or maneuver area use.

6. MCAS, Yuma

a. General

MCAS, Yuma is a principal Marine aviation base capable of providing live fire ranges and maneuver areas that are not often available at other Marine Corps air stations or bases. Air-to-ground live ordnance drops are authorized for many weapons, which is an attractive feature to all Marine aviation commands. This live drop capability creates a requirement for MCAS, Yuma to host not only its tenant activities, but also squadrons from most CONUS Marine Corps air stations and frequently, U.S. Navy squadrons; however, there are limited training areas for ground units. Panel Stager has been renamed Moving Sand, and Rakish Litter has been renamed Cactus West. Because of heavy encroachment at the north edge of Restricted Air Space R-2301 that conflicted with run-in headings, both ranges were relocated approximately 9 nm southeast, further into R-2301 from their former positions. The TACTS provides for realistic air-to-air and no drop bombing training.

1) Live Fire Ranges

a) Availability

Live fire range facilities are provided in Table II-19. For the purposes of this study, three ranges apply: Moving Sand and Cactus West both in R-2301, and Chocolate Mountain Impact Area in R-2507, which is divided into north and south sections. HAWK air defense missiles are launched normally from R-2301W into the impact area in R-2301E.

TABLE II-19. YUMA LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Strafing	4	64 acft	20-mm, 25-mm, .50-cal	strafing panels, simulated airfields, MLT, moving-stationary	1326	
Multipurpose Target	4	64 acft	inert, live bombs, rockets, cannon, LGB	moving-stationary	1326	
Close Air Support and Combat Training	2	32 acft	live bombs, rockets, cannon, napalm	vehicles, buildings, airfields, moving-stationary	666	
Guided Missile	2	32 acft	MAVERICK, WALLEYE	vehicles, buildings	666	
Known Distance	1	15 pos	M16	stationary-stationary	242	
Pistol Qualification	1	12 pos	38-cal, .45-cal	stationary-stationary	242	
Air Defense Firing	1	1 pos	HAWK	stationary-stationary	2	Impact R-2301E

Moving Sand (R-2301W), located approximately 20 nm southeast of MCAS, Yuma, is used for inert weapons only. Special weapons, conventional delivery up to 1,000-pound bombs, heavy ordnance, and five-inch Zunis are authorized on the Special Weapons Target Range. Laser designation is also authorized. The range consists of one combined air-to-ground rocket and bomb target with a combined special (nuclear) and conventional weapons target in a bull's-eye arrangement. The target is scored with an AN/FXQ-3(V) Weapons Impact Scoring System (WISS). Real-time scoring information is provided during the flight, and plotted and printed information is available after the flight. Two strafing panels are available (without scoring) and are located 2,500 feet east of the conventional target. A Mobile Land Target (MLT) is also available with 48 hours notice. The MLT is a remotely-controlled, non-scored target vehicle operating in a race track pattern.

Cactus West (R-2301W) is located approximately 17 nm southeast of MCAS, Yuma and is used for inert weapons only. Heavy ordnance up to and including five-inch Zunis and 1,000-pound bombs is authorized. Laser designation is also authorized. The range consists of three raked air-to-ground rocket and bomb targets, four helicopter strafing targets, and eight fixed-wing strafing targets. It has a combined special (nuclear) and conventional weapons target in a bull's-eye arrangement. Strafing targets consist of 11 berms, four of which are acoustically scored with a DA-3/H Strafe Scoring System. The combined target is scored with an AN/FXQ-3(V) WISS. Real-time scoring information is provided during the flight, and plotted and printed information is available after the flight.

Chocolate Mountain Impact Area (R-2507) is located approximately 50 nm northwest of MCAS, Yuma and is used with numerous types of high explosives and inert ordnance up to and including 2,000-pound general purpose bombs. Laser designation is authorized. The area includes six target

complexes and assorted search and attack target locations. These search and attack target locations consist of more than 200 individual targets, including three surface-to-air missile sites, one surface-to-surface missile site, four simulated airfields, and a scored close air support range.

b) Requirements

MCAS, Yuma live fire requirements are listed in Table II-20. These are existing and projected requirements based on higher authority directives and commanders' prerogatives. These range requirements also include the use of MCAS, Yuma facilities by other than MCAS, Yuma squadrons. The scope of the LATAR Study excludes air-to-air requirements and facilities. There are requirements for ground weapons training other than pistol and rifle training. For example, no ranges exist at Yuma to support the 2d Light Antiaircraft Missile (LAAM) Battalion requirement for machine gun field fire and grenade launcher training.

c) Considerations

MLTs are restricted to 2.75 inches inert ordnance and MK76 practice bombs. No ROCKEYE or live cluster bombs are authorized. Air-to-ground guided missiles are not authorized except by special arrangements. HAWK missile firing, although infrequent, is normally conducted on a weekend so as not to interfere with routine air-to-ground ordnance delivery during normal range hours.

2) Maneuver Areas

a) Availability

Available maneuver areas are listed in Table II-21. TACTS provides for no drop bombing with scoring. In addition, the complex has a threat emitter to add realism to the training. There is no dedicated maneuver area in which to conduct LAAM training, which requires a relatively small area (1 km by 1 km); however, LAAM training is usually accommodated on an informal basis.

TABLE II-20. YUMA LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Strafing	yes	20-mm, 25-mm	5	38	1326	
Multipurpose Target	yes	inert and live bombs, rockets, cannon	5	178	663	No ROCKEYE or cluster bombs.
Close Air Support and Combat Training	yes	20-mm, 25-mm, 2.75-in rockets, napalm	5	62	1326	
Guided Missile	no	AGM65	5	20	0	
Known Distance	yes	M16	13	280	242	
Pistol Qualification	yes	.38-cal, .45-cal, 9-mm	13	214	242	
Combat Pistol	no	.45-cal	1	13	0	
Shotgun Familiarization	no	M870	1	13	0	
Air Defense Firing	yes	HAWK	1	2	2	
Machine Gun 10-Meter	no	M60, M2	1	8	0	
Machine Gun Field Firing	no	M60, M2	1	8	0	
Grenade Launcher	no	M203	1	4	0	
Electronic Warfare	no	chaff, flares, DECM	7	21	0	1 mobile emitter

* Live fire range days required if fully utilized each day

TABLE II-21. YUMA MANEUVER AREAS AVAILABLE

AREA DESIGNATION	SIZE (NM)	PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	LIMITATIONS/REMARKS
R-2301W	27 X 33	desert, mountainous	no drop bombing	Moving Sands and Cactus West are closed during TACTS use.

b) Requirements

Maneuver area requirements are listed in Table II-22. Though LATAR respondents often did not cite the TACTS facility as a maneuver area requirement (no drop bombing), discussions with 3d MAW G-3 personnel indicated that it is a valid training requirement. The TACTS requirements for 3d MAW units, therefore, are included in the table. Other MAW and U.S. Navy squadrons also utilize TACTS.

b. Interrelationships with Other Facilities

1) Formal Agreements

The Real Estate Resource Manager for R-2301W, which includes Moving Sand, Cactus West, and the West Coast Tactical Aircrew Combat System Range, is Commanding General, Luke Air Force Base, and the Manpower and Equipment Resource Manager is Commanding General, MCAS, Yuma. By Federal regulation, Mexican air space will not be penetrated without proper authorization.

2) Informal Agreements

MCAS, Yuma has a basically autonomous training capability and has minimal requirements to conduct training at other facilities.

7. MCB, Camp Pendleton

MCB, Camp Pendleton is the principal FMF installation on the West Coast for ground maneuver elements. FMF major tenant commands occupying the base are 1st MarDiv, 1st FSSG, and MAG-39 of 3d MAW. Camp Pendleton is located midway between the large metropolitan areas of San Diego and Los Angeles, both of which are among the most rapidly growing urban regions in the United States.

a. Live Fire Ranges

1) Availability

Camp Pendleton provides the full spectrum of live fire range facilities to FMF units assigned to the base and supports full-time small arms marksmanship training for MCRD, San Diego, MCAS, El Toro, the School of Infantry, and Selected Marine

TABLE II-22. YUMA MANEUVER AREA REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER SQDN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REPORTED (KM)	LIMITATIONS/REMARKS
LAAM BATTALION MCCRES Weapon Training, Instructor Support	1	semi-flat	not specified	1 X 1	

Corps Reserve (SMCR) units. The total number of available ranges is 74, with an additional 78 gun positions for mortar and artillery firing. These ranges and gun positions are located near the perimeter of the five impact areas: Whiskey, Zulu, X-Ray, Sierra One, and Sierra Two. Range distribution and density allow the majority of units to conduct weapons training within reasonable proximity of their base facilities.

The live fire ranges are actually facilities with individual safety zones, cleared areas, firing points, and varying types of targets and scoring systems. All current weapons assigned to FMF units, including those delivered by aircraft, can be fired at Camp Pendleton with certain limitations or restrictions on the larger caliber guns, bombs, or rocket systems. The specific ranges available and the weapons or unit sizes they support are listed in Table II-23.

2) Requirements

The projected annual FMF live fire user requirements for Camp Pendleton, based on current weapons systems, are listed in Table II-24. Based on these user requirements, it appears that the quantity of ranges available is adequate to support projected use, except for the MOUT Assault Course and the MOUT Tire House.

3) Considerations

On the LATAR survey forms provided to using units, it was requested that the type range needed or desired to accomplish required individual or unit training be selected from a list of range types on the form. The list of range types included several range types not available at Camp Pendleton or in the Marine Corps, but which were identified by using units at Camp Pendleton as desired and/or required ranges. These ranges basically provide an increased capability or effectiveness in the form of pop-up and moving targets or range configuration changes that would increase proficiency. These range modifications, if implemented, would be in keeping with the training standards as outlined in MCO 1510.35A, which specifically stipulates

TABLE II-23. CAMP PENDLETON LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/ UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Known Distance	4	364	M16A2/	standard, stationary	888	
Pistol Qualification	6	205	.45-cal, 9-mm/	pop-up, stationary	1344	
25-Meter	5	180	M16A2/	zero	1210	
Field Firing (Infantry)	16	NA	Dragon, TOW (4), M60 (14), M2 (2)/	moving (1), stationary (3), none (12)	3680	
Hand Grenade	3	15	M67 fragmentation grenade/	none	726	
Grenade Launcher	2	16	M203/	none	484	
Sniper	1	2	M40A1/	standard, stationary	242	
Field Artillery Scaled	1		M31 pneumatic device/	miniature buildings	242	
Tank Subcaliber	1	5	tank subcaliber/	electric pop-up	242	
Antitank Tracking and Live Fire	6		TOW, Dragon, training set XM-70/	none	242	Only live firing; no tracking capability.
Tracked Vehicle Machine Gun	1		7.62-mm/	electric pop-up	212	Units indicated no requirement for this range.
Live Overhead Fire	2	12	blanks/	NA	434	
Tank Gunnery Table VI	1	5	105-mm/	installed for firing	227	

TABLE II-23. CAMP PENDLETON LIVE FIRE RANGES AVAILABLE (CONTINUED)

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Tank Gunnery Tables VII and VIII	2	1 tank run	105-mm/	installed for firing	242	
Demolition	4		explosives (100 lbs max)/	NA	968	
Offensive	8		/ company	electric pop-up	1824	
Moving Target	1		/ platoon	electric pop-up, moving	237	
Helicopter Gunnery	1	1	up to 2.75-in rockets/	1 old truck	242	
Intelligence Reaction	1		/ squad	none	222	
Field Firing (Infantry Large Caliber)	3		/ company	installed for firing	666	
Mortar Gun Position	5 pos	6 guns ea	4.2-mm, 60-mm, 81-mm/	none	1210	
Defensive	4		/ company	electric pop-up (1), none (3)	908	
Machine Gun	1		up to .50-cal/	none	242	
Field Artillery Gun Position Mortar	78 pos	6 gun ea	105-mm, 155-mm/	none	18876	

TABLE II-24. CAMP PENDLETON LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
25-Meter	yes	M16A2	16	64	1210	Not all units request this type range for marksmanship training.
Automated Field Firing	no	M16A2	15	91	0	
Automated Record Firing	no	M16A2	7	49	0	
Sniper	yes	M40A1	9	128	242	72 sniper positions authorized in division.
Machine Gun 10-Meter	yes	M60, M2	19	134	484	Firing lines are at 26 meters and 15 meters. No 10-meter range for M2.
Machine Gun Transition	no	M60, M2, SAW	13	123	0	No Machine Gun Transition Range with electric elevating targets at Camp Pendleton; Field Firing Ranges with stationary targets substitute.
40-mm Machine Gun MK19 Qualification	no	MK19	12	237	0	No range specifically designed for MK19 qualification. No moving targets available. Field Firing Ranges can be used to fire MK19.
Grenade Launcher	yes	M203, M79	15	154	484	
MOUT Assault Course	no	small arms	13	272	0	Programmed for construction in FY 91.
MOUT Tire House	no	small arms	13	272	0	Programmed for construction in FY 91.
Combat Pistol	no	9-mm, .45-cal	10	38	0	
Tank Subcaliber	yes	laser, tank subcaliber	1	72	242	No moving target capability.

* Live fire range days required if fully utilized each day

TABLE II-24. CAMP PENDLETON LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Tank Gunnery Table VI	yes	105-mm tank gun	1	20	227	Table VI needs moving vehicle targets; Camp Pendleton has none.
Tank Gunnery Tables VII and VIII	yes	105-mm tank gun	1	90	142	Range has no moving target capability/standards.
Tank Gunnery Table IX	no	105-mm tank gun	1	60	0	This type firing exercise can be conducted at a maneuver area at MCA GCC, 29 Palms.
MPRC-H	no	infantry weapons, 105-mm tank gun, helicopter operations	2	52	0	
MPRC-L	yes, comparable	infantry weapons, 105-mm tank gun, helicopter operations	4	42	242	No moving target capability. Pop-up targets are not fully automated and self-scoring. Range is called Offensive Combat Range. New facility is due fall of 1988.
Known Distance	yes	M16A2	see Remarks	160	888	Requalification requirement for KD course is approximately 28,000 and B Modified 7,500.
Machine Gun Field Fire	yes	M60, M2	18	240	3146	16 ranges are available; only 4 have stationary targets.
Hand Grenade	yes	hand grenades	23	147	726	
M72 LAW	yes	M72	13	82	222	Can fire M72 on 14 Field Fire Ranges, but only 1 has a moving target capability.
Mortar	yes	81-mm, 60-mm	9	343	1210	5 mortar gun positions capable of handling plat are available.
Mortar Scaled Training	no	M32 pneumatic device	none	NA	NA	

* Live fire range days required if fully utilized each day

TABLE II-24. CAMP PENDLETON LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Field Artillery Scaled	yes	M31 pneumatic device	none	NA	NA	
Antitank Tracking and Live Firing	yes, no	Dragon, TOW	6	309	439	Can fire on 8 ranges, but has no moving target capability.
Helicopter Gunnery	yes	MK19, cannon	3	232	242	Only 1 air-to-ground range; no moving targets; only 1 target (old truck).
Field Artillery Indirect Fire	yes	105-mm, 155-mm	3	450	18876	Range limit approximately 12,000 meters; altitude restriction 2,000 ft AGL.
Air Defense Firing	no	STINGER	8	95	0	
Demolition	yes	explosives	19	170	968	
Electronic Warfare	no	NA	3	9	0	Limited resources at MCAS, Yuma.
Pistol Qualification	yes	.45-cal, 9-mm	see Remarks	323	1344	Requalification requirement is approximately 10,500.
Aircraft Bombing and Strafing	yes	inert bombs, 2.75-in rocket, cannon	9	287	484	Live bombs limited to 250 lbs.

* Live fire range days required if fully utilized each day

requirements for pop-up and moving target firing by specific weapons system.

Marine Corps tank gunnery qualification requirements for individuals and crews cannot be completed at Camp Pendleton due to inadequate range sizes and facilities. Qualification firing is conducted at the U.S. Army range facility at Yakima, Washington or at MCAGCC, 29 Palms, California.

4) Improvements

A Multi-Purpose Range Complex-Light (MPRC-L) has been funded, and construction is scheduled to begin in the fall of 1988. This range will provide a fully automated and self-scoring target system with several moving and pop-up target configurations that should enhance training for infantry and mechanized units.

b. Maneuver Areas/Beaches

1) Availability

There are 29 designated maneuver areas, listed in Table II-25, available for tactical exercises and field training at Camp Pendleton. Almost all training land outside the impact areas is used for maneuver training (tactical training), and on special request, certain impact areas can also be made available. Approximately 114,350 acres are considered available for maneuver training, and because of its mild climate, these areas are available on a year-round basis. Maneuver training areas basically surround the Whiskey and Zulu Impact Areas and generally consist of rugged, steep terrain with sparse vegetation. Seven of these areas, located to the north and east, consist of approximately 14,826 acres. The terrain in these areas is extremely rugged with steep slopes, and they are used primarily for patrolling and small unit infantry tactics training. The area is relatively isolated and is bounded on the north by the reservation boundary. The bulk of the maneuver areas to the south and west of these impact areas also consist of rugged, steep terrain and are restricted by live firing ranges, Basilone Road, and the impact areas to the north and built-up

TABLE II-25. CAMP PENDLETON MANEUVER AREAS/BEACHES AVAILABLE

AREA DESIGNATION	SIZE (SQ KM)	% PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	ADJACENT TO LIVE FIRE RANGES	LIMITATIONS/REMARKS
A-1	1.5 x 2.6 = 3.9	90% mountainous	small unit infantry tactics	yes, 5	vehicle cross-country mobility
A-2	2.7 x 3.6 = 9.72	90% mountainous	small unit infantry tactics	yes, 2	vehicle cross-country mobility
A-3	1.7 x 3.7 = 6.29	80% mountainous 20% rolling	small unit infantry tactics	yes, 3	vehicle cross-country mobility
B-2	3 x 3.5 = 10.5	35% mountainous 50% rolling	helicopter DZ, CAL site	yes, 7	
C	3.5 x 3.6 = 12.6	95% mountainous	CAL site	no	access, isolated area
B-3	3.9 x 4 = 15.6	80% mountainous	small unit infantry tactics, CAL site	yes, 1	vehicle cross-country mobility
D	7.1 x 2.9 = 20.59	100% mountainous	CAL sites (2)	no	access, isolated area
E	7.2 x 2.9 = 20.88	90% rolling	CAL sites (2), DZ	no	access, isolated area
F	5.9 x 2.6 = 15.34	95% mountainous	small unit infantry tactics, CAL site	no	very steep terrain
H	6 x 6 = 36	80% mountainous	CAL sites (3), DZ, gun positions (3)	no	
I	4.1 x 4.2 = 17.22	85% rolling	gun positions (12)	yes, 2	prohibited area 1 x .5 km
J	3 x 5.7 = 17.1	95% rolling	range, DZs (2)	no	
K-1	2.8 x 4.5 = 12.6	90% rolling	AV-8 pad, DZ	no	
K-2	2 x 2.5 = 5	90% rolling	gun positions (2), combat town	no	
L	3 x 3 = 9	50% rolling	small unit infantry tactics	no	golf course location
M	4.9 x 2.4 = 11.76	80% rolling	small unit infantry tactics	no	

TABLE II-25. CAMP PENDLETON MANEUVER AREAS/BEACHES AVAILABLE (CONTINUED)

AREA DESIGNATION	SIZE (SQ KM)	% PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	ADJACENT TO LIVE FIRE RANGES	LIMITATIONS/REMARKS
N	4.9 X 4.8 = 23.52	75% rolling	CAL Sites (2)	no	prohibited area, 3 lakes, 1 X .75 km
O-1	3.6 X 8.8 = 31.68	40% rolling	inland movement from beach, CAL site	no	prohibited area, 3 lakes; 300 to 500 government quarters may be constructed in 1988-1989
O-2	5.2 X 5.4 = 28.08	80% rolling	Ranges 127 and 128, LZ-41, DZ	yes, 1	Boy Scout Camp (prohibited)
P-1	1.8 X 7 = 12.6	50% mountainous	small unit infantry tactics	yes, 3	vehicle cross-country mobility
P-2	5 X 5.9 = 29.5	90% mountainous	small unit infantry tactics, CAL site	no	very steep terrain
P-3	2.9 X 2.8 = 8.12	50% rolling	Range 222, DZs (3), gun positions (4)	yes, 1	
R-1	2.5 X 6.1 = 15.25	95% mountainous	Ranges 206 and 215, gun positions (2)	yes, 9	vehicle cross-country mobility
R-2	4.4 X 4.2 = 18.48	95% mountainous	small unit infantry tactics	no	vehicle cross-country mobility
R-3	2.7 X 3.1 = 8.37	95% mountainous	small unit infantry tactics, CAL site	no	vehicle cross-country mobility
U	12.9 X 1.3 = 16.77	85% level	CAL site, beach landings	no	Interstate 5
V	5 X 4.5 = 22.5	85% level	CAL site, beach landings	no	Interstate 5
Y-2	2.8 X 2 = 5.6	90% mountainous	small unit infantry tactics	no	vehicle cross-country mobility
G	3.5 X 5.2 = 18.2	90% mountainous	gun positions (3), CAL site	yes, 1	very steep eastern portion, partially prohibited
Total sq km		462.77			
Acreage		114,350			

areas, Interstate 5, and railroads to the west. Interstate 5 and the railroad line effectively divide these maneuver areas from the beach landing sites. Additional maneuver areas exist to the east and south of the impact areas, but, except for Areas India and Kilo 2, which lie adjacent to the impact areas and contain numerous field artillery gun positions, are not extensively used for tactical training. They are isolated by barracks/housing areas, the reservation boundary, and the main highway leading into the base. The maximum contiguous available acreage for maneuver purposes is a 6 km by 6 km tract.

Camp Pendleton is the U.S. Marine Corps amphibious warfare training center for the West Coast. It has approximately 12.9 km of available beach frontage from which MAU-sized amphibious operations can be conducted. Larger sized unit amphibious operations can be conducted, but some loss of realism and training effectiveness would result.

Air training is supported at Camp Pendleton for both fixed-wing and helicopter aircraft through the use of restricted air space, drop zones, airfields, CAL sites, designated LZs, and range impact areas.

Cold weather training for Camp Pendleton personnel and units is conducted at the U.S. Marine Corps Mountain Warfare Training Center (MWTC). The Center is located approximately 400 miles north of Camp Pendleton and serves as the only Marine Corp controlled facility offering the proper environment for seasonal cold weather and mountain warfare training. It is comprised of approximately 45,635 acres of rugged terrain and is operated on land provided by a Memorandum of Understanding between the Marine Corps and the U.S. Forest Service. The objective of the MWTC is training individual Marines and units, up to battalion size, for survival, maneuver, and combat in mountain and cold weather environments.

2) Requirements

The principal tactical training activities for FMF battalion-sized units are determined by MCCRES and

contingency mission requirements. MCCRES prescribed levels of tactical proficiency for infantry and tank units require the largest maneuver areas. Contingency missions require tactical training to be conducted in diversified weather and terrain environments, such as cold weather, mountain, jungle, and desert environments, and Camp Pendleton units must rotate to locations where practical training can be conducted. Table II-26 presents an overview of maneuver area requirements for assigned FMF units.

3) Considerations

Maneuver areas are limited principally by their compartmentalized nature and the severity of their terrain. Sufficient areas exist, however, for infantry battalions to conduct the majority of the tactical training required under MCCRES. For tanks, LAVs, and AAVs, a major limitation is the mountainous terrain which limits cross-country mobility and restricts movement of tracked vehicles to trails and unimproved roads. The majority of the area exceeds a slope of 15 percent. Encroachment pressures, particularly in the beach area, are not new, and the landing beach site, although excellent, is divided by Interstate 5, a major north-south highway. Amphibious landings can be achieved, but units must administratively negotiate the crossing sites under the highway before they can again resume normal maneuver play.

8. MCAGCC, 29 Palms

The MCAGCC, 29 Palms, California, is a unique facility possessing sufficient acreage to allow units from other U.S. Marine Corps installations to conduct live fire tactical training exercises. Currently, only four battalion-sized units are permanently assigned to 29 Palms, and these, although taking maximum advantage of the training facilities available, constitute only a small percentage of units that use the training areas and facilities. The MCAGCC is located in the Mojave Desert, approximately 90 miles from Camp Pendleton and El Toro. It is readily accessible by road and by air, but not by rail. The surrounding land to the north, east, and west falls under

TABLE II-26. CAMP PENDLETON MANEUVER AREA/BEACH REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
INFANTRY BATTALION							
MCCRES Training Tasks							
..... Surface Assault	4	beach	yes	25 X 10	2.5 X 3	12.9 X 4.5	Egress routes from beach area are limited.
Helicopter Assault	2	DZ, LZ	yes	4 X 5	4 X 4	4 X 4	
Attack	8	rolling, open	limited	25 x 25	2.5 X 5	6 X 6	Rugged, steep terrain is good for infantry training, but use of vehicles is limited.
Movement to Contact	8	rolling, open	limited	25 X 25	2 X 10	2 X 10	
Night Attack	8	rolling, open	limited	25 X 25	2 X 4.5	6 X 6	
Defense	8	rolling, open	limited	25 X 25	3 X 3	6 X 6	
Retrograde	8	rolling, open	limited	25 X 25	28 X 10	no	Maximum area available is 6 X 6 km.
Tank Infantry Operations (Combined Arms Exercise)	8	open, desert	no	40 X 40	30 X 20	NA	Terrain type and size not available. Training is conducted at MCGCC.
Operational Training Tasks							
..... Military Operations on Urbanized Terrain (Special Operations Capability)	6	built-up	yes	1 X 1	3 X 3	3 X 3	Includes combat town and surrounding terrain.
Mountain/Cold Weather	8	mountainous	no	25 X 25	8 X 8	NA	Training is conducted at MWTC.
Command Post Exercise	4	rolling, open	yes	10 X 15	varied	yes	
Jungle	8	jungle	no	10 X 10	5 X 5	NA	Training is conducted at USAJWC, Panama.

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TABLE II-26. CAMP PENDLETON MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
TANK BATTALION							
Battalion Tactics	1	rolling, open	no	30 X 30	20 X 10	no	Maneuver areas provide only limited cross-country mobility for tracked vehicles.
Company Tactics	1	rolling, open	no	30 X 30	7 X 4	no	Tank platoon exercises are the maximum size practical.
Platoon Tactics	1	rolling, open	yes	30 X 30	4.5 X 1.5	4.5 X 1.5	
Tank Crew Gun Drills	1	level	yes	1 X 1	varied	1 X 1	
Combined Arms Exercise	1	desert	no	30 X 30	30 X 20	NA	Conduct at MCAGCC.
ASSAULT AMPHIBIAN VEHICLE BATTALION 1ST MARINE DIVISION							
Mechanized Operations (Battalion, Company Level)	1	rolling, open	limited	21 X 21	20 X 8	6 X 6	Off beach, terrain is restrictive. Mechanized operations limited to company and platoon size.
Amphibious	1	beach	yes	1 X .5	2.5 X 3	12.9 X 4.5	Egress routes from beaches are limited.
LIGHT ARMORED VEHICLE BATTALION 1ST MARINE DIVISION							
Reconnaissance Missions (Company Level)	1	rolling, open	yes	10 X 20	5 X 5 10 X 1	6 X 6 15 X 1	Some zone reconnaissance will have to be conducted dismounted due to terrain type; route reconnaissance is okay.
Airmobile	1	DZ, LZ	yes	1 X 1	4 X 4	4 X 4	
Amphibious	1	beach	yes	1 X 5	2.5 X 3	12.9 X 4.5	Egress routes from beaches are limited.

TABLE II-26. CAMP PENDLETON MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
Combined Arms Exercise	1	desert	no	15 X 15	30 X 20	none	Training is conducted at MCAGCC.
155-MM (T) HOWITZER BATTALION 1ST MARINE DIVISION							
Battery Tactics	4	rolling, open	yes	10 X 20	1 X 1	6 X 6	Road net and number of gun positions available allow meaningful field artillery training.
Battalion Tactics	4	rolling, open	yes	20 X 30	4 X 7	6 X 6	
Command Post Exercise	4	rolling, open	yes	10 X 15	varied	10 X 15	
Combined Arms Exercise	4	desert	no	20 X 40	30 X 20	none	Training is conducted at MCAGCC.
Amphibious	4	beach	yes	20 X 40 see Remarks	2.5 X 3	12.9 X 4.5	Requested size appears excessive.
RECONNAISSANCE BATTALION 1ST MARINE DIVISION							
Reconnaissance Missions (Company Level)	1	varied	yes	10 X 10	varied	6 X 10	Beach and rugged terrain suited to mission.
Mountain/Cold Weather	1	mountainous	no	10 X 10	8 X 8	NA	Training is conducted at MWTC.
Jungle	1	jungle	no	10 X 10	10 X 10	NA	
Amphibious	1	beach	yes	1 X 30	5 X 5	12.9 X 4.5	Small boat insert; requirement exceeds beach availability.
Desert	1	desert	no	30 X 10	undetermined	NA	Training is conducted at MCAGCC.

TABLE II-26. CAMP PENDLETON MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
HEADQUARTERS BATTALION 1ST MARINE DIVISION							
Command Post Exercise	1	rolling, open	yes	5 X 5	varied	10 X 15	
Communications Exercise (Communications Company)	1	rolling, open	yes	5 X 5	varied	10 X 15	
Military Operations on Urbanized Terrain (Special Operations Capability)	1	built-up	yes	1 X 1	3 X 3	3 X 3	
Infantry Tactics (Defense)	1	rolling, open	yes	4 X 3	2 X 2	6 X 6	
Road Movement (Day, Night)	1	roads, cross- country	yes	none	1 X 12	10 X 15	
COMBAT ENGINEER BATTALION 1ST MARINE DIVISION							
No maneuver area requirement was indicated.							
FORCE SERVICE SUPPORT GROUP							
Rear Area Security	7	rolling, open	yes	2.5 X 2.5	2 X 2	6 X 6	
Convoy Procedures	2	roads	yes	1 X 10	1 X 12	10 X 15	
Combat Service Support Supply	1	rolling, open	yes	3 X 3	4 X 4	see Remarks	Only CSS operational space is required.
Engineer Support	1	level, LZ, CAL site	yes	10 X 10	4 X 4	see Remarks	Only CSS operational space is required.
Bridging	1	river, streams	limited	3 X 3	2 X 2	3 X 3	Water sources are limited.
Beach Support	1	beach	yes	2 X 2	4 X 4	12.9 X 4.5	

TABLE II-26. CAMP PENDLETON MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
Medical	1	rolling, open	yes	1 X 1	4 X 4	see Remarks	Only CSS operational space is required.
Maintenance	1	rolling, open	yes	2 X 6	4 X 4	see Remarks	Only CSS operational space is required.
Motor Transport	1	rolling, open	yes	3 X 4	varied	see Remarks	Only CSS operational space is required.
Fuel Resupply	1	rolling, open	yes	6 X 6	4 X 4	see Remarks	Only CSS operational space is required.
Military Operations on Urbanized Terrain	1	built-up	yes	3 X 3	3 X 3	3 X 3	
Command Post Exercise	2	rolling, open	yes	1.5 X 1.5	varied	10 X 15	
1ST FORCE RECONNAISSANCE COMPANY FMFPAC							
Amphibious	1	beach	yes	5 X 50	5 X 5	12.9 X 4.5	Small boat insert; requirement exceeds availability.
Mountain/Cold Weather	1	rugged, mountainous	no	5 X 10	8 X 8	NA	Training is conducted at MWTC.
Jungle	1	jungle	no	5 X 10	10 X 10	NA	
Desert	1	desert	no	5 X 10	undetermined	NA	Training is conducted at MCAGCC.
Military Operations on Urbanized Terrain (Special Operations Capability)	1	built-up	yes	5 X 10	3 X 3	3 X 3	
Reconnaissance Missions	1	varied	yes	5 X 10	varied	6 X 10	
Parachute Operations (Company Level)	1	level	yes	1 X 1	undetermined	1 X 1	

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TABLE II-26. CAMP PENDLETON MANEUVER AREA/BEACH REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	TERRAIN TYPE AVAILABLE	AVERAGE USER AREA SIZE REQUESTED (KM)	PRE-SCRIBED STANDARD SIZE (KM)	CONSOLIDATED SIZE AVAILABLE (KM)	LIMITATIONS/REMARKS
1ST RADIO BATTALION FMFPAC							
Electronic Warfare	1	rolling, open	yes	2 X 1	varied	10 X 15	
Command Post Exercise	1	rolling, open	yes	10 X 15	varied	10 X 15	
Rear Area Security	1	rolling, open	yes	10 X 15	4 X 4	10 X 15	
MARINE AMPHIBIOUS UNITS							
Amphibious	2	beach	yes	2 X 2	2.5 X 3	12.9 X 4.5	Egress routes are limited.
Airmobile	2	DZ, LZ	yes	2 X 2	4 X 4	4 X 4	
Field Training Exercise	2	rolling, open	yes	8 X 12	varied	6 X 6	Close air support required. Required size may degrade exercise effectiveness.
Command Post Exercise	2	rolling, open	yes	5 X 5	varied		
MARINE AMPHIBIOUS BRIGADE							
Combined Arms and Fire Exercise	1	beach, impact area	yes	10 X 15	varied	12.9 X 4.5	
Amphibious	1	beach	yes	20 X 30	5 X 8	12.9 X 4.5	Egress routes are limited.
Airmobile	1	LZ, DZ	yes	3 X 3	6 X 6	4 X 4	
Military Operations on Urbanized Terrain (Special Operations Capability)	1	built-up	yes	1 X 1	3 X 3	3 X 3	
Command Post Exercise	1	rolling, open	yes	10 X 15	varied	10 X 15	

Bureau of Land Management (BLM) control and is sparsely populated open desert.

a. Live Fire Ranges

1) Availability

MCAGCC provides live fire range facilities for permanently assigned units and also to units temporarily assigned to the installation for training. One of the unique features associated with MCAGCC is that live firing is permitted in maneuver areas. For this reason, and because units normally conduct small-caliber live fire training at home stations, small-caliber ranges at the MCAGCC are not extensively used. The majority of ranges at 29 Palms are used for exercises with weapon systems that can best be fired in the environment of MCAGCC, such as tank gunnery tables, field artillery firing exercises, company/platoon fire, and maneuver range exercises, all of which require extensive movement area and elongated safety fans. The specific ranges available and the weapons or unit sizes they support are listed in Table II-27.

2) Requirements

The projected annual FMF live fire user requirements for MCAGCC, based on both assigned units and units that utilize the MCAGCC only for training, are listed in Table II-28. In addition to the ranges currently available, LATAR responses from units assigned to MCAGCC indicated a need for approximately 11 types of ranges not available at MCAGCC (see Table II-28).

3) Considerations

Submitted data from LATAR user and provider surveys indicates that range facilities for certain weapons do not meet the individual infantry training standards as stipulated in MCO 1510.35A. The stated standards outline a requirement for conducting firing exercises on moving or pop-up targets, which is not always possible at MCAGCC, 29 Palms.

TABLE II-27. 29 PALMS LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/ UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Known Distance	1	50	M16A2/ up to 350 individuals	stationary standard	217	1,000 yds maximum range
Pistol Qualification	1	50	.45-cal, 9-mm/ up to 300 individuals	revolving manual	217	50 yds maximum range
Field Artillery Scaled	1	3	M31/ 3 batteries per day	none	242	730 m maximum range
Demolition	2	NA	demolitions (500 lbs max)/ up to 75 individuals	none	222	
Tank Subcaliber	1	3	M55 laser, .22-cal/ 9 tanks per day	stationary	242	3,000 m maximum range
Field Firing (Infantry)	1	6	.50-cal/ 125 individuals per day	stationary	242	5,000 m maximum range
Grenade and Grenade Launcher	1	6 pits, 3 pos	M67, M203/ 125 individuals per day	stationary	232	1,000 m maximum range
Mortar	1	8	60-mm, 81-mm/	stationary	227	3,500 m maximum range
Defensive	1	NA	all infantry weapons/	stationary	162	used for final protective fire training
Tank Gunnery Table VII Practice	1	1 tk	TOW, 105-mm, practice rounds/ 5 tanks per day	stationary	92	7,000 m maximum range
Tank Gunnery Table VIII Qualification	1	1 tk	105-mm, practice rounds/ 5 tanks per day	stationary	242	7,000 m maximum range
Helicopter Gunnery	1	NA	30-mm cannon, 2.75-in rockets/ 16 helicopters	stationary	232	

TABLE II-27. 29 PALMS LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	NUMBER OF RANGES AVAILABLE	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/ UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Super Critical Fuze Impact	1	NA	CBU, ROCKEYE, FASCAM/ 24 aircraft, 1 battery	none	227	
Mobile Land Target	1	1 tk	105-mm/ 5 tanks per day	moving	142	Not used since 1984.
Offensive (Company)	1	NA	all infantry and supporting weapons/	stationary	187	Rifle company in attack with supporting arms.
Offensive (Platoon)	2	NA	small arms and machine guns/	stationary	207	Rifle platoon in attack.

TABLE II-28. 29 PALMS LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Known Distance	yes	M16A2	7	70	217	
Machine Gun Field Firing	yes	M60, M2	4	20	242	
Hand Grenade	yes	M67, M203, M79	6	39	232	Hand grenade and grenade launcher ranges are combined.
M72 LAW	no	M72	4	19	0	M72 is fired on Range 108 (Antimechanized/Grenade Range), which has no moving target capability required by M72.
Mortar	yes	81-mm, 60-mm	10	67	227	
Mortar Scaled Training	yes	M32 pneumatic device	1	60	242	This is not a designated range, but range simplicity and the availability of land make it usable.
Field Artillery Scaled	yes	14.5-mm training round	5	60	242	
Antitank Tracking and Live Firing	no	Dragon, TOW	3	65	0	No moving target capability exists at MCAGCC as required by this range type.
Helicopter Gunnery	yes	2.75-in rockets, 20-mm cannon, 30-mm cannon, .50-cal	11	98	232	No moving target capability exists at MCAGCC as required by this range type.
Field Artillery Indirect Fire	yes	105-mm, 155-mm, 8-in Howitzer	5	220	see Remarks	All 18 maneuver areas, consisting of 577,266 acres, can be used for live fire or artillery. Except for safety factors and scheduling, all should be available.
Air Defense Firing	yes	STINGER	1	1	NA	Antiair defense weapons are fired from Maneuver Area Delta.

* Live fire range days required if fully utilized each day

TABLE II-28. 29 PALMS LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
25-Meter	no	M16A2	4	16	0	
Automated Field Firing	no	M16A2	2	40	0	
Machine Gun 10-Meter	no	M60, M2, SAW	2	32	0	
Machine Gun Transition	no	M60, M2, SAW	2	24	0	No machine gun transition range with electric elevating targets is available at MCAGCC; field firing ranges with stationary targets substitute.
40-mm Machine Gun MK19 Qualification	no	MK19	2	36	0	No range specifically designed for MK19 qualification; no moving target available. Field fire range or maneuver areas can be used to fire MK19.
Grenade Launcher	yes	M203, M79	5	63	232	
MOU Assault Course	no	small arms	2	19	0	
MOU Tire House	no	small arms	2	16	0	
Combat Pistol	no	.45-cal, 9-mm	5	33	0	
Tank Subcaliber	yes	laser, tank subcaliber	1	108	242	
Tank Gunnery Table VI	comparable	105-mm tank gun, TOW	1	68	142	Table VI uses moving vehicle targets; MCAGCC has facility, but range personnel say it has not been operational since 1984.
Tank Gunnery Tables VII and VIII	yes	105-mm tank gun, TOW	9	63	334	MPRC will replace these facilities in 1988.
MPRC-H	no	105-mm tank gun	1	24	0	MPRC will be available in 1988.

* Live fire range days required if fully utilized each day

TABLE II-28. 29 PALMS LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Demolition	yes	explosives	6	10	222	
Pistol Qualification	yes	9-mm, .45-cal	7	26	217	
Tank Gunnery Table IX	comparable	105-mm tank gun	3	58	see Remarks	No moving targets are available as required by Tank Platoon Battle Run or Table IX. Basic objectives can be met (without moving targets) by using terrain in maneuver areas.
Platoon Fire and Maneuver	yes	small arms, machine guns	1	54	207	Conducted at Ranges 410 and 410A.
Company Fire and Maneuver	yes	infantry weapons, 105-mm tank gun	2	54	187	
Super Critical Fuze Impact	yes	CBU, ROCKEYE, A/AM, ICM, FASCAM	34	35	227	Only 1 of 2 such ranges on the West Coast, and it is used by the Air National Guard and the USAF.
Final Protective Fires (Defensive)	yes	all infantry weapons, 25-mm cannon	12	42	212	

* Live fire range days required if fully utilized each day

4) Improvements

Construction of an MPRC to be built in the Cleghorn Pass area has been funded and is scheduled to begin in the fall of 1988. This range will replace Ranges 111, 113, and 204. It will require less land but will provide for enhanced tank gunnery training. Range 112 will be modified to accommodate MK19 gun firing, but it will not include a moving target configuration, a stipulated training requirement in MCO 1510.35A.

b. Maneuver Areas

1) Availability

There are 18 designated maneuver areas within MCAGCC, listed in Table II-29, consisting of approximately 577,266 acres. The areas located north, east, and west of the barracks/housing area, known as Mainside, are adjacent to one another with usable roads or cross-country access between them. This allows battalion-sized and larger tactical formations to maneuver uninterrupted and unimpeded over relatively large tracts of land, and it allows independent gunnery training exercises or training as part of a tactical exercise. The terrain consists of a series of mountain ridges separated by relatively wide, open, level corridors, which provides an excellent opportunity to observe both direct and indirect fire results. For example, the northwest to southwest corridor in the western portion is approximately 20 km wide and over 20 km long. Vegetation is sparse to non-existent, and the soil consists primarily of sand, rock, and lava. Although the size and topography of 29 Palms are key factors contributing to the effectiveness of the area, its isolated location is also a benefit. Live fire of all conventional ground and air weapons systems can be conducted with relatively few constraints other than basic safety considerations. Associated with the MCAGCC ground area is Restricted Air Space R-2501, which is roughly aligned with the ground boundary.

TABLE II-29. 29 PALMS MANEUVER AREAS AVAILABLE

AREA DESIGNATION	SIZE (SQ KM)	% PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	ADJACENT TO LIVE FIRE RANGES	LIMITATIONS/REMARKS
Sunshine Peak	10 X 15 = 150	75% mountainous	TOW requalification firing, mechanized and company-level tactics	NA	Distance to resupply points is 62 km.
Rainbow Canyon	14 X 9 = 126	60% mountainous	tank battalion battle run	NA	Super Critical Fuze Impact Range (3 X 3 km), a major air-to-ground range, is a restricted area.
Quackenbush Lake	10.5 X 12 = 126	60% rolling	infantry battalion and company tactical training	NA	2 ground-based laser ranges.
Mesa	8.5 X 9 = 76.5	60% mountainous	MCCRES, field artillery firing	NA	Distance to resupply points is 68 km.
Maumee Mine	6 X 13.5 = 81	40% mountainous 40% level	MCCRES, infantry battalion training (FTX, CPX)	NA	Steep mountains to the north are over 4,000 ft in elevation.
Noble Pass	14.5 X 7.5 = 108.75	80% mountainous	tank battle run, small unit infantry tactics, CAX	NA	Limited vehicle cross-country mobility.
Lavic Lake	18 X 9.5 = 171	60% level	mortar firing, TOW firing	NA	Distance to resupply points is 65 km.
Gypsum Ridge	16.5 X 10 = 165	50% rolling 45% level	MCCRES, infantry battalion and company tactical training, CPX	NA	No direct fire allowed in the southern half.
Gays Pass	7.5 X 9 = 67.5	50% mountainous 50% level	mortar firing, infantry battalion and company tactical training, CPX	NA	
Emerson Lake	11.5 X 20 = 230	70% level	MCCRES, infantry battalion and company tactical training, CPX	NA	Noise buffer is in effect on the installation boundary.
America Mine	14.5 X 6.5 = 94.25	50% mountainous 30% rolling	patrolling, mortar firing, infantry company tactical training	NA	No direct access.

TABLE II-29. 29 PALMS MANEUVER AREAS AVAILABLE (CONTINUED)

AREA DESIGNATION	SIZE (SQ KM)	% PREVALENT TERRAIN TYPE	AREA UTILIZED FOR	ADJACENT TO LIVE FIRE RANGES	LIMITATIONS/REMARKS
Bullion	15 X 9 = 135	60% mountainous 40% rolling	machine gun firing, field artillery battery firing, defensive infantry tactics	NA	
Cleghorn Pass	11 X 7 = 77	50% mountainous 50% rolling	infantry company tactical training, machine gun firing.	NA	No heavy ordnance south of 00 grid line.
Delta	19 X 9 = 171	50% mountainous 50% level	battalion-level CPX, company-level training, CAX	NA	
Lava	17 X 13 = 221	40% mountainous 40% level	battalion tactical training, small arms firing, Tank Table VIII	NA	
Lead Mountain	13 X 12 = 156	75% level 15% lava flow	air strikes, mortar firing, field artillery firing	NA	
Blacktop	12 X 13 = 156	75% level	tank gunnery training, machine gun firing	NA	
East	4 X 6 = 24	60% rolling	tank battalion, CAX	NA	
Total sq km		2,336			
Acres		577,226			

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2) Requirements

One of the primary missions of MCAGCC is to provide facilities for the conduct of the Combined Arms Training Program. This is accomplished through the conduct of 10 Combined Arms Exercises (CAX) annually. The CAX program is designed to allow MAUs, comprised of a regimental staff (HHQ), a Ground Combat Element (GCE), Aviation Combat Element (ACE), and a Combat Service Support Detachment (CSSD), to conduct training culminating in a three-day live fire exercise. This allows for simultaneous live fire and maneuver, incorporating all conventional Marine Corps ordnance delivery systems.

Table II-30 presents the ranges and training areas used for both live fire and maneuver by a representative CAX. The schedule for each CAX is different, based on the particular nature of the training required. A basic CAX schedule consists of arrival day; briefing day; nine days of pre-exercise training, including three days of staff training in the Combined Arms Staff Trainer (CAST), two days of Air Support Coordination Exercise (ASCX), two days of Fire Support Coordination Exercise (FSCX), and two days of Mobile Assault Training; registration day; rehearsal day; the three-day live fire war; two debriefing days; and departure day, for a total of 19 days. CAXs are allocated the highest priority for use of training areas, ranges, and air space.

In addition to CAX requirements, the MCAGCC is used by a wide range of air and ground units to accomplish training objectives. MCAGCC maneuver area use for FY 86, by specific type unit and total training days used (including CAX) is as follows:

<u>DAYS</u>	<u>NUMBER AND TYPE UNITS/ACTIVITY CONDUCTED</u>
193	55 attack squadrons (USMC, USAF, and USN) low-level bombing, rocket launching, strafing, and close air support in support of field exercises or individual proficiency

TABLE II-30. 29 PALMS LIVE FIRE RANGES AND MANEUVER AREAS
 REQUIRED FOR REPRESENTATIVE COMBINED ARMS
 EXERCISES

TRAINING AREA/ RANGE REQUIREMENTS	REGT	ACE	INF BN	ARTY	TKS	CSSD	TOTAL
Small Arms	1		3			1	5
108 Grenade	1		3			1	5
109 Mortar			5				5
110 Final Protective Fire			3			1	4
111 Tank Table VII					9		9
113 Tank Table VIII	2				7		9
115 Helicopter Gunnery		9					9
119 Super Fuze Impact		5		1			6
201 Demoliton			3				3
400 Company Fire and Maneuver			6				6
410 Platoon Fire and Maneuver			6				6
410A Platoon Hasty Attack			6				6
Delta	5						5
Noble Pass	5	1					6
Lava	2						2
Gypsum Ridge	7	2		4			13
Quackenbush Lake	7	2		4			13
Gays Pass	7	1		4			12
Lavic Lake		9					9
Rainbow Canyon		9					9
Sunshine Peak		9					9
Emerson Lake			3				3
Maumee Mine			3				3
East	5						5
Mesa		9					9

<u>DAYS</u>	<u>NUMBER AND TYPE UNITS/ACTIVITY CONDUCTED</u>
5	5 commands (USMC and USAF) joint airborne/air transportability training and parachute operations
498	31 squadrons (USMC and USN) helicopter troop lifts, resupply, medical evacuation, low-altitude training, and night vision goggle training
80	6 attack helicopter squadrons close in fire support
32	Joint Chiefs of Staff Exercise GALLANT EAGLE: 10-day exercise 13 work-up period 8-day retrograde
180	10 Combined Arms Exercises: 8 19-day exercises 2 14-day exercises (SMCR)
14	Fire Support Coordination Application Course: 2 7-day training evolutions
21	Landing Force Training Command Pacific Tactical Air Control Party Exercise: 7 3-day training evolutions
6	1st MarDiv Exercise: 6-day exercise
10	7th MAB Exercise: 10-day exercise
52	4 Regimental Exercises: 13-day exercise 11th Mar 2 27th Mar 1 5th Reserve Naval 1 Construction Regt
144	24 Battalion Exercises: 1st Bn, 4th Mar 9 5th Bn, 11th Mar 8 3d Tk Bn 3 3d Bn, 11th Mar 1 2d Bn, 1st Mar 1 1st LAV Bn 1 4th Tk Bn 1

DAYS

NUMBER AND TYPE UNITS/ACTIVITY CONDUCTED

651

217 Company/Battery Exercises:
from 20 major commands

These exercises are scheduled simultaneously in the available training areas not being used by major exercise forces, thereby maximizing the use of training areas

Numerous Platoon Exercises

3) Considerations

The 577,266 acres available at MCAGCC to conduct live fire tactical exercise currently have no limitations or constraints from a training perspective. Matters such as encroachment, insufficient water supply, and environmental protection, however, could affect use and effectiveness in the future. Compared to a U.S. Army standard maneuver area requirement for notional heavy and light divisions, MCAGCC maneuver area acres are as follows:

MCAGCC Maneuver Area Acres Available: 577,266

Notional Heavy Division Acres Required:

Range	111,838
Impact Area	44,331
Total	156,169

Notional Light Division Acres Required:

Range	69,188
Impact Area	94,331
Total	165,319

Compared to Fort Irwin U.S. Army National Training Center, with 412,844, MCAGCC has 164,422 more acres. Fort Irwin conducts force on force exercises but does not have the capability to conduct extensive live fire maneuver exercises as MCAGCC, 29 Palms does.

Another MCAGCC consideration is that because of the extensive live fire conducted in maneuver areas, much dud clearing must take place periodically throughout the year.

9. FMFPAC Marine Activities - Hawaii

The principal installation for FMFPAC forces in Hawaii is the Kaneohe Marine Corps Air Station (KMCAS) where 1st MAB is assigned. Most of the other Marines in Hawaii are assigned to either Headquarters, FMFPAC at Camp H. M. Smith or the Marine Barracks at the Naval Operations Base (NOB), Pearl Harbor. This study addresses these three organizations as a single entity.

1st MAB consists of a brigade-sized Marine Air-Ground Task Force (MAGTF) with a primary mission of preparing to marry-up with Maritime Prepositioning Ships (MPS) equipment to conduct combat operations. 1st MAB is the only permanently standing full MAGTF and has a permanent strength of 8,791, all assigned to KMCAS.

KMCAS has a 7,500-foot runway and supporting taxiways which, in addition to normal operations, are used for access to outer island training areas. Ground training activities at Kaneohe Bay are limited to the range facility. This complex contains rifle and pistol marksmanship ranges, live fire ranges for all weapons organic to a rifle company, and limited demolitions areas. Though there are no designated maneuver areas, the range complex allows for squad-level live fire and maneuver training.

a. Live Fire Ranges

1) Availability

The range facilities at KMCAS, as well as those at Camp H. M. Smith, are limited. Camp Smith range facilities consist only of rifle and pistol qualification ranges. The specific U.S. Marine Corps ranges available and the weapons or unit sizes they support are listed in Table II-31. Live firing for most weapons systems is accomplished at range complexes at the U.S. Army's Schofield Barracks or at Pohakuloa Training Area (PTA). For the air elements, air-to-ground range sites are spread throughout the Hawaiian Islands. For example, live ordnance can be dropped at PTA and Kahoolawe, and the tiny island of Kaula (Barking Sands) is used for inert ordnance drops.

TABLE II-31. HAWAII LIVE FIRE RANGES AVAILABLE

RANGE TYPE AVAILABLE	LOCATION	TOTAL FIRING POSITIONS	RANGE CAPABILITY WEAPON TYPE/UNIT SIZE	TARGET TYPE	RANGE DAYS AVAILABLE	REMARKS
Known Distance	Camp Smith A Range	35	M16A2	standard stationary	242	Has 600-yd berm for sniper firing. USMC utilized.
Known Distance	Camp Smith B Range	47	M16A2	standard stationary	242	Is under-utilized and in poor condition. USN utilized.
Pistol Qualification	Camp Smith C Range	24	.45-cal, 9-mm	stationary turning	242	Is in poor condition. USN utilized.
Pistol Qualification	Camp Smith D Range	24	.45-cal, 9-mm	stationary turning	242	USMC utilized.
Combat Pistol	Camp Smith	10	.45-cal, 9-mm	stationary	242	USMC utilized.
Small Bore	Camp Smith E Range	8	shotgun, .22-cal	stationary	242	
Known Distance	KMCAS W-1	26	M16A2	standard stationary	242	
Pistol Qualification	KMCAS W-4	25	45-cal, 9-mm	stationary turning	242	
Combat Pistol	KMCAS W-5	6	45-cal, 9-mm	stationary	242	
25-Meter	KMCAS W-6	6	M16A2	zero	242	
Hand Grenade	KMCAS W-7	2	hand grenades	none	242	
Demolition	KMCAS W-8	2	demolitions	none	242	
Machine Gun	KMCAS W-2, W-3		M60 (approx 200 per day)	none	242	

All air training cannot be accomplished in Hawaii, and air units deploy to CONUS for additional training.

2) Requirements

The projected annual FMF live fire user requirements for 1st MAB and other Marine units assigned to the Hawaiian Islands are listed in Table II-32.

3) Considerations

Ranges available at either U.S. Marine Corps or U.S. Army facilities adequately meet Marine Corps individual training standards for infantry type weapons as outlined in MCO 1510.35A. Firing of crew-served weapons, including field artillery weapons, within stipulated standards can also be accomplished, the majority of this type firing being conducted at PTA. Aerial gunnery/bomb ranges are also considered adequate. No facility currently exists, however, for MOUT training, but funds have been approved for construction of a MOUT facility at Schofield Barracks, hopefully within the next year.

The majority of live firing takes place at U.S. Army facilities. This is not currently a problem, but the Marine Corps is placed in a user status, with the Army establishing use priorities and regulations. There is no immediate alternative to this relationship, as the acquisition of additional land in the Hawaiian Islands is not feasible. The cooperation of the U.S. Army is essential in this situation, and the U.S. Marine Corps must continue to develop and refine this relationship to ensure continued support.

b. Maneuver Areas

1) Availability

Maneuver areas available to 1st MAB generally belong to one of four categories based on the controlling and/or operating agency. The principal controlling agencies include the Marine Corps, the U.S. Army Support Command, Hawaii (USASCH), and Commander, Third Fleet. In the fourth category are lands procured for training from non-Department of Defense Government agencies (as with Hawaiian Homelands), the Department of Land and

TABLE II-32. HAWAII LIVE FIRE RANGE REQUIREMENTS

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
25-Meter	yes	M16A2	6	46	242	
Automated Field Firing	no	M16A2	7	213	see Remarks	U.S. Army has programmed for construction at Pohakuloa Training Area in FY 1990.
Automated Record Firing	no	M16A2	2	85	see Remarks	U.S. Army has programmed for construction at Pohakuloa Training Area in FY 1990.
Sniper	yes	M40A1	2	73	242	600-yd firing can be conducted at Camp Smith.
Machine Gun 10-Meter	yes	M60, M2	5	58	242	25-meter range (W-6) at KMCAS can be used for 10-meter machine gun range.
Machine Gun Transition	yes	M60, M2	7	74	see Remarks	Firing can be conducted at Schofield Barracks.
40-mm Machine Gun MK19 Qualification	no	MK19	4	65	see Remarks	U.S. Army has programmed for construction at Schofield Barracks in FY 1992.
Grenade Launcher		M203, M79	7	203	see Remarks	KR-9 at Schofield Barracks can be used.
MOUT Assault Course	no	small arms	1	57	see Remarks	U.S. Army has programmed for construction at Schofield Barracks in FY 1989.
MOUT Tire House	no	small arms	2	101	see Remarks	U.S. Army has programmed for construction at Schofield Barracks in FY 1989.
Combat Pistol	yes	.45-cal, 9-mm	16	138	242	Use Close Combat Pistol Course W-5 at KMCAS.
MPRC-L	no	105-mm tank gun, helicopter	1	138	see Remarks	U.S. Army has programmed for construction at Pohakuloa Training Area in FY 1988.

* Live fire range days required if fully utilized each day

TABLE II-32. HAWAII LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Known Distance	yes	M16A2	24	200	484	3 KD ranges are available. Requalification requirements are: KMCAS KD 4,500 KMCAS B Modified 3,228 Camp Smith KD 1,040
Machine Gun Field Firing	yes	M60	9	246	242	Figures are computed solely on KMCAS assets. If requirements exceed range availability, Schofield Barracks has facility.
Hand Grenade	yes	hand grenades	11	144	242	KMCAS range.
M72 LAW	yes	M72	6	82	see Remarks	Ranges 6 and 8 at Schofield Barracks can be used for familiarization and qualification firing.
Mortar	yes	60-mm, 81-mm	2	140	see Remarks	Firing Points 204, 206, 207, and 210 at Schofield Barracks can be used.
Mortar Scaled	no	M31 pneumatic device	2	120	NA	
Field Artillery Scaled	no	M31 pneumatic device	1	20	NA	
Antitank Tracking and Live Firing	yes	Dragon, TOW	3	149	see Remarks	Range facility is available at U.S. Army Pohakuloa Training Area.
Helicopter Gunnery	yes	MK19, 20-mm cannon	5	65	see Remarks	Range facility is available at U.S. Army Pohakuloa Training Area.
Field Artillery Indirect Fire	yes	105-mm, 155-mm	1	65	see Remarks	Range facility is available at U.S. Army Pohakuloa Training Area and Schofield Barracks.

* Live fire range days required if fully utilized each day

TABLE II-32. HAWAII LIVE FIRE RANGE REQUIREMENTS (CONTINUED)

LATAR RANGE TYPE	RANGE TYPE AVAILABLE	WEAPON TYPE	SEPARATE CO/SQDN/BN REQUESTING RANGE	RANGE DAYS REQUIRED*	RANGE DAYS AVAILABLE	REMARKS
Demolition	yes	explosives	5	141	242	
Pistol Qualification	yes	.45-cal, 9-mm	9	51	484	Approximately 2,060 to requalify yearly on 2 ranges.
Electronic Warfare	no	EW	4	16		Training must be conducted at CONUS facilities.
Multipurpose Target	yes	MK76, MK82, MK83, ZUNI, 5-in rockets	5	486	see Remarks	Conducted at Navy facilities.
Strafing	yes	20-mm cannon	1	25		Conducted at Navy facilities.
Close Air Support and Combat Training	yes	bombs, rockets	2	20		Conducted at Navy facilities.

* Live fire range days required if fully utilized each day

Natural Resources, or private citizens, such as Parker Ranch, Bishop Estates, and Campbell Estates. Archeological studies and environmental impact assessments must be prepared and processed through senior on-island Army or Navy engineering commands before civilian land can be used for training.

The best training area used by 1st MAB, PTA, is controlled and operated by USASCH and is located on the island of Hawaii. PTA enables all 1st MAB elements to conduct tactical exercises. Normally, units deploy to PTA twice a year for combined arms training and combat readiness evaluations. The summer deployment is MAB-size in scope and includes elements of CONUS Reserve units. The winter deployment is normally a reinforced Battalion Landing Team (BLT).

Amphibious assault training and live fire exercises employing all 1st MAB weapons systems are conducted on the island of Kahoolawe, under the cognizance of Commander, Third Fleet. On the island of Molokai, the Marine Corps owns a 12-acre support facility and maintains a lease agreement with Hawaiian Homelands for a 6,300-acre parcel used for company-sized infantry training. The island of Oahu, the most populated of all Hawaiian islands, also provides training for all 1st MAB units, but with definite limitations. Bellows Air Force Station provides amphibious and heliborne assault training and is accessible for maneuver and mechanized training. USASCH controls and operates all remaining training areas and facilities used by 1st MAB on Oahu.

2) Requirements

Table II-33 provides a list of 1st MAB and Marine Barracks, Hawaii maneuver areas and annual use requirements.

3) Considerations

The status of maneuver areas in FMFPAC is similar to that of live fire ranges. Since there are virtually no maneuver areas at U.S. Marine Corps facilities, there is continuing need for reliance on the U.S. Army.

TABLE II-33. HAWAII MANEUVER AREA REQUIREMENTS

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	AVERAGE USER AREA SIZE REQUESTED (KM)	WHERE CONDUCTED	LIMITATIONS/REMARKS
INFANTRY BATTALION	2				
Attack		rolling, open	4 X 6	Pohakuloa	Small unit (platoon and squad) exercises can be conducted at Schofield Barracks or KMCAS.
Defend		rolling, open	4 X 6	Pohakuloa	
Delay		rolling, open	4 X 6	Pohakuloa	
MOUT		built-up	1 X 1	NA	Schofield Barracks due for construction in FY 89.
Amphibious		beach	2 X 2	Kahoolawe	
Air Assault Raids		LZ, DZ	1 X 1	Kawailoa	
Command Post Exercise		rolling, open	3 X 5	Pohakuloa	
Mountain/Cold Weather		mountain	2 X 8	MWTC, Bridgeport	
Jungle		jungle	5 X 20	Kawailoa	
Combined Arms Exercise		desert	10 X 20	MCAGCC, 29 Palms	
RECONNAISSANCE COMPANY (1 FMF FORCE, 1 MAB)					
Amphibious Reconnaissance		beach	12 X 5	Bellows AFS	Maneuver area and egress from beach are limited.
Patrolling/Reconnaissance		mountainous	15 X 15	MWTC, Bridgeport	
Patrolling/Reconnaissance		jungle	15 X 15	Kawailoa	Other sites are also available for this training.
Parachute Operations		DZ	20 X 20	various sites	

TABLE II-33. HAWAII MANEUVER AREA REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	AVERAGE USER AREA SIZE REQUESTED (KM)	WHERE CONDUCTED	LIMITATIONS/REMARKS
ENGINEER COMPANY	1				
Infantry Tactics		varied	5 X 7	Kahoolawe	
Engineer Support		varied	3 X 3	Pohakuloa	
ASSAULT AMPHIBIAN VEHICLE DETACHMENT (2 PLATOONS)	1				
Infantry Tactics		rolling, open		Pohakuloa	
Amphibious Operations		beach	1 X 1	Bellows AFS	
Combined Arms Exercise		desert	20 X 10	MCAGCC, 29 Palms	
155-MM (T) HOWITZER BATTALION	1				
RSOP, Movement, Defense		varied	5 X 5	Pohakuloa, Schofield	
MACS-2	1				
Infantry Tactics		rolling, open	3 X 1	Kahuku Hills	
HMM	4				
Aircrew Training		mountain LZ, DZ; desert LZ, DZ; jungle LZ, DZ	160 X 50	varied sites	1,000 ft AGL required
Combat Support		mountain LZ, DZ; desert LZ, DZ; jungle LZ, DZ	19 X 14	varied sites	1,000 ft AGL required
BSSG-1	1				
Rear Area Security		varied	6 X 6	varied sites	
Convoy Procedures		varied	10 X 10	Pohakuloa	

TABLE II-33. HAWAII MANEUVER AREA REQUIREMENTS (CONTINUED)

TYPE UNIT/TRAINING TASKS	NUMBER OF SEP CO/BN REQUESTING	TERRAIN TYPE REQUESTED	AVERAGE USER AREA SIZE REQUESTED (KM)	WHERE CONDUCTED	LIMITATIONS/REMARKS
Combat Service Support		varied	6 X 6	Pohakuloa and other varied sites	
REGIMENTAL HEADQUARTERS	1				
Amphibious Operations		beach	10 X 10	Kahoolawe, Bellows AFS	
Combined Arms Exercise		desert	50 X 30	MCAGCC, 29 Palms	
Combined Arms Exercise		mountainous	50 X 30	MWTC, Bridgeport	
HEADQUARTERS, MARINE AMPHIBIOUS BRIGADE	1				
Combined Arms Exercise		off-shore with beach, maneuver area ashore	44 X 36	varied locations	
TEWT		off-shore with beach, maneuver area ashore	44 X 12		
Command Post Exercise		off-shore with beach, maneuver area ashore	1 X 1		

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D. LACK OF STANDARDS

1. Ground Systems

a. General

Marine Corps publications stipulate training requirements for specific organizations and individuals, the degree of proficiency for each, and in some cases, the frequency of training necessary to accomplish the training objective. To complete this directed training, live fire ranges and maneuver areas must be utilized. In order to ensure that all aspects of directed training requirements are met, range facilities and maneuver areas must have standards and uniform characteristics. For this study, a standard is defined as an official Marine Corps articulation of the physical characteristics of a type range or maneuver area.

b. Live Fire Ranges

Currently, there is no distinct correlation between Marine Corps articulated training requirements and facility characteristics necessary to accomplish required training. This is particularly evident in the area of live fire ranges, where, until most recently, clearly defined specific training requirements did not exist. Local commanders were directed to conduct training in order to accomplish missions but were permitted to determine the specific range requirements necessary to achieve the overall firing objective. As a result, live fire range capabilities and characteristics are diversified and based on a series of local command decisions. Only recently has Headquarters, U.S. Marine Corps published specific guidance outlining training requirements for individuals firing infantry weapons. Consequently, existing range facilities do not always provide the full capability to conduct the training prescribed.

Since the Marine Corps has not yet fully developed live fire training requirements for other ground systems, Marine Corps units generally follow requirements as specified by the U.S. Army. This is particularly true of armor unit requirements.

As a result, tank battalions at Camp Pendleton and Camp Lejeune have difficulty accomplishing training tasks using requirements stipulated by the U.S. Army because no range at either location conforms to U.S. Army standards relative to size, type, or target capability. The MCAGCC, with its large size and open terrain, more closely approximates a location where the full spectrum of U.S. Army tank gun firing tables can be conducted. At present, the MCAGCC tank gun ranges are below U.S. Army directed standards, and until the currently programmed multipurpose range complex is actually constructed, completely adequate tank gun firing facilities will not be available at any Marine Corps facility.

A similar situation exists with the three LAV battalions. These units, which should approximate tank battalions in gunnery requirements, have yet to receive specific tank gunnery firing guidance from Headquarters, U.S. Marine Corps. Local commanders have developed gunnery programs based on an individual concept of what is required. Table II-34 provides examples of three LAV command interpretations of range types required and the amount of time each range is required.

TABLE II-34. RANGE REQUIREMENT INTERPRETATION

<u>REQUESTED RANGE</u>	<u>1ST LAV PENDLETON</u>	<u>2D LAV LEJEUNE</u>	<u>3D LAV 29 PALMS</u>
Tank Gunnery Range (Stationary) Tables V-VI	None Required	20 Hours	4 Hours
Tank Crew Firing Tables VII-VIII	None Required	60 Hours	4 Hours
Tank Platoon Battle Run	None Required	30 Hours	12 Hours
MPRC-H	40 Hours	None Required	4 Hours
Antiarmor Tracking and Live Fire Range	15 Hours	None Required	5 Hours

Based on specific live fire training requirements and LATAR Study findings on the types of ranges currently available at CONUS and Hawaii Marine facilities, inadequacies have been identified which prevent completion of training requirements as stipulated. Tables II-35 and II-36 provide a comparison of live fire training requirements versus range standards available for both individuals and crews/units, respectively.

c. Maneuver Area Requirements

The battalion is the lowest echelon at which all elements of the combined arms team come together. It is at the battalion level where commanders plan artillery fire support, tactical air support, attack helicopter support, air defense employment, and electronic and chemical warfare. It is the battalion commander who actually fights the battle by deploying his units to meet the enemy. To do this, he must communicate and maneuver over extended distances. This makes the key level for effective unit training the battalion.

MCCRES defines the combat tasks of a battalion-sized force and its sub-elements; therefore, the training requirements generated from the defined tasks provide the basis for determining maneuver area standards at a particular installation. Training requirements for larger units involving troop tactical formations cannot be met at any Marine Corps facility other than MCAGCC, 29 Palms. MCCRES defines the task, but neither it, nor any other Marine Corps document, stipulates the area size or terrain type required for task performance. Each installation commander, therefore, determines his own training area requirements based on actual availability.

Current training strategy envisions MCCRES and MCCRES preparatory training being conducted at home stations, except for the battalions assigned to 1st MAB at MCAS, Kaneohe Bay, Hawaii, which must conduct actual MCCRES, and the bulk of any other sub-element maneuver training, at U.S. Army facilities throughout Hawaii. At a minimum, at installations where MCCRES

TABLE II-35. ANNUAL LIVE FIRE REQUIREMENTS VERSUS STANDARDS (INDIVIDUALS)

WEAPON TYPE	SPECIFIED INDIVIDUAL TRAINING REQUIREMENTS			TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
	TYPE FIRE	NUMBER ROUNDS	DISTANCE REQUIRED				
M16A2	qualification	50	200 to 500 m	known distance	yes	labor intense	U.S. Army uses automated record fire for M16A2 qualification. Requalification is annual.
	engage at night	50	not specified	field fire	yes		
	engage using field fire techniques	100	100 to 450 m	field fire (moving target)	yes	Most field firing ranges have no moving target capability.	
.45-cal, 9-mm	qualification, requalification	40	25 yds	pistol qualification	yes		Shotgun also fired on this range.
	qualification	250	7 to 25 yds	combat pistol	no	see Remarks	No specific combat pistol ranges currently exist, but should be relatively easy to construct on a field fire facility.
.38-cal	qualification	50	25 yds	pistol qualification	yes		Primarily air crew weapons.
Hand Grenade	engage	3	not specified	hand grenade	yes		
M203 Rifle Grenade	zero	10	200 m	rifle grenade	yes		Training conducted quarterly by grenadiers.
	engage	7	90 to 350 m	rifle grenade	yes		Training conducted quarterly by grenadiers.
	engage (limited visibility)	7	not specified	field fire	yes		Training conducted quarterly by grenadiers.

TABLE II-35. ANNUAL LIVE FIRE REQUIREMENTS VERSUS STANDARDS (INDIVIDUALS) (CONTINUED)

WEAPON TYPE	SPECIFIED INDIVIDUAL TRAINING REQUIREMENTS			TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
	TYPE FIRE	NUMBER ROUNDS	DISTANCE REQUIRED				
M72 LAW	engage	4	100 to 200 m	field fire (moving target)	yes	Camp Pendleton has the only field firing range with moving target capability.	
M249 SAW	zero	24	300 to 500 m	10-meter machine gun, field fire	no		Training conducted quarterly by automatic riflemen. No specific 10-meter machine gun range exists at USMC facilities, but 25-meter rifle (zero) range can be used.
	qualification	114	10 m	10-meter machine gun, field fire, machine gun transition	yes		
	engage (limited visibility)	30	not specified	not specified			
M60	zero	6	10 m	10-meter machine gun	no		No specific 10-meter machine gun range exists at USMC facilities, but 25-meter rifle (zero) range can be used.
	qualification	616	10 m	10-meter machine gun, machine gun transition	no		Training conducted annually by gunners, A-gunners.
	engage (night sight)	50	25 m	25-meter	yes		Training conducted annually.

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TABLE II-35. ANNUAL LIVE FIRE REQUIREMENTS VERSUS STANDARDS (INDIVIDUALS) (CONTINUED)

WEAPON TYPE	SPECIFIED INDIVIDUAL TRAINING REQUIREMENTS			TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
	TYPE FIRE	NUMBER ROUNDS	DISTANCE REQUIRED				
M2	zero	6	10 m	10-meter machine gun	no		No specific 10-meter machine gun range exists at USMC facilities, but 25-meter rifle (zero) range can be used.
	familiarization	56	10 m	10-meter machine gun, machine gun transition	no		Training conducted annually by gunners, A-gunners.
	engage (night sight)	50	not specified	field fire	yes		
MK19	zero	9	not specified	field fire	yes		Zero and familiarization firing performed quarterly by gunners, A-gunners.
	familiarization	63	700 to 1500 m	field fire	yes	see Remarks	Field fire ranges have no moving target capability as required in Training Objective. Field fire ranges are temporary until approval of specific MK19 range.
	engage (night sight)	50	700 to 1500 m	field fire	yes		
60-mm	fire	5	NA	not specified	NA		
	fire in hand-held mode	5	NA	not specified	NA		Mortars are fired from mortar positions into impact areas. No specific mortar range exists at any USMC facility.

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TABLE II-35. ANNUAL LIVE FIRE REQUIREMENTS VERSUS STANDARDS (INDIVIDUALS) (CONTINUED)

WEAPON TYPE	SPECIFIED INDIVIDUAL TRAINING REQUIREMENTS			TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
	TYPE FIRE	NUMBER ROUNDS	DISTANCE REQUIRED				
81-mm	fire	5	NA	not specified	NA		Mortars are fired from mortar positions into impact areas. No specific mortar range exists at any USMC facility.
Dragon	engage	4	350 to 900 m	not specified	yes	Training Objective requires firing on moving target; none available.	Distance required to engage with Dragon appears excessive. Training conducted annually by gunners, A-gunners.
TOW	engage	4	1500 to 3000 m	not specified	yes	Training Objective requires firing on moving target; none available.	Training conducted annually by gunners, A-gunners.
Demolitions	detonate	3, 1/4-lb demolition blocks	NA	demolition	yes		

TABLE II-36. ANNUAL GROUND UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS)

WEAPON TYPE	SIZE	UNIT/CREW TRAINING REQUIREMENTS			TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
		TYPE FIRING EXERCISE	ROUNDS PER WEAPON	FREQUENCY REQUIRED				
M60A1	crew	Subcaliber, Tables I-IV	NA	6	tank subcaliber	yes	No moving target capability.	
	crew	Table V	850 7.62-mm 350 .50-cal	3	tank gunnery (stationary)	yes	No moving target capability.	
	crew	Table VI	14 105-mm 50 .50-cal	1	tank gunnery (stationary)	yes	No moving target capability.	Full Crew Interactive Simulator (FCIS) can be substituted on all Tables to save main gun ammunition.
	crew	Table VII (practice)	15 105-mm 200 7.62-mm 150 .50-cal	1	tank crew combat firing course	yes	Camp Lejeune course is limited in length. No moving target capability at Camp Lejeune, Camp Pendleton, and MCAGCC.	
	crew	Table VIII (qualification)	22 105-mm 250 7.62-mm 300 .50-cal	3	tank crew combat firing course	yes	Camp Lejeune course is limited in length. No moving target capability at Camp Lejeune, Camp Pendleton, and MCAGCC.	
	section	Tables IX and X (qualification)	250 7.62-mm 150 .50-cal	2	MPRC-H	no		MCAGCC has a type MPRC programmed for construction in FY 88.
	platoon	Tables XI and XII (qualification)	13 105-mm	1	MPRC-H	no		MCAGCC has a type MPRC programmed for construction in FY 88.
LAV	crew, platoon	Tank Gunnery Tables	not specified	not specified	tank gunnery (stationary)	yes	No moving target capability.	No specific gunnery requirements have been directed for LAV battalions.

TABLE II-36. ANNUAL GROUND UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS)

WEAPON TYPE	SIZE	UNIT/CREW TRAINING REQUIREMENTS			TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
		TYPE FIRING EXERCISE	ROUNDS PER WEAPON	FREQUENCY REQUIRED				
155-mm (T) Howitzer, 155-mm (SP) Howitzer	crew to battalion	drills, live fire exercises	16,704 per battalion	varied based on fire mission type	field artillery indirect fire	see Remarks	Each gun position can accommodate 6 to 8 guns; there are now 8 guns per battery.	Artillery firing is conducted from artillery gun positions, not a specified range. The 8 gun positions existing at all installations are sufficient.
8-in Howitzer	crew to battery	drills, live fire exercises	2,340 per division	varied based on fire mission type	field artillery indirect fire	see Remarks	Each gun position can accommodate 6 to 8 guns; there are now 8 guns per battery.	Artillery firing is conducted from artillery gun positions, not a specified range. The 8 gun positions existing at all installations are sufficient.

and MCCRES-related training is conducted, contiguous maneuver areas must be large enough to accommodate the most land intensive training event required. As stated, the Marine Corps does not stipulate specific maneuver area size requirements, but the U.S. Army provides an insight into similar organizations accomplishing basically the same tactical tasks. The U.S. Army training program comparable to MCCRES is the Army Test and Evaluation Program (ARTEP). Table II-37 lists infantry type training tasks for both the U.S. Army and U.S. Marine Corps infantry units and provides the maneuver area size requirements for each task the U.S. Army considers necessary to accomplish the ARTEP evaluation for an infantry battalion.

TABLE II-37. TRAINING TASKS AND ASSOCIATED LAND REQUIREMENTS

<u>U.S. ARMY ARTEP TASK</u>	<u>U.S. ARMY REQUIRED LAND (KM)</u>	<u>U.S. MARINE CORPS MCCRES TASK</u>
Inf Bn (773 Men)		Inf Bn (833 Men)
Daylight Attack	2.5 X 5.0 = 12.5	Attack
Defense	3.0 X 3.0 = 9.0	Defense
Delay	28.0 X 10.0 = 280.0	Retrograde Operations
Night Withdrawal	3.0 X 6.0 = 18.0	-----
Night Attack	2.0 X 4.5 = 9.0	Night Attack
Airmobile Assault	4.0 X 4.0 = 16.0	Helicopterborne Assault
Defense of Built-up Area	3.0 X 3.0 = 9.0	-----
-----		Surface Assault
-----		Tank-Infantry Operation

Infantry battalions, as the principal maneuver force of all units within the Marine Division, require the greatest amount of maneuver land for training tasks. According to Table II-37, the task requiring the most land, 280 square kilometers or 69,188 acres, is that of the infantry battalion conducting a delay operation. This then becomes the critical land size requirement for MCCRES training at a particular installation. Size by itself, although an important factor, must be considered together with terrain type and the contiguity of

maneuver areas so that there can be a meaningful, sequential flow to the training activity.

In general, battalion- and company-sized organizations should conduct tactical training on the type terrain on which the unit may be required to conduct its contingency missions. For Marine units, this may be mountain, desert, and/or jungle type terrain. In reality, these diversified training requirements cannot always be conducted at the desired location on a consistent or continuing basis as cost, scheduling, and distance affect participation. FMF units do conduct this terrain-oriented training, but it is cyclic at best, and the bulk of training requirements still must be conducted at home stations on the type terrain available there.

The type terrain utilized for training should not be so restrictive that training requirements are compromised in order to overcome topographic limitations. Units must practice basic fire and maneuver techniques without the distraction of adverse terrain features.

Another factor relative to training and terrain is that exercise techniques must be readily observable to leaders to discern difficulties. This leads to a requirement for relatively open terrain with good fields of observation. The ideal topography for battalion, as well as small unit-sized training requirements, is undulating terrain/hills with moderate to light vegetation.

Relative to contiguity, it is possible to train for each prescribed tactical mission or task in isolation; however, at some stage, units should undertake field exercises incorporating all of their critical missions in a logical sequence of events to ensure effectiveness in an environment that approximates actual combat. This requires a flow of logical events without interruption and the subsequent tactical deployment from one terrain feature to another. This necessitates contiguous maneuver land areas and the logical tactical ingress to and egress from them.

Size, terrain type, and area contiguity are all equally important to the development of maneuver area standards. Of concern is how well the four Marine Corps bases at which ground combat elements of the FMF are stationed provide the required maneuver area standards based on the criteria outlined above. Table II-38 provides a summarization of infantry battalion requirements.

The LATAR Study has documented the presence or absence of both live fire range and maneuver area standards throughout the Marine Corps at CONUS and Hawaii facilities.

It appears that with the recent emphasis on and a more clearly defined centralized determination of training requirements, live fire ranges can be modified or constructed to a standard that ensures completion of training requirements. Maneuver areas, however, such as those at Camp Pendleton, Camp Lejeune, and Kaneohe have size, terrain characteristics, or encroachment restrictions that make standardization more difficult. The land acquisition planned for Camp Lejeune will help, but Camp Pendleton and Kaneohe are located in the centers of urban development that precludes any major expansion. The solution to the requirement to provide adequate maneuver area land is beyond the scope of the LATAR Study. The Study, at this point, simply documents the fact that maneuver area standards are lacking in certain areas. Conversely, MCAGCC, 29 Palms possesses the size, terrain, and contiguity characteristics required, and is located in an isolated environment with good climatic conditions which allow for maximum training effectiveness. To capitalize on these assets should be a major consideration in future U.S. Marine Corps planning.

2. Aviation Systems

a. General

Formal aviation training requirements are established in MCO P3500 series T&R Manuals and Mission Performance Standards of MCCRES. The syllabuses describe the

MANEUVER
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TABLE II-38. SUMMARY OF INFANTRY BATTALION MANEUVER AREA REQUIREMENTS

	MCB, CAMP PENDLETON	MCB, CAMP LEJEUNE	MCAGCC, 29 PALMS	MCAS, KANEHOE
Number of Infantry Battalions?	9	8	1	2
Number of acres available?	106,698	48,375	577,266	32,000**
Is area size adequate?	Yes *1	No *2	Yes *3	Yes *4
Terrain type?	Rough Mountainous	Wooded Flat Coastal	Desert Rolling	Level Open
Is terrain type adequate?	Marginal	No	Yes	Marginal
Is terrain continuous?	No	No	Yes	Unknown
Is expansion possible?	No	Yes	NA	No

Area Size Notes:

- *1. Accommodates 5 of 7 MCCRES tasks
- *2. Accommodates 3 of 7 MCCRES tasks
- *3. Accommodates 6 of 7 MCCRES tasks
- *4. Accommodates 4 of 7 MCCRES tasks

** 1st MAB conducts the majority of its tactical training requiring maneuver areas at the U.S. Army Pohakuloa Training Area on the island of Hawaii.

Size, terrain type, and area contiguity are all equally important to the development of maneuver area standards. Of concern is how well the four Marine Corps bases at which ground combat elements of the FMF are stationed provide the required maneuver area standards based on the criteria outlined above. Table II-38 provides a summarization of infantry battalion requirements.

The LATAR Study has documented the presence or absence of both live fire range and maneuver area standards throughout the Marine Corps at CONUS and Hawaii facilities.

It appears that with the recent emphasis on and a more clearly defined centralized determination of training requirements, live fire ranges can be modified or constructed to a standard that ensures completion of training requirements. Maneuver areas, however, such as those at Camp Pendleton, Camp Lejeune, and Kaneohe have size, terrain characteristics, or encroachment restrictions that make standardization more difficult. The land acquisition planned for Camp Lejeune will help, but Camp Pendleton and Kaneohe are located in the centers of urban development that precludes any major expansion. The solution to the requirement to provide adequate maneuver area land is beyond the scope of the LATAR Study. The Study, at this point, simply documents the fact that maneuver area standards are lacking in certain areas. Conversely, MCAGCC, 29 Palms possesses the size, terrain, and contiguity characteristics required, and is located in an isolated environment with good climatic conditions which allow for maximum training effectiveness. To capitalize on these assets should be a major consideration in future U.S. Marine Corps planning.

2. Aviation Systems

a. General

Formal aviation training requirements are established in MCO P3500 series T&R Manuals and Mission Performance Standards of MCCRES. The syllabuses describe the

TABLE II-38. SUMMARY OF INFANTRY BATTALION MANEUVER AREA REQUIREMENTS

	MCB, CAMP PENDLETON	MCB, CAMP LEJEUNE	MCAGCC, 29 PALMS	MCAS, KANEHOE
Number of Infantry Battalions?	9	8	1	2
Number of acres available?	106,698	48,375	577,266	32,000**
Is area size adequate?	Yes *1	No *2	Yes *3	Yes *4
Terrain type?	Rough Mountainous	Wooded Flat Coastal	Desert Rolling	Level Open
Is terrain type adequate?	Marginal	No	Yes	Marginal
Is terrain continuous?	No	No	Yes	Unknown
Is expansion possible?	No	Yes	NA	No

Area Size Notes:

- *1. Accommodates 5 of 7 MCCRES tasks
- *2. Accommodates 3 of 7 MCCRES tasks
- *3. Accommodates 6 of 7 MCCRES tasks
- *4. Accommodates 4 of 7 MCCRES tasks

** 1st MAB conducts the majority of its tactical training requiring maneuver areas at the U.S. Army Pohakuloa Training Area on the island of Hawaii.

number of sorties, number of flight hours, aircraft, goals, prerequisites, requirements, ordnance, and flight planning and conduct. The range types or target requirements to support a specific mission are not identified. The range requirements considered necessary to flight conduct for a specific mission are at the discretion of the squadron commanding officer and are based on four elements: location, availability, support requirements, and range facilities. Location, availability, and support requirements may vary with each mission, but range characteristics remain constant, and as such should be standardized to support multiple missions. Ranges and maneuver areas have changed from wide, open expanses with few weapons system restrictions to areas permitting only subcaliber or inert weapons. Range and maneuver area standards are derived from training requirements, or the lack thereof, and are based on T&R and MCCRES training requirements and commanders' desired characteristics.

To generalize, most live fire ranges have evolved to become multipurpose ranges. That is, once the air space and associated land areas have been committed for air-to-ground delivery, the range is adorned with target vehicles, airfields, surface-to-air missile (SAM) sites, strafing panels, etc., to make the best use of the area. Maneuver areas are much less standardized. They are not developed to support a specific mission performance standard, but are what is remaining from live fire ranges. There are range and maneuver area training requirements; however, there are no established range and maneuver area standards.

b. Live Fire Requirements versus Standards

Table II-39 presents range requirements by aircraft, ordnance, and type. The table also identifies whether or not the range is available within the Marine Corps. Not all ranges identified are available at all Marine Corps facilities, but possibly only at one facility. Some range requirements are not supported at any Marine Corps facility, but the requirements

TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
A-4	MK76	250	loft, multipurpose	yes		Various delivery modes, i.e., loft, over-the-shoulder, where higher altitude requirements apply.
	MK82	25	loft, multipurpose high altitude	yes		Only Yuma and 29 Palms authorized.
	MK82SE	50	loft, multipurpose	yes		Only Yuma and 29 Palms authorized.
	MK82 inert	10	loft, multipurpose	yes		Only Camp Pendleton, Yuma, and 29 Palms authorized.
	LGB	1	multipurpose	yes	Limited laser designated areas.	
	2.75-in rocket	12	multipurpose, CAS	yes		Loft or low-angle deliveries.
	5-in rocket	80	multipurpose, CAS	yes		Loft or low-angle deliveries.
	MK77	4	multipurpose	yes		
	MK45	20	multipurpose	yes		
	20-mm	1,600	strafing	yes		
	AGM-45	1	guided missile	no		Normally use NWC, China Lake.
	chaff	100	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.

TYPE RANGE AVAILABLE:

"Yes" signifies only that the range is available at at least one Marine Corps facility. "No" signifies that the Marine Corps does not have the range capability for the weapon specified, although the range may be available to the Marine Corps for use. If a range is identified for a weapons system, it does not signify that the range is a standard, and it may lack certain required characteristics.

TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS) (CONTINUED)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
A-4 (continued)	flares	100	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.
	MK20	2	multipurpose	yes	Only 1 USMC range authorized.	Restricted to R-2501N, MCAGCC, 29 Palms. Use normally not authorized due to safety considerations of ground personnel exposed to duds and personnel requirements for recovery.
	BDU	1	multipurpose	no	Inert authorized.	
	MK106	13	multipurpose	yes		High altitude, loft, and CAS/CTA ranges are also used.
	MK25	4	aerial mining	no		Use Navy ranges.
	MK36	4	aerial mining	no		Use Navy ranges.
OA-4, TA-4	MK76, BDU-48	66	loft, multipurpose	yes		No pop-up deliveries authorized at some ranges.
	2.75-in rocket	133	multipurpose, CAS	yes		
	5-in rocket	16	multipurpose, CAS	yes		
	20-mm	600	CAS, strafing	yes		
	chaff	270	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.
	flares	270	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.

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TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS) (CONTINUED)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
OA-4, TA-4 (continued)	MK82	6	loft, multipurpose	yes		
	MK82 inert	4	loft, multipurpose	yes		
	AGM-45	1	guided missile	no		Normally use NWC, China Lake.
	WALLEYE	1	guided missile	no		Ranges by special request.
	MK77	2	multipurpose	yes		
A-6	MK76	464	loft, multipurpose	yes		Some ranges do not allow pop-up maneuvers.
	MK82	142	loft, multipurpose high altitude	yes	Limited laser designated areas.	LGB version authorized.
	MK106	18	loft, multipurpose	yes		
	BDU	2	multipurpose	no		Personnel requirements for immediate recovery are not available.
	MK77	4	multipurpose	yes		napalm
	2.75-in rocket	10	multipurpose, CAS	yes		
	5-in rocket	24	multipurpose, CAS	yes		
	chaff	300	electronic warfare	no		
	flares	180	electronic warfare	no		
	MK20	24	multipurpose			Restricted to R-2501N, MCAGCC, 29 Palms.
	MK83	54	loft, multipurpose	yes	Limited laser designated areas.	LGB version authorized.
	CBU-72	8	multipurpose	yes	Authorization susceptible to strong wind conditions.	Restricted to R-2501N, MCAGCC, 29 Palms.
	AGM-45	1	guided missile	no		Normally use NWC, China Lake.

TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS) (CONTINUED)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
F-4	MK76	27	loft, multipurpose	yes		Some ranges restrict pop-up deliveries.
	MK82	44	loft, multipurpose	yes		
	MK83	44	loft, multipurpose	yes		LGB authorized for MK83.
	2.75-in rocket	36	multipurpose, CAS	yes		
	5-in rocket	30	multipurpose, CAS	yes		
	MK77	12	multipurpose	yes		
	MK45	12	multipurpose	yes		
	20-mm	1,000	CAS, strafing	yes		
	chaff	9	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.
	flares	9	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.
	MK20	2	multipurpose	yes		Restricted to R-2501N, MCAGCC, 29 Palms.
F-18	MK76	205	loft, multipurpose	yes		No pop-up deliveries authorized at some ranges.
	MK82	68	loft, multipurpose	yes		No pop-up deliveries authorized at some ranges.
	MK83	8	loft, multipurpose	yes		No pop-up deliveries authorized at some ranges.

TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS) (CONTINUED)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
F-18 (continued)	2.75-in rocket	74	multipurpose, CAS	yes	Some ranges allow inert only.	
	5-in rocket	20	multipurpose, CAS	yes	Some ranges allow inert only.	
	20-mm	10,760	CAS, strafing	yes		
	chaff	1,280	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.
	flares	480	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.
	LGB	1		yes	Limited laser designated areas.	
	WALLEYE	1	guided missile	no		
	AGM-65	1	guided missile	no		
	AGM-45	1	guided missile	no		
	MK20	2	multipurpose	yes	Restricted to Range 119, MCAGCC, 29 Palms.	Normally use NWC, China Lake. MCAGCC, 29 Palms has the only USMC range authorized.
	CBU-59	2	multipurpose	yes	Restricted to Range 119, MCAGCC, 29 Palms.	MCAGCC, 29 Palms has the only USMC range authorized.
CBU-55, CBU-72	2	multipurpose	yes	Restricted to Range 119, MCAGCC, 29 Palms.	MCAGCC, 29 Palms has the only USMC range authorized.	
KC-130	LUU-2	64	multipurpose	yes		Illumination for fixed-wing attack, ground or helicopter assault.
AV-8B	MK76	125	multipurpose	yes		
	BDU-48	117	multipurpose	yes		

TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS) (CONTINUED)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
AV-8B (continued)	25-mm	1,275	CAS, strafing	yes		
	MK106	18	multipurpose	yes		
	2.75-in rocket	72	multipurpose, CAS	yes		
	5-in rocket	8	multipurpose, CAS	yes		
	chaff	480	electronic warfare	no	Limited to antiaircraft mission.	MAEWR is under development.
	flares	120	electronic warfare	no	Limited to antiaircraft mission.	MAEWR is under development.
	MK82	116	multipurpose	yes		Live fire only at MCAS, Yuma and MCAGCC, 29 Palms.
	GBU-12, GBU-16	1	?	?		
	MK45	2	multipurpose	yes		
	MK20	2	multipurpose	yes		Restricted to R-2501N, MCAGCC, 29 Palms.
	MK77	4	multipurpose	yes		
	AV-8A/C	MK76	156	multipurpose	yes	
MK106		60	multipurpose	yes		
MK805		18	multipurpose	yes		
LGB		1	multipurpose	yes	Limited laser designated areas.	
2.75-in rocket		98	multipurpose, CAS	yes		
5-in rocket		32	multipurpose, CAS	yes		
30-mm		1,080	CAS, strafing	yes		
MK77		12	multipurpose	yes		

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TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS) (CONTINUED)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
AV-8A/C (continued)	MK20	4	multipurpose	yes	Limited to MCAGCC, 29 Palms.	Restricted to R-2501N, MCAGCC, 29 Palms.
	MK45	16	multipurpose	yes		
	chaff	4	electronic warfare	no	Limited to antiaircraft mission.	MAEWR under development.
OV-10	7.62-mm	8,800	CAS, strafing	yes		Multipurpose range is also used.
	2.75-in rocket	189	CAS	yes		
	5-in rocket	36	CAS	yes		
	20-mm	900	CAS, strafing	yes		Multipurpose range is also used.
	CBU-55	4	multipurpose	yes		Offset with ground forces for safety.
	MK45	64	multipurpose	yes	Wind restrictions apply.	
	MK106, ADSID	12	multipurpose	yes		
	MK76	6	multipurpose	yes		
	chaff	120	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.
	flares	120	electronic warfare	no	USMC has no electronic warfare ranges.	Use NAS, Fallon; NWC, China Lake; Eglin AFB. A mid-Atlantic electronic warfare range is being developed at BT-11, MCAS, Cherry Point.
CH-53A/D	chaff	95	electronic warfare	no	USMC has no electronic warfare ranges.	Local training is extremely limited. Travel to an electronic warfare range is often not practical.

TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS) (CONTINUED)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
CH-53A/D (continued)	flares	95	electronic warfare	no	USMC has no electronic warfare ranges.	Local training is extremely limited. Travel to an electronic warfare range is often not practical.
	.50-cal, 7.62-mm	3,500	helicopter gunnery, strafing	yes		
UH-1	7.62-mm	2,000	helicopter gunnery, strafing	yes		
	2.75-in rocket chaff	70	CAS	yes	Some ranges allow inert only.	Special training rounds.
		40	electronic warfare	no	USMC has no electronic warfare ranges.	Local training is extremely limited. Travel to an electronic warfare range is often not practical.
	flares	130	electronic warfare	no	USMC has no electronic warfare ranges.	Local training is extremely limited. Travel to an electronic warfare range is often not practical.
CH-46	chaff	200	electronic warfare	no	USMC has no electronic warfare ranges.	Local training is extremely limited. Travel to an electronic warfare range is often not practical.
	flares	5	electronic warfare	no	USMC has no electronic warfare ranges.	Local training is extremely limited. Travel to an electronic warfare range is often not practical.
	.50-cal, 7.62-mm	1,200	helicopter gunnery, strafing	yes		
CH-53E	.50-cal, 7.62-mm	1,500	helicopter gunnery, strafing	yes		
AH-1	2.75-in rocket	486	multipurpose, CAS	yes		
	20-mm	14,300	helicopter gunnery, strafing	yes		

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TABLE II-39. ANNUAL AVIATION UNIT LIVE FIRE REQUIREMENTS VERSUS STANDARDS (CREW/UNITS) (CONTINUED)

WEAPON TYPE	ORDNANCE	NUMBER ROUNDS	TYPE RANGE REQUIRED	TYPE RANGE AVAILABLE	AVAILABLE RANGE LIMITATIONS	REMARKS
AH-1 (continued)	CBU-55	1	multipurpose	yes		Offset with ground forces for safety.
	TOW	1	multipurpose	yes		Special request required.
	MK45	16	multipurpose	yes		
	5-in rocket	20	multipurpose, CAS	yes		
	chaff	30	electronic warfare	no	USMC has no electronic warfare ranges.	Local training is extremely limited. Travel to an electronic warfare range is often not practical.
LAAM	I-HAWK	1	air defense firing	yes	Special request required.	MCAS, Yuma and MCB, Camp Lejeune.
LAAD	STINGER	1	air defense firing	yes	Special request required.	MCAGCC, 29 Palms and MCB, Camp Lejeune.

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may be supported at facilities available for use by Marine Corps units. Aviation live fire ranges are not standardized, and available ranges identified are not necessarily standard ranges and possibly lack characteristics required for certain training, such as target types, altitude, communication, instrumentation, and air speed. Using areas deficient in required characteristics compromise effective training.

c. Maneuver Area Requirements versus Standards

The fact that most aircraft drop chaff and flares (ordnance) in an EW environment does not necessarily identify a mission as having a live fire range requirement. It is common for EW training to take place in conjunction with weapons delivery. Accordingly, for the purposes of this Study, EW is categorized as a live fire characteristic, and electronic support measures (ESM) training is a maneuver area requirement.

Maneuver areas are defined as areas required by aviation units for the use of EW assets, delivery of aviation ordnance, and air control and air defense training. EW and ESM training require large land and air space areas. Land areas must accommodate the sophisticated threat simulators dispersed to simulate actual conditions, and air space must allow maneuvering to conduct ESM operations outside the simulated threat envelope.

Maneuver areas for the delivery of aviation ordnance using the No Drop Bomb Scoring System (NDBS) of the TACTS at MCAS, Cherry Point overlay live fire Ranges BT-9 and BT-11. The TACTS area at MCAS, Yuma overlays live fire Ranges Moving Sand and Cactus West, and the Yuma gunnery range in Restricted Air Space R-2301W must be closed when TACTS is being used. This results in maneuver area time sharing with a live fire range. Although a scheduling consideration, this arrangement takes maximum advantage of the air space and land area available for live fire and maneuver area training requirements. Air control and air defense maneuver areas are

normally small land areas (1 km by 1 km) requiring a large air space (50 km by 50 km) and are comprised of available maneuver areas and live fire ranges.

E. FUTURE RANGE AND MANEUVER AREA REQUIREMENTS

As part of the LATAR survey, various project officers at the Development Center, Marine Corps Development and Education Command identified new weapons systems/munitions scheduled for fielding during the period 1988-2004. Of primary concern were those systems that would require additional training land (live fire ranges and maneuver areas). Generally, the survey revealed that most of the programs would not generate additional land requirements or that they were other Service programs for which a Marine Corps procurement decision had not yet been made. Some of the new development programs, such as the telerobotic systems, may generate additional land requirements or at least modification to existing ranges and maneuver areas, but the finalization of these programs is still two to three years away.

Fifteen new weapons systems/munitions or training devices, budgeted in the Marine Corps Program Objectives Memorandum (POM) or its Extended Planning Annex (EPA), were identified. Each of these items require additional training land and/or air space to support their implementation and use. These sixteen new weapons systems/munitions and training devices are listed below:

<u>SYSTEM NAME</u>	<u>IOC FY</u>	<u>NEW REQUIREMENT</u>
Sense and Destroy Armor Artillery Munition (SADARM)	1992	Larger Safety Buffer, Remote Controlled Target Vehicle
Shoulder-Launched Multipurpose Assault Weapon (SMAW) High Explosive Antiarmor (HEAA) Round	1989	
Dragon Product Improvement Plan (PIP) (Generation III)	1991- 1992	Increased Range

<u>SYSTEM NAME</u>	<u>IOC FY</u>	<u>NEW REQUIREMENT</u>
Anti-Personnel Obstacle Breaching System (APOBS)	1991	New Range
Light Armored Vehicle (LAV) Air Defense	1994	Increased Air Space (Altitude)
Catapult-Launched Fuel Air Explosive (CATFAE) Landmine Countermeasure System	1992-1993	New Range
General Support Rocket System (GSRS) Multiple Launch Rocket System (MLRS)	1994	Increased Range and Large Impact Area
M1A1 120-mm Tank Gun	1990	Increased Range
Advanced Antiarmor Weapons		Increased Range
Ribbon Bridge (RB)	1988	New Engineer Maneuver/Training Area
Trailer-Launched Bridge (TLB)	1991	New Engineer Maneuver/Training Area
Expendable Drone (EXDRONE)	1991	New Range
Combined Arms Training System (CATS)	1992	New Maneuver Area
Precision Gunnery Training System - Outdoor Simulator Range	TOW 1988 Dragon 1989 AAWS-M 1994	New or Modified Range
Combined Arms Staff Trainer (CAST)	1988	New Training Building

F. OTHER SERVICE METHODOLOGIES AND TECHNIQUES

The LATAR survey involved visiting and interviewing select personnel at other Service headquarters to obtain information pertaining to the methodologies and techniques they use for establishing land requirements to support live fire and maneuver training requirements. Those organizations visited include:

- (1) Training Division, DCSOPS, Department of the Army;
- (2) Installation Planning Division, DCSLOG, Department of the Army;
- (3) Training Branch, Tactical Division, Directorate of Operations, Department of the Air Force;
- (4) Installation and Planning Division, Naval Facilities Engineering Command;
- (5) Real Estate Operations and Natural Resources Division, Naval Facilities Engineering Command;
- (6) Guard/Reserve Readiness and Training Directorate, Office of the Secretary of Defense;
- (7) Installations Division, National Guard Bureau; and
- (8) Plans and Operations Division, Air National Guard Staff.

The results of this portion of the LATAR survey revealed that, with the exception of the U.S. Army, there is no formal policy or methodology for establishing land requirements to support range and maneuver training requirements throughout the Department of Defense (DOD) and the other Services and agencies. A synopsis of the information obtained during these visits is provided below.

1. U.S. Army

The U.S. Army has a system for establishing land requirements to support range and maneuver training requirements. Range and maneuver land area requirements are based on individual and collective training requirements. The Standards in Training Commission (STRAC), U.S. Army Training Support Center at Fort Eustis, Virginia, is responsible for the development of training standards. The Directorate for Army Ammunition, Ranges, and Targets (DAART), U.S. Army Training Support Center, as the Department of the Army's Executive Agent, is responsible for the design of new and the renovation of existing live fire ranges. Installation commanders are responsible for determining their own training land and range requirements using the Army Training and Evaluation Program (ARTEP), Department of the Army Circular 350-

85-4, Standards in Weapons Training, and the Army Master Range Plan (AMRP). Operations and Maintenance, Army (OMA) and Other Procurement, Army (OPA) funds are used for the routine operation and maintenance of existing ranges, minor range construction, and the purchase of targets and training devices. Army Training Circular 25-1, Training Land and Field Manual 25-7, Training Ranges contain detailed instructions for installation commanders for determining a need for additional land for a new range or maneuver area to support training requirements. Once the installation commander believes that his land cannot support his training requirements, he initiates a Land Use Requirements Study (LURS) to determine if a training land inadequacy exists and to document internal management actions already taken to correct or eliminate the inadequacy. The installation then initiates an Analysis of Alternative Study (AAS), which analyzes the alternatives and recommends the best course of action. With the completion of the AAS, an Environmental Impact Statement is prepared and submitted to the Environmental Protection Agency. The entire package is concurrently sent to the Department of the Army for action. The requirement is then staffed, approved, or disapproved. If approved, the necessary funds are appropriated.

Inter-Service/Inter-Agency Support Agreements are generated at the local command level, either by the installation commander or the tenant unit. At times, the Army Corps of Engineers will assist local commanders in obtaining agreements, and the Department of the Army staff seldom is involved in these arrangements.

2. U.S. Air Force

The Air Force does not have a formal policy or methodology for establishing land requirements to support range and maneuver training requirements. Installation (base) commanders are responsible for modifying existing ranges and identifying the need for new ranges and or maneuver areas based on training requirements established in TAC Manual 51-50, Tactical Air Training, Air Force Regulation 50-46, Training

Weapons Ranges, and Design Operations Capability Statements published by the Tactical Air Command or the Unified Commander to whom the respective air units provide support. The Air Force, like the Army, articulates land/range requirements based on training requirements. The Air Force, however, like the other Services, is experiencing major training area inadequacies in CONUS with regard to the delivery of live ordnance. The limited number of air-to-ground ranges on which live ordnance can be delivered, especially on the East Coast, has generated the requirement for the acquisition of land for a new range in the southeastern portion of the United States (called the Southeast Range Initiative). Although this is a Tactical Air Command initiative, the purchase of additional land, coupled with the political and environmental aspects, require the Department of the Air Force to be actively involved in this action. Headquarters, Department of the Air Force is also involved in all capital improvements associated with the Range Improvement Program, instrumentation upgrades, and the procurement of large items used on their ranges.

Inter-Service/Inter-Agency Support Agreements are all generated at the local command level by either the base commander or a tenant organizations. Headquarters, Department of the Air Force is never involved in these agreements.

3. U.S. Navy

The Navy does not have a formal policy or methodology for establishing land requirements to support land-based ranges and training areas. New land/range requirements or range modifications are handled individually. Installation (base) commanders are responsible for all ranges under their command and operate, maintain, and modify these ranges using local operation and maintenance funds. According to Naval Facilities Engineering Command, there have been no range acquisitions or major range modifications to Navy land-based ranges in the past 15 years. There are two ongoing initiatives for land-based training areas: one is a Sea-Air-Land (SEAL) training area on the West Coast and

the other involves the upgrade and/or acquisition of a new range near China Lake. The Navy is also presently conducting a study of Navy/Marine Corps basing of aircraft units and is examining the ranges and facilities needed to support these units.

Navy Inter-Service/Inter-Agency Support Agreements are all generated at the local level. CNO and the Naval Facilities Engineering Command are not involved in this process.

4. National Guard Bureau

The National Guard Bureau (NGB) uses the same documentation (TC 25-1 and FM 25-7), policy, and methodology as the U.S. Army for the establishment of land requirements to support range and maneuver area training requirements. The National Guard Bureau, however, does not have the leverage to implement this policy, primarily because states provide most of the funds for their National Guard units, and therefore, they determine and dictate priorities. Additionally, many of the 274 National Guard local training ranges and maneuver areas are not owned by the National Guard. Some are leased and others have been offered at no cost to the Government by local residents. These facilities normally are located on local farms and consist of non-firing maneuver areas and a few subcaliber ranges. The 47 major (National Guard-approved) training areas are under the control of the National Guard Bureau and are supported, at least partially, by Federal funds. In 1985, the National Guard Bureau assembled and published a listing (NGB Pamphlet 25-1) of available live fire ranges and maneuver areas across the United States. They are currently in the process of updating this list in an attempt to make better use of the existing facilities and enhance the quality of training throughout the National Guard.

Inter-Service/Inter-Agency Support Agreements are all generated at the local level. The National Guard Bureau rarely is involved in the creation of these agreements.

5. Reserve Readiness and Training

The U.S. Army Reserve Readiness and Training, Office of the Secretary of Defense, like the National Guard, uses U.S. Army

documentation (TC 25-1 and FM 25-7), policy, and methodology for the establishment of land requirements to support range and maneuver area training requirements. The Army Reserve uses the Army Master Range Plan to upgrade and/or modify its ranges, especially its indoor pistol ranges that have to be brought up to Environmental Protection Agency (EPA) standards. As with the National Guard, range and maneuver area maintenance is a problem. To facilitate better maintenance of all Reserve tactical wheeled and tracked vehicles, the Army has established two Regional Maintenance Training Centers (Camp Shelby, Mississippi, and Fort Bragg, North Carolina) and plans to establish 19 other such offices. Reserve units provide equipment and personnel to each of the Centers to support maintenance training courses as well as a tank commander's course conducted at each of the Centers.

Army Reserve units at the local level generate Inter-Service/Inter-Agency Support Agreements. No record of these agreements is maintained at higher headquarters.

6. Air National Guard Staff Command

The Air National Guard has no established methodology or technique for modifying existing ranges or acquiring additional land to support range training requirements. There have been no new Air National Guard range land acquisition requirements or procurements since 1981. The Air National Guard operates 15 ranges (1 in Puerto Rico and 14 in CONUS, including Townsend Range which is owned by the Marine Corps but operated by the Air National Guard). The Air National Guard is also unable to satisfactorily complete their training requirements because of the limited number of ranges available that allow the delivery of live ordnance. This training inadequacy has convinced the Air National Guard Staff Command to support the Air Force's position that the Southeast Range Initiative should be a joint venture.

All Inter-Service/Inter-Agency Support Agreements are executed at the local (user) level. Most are informal, but the Air National Guard Staff Command believes that the time has come to convert these to formal agreements.

CHAPTER III
LIVE FIRE RANGE AND TRAINING STANDARDS

Live fire range standards were determined based on an analysis of information received from field units, installations, and Headquarters, U.S. Marine Corps directives. The following paragraphs describe the methodology used to determine the proposed standards.

Initially, a list of live fire ranges considered necessary or desirable to complete gunnery training objectives was compiled from Land and Training Area Requirements (LATAR) surveys submitted by Fleet Marine Force (FMF) units. This list was then compared to current training requirements as stipulated by Headquarters, U.S. Marine Corps to determine the exact characteristics required of a range in order to accomplish Headquarters, U.S. Marine Corps training objectives. This comparative analysis resulted in the deletion of certain ranges considered necessary by responding units, but which were not required to complete U.S. Marine Corps training objectives. This information was then further analyzed considering current U.S. Marine Corps range assets available, ranges about to be constructed, and standard U.S. Army ranges incorporating refined characteristics to enhance gunnery training. This comparative analysis resulted in a determination of characteristics required of live fire ranges. Proposed new weapons systems were then considered, and range modifications were incorporated based on increased or new capabilities of the weapons systems.

From this analysis, it was determined that certain U.S. Marine Corps ranges should remain unmodified, certain ranges should be incorporated into the U.S. Marine Corps range inventory based on U.S. Army standards, and other U.S. Army ranges should be modified to reflect U.S. Marine Corps training requirements. Finally, to achieve greater training efficiency and reduce redundant facilities, some current live fire range facilities should be consolidated. The following paragraphs present the

proposed live fire ranges, including their basic characteristics and the rationale for their inclusion.

BASIC FIRING RANGE (ZERO)

WEAPONS:

M16A2 rifle; M60, M2 machine guns; SAW

CLASSIFICATION:

Proposed modification to existing U.S. Marine Corps range

USE:

It is proposed that this range be used for preparatory marksmanship training and zeroing for the M16A2. It is also to be used for firing the 10-m portion of record fire for the M60 and M2 machine guns and the SAW. It is further proposed that this range be used to familiarize Marines with the characteristics, noise, and recoil of the weapons. This range should be used to practice target observation and adjustment of fire, to practice machine gun traversing and searching, to develop speed during operation, and to obtain an accurate burst. It should also be used to zero night vision devices for the M60 and M2 machine guns.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 320 m X 25 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required (M2)	6,500 m
(2) Maximum Width Required at 6,500 m	2,400 m
(3) Maximum Width Required at Firing Line	520 m

NUMBER OF FIRING POSITIONS:

(1) M16A2:	80
(2) M60, M2, SAW:	20

FIRING LANE DIMENSIONS: 4 m wide per lane with 80 positions or 320 m

TARGET AREA DIMENSIONS: 320 m wide

FIRING POINT CONFIGURATION:

(1) Foxholes
(2) Stumps
(3) Sand bags

TARGET CONFIGURATION:

(1) M16A2:	80 E-type silhouettes with 25-m zero
(2) M6, M2, SAW:	20 marksmanship targets at 10 m

ASSOCIATED FACILITIES: Standard facilities

RATIONALE:

The range should consolidate two current facilities and reduce range land requirement. It is a combination of the Basic 25-Meter Firing Range (Zero) for the M16A2 rifle and the Machine Gun 10-Meter Range for the M60, M2, and SAW, and should be large enough to accommodate a rifle company.

REFERENCES:

FM 25-7
MCO 1510.35A

KNOWN DISTANCE (KD) RANGE

WEAPONS:

M16A2 rifle

CLASSIFICATION:

U.S. Marine Corps standard

USE:

This range is used for rifle qualification and practice firing.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 165 m X 457 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	3,100 m
(2) Maximum Width Required at 3,100 m	1,300 m
(3) Maximum Width Required at Firing Line	365 m

NUMBER OF FIRING POSITIONS: 50

FIRING LANE DIMENSIONS: 165 m wide with 3 m per point

TARGET AREA DIMENSIONS: 165 m wide; 457 yds long

FIRING POINT CONFIGURATION: Firing lines/positions at 200, 300, and 500 yds

TARGET CONFIGURATION: Target pit

ASSOCIATED FACILITIES: Standard facilities

RATIONALE:

The KD qualification course currently in use by Marines calls for firing from 200, 300, and 500 yds from standing, kneeling/sitting, and prone positions. KD Ranges based on distances computed in yards do in fact exist throughout the Marine Corps, and to construct new or modify existing facilities to metric distance ranges would not necessarily produce a better qualified shooter and would not be cost effective.

AUTOMATED FIELD FIRE (AFF) RANGE

WEAPONS:

M16A2 rifle, SAW

CLASSIFICATION:

U.S. Army standard with proposed modification for U.S. Marine Corps

USE:

This range is used for firing at targets at ranges comparable to battlefield ranges, developing speed in target engagement, and developing confidence in individual ability.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 512 m X 300 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	3,100 m
(2) Maximum Width Required at 3,100 m	1,500 m
(3) Maximum Width Required at Firing Line	712 m

NUMBER OF FIRING POSITIONS: 32 lanes

FIRING LANE DIMENSIONS: 16 m wide per lane or 512 m

TARGET AREA DIMENSIONS: 512 m wide at farthest target at 450 m

FIRING POINT CONFIGURATION:

- (1) Foxholes
- (2) Stumps
- (3) Sand bags

TARGET CONFIGURATION:

- (1) 4 banks of targets with elevating mechanisms parallel to the firing line
- (2) F-type silhouettes at 100 m

- (3) E-type silhouettes at 175, 300, and 450 m
- (4) Moving targets at 375 m

ASSOCIATED FACILITIES: Standard facilities

RATIONALE:

The LATAR survey indicated a high degree of interest among FMF units for a range possessing the characteristics of the AFF Range. The range meets the requirements for individual training standards for infantry units to engage targets with the Service rifle using field firing techniques.

REFERENCES:

FM 23-9
FM 25-7
MCO 1510.35A

SNIPER TRAINING FIELD FIRE RANGE

WEAPONS:

M40A1 sniper rifle

CLASSIFICATION:

U.S. Army standard with proposed modification for U.S. Marine Corps

USE:

This range is used for both day and night training. It is also used for advanced rifle training by selected personnel.

CHARACTERISTICS:

SHAPE: Fan

RANGE DIMENSIONS: 80 m X 1,000 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	4,100 m
(2) Maximum Width Required at 4,100 m	1,450 m
(3) Maximum Width Required at Firing Line	280 m

NUMBER OF FIRING POSITIONS: 4 lanes

FIRING LANE DIMENSIONS: 20 m wide per lane or 80 m

TARGET AREA DIMENSIONS: 600 m wide at the farthest target at 1,000 m; 100 to 1,000 m long

FIRING POINT CONFIGURATION:

- (1) Numbered markers on slightly elevated and sodded ground
- (2) Sandbags for rifle support

TARGET CONFIGURATION:

- (1) Modified E-type and F-type silhouettes using elevating mechanisms
- (2) Moving targets

ASSOCIATED FACILITIES: Standard facilities

ADDITIONAL INFORMATION:

Natural vegetation is required in the target area.

RATIONALE:

Current sniper training is basically conducted on KD Ranges possessing a 1,000-yd firing line. The nature of sniper firing necessitates training in determining target locations in natural settings as well as training with moving target capabilities. This range provides this environment.

REFERENCES:

FM 25-7
TC 23-14

MACHINE GUN RANGE COMPLEX

WEAPONS:

M60, M2 machine guns; MK19 grenade launcher; SAW

CLASSIFICATION:

Proposed

USE:

This range would be used in conjunction with the Basic Firing Range (Zero) to qualify gunners on the M60, M2, and the SAW. It would be used for familiarization firing for the MK19 and could also be used to practice target observation and adjustment of fire, to practice machine gun traversing and searching, to develop speed during operation, and to obtain an accurate burst. This range would be used to train Marines with weapons on the ground or mounted on a vehicle.

CHARACTERISTICS:

SHAPE: Fan

RANGE DIMENSIONS: 300 m X 2,500 m

SURFACE DANGER AREA DIMENSIONS:

- | | |
|---|---------|
| (1) Maximum Distance Required (M2) | 6,500 m |
| (2) Maximum Width Required at 6,500 m | 2,400 m |
| (3) Maximum Width Required at Firing Line | 560 m |

NUMBER OF FIRING POSITIONS:

- (1) M60, M2, SAW: 10
- (2) MK19: 3

A possible arrangement would be 5 lanes to the right and 5 lanes to the left of the 3 designated MK19 firing positions, which would be at the center core of the range.

FIRING LANE DIMENSIONS: 300 m wide

TARGET AREA DIMENSIONS: 2,500 m wide

FIRING POINT CONFIGURATION:

- (1) M60, M2, SAW: Qualification firing using conventional ground-mount or L-shaped machine gun positions
- (2) MK19: 3 firing positions along a 200-m portion of the firing line:
 - (a) one position utilizes 75 m along the line for firing from a moving vehicle
 - (b) 2 positions are located approximately along the remaining 125 m to provide positions for firing from a stationary vehicle and from a ground-mounted tripod

TARGET CONFIGURATION:

- (1) M60, M2, SAW Qualification Firing: All targets would have electric elevating mechanisms
 - (a) M60: 8 double E-type silhouettes in each lane between 400 and 800 m, the first target at 400 m, the farthest target at 800 m, with remaining 6 targets 50 m apart between 400 and 800 m
 - (b) M2: 5 double E-type silhouettes in each lane between 400 and 1,000 m, the first target at 400 m and the farthest target at 1,000 m, with the remaining targets spaced 150 m apart between 400 and 1,000 m
 - (c) SAW: add single E-type silhouettes at 100, 200, and 300 m, convert the 400-m single E-type silhouette to double E-type silhouette, and add a target array at 800 m.

Ensure that target configurations and locations are in accordance with the appropriate field manuals/circulars.

- (2) MK19 Familiarization Firing: 3 moving targets located at 400, 800, and 1,100 m; 6 area targets, 30 m x 100 m, with locally fabricated non-mechanical personnel targets located at the following ranges:
 - (a) 400 to 450 m oblique to firing line
 - (b) 500 to 700 m and parallel to firing line
 - (c) 900 to 1,000 m and perpendicular to firing line
 - (d) 800 to 1,000 m and at a 45-degree angle from firing line
 - (e) 1,000 to 1,200 m and parallel to firing line

(f) 1,500 m and perpendicular to firing line
A 2-m x 2-m durable zero panel should be placed 600 m
downrange from the tripod-mounted firing position.

ASSOCIATED FACILITIES: Standard facilities

RATIONALE:

This range would provide a centralized range facility for current qualification requirements for the M60, M2, and SAW, while concurrently providing firing configuration arrangements for MK19 familiarization firing from a vehicle and ground mount. It is anticipated that this range configuration will save land area and meet current range training standards as specified in MCO 1510.35A.

REFERENCES:

MCO 1510.35A
FM 25-7
FM 23-14
FM-23-67

INDIVIDUAL SHOULDER FIRED WEAPON RANGE
(ANTITANK AND ANTIPERSONNEL)

WEAPONS:

M203 grenade launcher, M72A2 LAW, AT-4 light antiarmor
weapon, SMAW

CLASSIFICATION:

Proposed

USE:

This range would teach Marines firing techniques to defeat personnel and tank targets and destroy field fortifications.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 600 m X 250 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	1,250 m
(2) Maximum Width Required at 1,250 m	760 m
(3) Maximum Width Required at Firing Line	300 m

NUMBER OF FIRING POSITIONS: 8

FIRING LANE DIMENSIONS: 25 m wide per lane or 200 m

TARGET AREA DIMENSIONS: Not applicable

FIRING POINT CONFIGURATION:

- (1) M203:
 - (a) Fighting positions at 4 sites
 - (b) Surface danger area for the M203 requires a safety buffer of 50 m on either side of its portion of the firing line, in effect dividing the firing line into two separate parts.
- (2) M72A2, AT-4, SMAW:
 - (a) 4 lanes with no expressed configuration required
 - (b) range design must consider M72A2 LAW and AT-4 backblast danger area, a triangle with its apex at the rear of the launcher, extending 40 m to the rear of the firing point, and is 38 m wide at the base of the triangle

TARGET CONFIGURATION:

- (1) M203:
 - (a) 1 window (.75 m wide and 1 m long) at a range of 90 to 100 m per firing point
 - (b) 1 bunker at a range of 125 to 150 m per firing point
 - (c) 1 group silhouette target at a range of 275 to 300 m per firing point
 - (d) 1 group silhouette target at a range of 325 to 350 m per firing point
- (2) M72A2 LAW, AT-4:
 - (a) 4 stationary vehicle targets at 100, 125, 150, and 300 m
 - (b) Moving vehicle target between 150 and 300 m
- (3) 2 bunker targets at 150 m and 200 m
- (4) Moving vehicle target between 150 and 300 m

ASSOCIATED FACILITIES: Standard facilities include a range tower and public address system.

RATIONALE:

This configuration is based on the proximity of range size requirements for the M203 and M72 LAW and the fact that, from a training management perspective, it would be advantageous to conduct this firing simultaneously at the same facility.

REFERENCES:

FM 23-33
FM 25-7
FM 21-2
FM 23-31
MCO 1510.35A

CLOSE COMBAT PISTOL RANGE

WEAPONS:

.38-cal, .45-cal, 9-mm pistols

CLASSIFICATION:

U.S. Army standard modified for U.S. Marine Corps use

USE:

This range is used to provide supplemental training in pistol marksmanship.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 80 m X 31 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required (.38-cal)	1,900 m
(2) Maximum Width Required at 1,900 m	800 m
(3) Maximum Width Required at Firing Line	80 m

NUMBER OF FIRING POSITIONS: 10 lanes, each 31 m in length

FIRING LANE DIMENSIONS: 10 lanes 8 m wide or 80 m

TARGET AREA DIMENSIONS: Not applicable

FIRING POINT CONFIGURATION: Slightly raised area

TARGET CONFIGURATION: 7 E-type silhouette targets with electrically activated target elevating mechanisms on each line, located at 10, 13, 16, 17, 23, 27, and 31 m

ASSOCIATED FACILITIES: Standard facilities

RATIONALE:

The current U.S. Marine Corps Close Combat Pistol Course, as described by personnel from Marksmanship Training Unit, Marine Corps Development and Education Command, Quantico, Virginia, is not as challenging as this proposed course. The facility described by the unit had only 1 stationary target, and the individual walked toward it and fired from various positions.

REFERENCE:

MCO 1510.35A

TANK GUNNERY RANGE, 1:5 AND 1:10 SCALE

WEAPONS:

5.56-mm rifle in the Brewster mount

CLASSIFICATION:

U.S. Army standard

USE:

This range is used to exercise all tank, LAV, and AAV fire control systems including the laser rangefinder. It is also used for subcaliber exercises.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 100 m X 400 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	3,100 m
(2) Maximum Width Required at 3,100 m	1,300 m
(3) Maximum Width Required at Firing Line	100 m

NUMBER OF FIRING POSITIONS: 5

FIRING LANE DIMENSIONS: 100 m wide

TARGET AREA DIMENSIONS: 100 m wide; 400 m long

FIRING POINT CONFIGURATION: In relation to the target area, the firing point is slightly lowered to reduce parallax). The firing points are covered.

TARGET CONFIGURATION:

- (1) Frontal view stationary targets
- (2) Average of 10 vehicle targets per lane on slightly raised impact area

ASSOCIATED FACILITIES: Standard facilities

ADDITIONAL INFORMATION:

Two sets of targets allow both mid-range engagements at 1:5 scale and long-range engagements at 1:10 scale.

Laser rangefinding and designating devices will be utilized at this range, and appropriate safety procedures as stipulated in AR385-63/MCO P3570.1 must be implemented.

RATIONALE:

This range is necessary for tank gunnery training for both tank, AAV, and LAV battalions.

REFERENCES:
FM 25-7
FM 17-12

TANK GUNNERY RANGE (STATIONARY)

WEAPONS:

105-mm, 120-mm main tank guns; 25-mm cannon; 7.62-mm coaxial, M2 machine guns; MK19, M240 grenade launchers

CLASSIFICATION:

U.S. Army standard

USE:

This range is used to train tank, LAV, and AAV crews in the rapid engagement and destruction of targets during both day and night exercises (Tank Table VI). It is also used to conduct subcaliber exercises against targets in tactical array. All exercises on this range are conducted in stationary tanks.

CHARACTERISTICS:

RANGE DIMENSIONS: 150 m X 1,000 m X 3,500 m

SURFACE DANGER AREA DIMENSIONS:

- | | |
|---|---------|
| (1) Maximum Distance Required (120-mm training ammunition only) | 7,725 m |
| (2) Maximum Width Required at 7,725 m | 6,350 m |
| (3) Maximum Width Required at Firing Line | 150 m |

NUMBER OF FIRING POSITIONS: 15 points

FIRING LANE DIMENSIONS: 150 m with 10 m per point

TARGET AREA DIMENSIONS: 1,000 m wide at the farthest target at 3,500 m; 3,500 m long

FIRING POINT CONFIGURATION: The firing line is slightly elevated and hardened to sustain tank traffic and turning.

TARGET CONFIGURATION:

- (1) 4 moving vehicle targets on diagonal tracks at 1,000 and 1,800 m
 - (2) 36 stationary pop-up and static vehicle targets
 - (3) 6 tactical arrays of E-type silhouette static personnel targets
 - (4) 3 boresight and zero targets at 1,200 m
- All stationary vehicle targets are frontal views; moving vehicle targets are flank.

ASSOCIATED FACILITIES: Standard facilities include a range tower and staging area.

ADDITIONAL INFORMATION:

This range may also be used for direct fire of field artillery weapons. Personnel in the control tower are capable of controlling the range from behind the firing line. That is, they can present various tactical scenarios and stop or delay the action at any time from the control tower.

Moving target systems are exposed from 20 to 30 seconds and move at speeds of up to 25 miles per hour.

Whenever possible, target mechanisms are set up to provide visibility with 2 or more firing positions.

Laser rangefinding and designating devices will be utilized at this range, and appropriate safety procedures as stipulated in AR385-63/MCO P3570.1 must be implemented.

RATIONALE:

This range is necessary for tank, LAV, and AAV gunnery proficiency.

REFERENCES:

FM 17-12
FM 25-7

MULTIPURPOSE RANGE COMPLEX - HEAVY (MPRC-H)

WEAPONS:

105-mm, 120-mm main tank guns; 20-mm, 25-mm cannons; .50-cal machine gun

CLASSIFICATION:

U.S. Army standard

USE:

This range provides collective training facilities for tanks, LAVs, AAVs, and AH-1 helicopters. It accommodates platoon-level collective training exercises as well as individual and crew qualification training.

CHARACTERISTICS:

RANGE DIMENSIONS: 1,000 m X 4,500 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required (120-mm training ammunition only) 10,225 m

- | | |
|---|---------|
| (2) Maximum Width Required at 10,225 m | 7,750 m |
| (3) Maximum Width Required at Firing Line | 1,000 m |

FIRING LANE DIMENSIONS: Not applicable

TARGET AREA DIMENSIONS: 1,000 m wide; 200 to 3,700 m long

FIRING POINT CONFIGURATION:

- (1) Fighting positions
- (2) Hull defilade

TARGET CONFIGURATION:

- (1) 12 moving vehicle targets
- (2) 60 stationary vehicle targets
- (3) 153 personnel targets
- (4) 45 moving E-type silhouette personnel targets

The target locations will be based on site adoption.

ASSOCIATED FACILITIES: Standard facilities include:

- (1) Instructor briefing/debriefing classroom
- (2) Ammunition breakdown
- (3) Administrative area
- (4) Vehicle holding and maintenance area
- (5) Air conditioned control tower

ADDITIONAL INFORMATION:

The target system for the MPRC-H will be fully automated and self-scoring. The computer central console will have the capability to independently program and control the timing and exposure sequence of each armor and infantry target.

The remote target system will be used on the MPRC-H.

Laser rangefinding and designating devices will be utilized at this range, and appropriate safety procedures as stipulated in AR385-63/MCO P3570.1 must be implemented.

Hostile fire simulator, thermal targets, night illumination devices, target kill simulators, and visual flash simulators are used on this range.

The MPRC-H will accommodate all current armor and fighting vehicle proficiency and sustainment tasks, as well as provide an arena for combined arms live fire exercises.

The MPRC-H will meet all range requirements for the following gunnery programs:

- (1) Tank Tables VII, VIII, IX, X, XI, and XII
- (2) Infantry Squad Battle Course
- (3) Infantry Platoon Battle Course
- (4) Scout Squad Attack Course

- (5) AH-1 Individual and Crew Qualification
- (6) AH-64 Individual and Crew Qualification

With the introduction of the M1 tank with its 120-mm gun, the range length will have to be extended to 6,000 m and the target area length to 4,700 m.

RATIONALE:

This range is necessary to support simultaneous platoon-level collective training for tank, infantry, and attack helicopter units.

REFERENCES:

- FM 17-12
- FM 25-7

HAND GRENADE QUALIFICATION COURSE

WEAPONS:

Hand grenades

CLASSIFICATION:

U.S. Army standard modified for U.S. Marine Corps use

USE:

This range is used to teach current procedures of throwing hand grenades and allows Marines the opportunity to actually engage targets.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 100 m X 100 m

SURFACE DANGER AREA DIMENSIONS: (Circular)

- | | |
|---|--------------|
| (1) Throwing Bays to Impact Area | 190 m |
| (2) Behind Throwing Bays | <u>150 m</u> |
| Total Front to Rear | 340 m |
| (3) Maximum Width Required at Throwing Bays | 530 m |

NUMBER OF FIRING POSITIONS: 6 stations with:

- (1) 3 positions for standard fragmentation grenades
- (2) 3 positions for practice grenades

FIRING LANE DIMENSIONS: 150 m wide

TARGET AREA DIMENSIONS: 100 m wide at the farthest target at 30 m

FIRING POINT CONFIGURATION:

- (1) Low log walls
- (2) Throwing position markers
- (3) Foxholes

TARGET CONFIGURATION:

- (1) Foxholes
- (2) Window
- (3) Bunker
- (4) Area personnel E-type silhouette target

ASSOCIATED FACILITIES: Standard facilities

ADDITIONAL INFORMATION:

The stations must be at least 25 m apart for maximum efficiency and safety. Operations must stop whenever participants are forward of the throwing line.

Station 1 consists of a chest-high log wall and a foxhole located 20 m from the wall (practice).

Station 2 consists of a low log wall and a window target located 20 m from the wall (practice).

Station 3 consists of a throwing position marker and a trench located 20 m from the marker (practice).

Station 4 consists of a log wall and foxhole located 25 m from the wall (live grenade).

Station 5 consists of a foxhole throwing position and a cluster of E-type silhouettes located 30 m from the throwing position. A cable (4.5 m high) is suspended across the width of the field, 15 m from the throwing position (live grenade).

Station 6 consists of a bunker with an aperture of 30 sq cm (live grenade).

RATIONALE:

MCO 1510.35A requires Marines to engage 3 targets with live fragmentation grenades. This range allows for practice sessions prior to the live throws.

REFERENCES:

- FM 23-30
- FM 25-7
- MCO 1510.35A

INDIRECT FIRE RANGE

WEAPONS:

Field artillery weapons systems and mortars

CLASSIFICATION:

U.S. Army standard modified for U.S. Marine Corps use

USE:

This range is used by field artillery (105-mm, 155-mm, and 8-in) and mortar (60-mm, 81-mm, and 120-mm) gun crews to maintain technical proficiency.

CHARACTERISTICS:

SHAPE: Fan

RANGE DIMENSIONS: 400 m X 7,375 m X 14,750 m

SURFACE DANGER AREA DIMENSIONS: The actual size of the impact area will depend on the probable error at a particular range as stipulated in the firing tables for a particular indirect fire weapon.

NUMBER OF FIRING POSITIONS: 6 to 8

A battery firing position is about 200 to 400 m in length, its exact size dependent on the formation of the weapons and the shape of the ground at the firing point.

FIRING LANE DIMENSIONS: 200 to 400 m wide

TARGET AREA DIMENSIONS: At least 7,375 m wide; up to 14,750 m long

FIRING POINT CONFIGURATION: Surveyed markers for battery center

TARGET CONFIGURATION: Sufficiently durable targets to provide viable training opportunity

ASSOCIATED FACILITIES: Standard facilities include a surveyed observation post.

ADDITIONAL INFORMATION:

Every effort should be made to locate this range next to a unit maneuver area in order to support training with tactical smoke and illumination.

If firing the GSRL, Rocket Assisted Projectile (RAP), Sense and Destroy Armor Artillery Munition (SADARM), or Extended Range Dual Purpose Improved Conventional Munition (DPICM) to

maintain proficiency, the target area length will have to be extended to 32,000 m and the target area width to 14,500 m.

Laser rangefinding and designating devices will be utilized at this range, and appropriate safety procedures as stipulated in AR385-63/MCO P3570.1 must be implemented.

RATIONALE:

This range is necessary for achieving and maintaining indirect fire gunnery and forward observer standards.

REFERENCES:

FM 23-36
FM 27-90
FM 6-40-5
TC 25-1
FM 25-7

MULTIPURPOSE INDOOR RANGE (SMALL ARMS)

WEAPONS:

Handguns, rifles, machine guns

CLASSIFICATION:

U.S. Army standard

USE:

This range is used for handgun, rifle, and machine gun marksmanship training. Marines can also zero their rifles on this range and train with the rimfire adaptor for the M16A1 rifle. Plastic training ammunition (5.56-mm and .50-cal) may be fired on this range.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 24 ft, 4 in X 124 ft, 4 in

SURFACE DANGER AREA DIMENSIONS: Not applicable

NUMBER OF FIRING POSITIONS: 5 points (minimum)

FIRING LANE DIMENSIONS: 1.4 m wide per position (minimum)

TARGET AREA DIMENSIONS: 1.4 m wide per position (minimum)

FIRING POINT CONFIGURATION:

- (1) Numbered markers
- (2) Movable benches
- (3) Firing booths

TARGET CONFIGURATION:

- (1) 50-ft rifle and pistol targets
- (2) 1,000-in rifle targets
- (3) 10-m targets
- (4) 25-yd pistol targets
- (5) 25-m zero targets

ASSOCIATED FACILITIES: Standard facilities include control and shooting booths.

ADDITIONAL INFORMATION:

On ranges used for both rifle and pistol shooting, carrier mechanisms are provided for targets at two heights: one at about 1.5 m and the other at about .5 m. These positions are usually obtained by using detachable extension rods on the carrier.

Carrier mechanisms have stops at 50 ft, 1,000 in, and 25 m. They are capable of turning the targets at 50 ft and 50 yds.

The range needs a minimum of 35 feet per minute of ventilation air across the firing points. The facility is maintained at a slightly negative pressure. That is, exhaust air exceeds supply air by 10 percent. In cold climates, the supply air is heated to room temperature before it enters the facility.

RATIONALE:

The primary users of this range are Selected Marine Corps Reserve (SMCR) units. The most prevalent comments obtained from SMCR units during the LATAR survey indicated that these units did not have adequate range facilities at home stations and had to rely on civilian agencies or other Services to accomplish firing requirements.

REFERENCES:

- FM 23-9
- FM 23-14
- FM 23-67
- FM 25-7

PISTOL QUALIFICATION RANGE

WEAPONS:

.38-cal, .45-cal, 9-mm pistols; shotguns

CLASSIFICATION:

U.S. Marine Corps standard

USE:

This range is used for pistol qualification and practice firing as well as for shotgun proficiency and familiarization firing.

CHARACTERISTICS:

SHAPE: Square

RANGE DIMENSIONS: 22.85 m X 22.85 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	1,900 m
(2) Maximum Width Required at 1,900 m	800 m
(3) Maximum Width Required at Firing Line	22.85 m

NUMBER OF FIRING POSITIONS: 25

FIRING LANE DIMENSIONS: 1 yd wide

TARGET AREA DIMENSIONS: 25 yds wide; 25 yds long

TARGET CONFIGURATION:

(1) 25 E-type silhouette targets at 15 yds
(2) 25 E-type silhouette targets at 25 yds
Targets are stationary and rotating.

ASSOCIATED FACILITIES: Standard facilities

RATIONALE:

Under MCO 1510.35A and MCO 3574.2G certain Marines require pistol qualification or shotgun familiarization.

REFERENCES:

MCO 1510.35A
MCO 3574.2G

ANTIARMOR TRACKING AND LIVE FIRE RANGE

WEAPONS:

TOW, Dragon, AT-4 light antiarmor weapon

CLASSIFICATION:

U.S. Army standard modified for U.S. Marine Corps use

USE:

This range is used to teach Marines the techniques of engaging targets with medium and heavy antiarmor weapons. It is also used for field tracking exercises and for qualification exercises with tracking and launch effect trainers.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 200 m X 1,000 m X 4,000 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	5,825 m
(2) Maximum Width Required (HEAT round)	4,550 m
(3) Maximum Width Required at Firing Line	300 m

NUMBER OF FIRING POSITIONS: 2 firing lines with 10 points on each line

FIRING LANE DIMENSIONS: 200 m wide

TARGET AREA DIMENSIONS: 1,000 m wide; 350 to 3,750 m long

FIRING POINT CONFIGURATION: Raised firing lines with 10 firing positions and 10 vehicle positions

TARGET CONFIGURATION:

- (1) 2 moving target tracks
- (2) 3 tracking roads

ASSOCIATED FACILITIES: Standard facilities include an ammunition point with overhead cover.

ADDITIONAL INFORMATION:

Tracking roads have turnaround and crossover points and are made of concrete.

Concurrent training sites are covered and enclosed.

The 2 moving target tracks extend from 350 m to 750 m and from 1,500 m to 2,000 m. Three groupings of stationary tank targets are found at ranges from 400 to 700 m, 750 to 900 m, and between 2,000 and 3,750 m.

This range could be utilized for the Precision Gunnery Training System (PCTS).

RATIONALE:

This range is necessary to achieve and maintain antiarmor tracking and live fire capability. Modifications to the moving target track and stationary target distances are required to conform to standards outlined in MCO 1510.35A for TOW and DRAGON gunners.

REFERENCES:

TC 23-23
TC 23-24
MCO 1510.35A

AIR DEFENSE FIRING RANGE

WEAPONS:

STINGER, LAV (air defense variant), small arms

CLASSIFICATION:

U.S. Army standard

USE:

This range is used for air defense service practice for the STINGER LAV (air defense variant) and for Small Arms Air Defense (SAAD) training.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 500 m X 3,500 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	6,500 m
(2) Maximum Width Required (STINGER)	9,800 m
(3) Maximum Width Required at Firing Line	700 m

NUMBER OF FIRING POSITIONS: 6 points

FIRING LANE DIMENSIONS: 500 m wide

TARGET AREA DIMENSIONS: 3,500 m wide

FIRING POINT CONFIGURATION: Range must be flat area with cleared of vegetation.

TARGET CONFIGURATION: The STINGER missile requires an aerial target drone with an infrared signature.

ASSOCIATED FACILITIES:

- (1) Preparation station
- (2) Missile assembly station
- (3) Prefire station
- (4) Target launch station
- (5) Tracking positions
- (6) Utility building for missile maintenance

ADDITIONAL INFORMATION:

HAWK launches require special arrangements. The target area, air space, and monitoring equipment requirements to dedicate a full-time range for the HAWK are not warranted. HAWK firings are currently conducted only at MCAS, Yuma and MCB, Camp Lejeune.

RATIONALE:

This range is required for proficiency training in air defense.

REFERENCES:

FM 44-2
FM 25-7

GUNSHIP HARMONIZATION RANGE

WEAPONS:

.50-cal, 7.62-mm machine guns; 20-mm cannon

CLASSIFICATION:

U.S. Army standard

USE:

This range is used to boresight, align, and zero weapons systems on individual aircraft. It is normally collocated with helicopter gunnery ranges.

CHARACTERISTICS:

SHAPE: Elongated rectangle

RANGE DIMENSIONS: 10 m X 1,200 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required	14,300 m
(2) Maximum Width Required	8,100 m
(3) Maximum Width Required at Firing Line	8,100 m

NUMBER OF FIRING POSITIONS: 1 point

FIRING LANE DIMENSIONS: 10 m wide

TARGET AREA DIMENSIONS: 10 m wide

FIRING POINT CONFIGURATION: Flat, level pad

TARGET CONFIGURATION: Zero and boresight panel measuring
3.5 m X 3.5 m

ASSOCIATED FACILITIES: None

ADDITIONAL INFORMATION:

Harmonization distances are determined from the technical manual of the weapons system.

RATIONALE:

This range is desired for refining weapons accuracy and increase air crew gunnery proficiency without the cost of flight hours.

REFERENCE:

FM 25-7

HELICOPTER GUNNERY RANGE

WEAPONS:

.50-cal, 7.62-mm machine guns; 20-mm cannon; TOW, HELLFIRE

CLASSIFICATION:

U.S. Army standard

USE:

This range is used for individual, crew, and unit attack helicopter gunnery exercises. It is also used to conduct TOW missile firing.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 1,500 m X 2,000 m X 5,000 m

SURFACE DANGER AREA DIMENSIONS:

(1) Maximum Distance Required (HELLFIRE)	14,300 m
(2) Maximum Width Required	8,100 m
(3) Maximum Width Required at Firing Line	8,100 m

NUMBER OF FIRING POSITIONS: 8 points

FIRING LANE DIMENSIONS: 1,500 m wide (minimum)

TARGET AREA DIMENSIONS: 2,000 m wide (minimum)

FIRING POINT CONFIGURATION: Range requires a man-made marker or prominent natural terrain feature at each point with access to emergency landing area.

TARGET CONFIGURATION:

- (1) Stationary targets
- (2) Moving targets
- (3) Personnel targets
- (4) Vehicle targets
- (5) Fortified position targets

ASSOCIATED FACILITIES:

- (1) Control point (tower, ground, vehicle, or airborne controller)

- (2) Helicopter parking and landing area (for ammunition storage and issue)
- (3) Rearm pad
- (4) Refuel point
- (5) Administrative facility

ADDITIONAL INFORMATION:

Laser rangefinding and designating devices will be utilized at this range, and appropriate safety procedures as stipulated in AR385-63/MCO P3570.1 must be implemented.

RATIONALE:

The range is necessary to maintain helicopter gun proficiency in the CAS and strafing roles.

REFERENCE:

FM 25-7

**MILITARY OPERATIONS ON URBANIZED TERRAIN (MOUT)
ASSAULT COURSE**

WEAPONS:

Small arms, hand grenades

CLASSIFICATION:

U.S. Marine Corps standard

USE:

This range facility is used for individual and low-level collective training using live fire or MILES.

CHARACTERISTICS:

RANGE DIMENSIONS: 300 ft X 1,400 ft (approximately)

SURFACE DANGER AREA DIMENSIONS:

- | | |
|---------------------------------------|----------|
| (1) Maximum Distance Required | 3,100 m |
| (2) Maximum Width Required at 3,100 m | 2,900 m |
| (3) Maximum Width Required at Course | 1,600 ft |

NUMBER OF FIRING POSITIONS: 6 training structures:

- (1) Urban Quick Kill
- (2) Kill and Search
- (3) Tire City
- (4) Cover and Clear
- (5) Dodge City
- (6) Obstacle course

FIRING LANE DIMENSIONS: 20.74 m wide between training structures

ASSOCIATED FACILITIES: Standard facilities

ADDITIONAL INFORMATION:

Standardized drawings are available through Naval Facilities Engineering Command, Atlantic Division, Norfolk, Virginia.

Each training structure supports one or more individual/low-level collective tasks.

Vegetation should be left in its natural state. The course is preferably located adjacent to an impact area or surface danger zone.

Low-level collective skill proficiency is attained in this range facility prior to advancing to the MOUT Collective Training Facility (CTF).

Final determination of facility layout is currently being revised.

RATIONALE:

Special Operations Capability (SOC) requirements necessitate that Marines be familiar with MOUT operations. Current plans call for the construction of a MOUT CTF and MOUT Assault Course at both MCB, Camp Lejeune and MCB, Camp Pendleton and also at Schofield Barracks where 1st MAB trains.

REFERENCES:

FM 25-7

FM 90-10

FM 90-10-1

Engineer Drawings, Naval Facilities Engineering Command, Norfolk, Virginia

CATFAE RANGE

WEAPONS:

Catapult-launched Fuel Air Explosive (CATFAE)

CLASSIFICATION:

U.S. Marine Corps developmental

USE:

This proposed range will be used to train Marines in the use of CATFAE.

CHARACTERISTICS:

RANGE DIMENSIONS: 500 m X 1,000 m X 2,000 m

NUMBER OF FIRING POSITIONS: 1 (fired from an AAV)

FIRING LANE DIMENSIONS: 500 m wide

TARGET AREA DIMENSIONS: 1,000 m wide at the farthest point

FIRING POINT CONFIGURATION: Range must be on level to gently rolling terrain on a beach. Need approximately 1,000 m of ocean to approach the firing line which will be 100 to 400 m from the shore.

TARGET CONFIGURATION: Not applicable

ASSOCIATED FACILITIES:

- (1) Control boat
- (2) Communications

RATIONALE:

This range is necessary to develop and maintain proficiency in CATFAE delivery.

REFERENCE:

LATAR form submitted by Marine Corps Development and Education Command

DEMOLITION RANGE

WEAPONS:

Military explosives, tactical explosive system (TEXS)

CLASSIFICATION:

U.S. Marine Corps standard

USE:

This range is used for training Marines in the use of explosives and explosive devices.

CHARACTERISTICS:

SHAPE: Square

RANGE DIMENSIONS: 1,000 m X 1,000 m

NUMBER OF FIRING POSITIONS: 1

FIRING LANE DIMENSIONS: Not applicable

TARGET AREA DIMENSIONS: Not applicable

FIRING POINT CONFIGURATION: Not applicable

TARGET CONFIGURATION: Not applicable

ASSOCIATED FACILITIES: Standard facilities

RATIONALE:

MCO 1510.35A requires individual Marines to acquire and maintain proficiency in the use of tactical explosives.

REFERENCE:

MCO 1510.35A

STRAFING RANGE

WEAPONS:

20-mm, 25-mm, 30-mm cannons

CLASSIFICATION:

U.S. Air Force standard modified for Marine Corps use

USE:

A Strafing Range is used for air-to-ground gunnery proficiency training in low-altitude strafing firing 20-mm, 25-mm, or 30-mm ammunition.

CHARACTERISTICS:

SHAPE: Fan

RANGE DIMENSIONS: 5 X 8 nm

NUMBER OF FIRING POSITIONS: There are two firing angles; however, one aircraft fires at a time.

FIRING LANE DIMENSIONS: 600 ft wide

TARGET AREA DIMENSIONS: 600 ft wide (plus 22,000 ft ricochet buffer); 2,000 ft long (plus 22,000 ft runaway gun buffer)

TARGET CONFIGURATION:

- (1) Stationary targets
- (2) Berms with acoustical scoring
- (3) Raked ranges provide for easier line-up
- (4) 4 strafing at 2 locations at off-set angles and spaced to allow for single-tower scoring

ASSOCIATED FACILITIES:

- (1) Scoring system to allow for real time feedback and post-mission printout
- (2) Control tower with two-way air-to-ground communications

ADDITIONAL INFORMATION:

This range accommodates 32 aircraft per 8-hour day.

RATIONALE:
This range maintains proficiency in air-to-ground gunnery.

REFERENCES:
AFR-50-46
NAVFAC P-80

CLOSE AIR SUPPORT (CAS) AND COMBAT TRAINING AREA (CTA)

WEAPONS:
MK76, MK80 series, MK106 bombs; 20-mm, 25-mm, 30-mm cannons;
2.75-in, 5-in rockets; napalm; 7.62-mm, .50-cal machine
guns; MAVERICK

CLASSIFICATION:
U.S. Air Force standard modified for Marine Corps use

USE:
This range is used by gunship, attack, and fighter units for
training in live and inert ordnance to support ground units.

CHARACTERISTICS:
SHAPE: Rectangular (to allow for multiple release headings)

RANGE DIMENSIONS: 7 X 9 nm

NUMBER OF FIRING POSITIONS: There are multiple firing
angles; however, one aircraft fires at a time.

FIRING LANE DIMENSIONS: 360 degrees

TARGET AREA DIMENSIONS: 6,000 ft wide (plus 22,000 ft
ricochet buffer); 6,000 ft long (plus 2,000 ft ricochet
buffer)

TARGET CONFIGURATION:
(1) Stationary targets
(2) Moving targets
(3) Abandoned motor vehicles
(4) 2 tanks
(5) 1 POL site
(6) 1 mobile target
(7) 2 SAM sites
(8) 2 AAA sites
(9) Simulated personnel targets

These are the minimum desired to allow for bombs, rockets,
strafing, and missile firing. Target spacing should be
based on current and projected intelligence.

ASSOCIATED FACILITIES:

- (1) Two-way air-to-ground communications are required.
- (2) CAS live ordnance missions must be under positive control of a Forward Area Controller or a Tactical Air Controller (airborne).

ADDITIONAL INFORMATION:

Range accommodates 32 aircraft per 8-hour day.

Laser rangefinding and designating devices will be utilized at this range, and appropriate safety procedures as stipulated in AR385-63/MCO P3570.1 must be implemented.

RATIONALE:

This range maintains proficiency in conducting CAS.

REFERENCES:

AFR-50-46
NAVFAC P-80

AERIAL MINING RANGE

WEAPONS:

MK25, MK36, MK52, MK55, MK56, CBU-78 mines

CLASSIFICATION:

Proposed

USE:

The Aerial Mining Range will be used for low- and high-altitude mining.

CHARACTERISTICS:

SHAPE: Elongated rectangle

RANGE DIMENSIONS: Dependent on seeding dimensions

NUMBER OF FIRING POSITIONS: Multiple aircraft release simultaneously.

FIRING LANE DIMENSIONS: Dependent upon the pattern

TARGET AREA DIMENSIONS: Dependent upon the pattern

TARGET CONFIGURATION: There is no target configuration; however, the target area must be well-defined.

ASSOCIATED FACILITIES: Placement pattern scoring

ADDITIONAL INFORMATION:

The Marine Corps has no dedicated Aerial Mining Range.

RATIONALE:

This range maintains proficiency in aerial waterway and land mining.

GUIDED MISSILE RANGE

WEAPONS:

SHRIKE, HARM, SIDEARM, MAVERICK, WALLEYE

CLASSIFICATION:

Proposed

USE:

The Air-to-Ground Guided Missile Target Range will be used for training in controlled air-to-ground missiles.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 16 X 23 nm (max) plus entry/exit routes

NUMBER OF FIRING POSITIONS: 1

FIRING LANE DIMENSIONS: 1 nm wide

TARGET AREA DIMENSIONS: 300 ft wide (dependent upon target type) plus a 7.8-nm buffer each side of target; 300 ft (dependent upon target type and missile) plus 13 nm buffer inbound from launch point

TARGET CONFIGURATION:

- (1) Stationary targets
- (2) ARM missiles require at least one E-, F-, G-, or I-band pulsed emitter for missile homing
- (3) MAVERICK and WALLEYE require multiple definitive targets such as vehicles or structures

ASSOCIATED FACILITIES:

- (1) Two-way air-to-ground communications
- (2) Event reconstruction capability (recommended)

ADDITIONAL INFORMATION:

Four independent launch segments can be conducted per 8-hour day. This range may also be used as an air defense firing impact area.

Due to guided missile cost and the resultant infrequent opportunity to launch the missiles, maximum advantage must

be taken of the event. Observers, tracking, recording, telemetry devices, chase aircraft, and adequate targets should be available.

To keep within the buffer area, each range needs a surface visual minimum and maximum launch point clearly identifiable by the pilot.

Laser rangefinding and designating devices will be utilized at this range, and appropriate safety procedures as stipulated in AR385-63/MCO P3570.1 must be implemented.

RATIONALE:

This range maintains proficiency in air-to-ground guided missile targeting and launching.

HIGH ALTITUDE LEVEL BOMBING RANGE

WEAPONS:

MK76, MK106, MK80 series bombs

CLASSIFICATION:

U.S. Air Force standard modified for Marine Corps use

USE:

The High Altitude Level Bombing Range provides training in high-speed, high-altitude, and level altitude bomb releases.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 5 X 7 nm plus entry/exit routes

NUMBER OF FIRING POSITIONS: 4 aircraft simultaneously

FIRING LANE DIMENSIONS: 360 degrees

TARGET AREA DIMENSIONS: 1,000 ft wide plus 15,000 ft buffer; 1,000 ft long plus 15,000 ft buffer

TARGET CONFIGURATION:

- (1) Stationary targets
 - (2) Bull's-eye arrangement for conventional target, a 20-ft bull's-eye with concentric circles at 75, 150, 300, and 500 ft
 - (3) Bull's-eye arrangement for nuclear target, a 50-ft bull's-eye and a concentric circle radius of 1,000 ft
- Both targets must have automated scoring. The targets and area must be certified laser safe.

ASSOCIATED FACILITIES:

- (1) Observation tower with two-way air-to-ground communications
- (2) Radar reflectors at IPs

ADDITIONAL INFORMATION:

Range accommodates 64 aircraft per 8-hour day.

RATIONALE:

This range maintains proficiency in high-altitude level bombing.

REFERENCES:

AFR-50-46
NAVFAC P-80

MULTIPURPOSE TARGET RANGE

WEAPONS:

All air-to-ground conventional weapons

CLASSIFICATION:

Proposed

USE:

The Multipurpose Target Range will be used for training in conventional bombing, strafing, and rockets including ROCKEYE, cluster bombs, and land and/or water mining.

CHARACTERISTICS:

SHAPE: Rectangular (basically)

RANGE DIMENSIONS: 12 X 12 nm (includes 2 nm buffer) plus entry/exit routes

NUMBER OF FIRING POSITIONS: Multiple

FIRING LANE DIMENSIONS: 360 degrees

TARGET AREA DIMENSIONS: 10 nm wide; 10 nm long

TARGET TYPE: Stationary and moving

TARGET CONFIGURATION:

- (1) Stationary targets
- (2) 3 moving targets
- (3) 4 SAM sites
- (4) 4 AAA sites
- (4) 1 SSM site
- (5) 3 simulated airfields
- (6) 4 vehicle convoys

- (7) 2 tanks
 - (8) 6 buildings
 - (9) 3 fuel farms
 - (10) 1 nuclear bull's-eye
 - (11) 1 conventional bull's-eye
 - (12) 3 sets of strafing panels
 - (13) Moving and stationary waterborne targets where possible
- The targets and area must be certified laser safe. Current and projected intelligence information should be used as the basis for determining target types, numbers of targets, and positioning. As an initial standard, the above is proposed.

ASSOCIATED FACILITIES:

- (1) Observation tower
- (2) Scoring towers
- (3) Automated scoring systems
- (4) Two-way air-to-ground communications

ADDITIONAL INFORMATION:

Accommodates approximately 96 aircraft per 8-hour day.

An EOD team will be required to sanitize the range after ROCKEYE and cluster bomb deliveries.

RATIONALE:

This range maintains proficiency in multiple aircraft tactics and weapons delivery against numerous targets. Aggressor aircraft also add realism for maximum training.

ELECTRONIC WARFARE RANGE

WEAPONS:

Chaff, flares, DECM, tactical jammers

CLASSIFICATION:

U.S. Air Force standard modified for Marine Corps use

USE:

This range provides air crews with an operating area with a simulated hostile electronic warfare environment of surface-to-air missile, antiaircraft artillery, acquisition, and target tracking radars for training in ESM, ECM, and ECCM.

CHARACTERISTICS:

Threat Types: Equipment simulates ground-based and naval threats. To form a complete air defense system, a range can be combined with aircraft representing the ground-controlled interceptor threat. Threats simulated are:

- (1) Early Warning (EW)
- (2) Ground-Controlled Intercept (GCI) (including surveillance and height-finder)

- (3) Acquisition (ACQ)
- (4) Surface-to-Air Missile (SAM) control radars (including target trackers, target illuminators, and missile command guidance signals) and optical tracking devices
- (5) Antiaircraft Artillery (AAA) fire control radars and optical tracking devices
- (6) Jammers: devices designed to jam aircraft radio communications or other avionics, including airborne radar systems

SHAPE: Rectangular

RANGE DIMENSIONS: Sufficient to allow for maneuvering with no buffer required, approximately 15 X 25 nm (minimum)

NUMBER OF FIRING POSITIONS: Not applicable

FIRING LANE DIMENSIONS: Not applicable

TARGET AREA DIMENSIONS: Not applicable

FIRING POINT CONFIGURATION: Not applicable

TARGET CONFIGURATION: The composition and placement of emitters should be based on current and projected intelligence information. As an initial standard, however, the following electronic order of battle (EOB) is proposed for the land and sea threats:

- (1) Land
 - (a) 3 early warning/acquisition
 - (b) 1 GCI
 - (c) 12 assorted SAM (with up-link as appropriate)
 - (d) 12 assorted AAA simulators
 - (e) 3 jammers
- (2) Naval (land-based)
 - (a) 2 early warning/acquisition
 - (b) 8 assorted S-A-N (with up-link as appropriate)
 - (c) 2 naval AAA

ASSOCIATED FACILITIES:

- (1) Two-way air-to-ground communications
 - (2) Means to determine effectiveness
- Effectiveness can be the accumulation of the factors of maneuvering, speed, range, DECM, and ECM to determine a missile miss distance, or the level of ECM effectiveness in defeating a threat system.

ADDITIONAL INFORMATION:

The Marine Corps has no dedicated Electronic Warfare Range; however, the Mid-Atlantic Electronic Warfare Range at MCAS, Cherry Point, North Carolina, is under development.

The range can accommodate 96 aircraft per 8-hour day. EOB adjacent or collocated with the Multipurpose Target Range would be an ideal training investment.

RATIONALE:

This range maintains proficiency in threat identification and defensive or offensive tactics to defeat or degrade the threat system.

LOFT BOMBING RANGE

WEAPONS:

MK76, MK106, MK80 series, BDU-43, BDU-57, BDU-61 bombs;
2.75-in, 5-in rockets

CLASSIFICATION:

U.S. Air Force standard modified for Marine Corps use

USE:

The Loft Bombing Range is an instrumented land range used for practice bombing with conventional and simulated nuclear weapons. Bomb release maneuvers practiced include loft, toss, and over-the-shoulder techniques providing training in rapid recovery and escape from atomic weapons effects, detection, and retaliatory ground fire.

CHARACTERISTICS:

SHAPE: Rectangular

RANGE DIMENSIONS: 5 X 7 nm plus entry/exit routes.

NUMBER OF FIRING POSITIONS: There are multiple release positions; however, 1 aircraft releases at a time.

FIRING LANE DIMENSIONS: 360 degrees

TARGET AREA DIMENSIONS: 1,000 ft wide plus a 5,000-ft buffer; 1,000 ft long plus a 15,000-ft buffer

TARGET TYPE: Stationary

TARGET CONFIGURATION:

(1) Stationary targets

(2) Bull's-eye arrangement for conventional targets

(3) Bull's-eye arrangement for nuclear targets

The conventional target is a 20-ft bull's-eye with concentric circles at 75, 150, 300, and 500 ft. The nuclear target has a 50-ft bull's-eye and a concentric circle radius of 1,000 ft. Both targets must have automated scoring. The targets and area must be certified laser safe.

ASSOCIATED FACILITIES: Two-way air-to-ground communications are required.

ADDITIONAL INFORMATION:

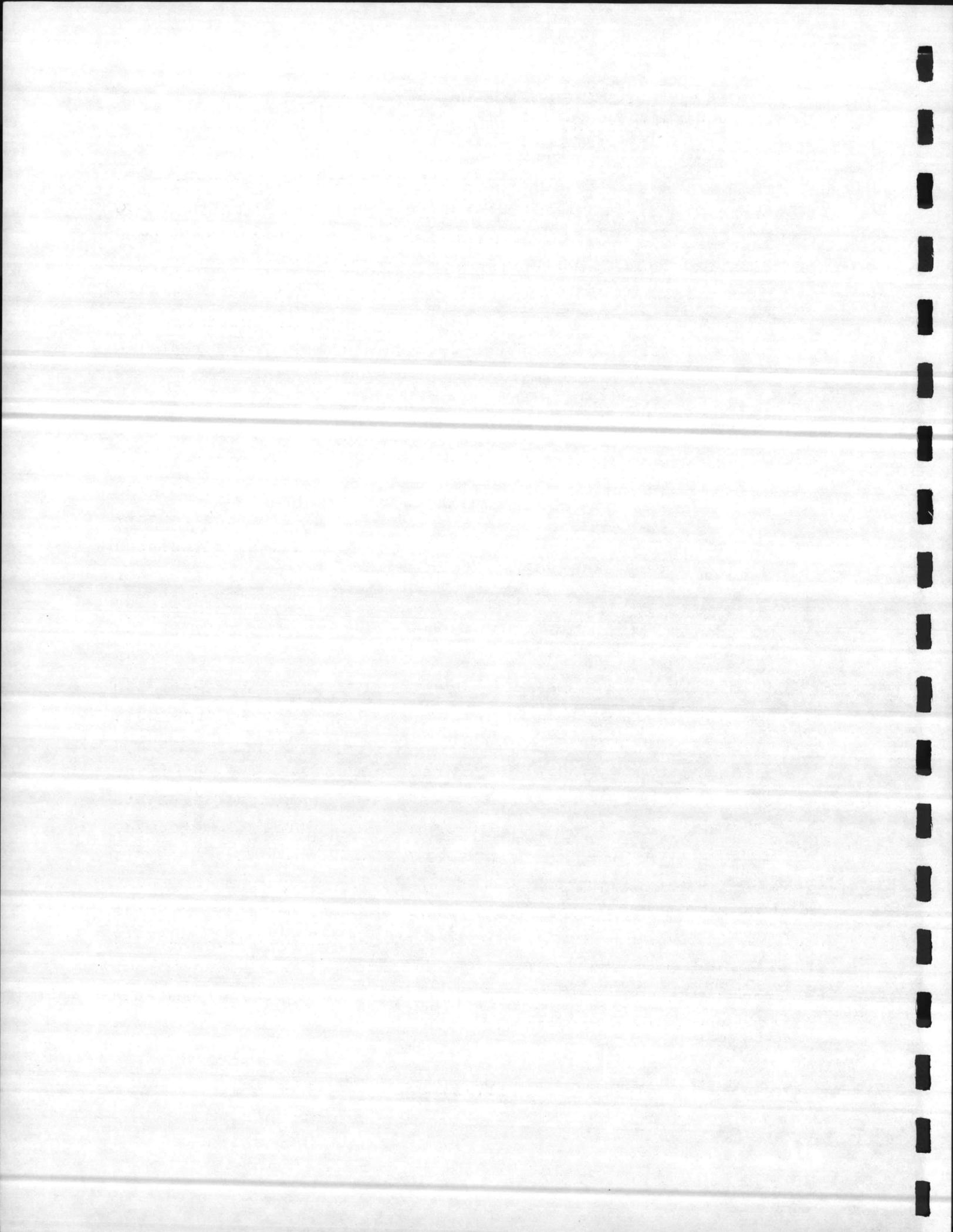
Range accommodates 32 aircraft per 8-hour day.

RATIONALE:

This range maintains proficiency in high-altitude loft bombing.

REFERENCE:

AFR-50-46



CHAPTER IV
UNIT TRAINING AND MANEUVER AREA STANDARDS

This chapter presents the unit training and maneuver area standards (UTMAS) proposed for Marine Corps consideration. To determine the proposed UTMAS, an analysis was made of the survey data collected from Fleet Marine Force (FMF) users; installation providers; Headquarters, U.S. Marine Corps directives, training circulars, and field manuals; other Service headquarters; and other commands visited during the course of the Land and Training Area Requirements (LATAR) survey. The following paragraphs describe the methodology used to determine the proposed standards.

As with live fire range and training standards (LFRTS), the initial step was to synthesize and analyze maneuver area requirements data provided by the FMF users. These requirements were then compared to current training requirements as stipulated in Headquarters, U.S. Marine Corps orders, directives, and other doctrinal publications to determine the exact characteristics required of the various unit training and maneuver areas needed to accomplish collective and mission performance training objectives. The specific maneuver area requirements derived from this analysis were then compared to existing Marine Corps unit training and maneuver area resources to determine if existing resources satisfy maneuver area requirements. In addition, training objectives and the specified maneuver area requirements were compared to U.S. Army maneuver area standards to determine the possible applicability of the Army standards. This analysis revealed that neither the existing Marine Corps nor the Army maneuver area standards satisfy the specified maneuver area requirements. Consequently, the development of the proposed unit training and maneuver area standards involved a combination of both the existing Marine Corps maneuver area resources and the U.S. Army maneuver area standards.

Specific requirements, such as cold weather, desert, jungle, and mountain training, identified by the FMF users and specified in the Marine Corps Combat Readiness Evaluation System (MCCRES) are not addressed in the proposed unit training and maneuver area standards. The proposed maneuver areas derived from this analysis intentionally are not designed for specific settings and may be employed for any terrain or climate required. This allows flexibility of standards to accommodate the differences in terrain from one Marine Corps installation to another. For example, the setting of an infantry company conducting a daylight attack in the mountains of Camp Pendleton differs considerably from an infantry company conducting the same type of training operation at Camp Lejeune. The following paragraphs present the proposed unit training and maneuver area standards, their characteristics, and the rationale for their inclusion.

MECHANIZED COMBINED ARMS MANEUVER AREA

CLASSIFICATION:

Proposed

USE:

This maneuver area will be used primarily by elements of a combined arms task force to train and sustain individual, collective, and mission performance skill proficiency in mechanized combined arms operations.

CAPABILITY:

This maneuver area will be designed primarily to support battalion level tank/infantry and mechanized combined arms task force operations. It will be specifically structured to provide the environment required for all task force elements (i.e., infantry, artillery, engineer, LAV, AAV, tank, aviation, and combat service support) to accomplish skill level training to mission performance standards.

CHARACTERISTICS:

SHAPE: Roughly rectangular

DIMENSIONS: 12 km X 30 km or 360 sq km

AIR SPACE: 12 km X 30 km or 360 sq km

ALTITUDE: 20,000 ft

GENERAL FEATURES:

The area should provide varying, relatively open, hilly terrain with good fields for fire and observation. It should provide for excellent cross-country mobility for tracked and wheeled vehicles and possess several salient terrain features to serve as tactical focal points.

ADDITIONAL INFORMATION:

This area may be used by small units (platoons and companies) to train and sustain skill proficiency in tank/infantry and mechanized combined arms operations.

Opposition forces should be used for large unit training exercises to obtain the maximum effect of the training.

The use of MILES or other simulation devices would enhance the value of the overall training.

RATIONALE:

Present and projected contingency requirements indicate a strong necessity for Marine Corps units to carry out operations requiring extensive knowledge of tank/infantry and mechanized combined arms operations over extended land areas. The coordination of such operations can only be effective if it is practiced repeatedly so that the participants understand their respective roles and can instantly react to situations that occur more rapidly in mechanized operations.

REFERENCE:

OH 9-3A

INFANTRY TACTICS MANEUVER AREA

CLASSIFICATION:

U.S. Army standard modified for Marine Corps use

USE:

This maneuver area is used to train and sustain unit proficiency in infantry tactics.

CAPABILITY:

This area is designed to support infantry maneuver area training requirements for squad through battalion size units, except for Military Operations on Urbanized Terrain (MOUT) requirements.

CHARACTERISTICS

SHAPE: Rectangular

DIMENSIONS: 3 km X 10 km or 30 sq km

AIR SPACE: 3 km X 10 km or 30 sq km

ALTITUDE: 20,000 ft

GENERAL FEATURES:

This maneuver area consists of varying terrain (location dependent) with mixed vegetation, an established road and trail network, a tactical helicopter landing zone, natural obstacles and barriers, and an area containing prepared defensive positions and strong points.

HELICOPTER LANDING ZONE REQUIREMENTS:

Quantity: 1

Size: 150 m X 280 m or 42,000 sq m

ADDITIONAL INFORMATION:

This maneuver area is designed to accommodate units from squad size up to a full infantry battalion and support their non-firing individual and collective skill proficiency training in infantry tactics.

The area is structured so that it can be used by other combat, combat support, and combat service support units to sustain basic infantry skills.

This maneuver area is capable of supporting the following training and land requirements for a Marine infantry battalion:

- (1) Daylight Attack: 2.5 km X 5 km or 12.5 sq km
- (2) Night Attack: 2 km X 4.5 km or 9 sq km
- (3) Helicopter Assault: 4 km X 4 km or 16 sq km
- (4) Defense: 3 km X 3 km or 9 sq km
- (5) Retrograde Operations: 3 km X 6 km or 18 sq km
- (6) Movement to Contact: 3 km X 10 km or 30 sq km
- (7) Tank/Infantry: 3 km X 5 km or 15 sq km

RATIONALE:

This maneuver area provides the resources necessary to train and sustain unit and individual skill proficiency in the tactics and techniques employed by a Marine infantry battalion to the mission performance standards specified by MCCRES and the non-firing individual training requirements specified by the Marine Corps Individual Training Standards (ITS) System.

REFERENCES:

MCO 1510.35A
MCO 3501.3A
TC 25-1

MILITARY OPERATIONS ON URBANIZED TERRAIN (MOUT)
MANEUVER AREA/TRAINING COMPLEX

CLASSIFICATION:

U.S. Army standard modified for Marine Corps use

USE:

This maneuver area/training complex is used to train and sustain unit proficiency in offensive and defensive operations in an urban environment using MILES.

CAPABILITY:

This maneuver area/training complex is designed to support up to a reinforced infantry battalion or mechanized combined arms task force.

CHARACTERISTICS:

SHAPE: Rectangular

DIMENSIONS: 3 km X 4 km or 12 sq km

AIR SPACE: 3 km X 4 km or 12 sq km

ALTITUDE: 20,000 ft

GENERAL FEATURES:

This area is a city complex consisting of 32 buildings, a soccer field, a cemetery, two lakes, and an established road network. The city has functional public utilities (i.e., water, electricity).

ADDITIONAL INFORMATION:

This maneuver area/training complex is located adjacent to the MOUT Assault Course. Training on the MOUT Maneuver Area/Training Complex is normally accomplished after individual and low-level collective skill proficiency training has been conducted on the MOUT Assault Course.

RATIONALE:

Marines committed to any of the current potential contingency areas will require training in an urban area complex. Additionally, MCCRES requires that Marines attain and maintain a skill proficiency equal to that specified by the mission performance standard.

REFERENCES:

MCO 3510.10
Naval Facilities Engineering Command, Atlantic Division,
Camp Lejeune MOUT (P-846) Layout Plan
TC 25-1

AMPHIBIOUS ASSAULT MANEUVER AREA

CLASSIFICATION:
Proposed

USE: This maneuver area will be used by all elements of the MAGTF to train and sustain unit proficiency in conducting amphibious operations and subsequent operations ashore.

CAPABILITY:

This maneuver area should support a 3- to 4-day ^{MEU} MAU size amphibious training exercise (raid, evacuation, or special operations) against a reinforced battalion size opposition force. It should also be capable of supporting individual unit training requirements specified by MCCRES.

CHARACTERISTICS:

SHAPE: Rectangular

DIMENSIONS:

Overall: 8 km X 100.6 km or 804.8 sq km
Land Area: 8 km X 8 km or 64 sq km
Water Area: 8 km X 92.6 km or 740.8 sq km

AIR SPACE: 8 km X 100.6 km or 804.8 sq km

ALTITUDE: 20,000 ft

GENERAL FEATURES:

Features will include a coastal area with a beach, three tactical helicopter landing zones, an established road and trail network, mixed vegetation, natural obstacles and barriers, an urban complex (MOUT or Combat Town), and an area containing prepared defensive positions and strong points.

LANDING BEACH REQUIREMENTS:

Quantity: 1
Size: 500 m X 50 m
Beach Exits: 2 (minimum)

LCAC LANDING ZONE REQUIREMENTS:

Quantity: 1
Size: 500 m X 50 m

LCAC LANDING SITE REQUIREMENTS:

Quantity: 2 (minimum) outside beach area
Size: 73 m to 91 m in diameter

1 yd = .9 meters

1 M =

1 KM = 1.06

MILITARY OPERATIONS ON URBANIZED TERRAIN (MOUT)
MANEUVER AREA/TRAINING COMPLEX

CLASSIFICATION:

U.S. Army standard modified for Marine Corps use

USE:

This maneuver area/training complex is used to train and sustain unit proficiency in offensive and defensive operations in an urban environment using MILES.

CAPABILITY:

This maneuver area/training complex is designed to support up to a reinforced infantry battalion or mechanized combined arms task force.

CHARACTERISTICS:

SHAPE: Rectangular

DIMENSIONS: 3 km X 4 km or 12 sq km

AIR SPACE: 3 km X 4 km or 12 sq km

ALTITUDE: 20,000 ft

GENERAL FEATURES:

This area is a city complex consisting of 32 buildings, a soccer field, a cemetery, two lakes, and an established road network. The city has functional public utilities (i.e., water, electricity).

ADDITIONAL INFORMATION:

This maneuver area/training complex is located adjacent to the MOUT Assault Course. Training on the MOUT Maneuver Area/Training Complex is normally accomplished after individual and low-level collective skill proficiency training has been conducted on the MOUT Assault Course.

RATIONALE:

Marines committed to any of the current potential contingency areas will require training in an urban area complex. Additionally, MCCRES requires that Marines attain and maintain a skill proficiency equal to that specified by the mission performance standard.

REFERENCES:

MCO 3510.10
Naval Facilities Engineering Command, Atlantic Division,
Camp Lejeune MOUT (P-846) Layout Plan
TC 25-1

AMPHIBIOUS ASSAULT MANEUVER AREA

CLASSIFICATION:
Proposed

USE: This maneuver area will be used by all elements of the MAGTF to train and sustain unit proficiency in conducting amphibious operations and subsequent operations ashore.

CAPABILITY: This maneuver area should support a 3- to 4-day ^{MEU} ~~MAU~~ size amphibious training exercise (raid, evacuation, or special operations) against a reinforced battalion size opposition force. It should also be capable of supporting individual unit training requirements specified by MCCRES.

CHARACTERISTICS:

SHAPE: Rectangular

DIMENSIONS:

Overall: 8 km X 100.6 km or 804.8 sq km
Land Area: 8 km X 8 km or 64 sq km
Water Area: 8 km X 92.6 km or 740.8 sq km

AIR SPACE: 8 km X 100.6 km or 804.8 sq km

ALTITUDE: 20,000 ft

GENERAL FEATURES:

Features will include a coastal area with a beach, three tactical helicopter landing zones, an established road and trail network, mixed vegetation, natural obstacles and barriers, an urban complex (MOUT or Combat Town), and an area containing prepared defensive positions and strong points.

LANDING BEACH REQUIREMENTS:

Quantity: 1
Size: 500 m X 50 m
Beach Exits: 2 (minimum)

LCAC LANDING ZONE REQUIREMENTS:

Quantity: 1
Size: 500 m X 50 m

LCAC LANDING SITE REQUIREMENTS:

Quantity: 2 (minimum) outside beach area
Size: 73 m to 91 m in diameter

HELICOPTER LANDING ZONE REQUIREMENTS:

Quantity: 3 (minimum)

Size: 150 m X 280 m or 42,000 m (minimum)

ADDITIONAL INFORMATION:

This maneuver area should be capable of supporting most combat, combat support, and combat service support unit individual and collective non-firing training requirements.

This area, if established, should consolidate and incorporate the requirements for the Infantry Tactics Maneuver Area and the MOUT Maneuver Area/Training Complex, which would reduce the overall maneuver area land requirement.

RATIONALE:

The Amphibious Assault Maneuver Area will provide a training facility capable of training Marines in amphibious warfare, including subsequent land combat operations, to the mission performance standards specified by MCCRES. This area will also consolidate the resources by which most Marine Corps units can conduct field training to satisfy non-firing individual training requirements specified by the ITS System for the various occupational fields.

REFERENCES:

MCO 1510.35A

MCO 3501 series

FMFM 0-1

TC 25-1

ENGINEER MANEUVER/TRAINING AREA

CLASSIFICATION:

U.S. Army standard modified for Marine Corps use

USE:

This maneuver/training area is used by the Marine Corps combat engineer and combat support battalions to train and sustain skill proficiency in erecting bridges, setting up decontamination stations, and operating decontamination equipment.

CAPABILITY:

This area is designed to provide the terrain features required for erecting the various types of bridges organic to the engineer support battalion. It is also structured to support the establishment and operation of one Personnel Decontamination Station and one Support-Level Equipment Decontamination Station. The decontamination area is capable of supporting complete personnel and equipment

decontamination for all combat, combat support, and combat service support units.

CHARACTERISTICS:

SHAPE: Square

DIMENSIONS: 4 km X 4 km or 16 sq km

AIR SPACE: 4 km X 4 km or 16 sq km

ALTITUDE: 5,000 ft

GENERAL FEATURES:

General features include an area of varying terrain (location dependent) that contains a river, stream, or lake/pond (natural or man-made) and a series of dry and wet gaps for bridge erection training. An established road or improved trail network must connect the various gap and water areas. A relatively clear area must also be designated to accommodate the establishment of the decontamination stations. This area must have a substantial water supply (river or lake) or a piped water system.

RIVER, STREAM, LAKE/POND REQUIREMENTS: A water area (natural or man-made) between 100 m and 1,000 m in width, at least 1 m deep, and accessible by road or improved trail. Used to erect the Ribbon Bridge.

22-M GAP (WET OR DRY) REQUIREMENTS: A natural gully or man-made hole in the earth 22 m wide, from bank to bank, and at least 1 m deep. Used to erect the Trailer-Launched Bridge.

26-M DRY GAP REQUIREMENTS: A natural gully or man-made hole in the earth 26 m wide, from bank to bank, and at least 1 m deep. This gap must also be cleared 50 m in diameter to maneuver the trailer in position. Used to erect the Medium Girder Bridge.

71-M GAP (WET OR DRY) REQUIREMENTS: A natural gully or man-made hole in the earth 17 m wide, from bank to bank, and at least 1 m deep. Used to erect the Armored Vehicle-Launched Bridge.

DECONTAMINATION AREA REQUIREMENTS: An area 1 km X 1 km with an adequate water supply. This area should be basically natural in setting to allow the decontamination team adequate training in erecting the Personnel Decontamination Station and Support-Level Equipment Decontamination Station in accordance with the procedures set forth in FM 3-87.

ADDITIONAL INFORMATION:

The Engineer Maneuver/Training Area should be either located adjacent to or collocated with the Nuclear, Biological, and Chemical (NBC) Defense Maneuver/Training Area in order to combine this training.

RATIONALE:

Marine Corps engineer units perform unique, but critical tasks. In order for these units to be skilled in their mission performance tasks, they must be trained in and knowledgeable of the capabilities and limitations associated with each engineering task. This training area will provide the facilities necessary for engineer task training.

REFERENCES:

MCO 3501.8
OH 11-1
FM 3-87

NBC DEFENSE MANEUVER/TRAINING AREA

CLASSIFICATION:

Proposed

USE:

This maneuver/training area will be used by Marine Corps units to train and sustain individual and collective skill proficiency in performing routine combat tasks while wearing the M3 Impermeable Protective Coveralls and the Field Protective Mask.

CAPABILITY:

This area will be designed to accommodate a platoon of Marines on each cycle through the course. The course will provide training for combat, combat support, and combat service support units.

CHARACTERISTICS:

SHAPE: Rectangular

DIMENSIONS: .5 km X 1 km or .5 sq km

AIR SPACE: None

ALTITUDE: NA

GENERAL FEATURES:

The NBC Defense Maneuver/Training Area will be a lightly wooded area with an improved dirt road and a foot trail. There will be two assembly areas, one at each end of the

maneuver area. It will have three bunkers with protective defensive positions located along the road and trail.

ADDITIONAL INFORMATION:

Units will move through the maneuver/training area in tactical formation. They will be alerted to an impending gas attack and instructed to wear protective coveralls. As they continue on the road/trail, opposition forces will attack with gas or smoke grenades. Unit personnel will put on protective masks and maneuver through the remainder of the course.

The NBC Defense Maneuver/Training Area should be collocated with the Engineer Maneuver/Training Area in order to combine NBC defense training and decontamination training.

RATIONALE:

Marines require NBC defense training to develop and maintain a degree of proficiency necessary to ensure survival during an NBC attack and to ensure that units attain and maintain established standards of individual and unit NBC defense readiness.

REFERENCES:

OH 11-1
FM 3-87

COMBINED ARMS TRAINING SYSTEM (CATS) MANEUVER AREA

CLASSIFICATION:

Proposed

USE:

This maneuver area will be used by the MAU to evaluate the MAU and its subordinate company and battery size units under full simulation conditions.

CAPABILITY:

This area will provide full force-on-force exercise using CATS simulation devices for scoring and reconstruction.

CHARACTERISTICS:

SHAPE: Rectangular

DIMENSIONS: 3 km X 10 km or 30 sq km

AIR SPACE: 3 km X 10 km or 30 sq km

ALTITUDE: 18,000 ft

GENERAL FEATURES:

The area consists of varying terrain (location dependent) with a mix of sparse to heavy vegetation. The area will contain several proposed defensive positions with bunker complexes and strong points. The CATS maneuver area will require the following facilities:

- (1) control center
- (2) communications system
- (3) electrical system
- (4) classroom
- (5) utility/storage building
- (6) bivouac site
- (7) head facilities
- (8) viewing area
- (9) parking area

ADDITIONAL INFORMATION:

CATS incorporates as components of the system MILES, PLARS, TACTS, and TWSEAS. It will be able to score the simulated combat actions and reconstruct the entire exercise/

Specific dimensions for the control center and other facilities are not currently available. These aspects of CATS are presently being designed under an ongoing study effort.

RATIONALE:

CATS provides an accurate method of assessing the performance of the MAU and its subordinate elements during the execution of mission assigned tasks. This system affords commanders at all echelons an opportunity to observe performance and take necessary corrective action prior to actual combat situations.

REFERENCE:

LATAR survey

REMOTELY PILOTED VEHICLE (RPV) AND DRONE MANEUVER AREA

CLASSIFICATION:

Proposed

USE:

This maneuver area will be used by the Marine Division's RPV platoons to train and sustain operator and unit skill proficiency in launching, controlling, and recovering RPVs and in launching expendable drones (EXDRONES).

CAPABILITY:

This area will be designed to support the RPV and drone inventory organic to the Marine Division.

CHARACTERISTICS:

SHAPE: Square

DIMENSIONS: 5 km X 5 km or 25 sq km

AIR SPACE: 5 km X 5 km or 25 sq km

ALTITUDE: 10,000 ft

GENERAL FEATURES:

The area will feature varying terrain (location dependent) with mixed vegetation, a launcher pad, a recovery strip, a control tower, and a utility storage/maintenance building. The facility must have electricity and a telephone.

RPV/DRONE LAUNCH PAD REQUIREMENTS: A concrete or asphalt pad 6.1 m X 6.1 m.

RPV/DRONE RECOVERY STRIP REQUIREMENTS: A concrete or asphalt pad 26 m X 61 m.

CONTROL TOWER REQUIREMENTS: A wooden tower 30.5 m high with an observation/control platform 3.05 m square.

ADDITIONAL INFORMATION:

This maneuver area should be collocated with the Infantry Tactics Maneuver Area or the Amphibious Assault Maneuver Area to facilitate training in target acquisition and surveillance techniques.

The range may not be suitable for supporting the launching of EXDRONES due to the flight capability of the vehicle. The EXDRONE has a flight range capability of 21.058 km (39 nm), and its flight path is programmed prior to launch rather than being controlled by the RPV platoon. It may, however, be capable of being programmed to fly within the maneuver area boundaries.

RATIONALE:

This maneuver area is required to train and sustain the proficiency of the RPV platoon to carry out mission related tasks. RPVs and drones, like other Marine Corps helicopters and fixed-wing aircraft, are controlled by the Direct Air Support Center (DASC). Marines assigned to the RPV platoon must exercise all aspects of RPV/drone operations to maintain proficiency.

REFERENCE:

LATAR survey

CROSS-COUNTRY VEHICLE MANEUVER AREA

CLASSIFICATION:

Proposed

USE:

This maneuver area will be used to train and sustain individual and unit proficiency in operating tactical wheeled vehicles, tanks, LAVs, and AAVs cross-country in rugged terrain.

CAPABILITY:

The range will be designed to support the attainment and maintenance of cross-country driving skills for drivers assigned to combat, combat support, and combat service support units.

CHARACTERISTICS:

SHAPE: Rectangular

DIMENSIONS: 2 km X 4 km or 8 sq km

AIR SPACE: None

ALTITUDE: NA

GENERAL FEATURES:

The area will consist of varying terrain (location dependent) which is generally clear but may contain a mix of sparse to moderate vegetation. The soil composition throughout the area should vary and include loose sand, clay, rock, and marsh. The area should have numerous ditches and gullies (natural or man-made), fallen trees, and one or two shallow streams (natural or man-made).

RATIONALE:

Most Marine Corps tactical wheeled vehicle, tank, LAV, and AAV drivers have little cross-country driving experience. On most Marine Corps installations, all tactical vehicles, including tracked vehicles, are restricted to established road networks or trails due to environmental restrictions. Consequently, when most drivers are required to operate on difficult terrain for cross-country movement exercises or contingency operations, they are unfamiliar with vehicle handling and control. Driving, like qualifying on T/O weapons, is a mission performance standard specified by ITS and MCCRES.

REFERENCES:

MCO 1510.35A

MCO 3501 series

MAB/MAF MANEUVER TRAINING AREA

CLASSIFICATION:
Proposed

USE:

This maneuver area will be used by all elements of the MAGTF to train and sustain unit proficiency in conducting MAB and MAF amphibious operations and subsequent operations ashore.

CAPABILITY:

This maneuver area should support a 5- to 7-day training exercise (surface and vertical amphibious assault operations, special operations, and sustained land operations ashore) against a regimental size opposition force. This area should also be capable of supporting individual unit training requirements for the Ground Combat Element, Air Combat Element, and Combat Service Support Elements of the MAGTF specified by MCCRES.

CHARACTERISTICS:

SHAPE: Rectangular (may vary to accommodate terrain and/or military installation boundaries)

DIMENSIONS:

Overall: 20 km X 160.6 km or 3,212 sq km
Land Area: 20 km X 50 km or 1,000 sq km
Water Area: 20 km X 92.6 km or 1,852 sq km

AIR SPACE: 20 km X 160.6 km or 3,212 sq km

ALTITUDE: 20,000 ft

GENERAL FEATURES:

Features should include a coastal area with a beach, an established road network, mixed vegetation, natural obstacles and barriers, eight or more tactical helicopter landing zones, an urban complex (MOUT or Combat Town), and two or more areas containing established defensive positions and strong points.

LANDING BEACH REQUIREMENTS:

Quantity: 2 (minimum)
Size: 500 m X 50 m (each)
Beach Exist: 2 per beach (minimum)

LCAC LANDING ZONE REQUIREMENTS:

Quantity: 2 (minimum)
Size: 500 m X 50 m (each)

LCAC LANDING SITE REQUIREMENTS:

Quantity: 4 (minimum) outside beach area
Size: 73 m to 91 m in diameter

HELICOPTER LANDING ZONE REQUIREMENTS:

Quantity: 8 (minimum)
Size: 150 m X 280 m or 42,000 sq m (minimum)

ADDITIONAL INFORMATION:

This maneuver area should be capable of supporting all combat, combat support, and combat service support individual and collective non-firing training requirements.

This area, if established adjacent to live-fire ranges and impact areas, would also accommodate controlled fire and maneuver training during large scale Field Training Exercises (FTXs).

This area, if established, should consolidate and incorporate the requirements for the Infantry Tactics Maneuver Area, Amphibious Assault Maneuver Area, MOUT Maneuver Area and Training Complex, Engineer Maneuver and Training Area, and NBC Defense Maneuver and Training Area.

RATIONALE:

The MAB/MAF Maneuver Training Area will provide a training facility capable of training all elements of a MAGTF in the various aspects of amphibious warfare, special operations, and subsequent land combat operations to the performance standards specified by MCCRES. This area provides the MAGTF with the space necessary to train and exercise its components in over-the-horizon amphibious assault techniques, special operations, and basic land combat missions including deliberate attack, movement to contact, defense, and delay. This area's size also provides for realistic training in the areas of command, control, and communications associated with these operations.

This area will also consolidate the resources by which most Marine Corps units conduct field training to satisfy non-firing individual training requirements specified by the ITS System for the various occupational fields.

REFERENCES:

MCO 1510.35A

MCO 3501 series

FMFM 0-1

TC 25-1

CNA, CRM 87-119/JULY 87

CHAPTER V
LATAR DATA BASE ARCHITECTURE

A. GENERAL

The architecture for the Land and Training Area Requirements (LATAR) Data Base was developed using requirements specified in Paragraphs 2.2.4 and 5.2.3 of the Statement of Work (SOW) and information obtained and/or developed during Tasks I-1 and I-2 of the LATAR Study (Phase I - Problem Definition). This chapter presents, in detail, the design, structure, and functions of the proposed LATAR Data Base architecture and outlines the capability of the Data Base as a management tool for the Land Use and Military Construction Branch (LFL) to plan for and manage live fire range, maneuver area, and training facility resources to support Marine Corps training requirements.

B. ARCHITECTURE OVERVIEW

1. Purpose of the LATAR Data Base

The LATAR Data Base must support the U.S. Marine Corps data requirements for training facility data. The following data base functions are required:

- (1) Inventories of all data in the Data Base including standards; units, bases and stations; requirements; resources; and alternative resource data.
- (2) Queries of any data contained in the Data Base.
- (3) Comparisons of training resources to training facility standards to identify deficiencies in training facilities.
- (4) Comparisons of alternative training resources to training facility standards to analyze planned solutions.
- (5) Comparisons of training requirements to training facility resources to identify resource shortfalls.

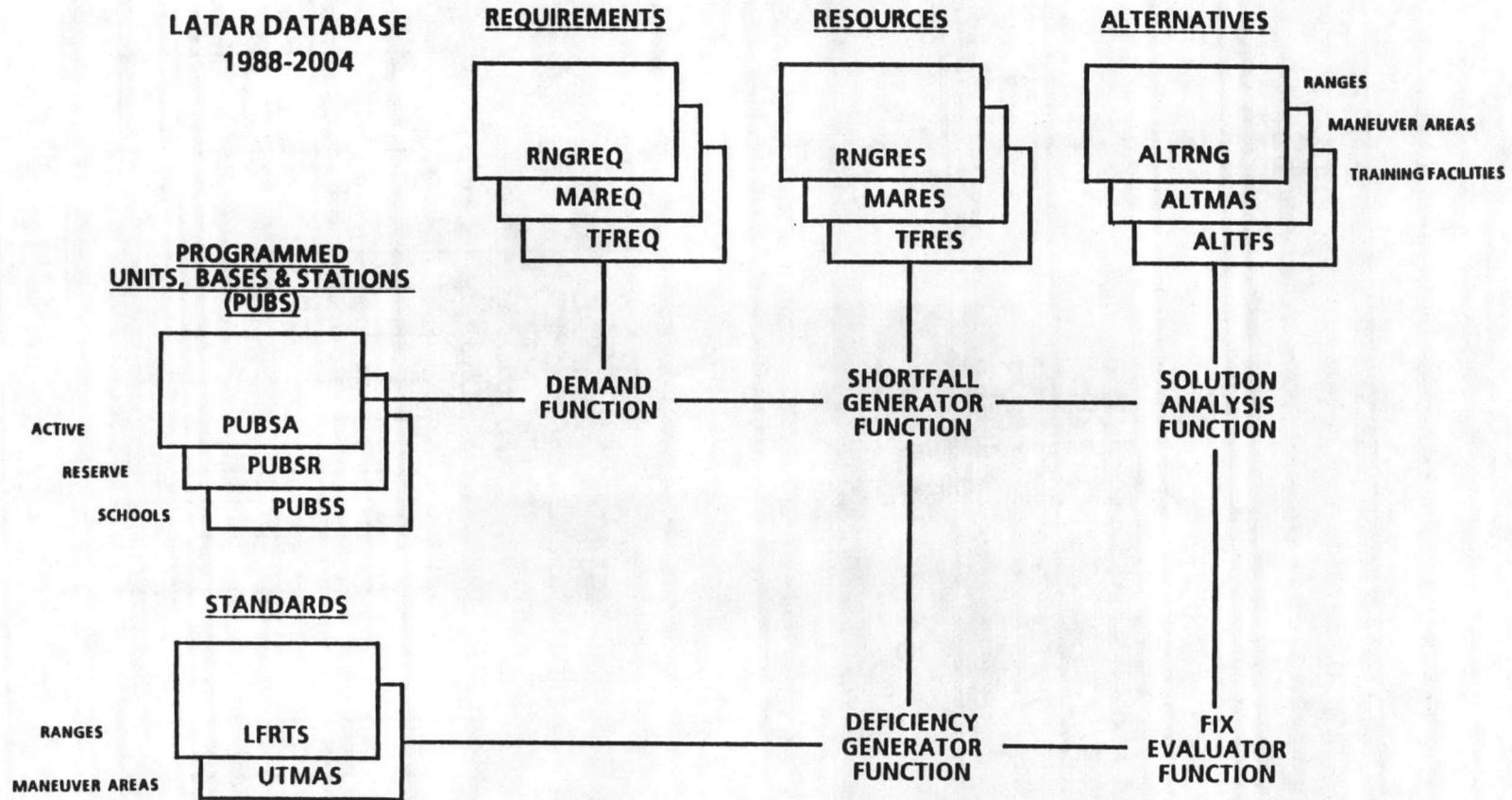
- (6) Comparisons of alternative training resources to training requirements to analyze solutions to training facility shortfalls.

A cross-reference of all LATAR Data Base requirements to the architecture (from the SOW) is provided in Appendix E.

2. Data Base Design

The LATAR Data Base will be designed for resource information for both Continental United States (CONUS) and overseas locations. The overseas portion of the Data Base, however, will be an empty structure shell, similar to the CONUS portion of the Data Base. The information for the overseas portion of the Data Base will be obtained and input by the Marine Corps at a later date. The Data Base will contain data for CONUS-based active duty, reserve, and formal school units. The information stored will cover the 17-year time period from 1988 to 2004. Figure V-1 illustrates the relationship between structural modules and functions in the Data Base and the U.S. Marine Corps requirements discussed above. The Data Base design uses five modules (Standards; Programmed Units, Bases and Stations (PUBS); Requirements; Resources; and Alternatives) consisting of 14 submodules. Each submodule is further subdivided into subgroups for each year from 1988 to 2004. The time-related subgroups are organized into the Five Year Defense Plan (FYDP) Group and the Out-Years Group for each submodule. The modular construction of the Data Base supports U.S. Marine Corps requirements. The yearly subgroups permit the U.S. Marine Corps to easily redefine and regroup submodules on a yearly basis to maintain a 17-year data base. Figure V-2 illustrates the complete Data Base hierarchy from modules to individual data elements.

The LATAR Data Base was designed with two groups (FYDP and Out-Years) and 17 subgroups (one for each year from 1988 to 2004) to provide program analysis and planning support capabilities for the U.S. Marine Corps. It is intended that the data in the FYDP Group (1988 to 1992) will be modified less



NOTE: INVENTORY AND QUERY FUNCTIONS AVAILABLE ON ALL MODULES

Figure V-1. LATAR Data Base Structural Modules and Functions Relationships

V-4

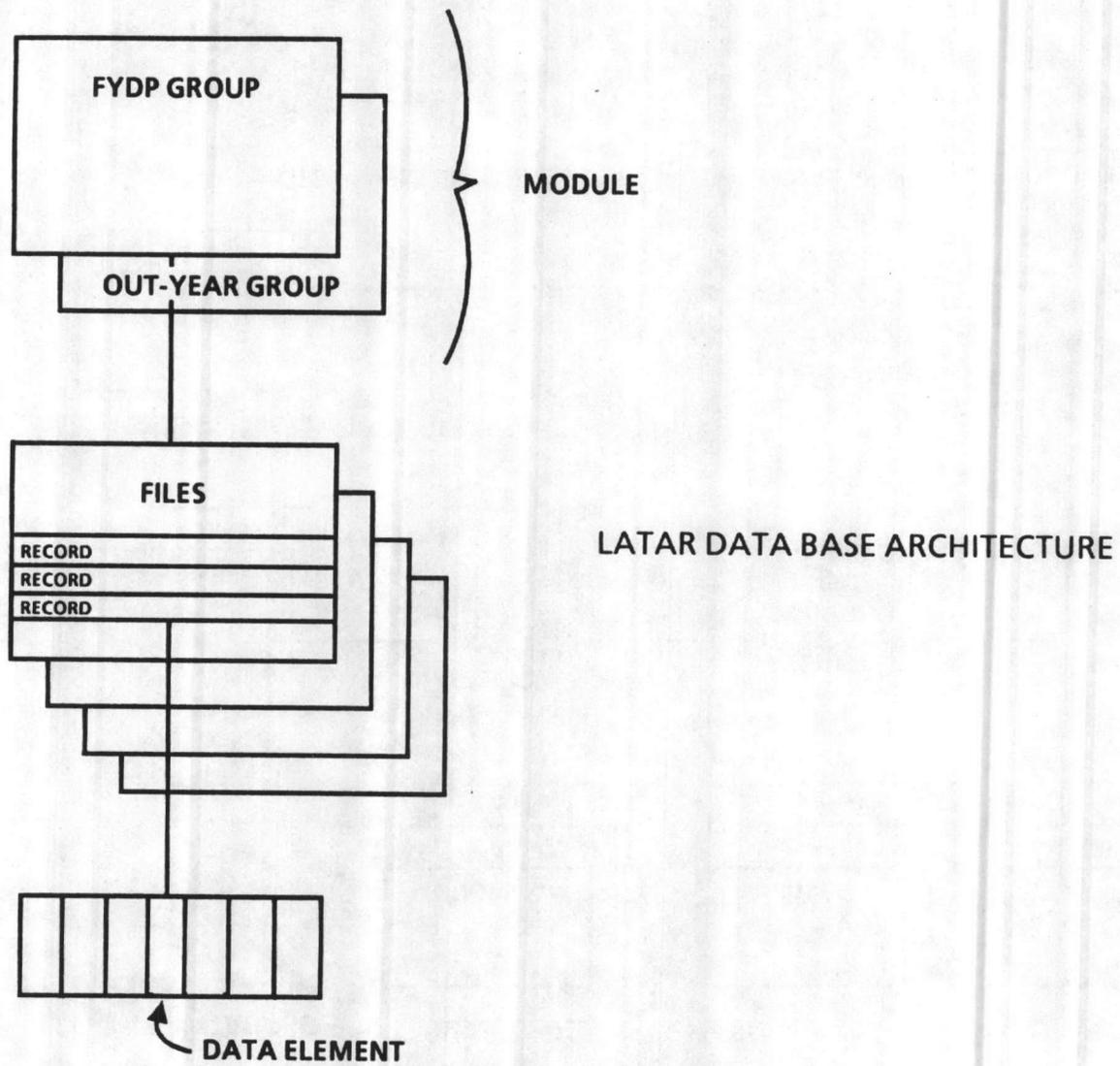


Figure V-2. LATAR Data Base Hierarchy

often than that in the Out-Years Group (1993-2004) because it will contain data representative of programmed resources and requirements. With this design, the Data Base will support both the POM budget process and planning efforts using the year-oriented groups and subgroups. The subgroup structure also permits rapid update of the Data Base to the next 17-year time period (1989 to 2005) simply by renaming data files and adding one year of data into a 17th subgroup. To assist in the update, a subgroup of blank data files structured in modules and submodules may be copied and filled with data on a yearly basis. Alternatively, the 17th year may be copied and edited to produce a new 17th year subgroup.

3. Modules

The LATAR Data Base modules, along with their corresponding submodules are as follows:

- (1) Standards Module
 - (a) LFRTS: Live Fire Range and Training Standards Submodule
 - (b) UTMAS: Unit Training and Maneuver Area Standards Submodule
- (2) Requirements Module
 - (a) RNGREQ: Range Requirements Submodule
 - (b) MAREQ: Maneuver Area Requirements Submodule
 - (c) TFREQ: Training Facility Requirements Submodule
- (3) Programmed Units, Bases and Stations (PUBS) Module
 - (a) PUBSA: Programmed Units, Bases and Stations (Active Duty) Submodule
 - (b) PUBSR: Programmed Units, Bases and Stations (Reserve) Submodule
 - (c) PUBSS: Programmed Units, Bases and Stations (Formal Schools) Submodule
- (4) Resources Module
 - (a) RNGRES: Range Resources Submodule
 - (b) MARES: Maneuver Area Resources Submodule
 - (c) TFRES: Training Facility Resources Submodule

(5) Alternatives Module

- (a) ALTRGS: Alternative Range Resources Submodule
- (b) ALTMAS: Alternative Maneuver Area Resources Submodule
- (c) ALTTFS: Alternative Training Facility Resources Submodule

4. Groups and Subgroups

Each of the submodules is further structured into two groups for the purpose of using the Data Base for POM support and planning and so that the Data Base can be updated over time. Each group is divided into subgroups that consist of all the files that pertain to a specific year.

- (1) FYDP Group: 1988 to 1992 Subgroups (5)
- (2) Out-Years Group: 1993 to 2004 Subgroups (12)

5. Files

Each of the groups contains the same set of files for each year from 1988 to 2004. These files also contain consistent data elements. Data for the FYDP Group will remain relatively unchanged; data for the period from 1993 to 2004 may be changed often. Appendix F lists the file names of the files, provides a brief description of the files associated with each of the submodules, and provides a brief description of records contained in the files.

a. File Name Conventions

File names were designed to ease configuration management of the Data Base, to support modernization of the Data Base, and to support applications programming. Each file name consists of an eight-character name and a three-character extension as follows:

MMM#FFF.XXX

MMM = Module Prefix: UTM (for UTMAS), etc.
G = F (for FYDP Group) or O (for Out-Years Group)
= Subgroup Year #
FFF = File Descriptor: TER (for Terrain), etc.
XXX = File Type: NDX (for Index) or DAT (for Data)

b. Index Files

Submodules may contain index files to allow the data to be referenced by location; unit type; and range, maneuver area, or training facility.

c. Data Files

Data files contain records of related data elements, such as terrain characteristics, weather conditions, and targets.

6. Records

Both of the two types of files (index and data) contain records which are groups of related data elements. The records in the index files contain pointers to records in other index files or data files. A record in a data file contains one or more related data elements and includes documentation information, such as the date and source of data updates to the record. Normal data update operations are performed at the record level.

7. Data Elements

Data in the records may consist of pointers to other records and actual training facility-related data. The data may be coded (and indexed to a related decoding file) or encoded. Appendix G contains descriptions of each of the data elements.

C. STANDARDS MODULE DESCRIPTION

1. Overview

The LFRTS and UTMAS Submodules will support deficiency assessment in the RNGRES and MARES Resource Submodules. LFRTS and UTMAS Submodules will provide support to justify the modernization of existing range resources. These submodules also provide an inventory of range and maneuver area standards.

2. Live Fire Range and Training Standards (LFRTS)

a. Index File Description

The LFRTS Submodule will be indexed by range type in the Range Index Files (files with descriptors of RNG). Each record within the files will represent a unique range type such as Known Distance Range and Field Firing Range, and the data fields will contain the addresses (record numbers) of the data within the Data Files for each range.

b. Data File Description

The LFRTS Data Files will contain standards characteristics data for each of the ranges in the Range Index File. Table V-1 lists the categories of the files for which standards information has been developed and the three-character file descriptor suffix used to identify the files for each topic.

TABLE V-1. DATA FILES

<u>FILE DESCRIPTOR SUFFIX</u>	<u>TOPIC</u>
ACC	Number of Access Routes
CAP	Daily Capacity
DOC	Documentation
DWN	Downtime
FAC	Facilities
OTH	Other Physical Characteristics
SAF	Safety Buffers
SHF	Shape
SOI	Soil Profile
SUP	Distance to Supply Points
TGT	Target Types
TEL	Telemetry
TER	Terrain Profile
VEG	Vegetation Profile
WPN	Weapon Type

3. Unit Training and Maneuver Area Standards (UTMAS)

a. Index File Description

The UTMAS Submodule will use the same indexing method as the LFRTS Submodule except that each record in the

Maneuver Area Index Files (files with descriptors of MTA) will represent a unique maneuver area. The data for each facility will be accessed in the same manner as described above for the LFRTS Submodule.

b. Data File Description

The UTMAS Data Files will be constructed in the same manner as the LFRTS Data Files.

D. PROGRAMMED UNITS, BASES AND STATIONS (PUBS) MODULE DESCRIPTION

1. Overview

The PUBSA (Active Duty), PUBSR (Reserve), and PUBSS (Formal Schools) Submodules will generate the RNGREQ, MAREQ, and TFREQ requirements data based on the programmed stationing of U.S. Marine Corps units. These submodules will provide an inventory of the programmed number and type of units and their weapons by location.

2. Programmed Units, Bases and Stations - Active Duty (PUBSA)

a. Overview

The PUBSA Submodule will contain two index files. Data in the LOC Index File will be organized by location and will contain the addresses of the information within the second index file. The second index file, the UNT file, will contain the addresses of the data in the data files associated with each type unit.

b. Data File Description

The PUBSA Submodule will contain two data files. Information concerning the number of weapons of each type in a unit will be stored in the WPN files. Documentation references for units, bases and stations will be stored in the DOC files.

3. Programmed Units, Bases and Stations - Reserve (PUBSR)

a. Index File Description

The PUBSR Index Files will be constructed in the same manner as the PUBSA Index Files.

b. Data File Description

The PUBSR Data Files will be constructed in the same manner as the PUBSA Data Files.

4. Programmed Units, Bases and Stations - Formal Schools (PUBSS)

a. Index File Description

The PUBSS Index Files will be constructed in the same manner as the PUBSA Index Files.

b. Data File Description

The PUBSS Data Files will be constructed in the same manner as the PUBSA Data Files.

E. REQUIREMENTS MODULE DESCRIPTION

1. Overview

The Requirements Submodules, RNGREQ, MAREQ, and TFREQ, will be used in conjunction with the PUBS Module to generate the demands for range or maneuver area resources. The demands will be compared to the Resources Module files to generate shortfalls in the availability range, maneuver area, or training facilities to accomplish the training requirements of the units.

2. Range Requirements (RNGREQ)

a. Index File Description

The RNGREQ Submodule will contain three index files. Data will first be organized by location in the LOC Index File which will contain a record for each unique location. The records in the LOC Index File will consist of the addresses of unit records in the second index file, the UNT Index File. The UNT Index File will consist of records for each unit type assigned to each location. A record in the UNT Index File will contain addresses of range type records in the RNG Index File.

The records in the RNG Index File will contain addresses of related range type data in the data files. In this manner, the data related to a range type required by a type unit at a particular base or station can be retrieved.

b. Data File Description

The RNGREQ Submodule will incorporate the same data file categories, listed in Table V-1, as the LFRTS Submodule, with the addition of the ISV File for interservice agreements with other military units requesting U.S. Marine Corps training facilities. The data elements for the interservice agreement entries will contain information such as agreement name, duration, and agreement type (formal or informal). Data elements for the remaining entries will provide inventory and requirement information for each range, by unit, for each location. The Weapons Files will contain the number of weapons to be trained at each type of facility. This will be computed from the units requiring use of the ranges and their weapons.

3. Maneuver Area Requirements (MAREQ)

a. Index File Description

The MAREQ Index Files will be constructed in the same manner as the RNGREQ Index Files except that the RNG file descriptor will be changed to MTA.

b. Data File Description

The MAREQ Data Files will be constructed in the same manner as the RNGREQ Data Files.

4. Training Facility Requirements (TFREQ)

a. Index File Description

The TFREQ Index Files will be constructed in the same manner as the RNGREQ Index Files except that the RNG file descriptor will be changed to TFA.

b. Data File Description

The TFREQ Data Files will be constructed in the same manner as the RNGREQ Data Files.

F. RESOURCES MODULE DESCRIPTION

1. Overview

The RNGRES, MARES, and TFRES Submodules will provide an inventory of U.S. Marine Corps ranges, maneuver areas, and training facilities. These submodules will also show availability of facilities by location. Comparison of the data in these submodules to corresponding submodules in the Standards Module will show facility deficiencies. Comparison to corresponding submodules in the Requirements Module will identify training facility shortfalls.

2. Range Resources (RNGRES)

a. Index File Description

The RNGRES Submodule will contain two index files. Data will first be organized by location in the LOC Index File which will contain a record for each unique location. The records in this file will consist of the addresses of the range type records in the second index file, the RNG Index File. The RNG Index File will contain addresses of related range type data in the data files.

b. Data File Description

In addition to the site-specific categories listed in Table V-2, the RNGRES Submodule will incorporate the same data file categories as the LFRTS Submodule (see Table V-1). The data elements for the interservice agreement entries will contain information such as agreement name, duration, and agreement type (formal or informal). Data elements for the remaining entries will provide detailed information pertaining to individual ranges. Data in the Weapons Files will indicate facility ability to accommodate training on a type of weapon.

TABLE V-2. SITE-SPECIFIC DATA FILES

FILE NAME SUFFIX	TOPIC
CFT	Conflicts with Other Facilities
COR	Coordinates
SUR	Site-unique Requirement
SUS	Site-unique Standards
ISV	Interservice Agreements

3. Maneuver Area Resources (MARES)

a. Index File Description

The MARES Index Files will be constructed in the same manner as the RNGRES Index Files except that the RNG file descriptor will be changed to MTA.

b. Data File Description

The MARES Data Files will be constructed in the same manner as the RNGRES Data Files.

4. Training Facility Resources (TFRES)

a. Index File Description

The TFRES Index Files will be constructed in the same manner as the RNGRES Index Files except that the RNG file descriptor will be changed to TFA.

b. Data File Description

The TFRES Data Files will be constructed in the same manner as the RNGRES Data Files.

G. ALTERNATIVES MODULE DESCRIPTION

1. Overview

The ALTRNG, ALTMAS, and ALTTFS Submodules are identical in structure to the Resources Submodules. They will contain proposed modifications, upgrades, and additions to range, maneuver area, and training facility resources to analyze proposed solutions to resource shortfalls or to evaluate fixes to deficiencies as measured against standards.

2. Alternative Range Resources (ALTRNG)

a. Index File Description

The ALTRNG Submodule will contain two index files. Data will first be organized by location in the LOC Index File which will contain a record for each unique location. The records in this file will consist of the addresses of the range type records in the second index file, the RNG Index File. The RNG Index File will contain addresses of related range type data in the data files.

b. Data File Description

In addition to the site-specific categories listed in Table V-2, the ALTRNG Submodule will incorporate the same data file categories as the LFRTS Submodule (see Table V-1). Data elements will provide detailed information about the proposed modifications, upgrades, and additions to the individual ranges. Data in the Weapons Files will indicate facility ability to accommodate training on a type of weapon.

3. Alternative Maneuver Area Resources (ALTMAS)

a. Index File Description

The ALTMAS Index Files will be constructed in the same manner as the ALTRNG Index Files except that the RNG file descriptor will be changed to MTA.

b. Data File Description

The ALTMAS Data Files will be constructed in the same manner as the ALTRNG Data Files.

4. Alternative Training Facility Resources (ALTTFS)

a. Index File Description

The ALTTFS Index Files will be constructed in the same manner as the ALTRNG Index Files except that the RNG file descriptor will be changed to TFA.

b. Data File Description

The ALTTFS Data Files will be constructed in the same manner as the ALTRNG Data Files.

H. DATA BASE FUNCTIONS

The LATAR Data Base functions (queries, inventories, demands, deficiencies, shortfalls, fix evaluator, and solution analyzer) will all be accessed from an executive menu. The design of the menu will not prohibit advanced dBASE III users from accessing the Data Base for data or for special reports. Each of the functions accessible from the executive menu will generate a formal report (to the screen or the printer). Again, dBASE III users may generate their own special reports using dBASE III capabilities.

1. Demand Generator

Demands placed on U.S. Marine Corps facilities will be determined by comparing the PUBS Module to the Requirements Module. This process will involve examining the training facilities specified by units in the PUBSA, PUBSR, and PUBSS Submodules as requirements in the RNGREQ, MAREQ, and TFRREQ Submodules.

2. Shortfall Generator

Shortfalls in the availability of ranges, maneuver areas, and training facilities will be calculated by comparing the Resources Submodules to demands on resources. The PUBS Module must initially be compared to the Requirements Module to determine unit demands on training facility resources. The result will be compared to range resources in the Resources Module to determine if the facilities are capable of accommodating the units. In making comparisons to determine deficiencies and shortfalls, a criteria will be used for each data element to be compared such as \geq , \leq , $=$, or null. This criteria will be determined in advance and may differ among analyzing deficiencies, shortfalls, and alternatives.

3. Deficiencies Generator

A deficiency is a facility's inadequacy for training due to some physical characteristic. By comparing data in the Standards Submodules (LFRTS and UTMAS) to the corresponding

Resources Submodules (RNGRES, MARES, and TFRES), the user will be able to access the deficiencies of specific ranges and maneuver areas. A site-specific facility will be selected from the index files of the desired Resources Submodule. The information for the facility can then be extracted from the data files. The standards for a particular category of range or maneuver area will be accessed in the Standards Submodules, and the results of the two retrieval operations will be compared to analyze the deficiencies of the selected facility. In making comparisons to determine deficiencies and shortfalls, a criteria will be used for each data element to be compared such as \geq , \leq , $=$, or null. This criteria will be determined in advance and may differ among analyzing deficiencies, shortfalls, and alternatives.

4. Solutions Analysis

The U.S. Marine Corps may program and plan solutions to modify range, maneuver area, or training facility resources in order to meet training requirements or force changes. The Alternatives Module, which is identical in structure to the Resources Module, may contain planning data of this type which, when compared to the demand for training resources, will indicate shortfalls remaining after solutions have been planned.

5. Fix Evaluation

In a similar manner, the Alternatives Module may include training facility improvements to correct deficiencies which, when compared to standards, will show deficiencies remaining after fixes are applied.

6. Inventories

Formal reporting of the data contained in any module will be available as part of the Data Base.

7. Queries

Informal searches of the Data Base using user specified criterion will also be provided.

8. Use of Data Base Functions

The LATAR Data Base modular design will support U.S. Marine Corps analysis of training resources and requirements in the following ways.

a. Deficiency (Facilities Not Meeting Standards) Analysis

The Standards Module can be compared to the Resources Module to determine those ranges and maneuver area facilities (in the Resources Module) that meet the U.S. Marine Corps standard (as reflected in the Standards Module). The comparison may be made over the 17-year period supported by the Data Base. This comparison will account for programmed improvements or additions to range and maneuver area facilities and will show the impact of changes in standards required by the introduction of new weapons or training techniques. Planned or proposed fixes to deficiencies may be entered as data in the Alternatives Module (identical in structure to the Resources Module) so that the planned or proposed fixes may be compared to the standards and evaluated.

b. Shortfall (Facilities Not Meeting Training Requirements) Analysis

The PUBS Module may be used in conjunction with the Requirements Module to generate a demand for training resources (ranges, maneuver areas, and training facilities) by base and station, and by U.S. Marine Corps unit type. The demand for training resources may then be compared to resources available (Resources Module) to determine those training requirements that cannot be supported due to non-availability or lack of physical characteristics required by the units or weapons as specified in the Requirements Module. Again, this type of analysis may be made over the 17-year period from 1988 to 2004, and shortfalls may result from or be reduced by programmed changes in units, bases and stations or force structure; by changes in training requirements resulting from the introduction of new weapons and training techniques; and by programmed

improvements or additions to range and maneuver area training facilities. Planned or proposed solutions to identified shortfalls may be entered as data into the Alternatives Module for use in the analysis of alternative ways to solve training resource shortfalls.

c. Formulation of Alternatives for Analysis Using the LATAR Data Base

The LATAR data base design provides for the analysis of alternative sets of resource data to analyze plans for the upgrade, consolidation, or addition of range and maneuver area facilities. The comparison of alternative sets of resource data is accomplished by comparing the data contained in the alternatives module to the data in the standards module (to examine deficiencies) or to data in the requirements module (to examine shortfalls in resource capacity). The impact of a plan to improve range and/or maneuver area facilities can then be compared to the base case (the resources module) to determine if the plan will correct deficiencies or reduce shortfalls. This means that any alternative to be analyzed using the LATAR Data Base must be described in terms of planned or programmed changes to range and maneuver area facilities. Alternatives module(s) may be created by making a duplicate copy of the delivered baseline alternatives module and modifying the data to reflect changes to range and maneuver area resources. The delivered alternatives module will contain range and maneuver area data identical to the data in the delivered resources module.

d. Maintenance of Alternatives Modules

Copies of alternatives modules may be archived by the user as desired when analysis is completed. In some cases, copies of alternatives modules may be subsequently modified and analyzed for sensitivity and risk analysis purposes.

e. Additional Capabilities

The data element consistency between modules and the modular construction of the LATAR Data Base will support expansion of the analytical capabilities which are not now

required by the U.S. Marine Corps. For example, the design of the Standards, Resources, and Requirements Modules specifies a high degree of data element consistency to support the deficiency and shortfall analyses discussed above. Because there is data element consistency, the Marine Corps may redefine range and maneuver area standards data elements in the Standards Module to be a training requirement, and use the redefined standards data in the Requirements Module, if desired. For example, a range standard may specify that the range must be operable at night for the purpose of night training. This standard may also be articulated as a training requirement. Modular construction of the Data Base also permits large-scale replacement of any module with a "what-if" version for analytical purposes. For example, unprogrammed versions of the PUBS Module may be used to determine the training resources shortfall impact of force structure changes or relocation.

I. DATA BASE IMPLEMENTATION CONSIDERATIONS

The data base will be constructed to provide for direct access to data. This technique will involve index files for storing broad categories of information such as location, range types, and units, along with the address of more detailed information about each topic located in a subordinate data file. The data field within the index file records will contain the addresses where the data begins in the data files for a particular entry.

By using direct access, the data will be retrieved more efficiently since it is possible to "go to" the exact location of data instead of searching the Data Base for the desired information. This method also allows the Data Base size to be kept to a minimum since it is not necessary for each record in the data files to contain all the information about each location, range, etc., and likewise, the index files do not need to contain all of the details about the data file topics.

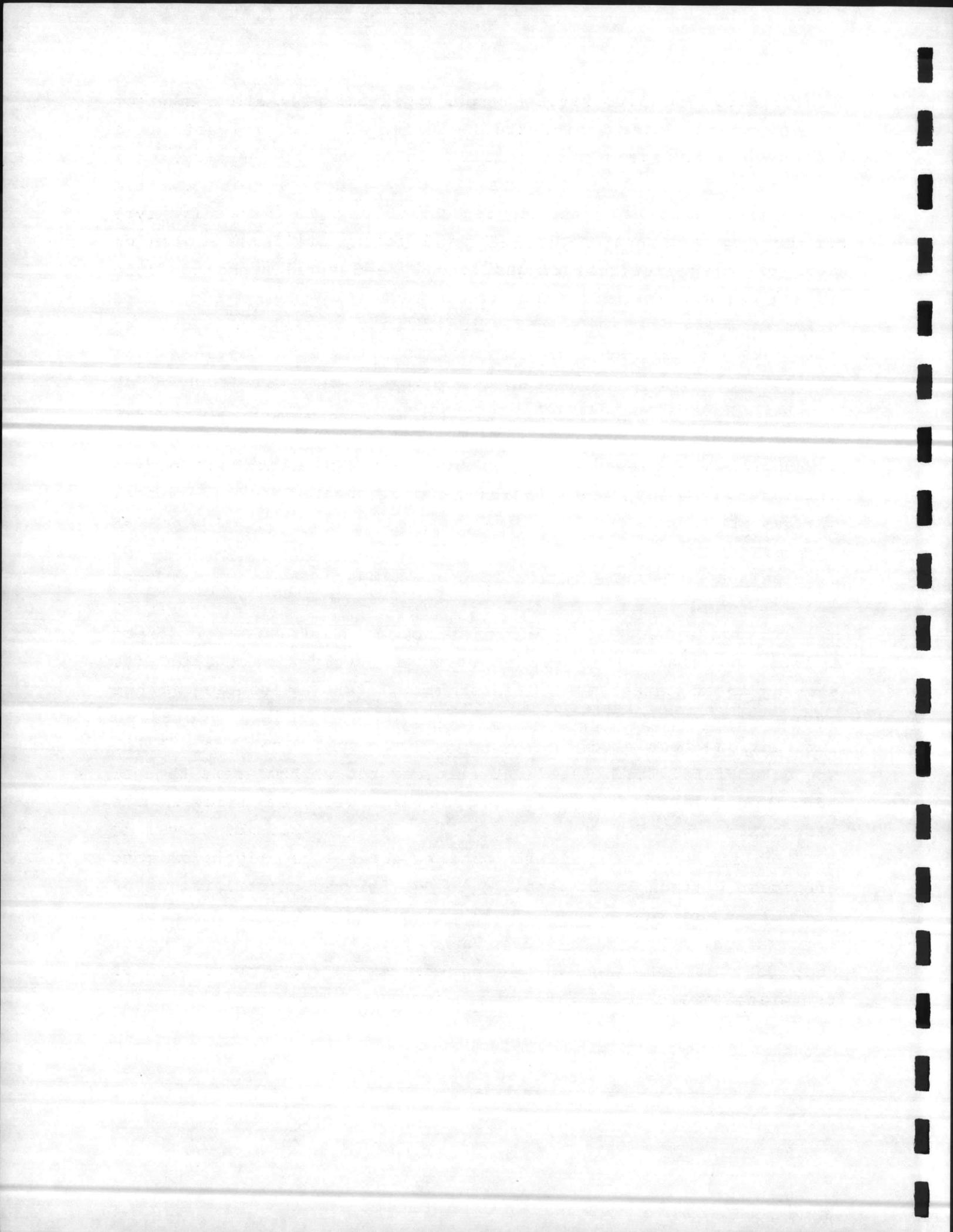


Figure V-3 illustrates how the index and data files interact using direct access to retrieve data. First, a location is selected from the Location (LOC) Index File. The MCB, Camp Lejeune record is used in the example. Each Range Type Field (Type 1, Type 2, etc.) in the record pertains to a specific type of range. In the figure, Type 3 corresponds to explosive ordnance disposal (EOD) ranges, and Type 5 corresponds to field firing ranges. The "3" located at the intersection of the Type 3 column and the Camp Lejeune row indicates the starting address of the data in the RNG File for EOD ranges at Camp Lejeune. The beginning of the data is in Record 3 in the RNG File. The "0" in the "# records to follow" field indicates that the K-326 EOD Range is the only record pertaining to EOD ranges at Camp Lejeune. The remaining fields contain the addresses of the information in the data files that are associated with the range. The "4" in the Access Routes Data File indicates that the access route information for the K-326 EOD Range may be retrieved at Record 3 in the Access Routes Data File. Similarly, the downtime data is located at Record 6 in the Downtime Data File. According to the example, the selected range has one land access route and a total downtime of 0 days per year. Using the same methodology, the data for the Camp Lejeune field firing ranges may be retrieved.

1. Data Base Manager: dBASE III+

dBASE III+ has been considered as the data base manager software to be used to accommodate the LATAR Data Base. The software is commercially available and has established itself to be a reliable product. Additionally, it is currently being used in Marine Corps applications.

2. Data Base Size

a. Number of Modules

The Data Base will consist of five modules, each representing a category of information.

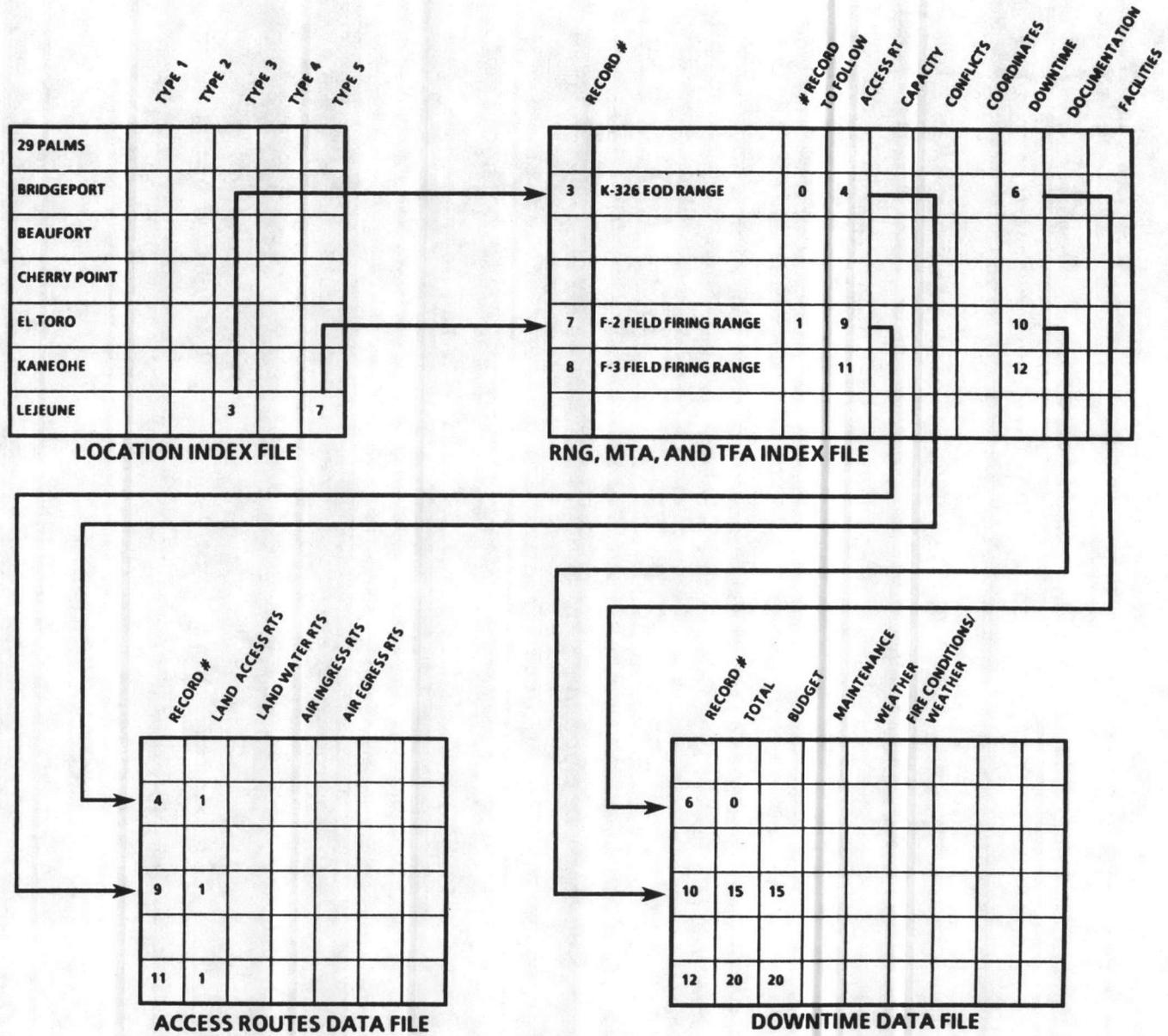


Figure V-3. Indexing Methodology

b. Number of Submodules

There will be a total of 14 submodules. Their distribution among the modules are as shown in Table V-3.

TABLE V-3. SUBMODULE ALLOCATION TO MODULES

<u>MODULES</u>	<u>SUBMODULES</u>	<u>TOTAL SUBMODULES</u>
Standards	LFRTS, UTMAS	2
PUBS	PUBSA, PUBSR, PUBSS	3
Requirements	RNGREQ, MAREQ, TFREQ	3
Resources	RNGRES, MARES, TFRES	3
Alternatives	ALTRNG, ALTMAS, ALTTFS	3
		<u>14</u>

c. Number of Groups

Each submodule will contain two groups: an FYDP Group and an Out-Years Group. Therefore, there will be a total of 28 groups throughout the 14 submodules.

d. Number of Subgroups

In each submodule, the FYDP Group is divided into five subgroups (one subgroup per year from 1988 to 1992), and the Out-Years Group is divided into 12 subgroups (one subgroup per year from 1993 to 2004) for a total of 17 subgroups per submodule. Therefore, there will be a total of 238 subgroups throughout the 14 submodules.

e. Number of Files

As illustrated in Table V-4, approximately 3,859 index and data files are expected within the Data Base (an estimated 209 total files for each of the 17 years represented in the subgroups). Also included in the table is the distribution of the files between the five modules.

TABLE V-4. APPROXIMATE FILE COUNT

<u>MODULE</u>	<u>SUBMODULES PER MODULE</u>		<u>FILE TYPES PER SUB- MODULE</u>		<u>SUBGROUPS</u>	<u>TOTAL</u>
Standards	2	X	16	X	17	= 544
PUBS	3	X	4	X	17	= 204
Requirements	3	X	18	X	17	= 918
Resources	3	X	22	X	17	= 1122
Alternatives	3	X	21	X	17	= <u>1071</u>
						3,859

f. Number of Records

As illustrated in Table V-5, there will be approximately 2,390,400 records in the Data Base. Also included in the table is the distribution of the records between the submodules, subgroups, file types, and files within the submodules.

g. Number of Data Values

As illustrated in Table V-5, there will be approximately 24,604,000 data values in the Data Base. Also included in the table is the distribution of the data elements among the file types.

h. Programming

It will be necessary to design Data Base programs to accomplish the following seven functions:

- (1) Compare the PUBS Module to the Requirements Module to generate demands.
- (2) Compare the Resources Module to the demands to generate shortfalls.
- (3) Compare the Alternatives Module to the shortfalls to analyze proposed solutions.
- (4) Compare the Resources Module to the Standards Module to generate deficiencies.
- (5) Compare the Alternatives Module to the Standards Module to evaluate planned fixes.

TABLE V-5. DATA BASE SIZE

	FILE			ESTIMATED NUMBER OF RECORDS PER FILE TYPE IN SUBMODULE												RECORDS x 1000	BYTES x 1000	VALUES x 1000		
	FILE	RECORD LENGTH	NUMBER OF ELEMENTS	LFRTS	UTMAS	PUBSA	PUBSR	PUBSS	RNGREQ	MAREQ	TFREQ	RNGRES	MARES	TFRES	ALTRNG				ALTMAS	ALTTFS
RNG	75	25		1					25			25						1.3	96.9	32.3
MTA	45	15			1							25						1.0	42.8	14.3
TFA	15	5												5				0.3	3.8	1.3
LOC	45	15				1	1	1	1	1	1	1	1	1	1	1	1	0.2	9.2	3.1
UNT	30	10				10	10	2	10	10								0.9	28.5	8.8
CFT	36	8										375	225	75	375	225	75	23.0	826.2	137.7
COR	29	4										375	225	75	375	225	75	23.0	665.8	91.8
SUR	23	4										375	225	75	375	225	75	23.0	527.9	91.8
SUS	23	4										375	225	75	375	225	75	23.0	527.9	91.8
ISV	50	5							3,750	2,250	750	375	225	75	375	225	75	137.7	6,885.0	688.5
ACC	29	7		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	4,170.8	1,006.7
CAP	54	17		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	7,788.3	2,444.9
DOC	30	8		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	4,314.6	862.9
DWN	35	9		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	5,033.7	1,294.4
FAC	30	18		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	4,314.6	2,588.8
OTH	42	11		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	6,040.4	1,582.0
SAF	34	7		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	4,889.9	1,006.7
SHP	49	11		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	7,047.2	1,582.0
SOI	35	9		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	5,033.7	1,294.4
SUP	32	8		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	4,802.2	862.9
TGT	38	10		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	5,465.2	1,438.2
TEL	24	5		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	3,451.7	719.1
TER	34	10		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	4,889.9	1,438.2
VEG	29	7		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	4,170.8	1,006.7
WPN	90	30		20	10	150	150	30	3,750	2,250	750	375	225	75	375	225	75	143.8	12,943.8	4,314.8
RECORDS PER SUB				301	151	2,261	2,261	453	60,036	36,026	12,016	7,526	4,526	1,506	7,526	4,516	1,506			
TOTAL RECORDS				5,117	2,567	38,437	38,437	7,701	1,020,812	612,442	204,272	127,842	78,942	25,802	127,942	76,772	25,802	2,390.4	93,746.4	24,604.0

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- (6) Allow formal inventories of the data in the five modules to be processed.
- (7) Allow informal access to the information through Data Base queries.

3. Storage Requirements

As illustrated in Table V-5, the Data Base will require approximately 93,746,400 bytes of storage (an estimated six megabytes of data for each of the 17 years represented in the subgroups). Also included in the table is the storage requirement for individual file types.

4. Data Sources Maintenance (Records and Data Elements)

Each data record contains dating and sourcing data elements so data updates will be documented. This data will be provided in formal inventories of a module. It is anticipated that data updates will be done by U.S. Marine Corps personnel using data base manager updates capabilities.

a. Standards Module

Data for the LFRTS and UTMAS Submodules will be extracted from the corresponding standards developed during Phase I. This data will be projected to 2004 and will be maintained by land and facility management activities at Headquarters, U.S. Marine Corps.

b. PUBS Module

Headquarters, U.S. Marine Corps will provide this data for the years 1988 to 2004 and will be responsible for maintenance of the data initially loaded into the Data Base during Phase II.

c. Requirements Module

Training requirements data will be synthesized to type unit requirements data from individual unit data collected during Phase I. Additionally, projections of training requirements data to 2004 will be provided by Headquarters, U.S. Marine Corps. This data will be maintained by Headquarters, U.S. Marine Corps training activities and by field units.

d. Resources Module

Range, maneuver area, and training facility resources data was collected during Phase I of the study for use in the Data Base during Phases II and III. Land and facility management activities at Headquarters, U.S. Marine Corps will provide projected data to 2004 and will be responsible for maintaining the data with support from field providers of these resources.

e. Alternatives Module

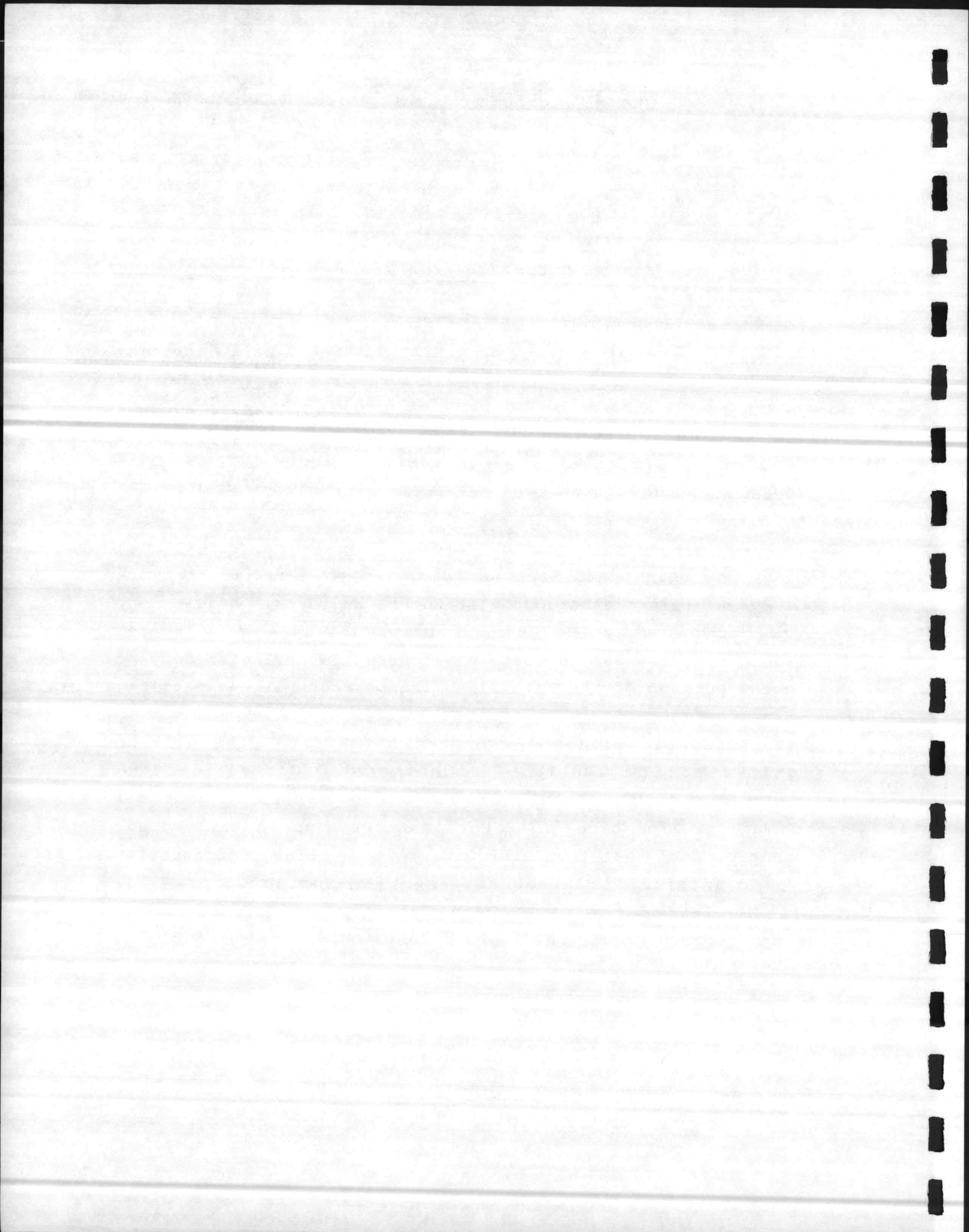
Data for this module will initially be a duplicate of the Resources Module. The data may then be modified by Headquarters, U.S. Marine Corps land and facility management activities according to plans or other non-programmed projections to be used in alternative assessments. Responsibility for maintenance of the alternatives data will generally lie with land and facility management.

5. Data Base Maintenance (Modules, Submodules, Files)

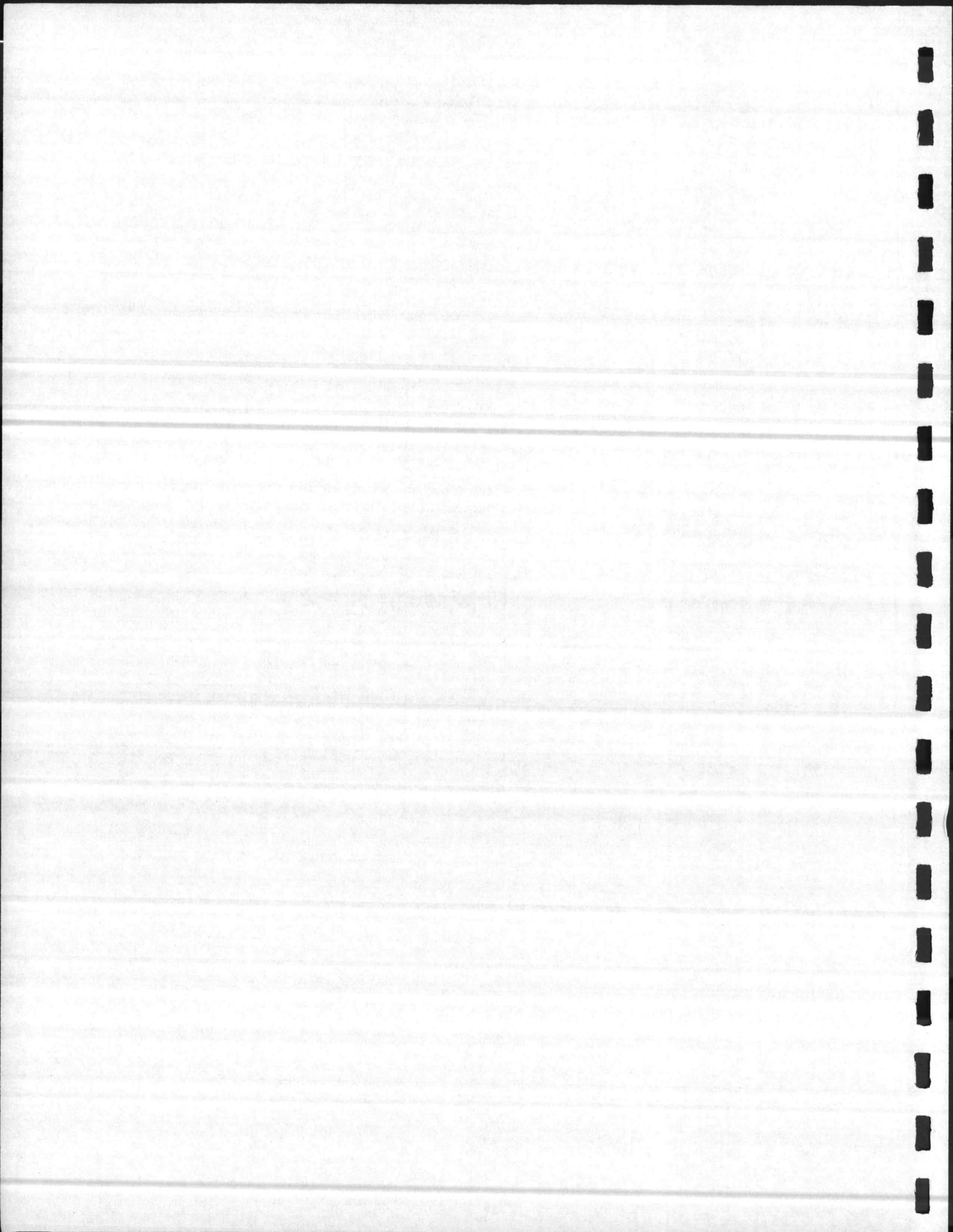
The LATAR Data Base was designed to minimize the work needed to maintain the Data Base structure and data. Modules may be replaced entirely and year groups may be renamed and moved forward in time to keep the Data Base current. Moving or copying a selected portion of the data files can be accomplished easily.

6. Configuration Management

The delivered and accepted LATAR Data Base will be designated as the baseline and archived. Corrections and modifications to the baseline will be documented so that all users may specify which LATAR Data Base version is being used. It is anticipated that the LATAR Data Base baseline configuration will be maintained at Headquarters, U.S. Marine Corps. The modular design of the LATAR Data Base will permit modular or group and subgroup revisions to be accomplished.



APPENDIX A
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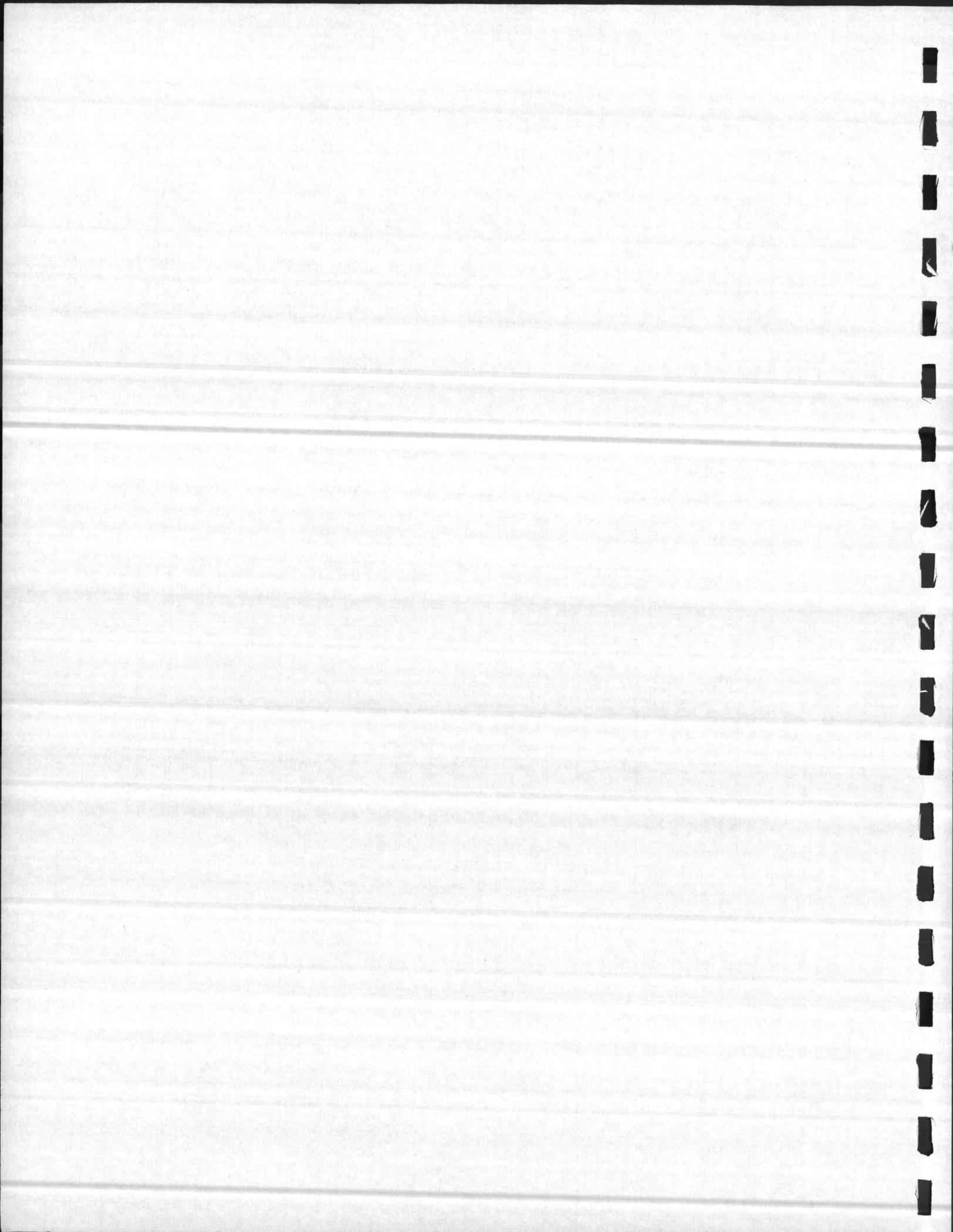
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1. Fleet Marine Force, Atlantic, Director, Security Force Training, March 4, 1987.
2. Fleet Marine Force, Atlantic, Force Engineering, March 4, 1987.
3. Fleet Marine Force, Atlantic, G-3, March 4, 1987.
4. 4th Marine Amphibious Brigade, G-3A, March 5, 1987.
5. 2d Force Service Support Group, G-3T, March 9, 1987.
6. 2d Marine Division, G-3T, March 9, 1987.
7. 6th Marine Amphibious Brigade, G-3, March 9, 1987.
8. Marine Aircraft Group 29, Weapons, March 11, 1987.
9. Marine Corps Air Station, New River, Operations, March 11, 1987.
10. 2d Marine Aircraft Wing, Weapons, March 12, 1987.
11. 1st Marine Amphibious Brigade, G-3, March 16, 1987.
12. 4th Force Reconnaissance Company (-), I-I, March 16, 1987.
13. Camp H. M. Smith, General Engineering, March 16, 1987.
14. Camp H. M. Smith, Training Facilities, March 16, 1987.
15. Fleet Marine Force, Pacific, Facilities Engineering, March 16, 1987.

16. U.S. Marine Corps, Banock, Hawaii, Operations, March 16, 1987.
17. 1st Marine Amphibious Brigade, G-3T, March 17, 1987.
18. Fleet Marine Force, Pacific, Training Real Estate, March 17, 1987.
19. U.S. Army, Pacific, Facilities, March 17, 1987.
20. Marine Corps Air Station, El Toro, Facilities Inventory, March 19, 1987.
21. 3d Marine Aircraft Wing, G-3, March 20, 1987.
22. 3d Marine Aircraft Wing, G-4, March 20, 1987.
23. Marine Aircraft Group 11, Operations, March 20, 1987.
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25. Marine Corps Base, Camp Pendleton, Conservationist, March 23, 1987.
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28. Marine Corps Air Station, Yuma, Operations, March 26, 1987.
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31. 7th Marine Amphibious Brigade, G-3, March 30, 1987.
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33. Marine Corps Air Ground Combat Center, 29 Palms, Range Scheduling, March 30, 1987.
34. Marine Corps Base, Camp Lejeune, Facilities Director, March 30, 1987.
35. Marine Corps Air Ground Combat Center, 29 Palms, G-3, March 31, 1987.
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37. Marine Aircraft Group 31, S-3, April 7, 1987.
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41. 4th Marine Air Wing, G-3A, April 16, 1987.

APPENDIX B
MARINE CORPS LIVE FIRE RANGE RESOURCES



LFRTS-P-0001

FILENAME	LOCATION	RANGE NAME	TYPE	WEAPONS
LP010126	29 Palms	Range 101, Rifle Requalification Range	Rifle Requalification Range	small arms service weapons, M16, 7.62-mm sniper rifle
LP010127	29 Palms	Range 102, Pistol Requalification Range	Pistol Requalification Range	small arms service weapons
LP010128	29 Palms	Range 104, Field Artillery Trainer Range	Field Artillery Trainer Range	14.5-mm artillery subcaliber trainer
LP010129	29 Palms	Range 105, Tank Conduct of Fire Area	Tank Conduct of Fire	REALTRAIN tank training device
LP010130	29 Palms	Range 106, Miniaturized Tank Training Range	Miniaturized Tank Training Range	M55 laser, .22-cal in bore device, M16 Brewster device, .50-cal Telfare device
LP010131	29 Palms	Range 107, Small Arms/Machine Gun Range	Small Arms/Machine Gun Range	up to .50-cal with non-explosive warhead
LP010132	29 Palms	Range 108, Antimechanized/Grenade Range	Antimechanized/Grenade Range	M67 grenades, M72 LAW, M73 LAW, SMAW, M203
LP010133	29 Palms	Range 109, Mortar Range	Mortar Range	60-mm, 81-mm
LP010134	29 Palms	Range 110, Final Protective Fires Range	Final Protective Fires Range	rifles, machine guns, mortars, Dragons, TOW, 25-mm chain gun
LP010135	29 Palms	Range 111, Tank Combat Course	Tank Combat Course	105-mm main tank gun, .50-cal, 7.62-mm coaxial, Dragon, TOW
LP010136	29 Palms	Range 112, Special Ordnance Test Area	Special Ordnance Test Area	Super critical fuze ordnance (ICM, Rockeye, APAM, FASCAM)
LP010137	29 Palms	Range 113, Tank Combat Course (Qualification)	Tank Combat Course	105-mm main tank gun (training practice only), 7.62-mm, .50-cal
LP010138	29 Palms	Range 114, M31 Field Artillery Trainer Range	M31 Field Artillery Trainer Range	demolitions (500 lbs max)
LP010139	29 Palms	Range 115, Air-to-Ground Range	Air-to-Ground Range	7.62-mm, .50-cal, 20-mm, 30-mm, 2.75-in rockets, flares, from aircraft
LP010140	29 Palms	Range 119, Super Critical Fuze Impact Area	Impact Area	super critical fuze ordnance (CBU, Rockeye, A/AM, ICM, FASCAM), inert practice ordnance
LP010141	29 Palms	Range 201, Combat Engineer Demolition Range	Combat Engineer Demolition Range	demolitions up to line charges (includes Claymore Mines)
LP010142	29 Palms	Range 204, Mobile Land Target System Range	Mobile Land Target System Range	flat trajectory weapons to 105-mm main tank gun with warheads only, including inert TOW
LP010143	29 Palms	Range 400, Company Fire and Maneuver Area	Company Fire and Maneuver Area	small arms, machine guns, mortars, LAW, SMAW, Dragon, TOW, M203 (training practice only), 25-mm chain gun, 2.75-in rockets, inert aviation ordnance, 105-mm main tank gun, demolitions
LP010144	29 Palms	Range 410, Platoon Fire and Maneuver Area	Platoon Fire and Maneuver Area	small arms, machine guns, M203 (training practice only), demolitions
LP010145	29 Palms	Range 410A, Platoon Hasty Attack Range	Platoon Hasty Attack Range	small arms, machine guns, M203 (training practice only), demolitions
LP010146	29 Palms	America Mine	Maneuver Area and Air Space	all conventional ordnance (less MK80 series HE aviation ordnance)
LP010147	29 Palms	Blacktop	Maneuver Area and Air Space	all conventional ordnance (including air and ground based lasers)
LP010148	29 Palms	Bullion	Maneuver Area and Air Space	all conventional ordnance (except MK80 series south of the 00 grid)
LP010149	29 Palms	Cleghorn Pass	Maneuver Area and Air Space	all conventional ordnance (less MK-80 series aviation ordnance south of the 00 grid)
LP010150	29 Palms	Delta	Maneuver Area and Air Space	all conventional ordnance (including air and ground based lasers)
LP010151	29 Palms	East	Maneuver Area and Air Space	all conventional ordnance, no impacts
LP010152	29 Palms	Emerson Lake	Maneuver Area and Air Space	all conventional ordnance, (less MK80 HE)
LP010153	29 Palms	Gays Pass	Maneuver Area and Air Space	all conventional ordnance
LP010154	29 Palms	Gypsum Ridge	Maneuver Area and Air Space	all conventional ordnance
LP010155	29 Palms	Lava	Maneuver Area and Air Space	all conventional ordnance (including lasers)
LP010156	29 Palms	Lavick Lake	Maneuver Area and Air Space	all conventional ordnance (including air- and ground- based lasers)
LP010157	29 Palms	Lead Mountain	Maneuver Area and Air Space	all conventional ordnance

LP010160	29 Palms	Mesa	Maneuver Area and Air Space	all conventional ordnance
LP010158	29 Palms	Noble Pass	Maneuver Area and Air Space	all conventional ordnance
LP010161	29 Palms	Quackenbush Lake	Maneuver Area and Air Space	all conventional ordnance
LP010162	29 Palms	Rainbow Canyon	Maneuver Area and Air Space	all (except nuclear)
LP010163	29 Palms	Sunshine Peak	Maneuver Area and Air Space	all conventional ordnance
LP010241	El Toro	Range 819, Pistol Range	Pistol Range	.45-cal, .38-cal special
LP010070	Smith	A Rang, Known Distance Rifle Range	Known Distance Rifle Range	small arms, snipers
LP010071	Smith	B Range, Known Distance Rifle Range	Known Distance Rifle Range	small arms
LP010072	Smith	C Range, Known Distance Rifle Range	Known Distance Rifle Range	small arms
LP010073	Smith	D Range, Known Distance Pistol Range	Known Distance Pistol Range	small arms
LP010075	Smith	E Range, Small Bore Range	Small Bore Range	small arms, .22-cal, shotgun
LP010074	Smith	Close Combat Pistol Course, Camp Smith Training Facility	Close Combat Pistol Course	small arms
LP010165	Pendleton	102 Pistol Range	Pistol Range	pistols
LP010235	Pendleton	103 Wilcox Rifle Range	Rifle Range	all caliber rifles
LP010234	Pendleton	104 Wilcox Basic 25-Meter Range	Basic 25-Meter Range	all small caliber
LP010164	Pendleton	104A, General Purpose Small Arms Range	General Purpose Small Arms Range	small arms
LP010199	Pendleton	108, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	5.56-mm, 7.62-mm, 60-mm illumination, 81-mm illumination
LP010212	Pendleton	109, Hand Grenade Range	Hand Grenade Range	hand grenades
LP010207	Pendleton	110, Rifle Grenade Range	Rifle Grenade Range	rifles, 40-mm grenades, M203, M79
LP010208	Pendleton	111, Field Firing Range	Field Firing Range	7.62-mm, 5.56-mm, pistols, shotguns
LP010209	Pendleton	113, Pistol Range (Known Distance)	Pistol Range (Known Distance)	pistols, revolvers, shotguns
LP010210	Pendleton	115, Pistol Range (Known Distance)	Pistol Range (Known Distance)	pistols, revolvers
LP010202	Pendleton	116, Rifle Range (Known Distance)	Rifle Range (Known Distance)	all caliber rifles
LP010211	Pendleton	117, Sniper Range	Sniper Range	rifles, .30-cal, 7.62-mm, 5.56-mm
LP010204	Pendleton	118, M31 Range	M31 Range	14.5-mm, M31 artillery trainer
LP010206	Pendleton	127, Tank Laser Subcaliber Gunnery Range	Tank Laser Subcaliber Gunnery Range	tank laser system, M16, Brewster subcaliber, .20-cal rimfire single shot, M60E2 subcaliber device (single shot only)
LP010205	Pendleton	128, TOW/Dragon Tracking Range	TOW/Dragon Tracking Range	XM-70 training set, demolitions (1/4-lb TNT max)
LP010203	Pendleton	129, Tank Range	Tank Range	7.62-mm, .30-cal, .50-cal spotting rifle, M190 rocket launcher (practice), M2, tank laser
LP010118	Pendleton	Range 130, Shooting House	Shooting House	rifles, pistols, submachine guns, shotguns
LP010196	Pendleton	200, Infiltration Range	Infiltration Range	1/4-lb TNT demolitions
LP010197	Pendleton	200B, Infiltration Range	Infiltration Range	5.56-mm blanks, 7.62-mm blanks, smoke, pyrotechnics
LP010198	Pendleton	200C, Infiltration Range	Infiltration Range	5.56-mm blanks, 7.62-mm blanks, smoke, pyrotechnics
LP010195	Pendleton	201, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	5.56-mm, 7.62-mm, 60-mm illumination, 81-mm illumination
LP010194	Pendleton	202, Hand Grenade Range	Hand Grenade Range	HE fragmentation hand grenades only
LP010181	Pendleton	203, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	5.56-mm, 7.62-mm, M202, M72 LAW, 60-mm illumination, 81-mm illumination
LP010182	Pendleton	204B, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	90-mm, Dragon, TOW, .50-cal
LP010183	Pendleton	205, Tank Gunnery Range	Tank Gunnery Range	5.56-mm, 7.62-mm, M60, .50-cal, LAW, mortars, M202, TOW, Dragon, 105-mm main tank gun, 120-mm
LP010184	Pendleton	206, Marksmanship Training Range	Marksmanship Training Range	5.56-mm, 7.62-mm, pistols, shotguns
LP010192	Pendleton	207, Demolitions Range	Demolitions Range	TNT, Claymore mines
LP010193	Pendleton	207A, Demolitions Range	Demolitions Range	TNT, Claymore mines
LP010180	Pendleton	208A, Offensive Combat Range	Offensive Combat Range	5.56-mm, 7.62-mm
LP010178	Pendleton	208C, Offensive Combat Range	Offensive Combat Range	5.56-mm, 7.62-mm, rifles, machine guns
LP010191	Pendleton	208D, Assault on Fortified Position	Assault on Fortified Position	TNT, 5.56-mm blanks, 7.62-mm blanks

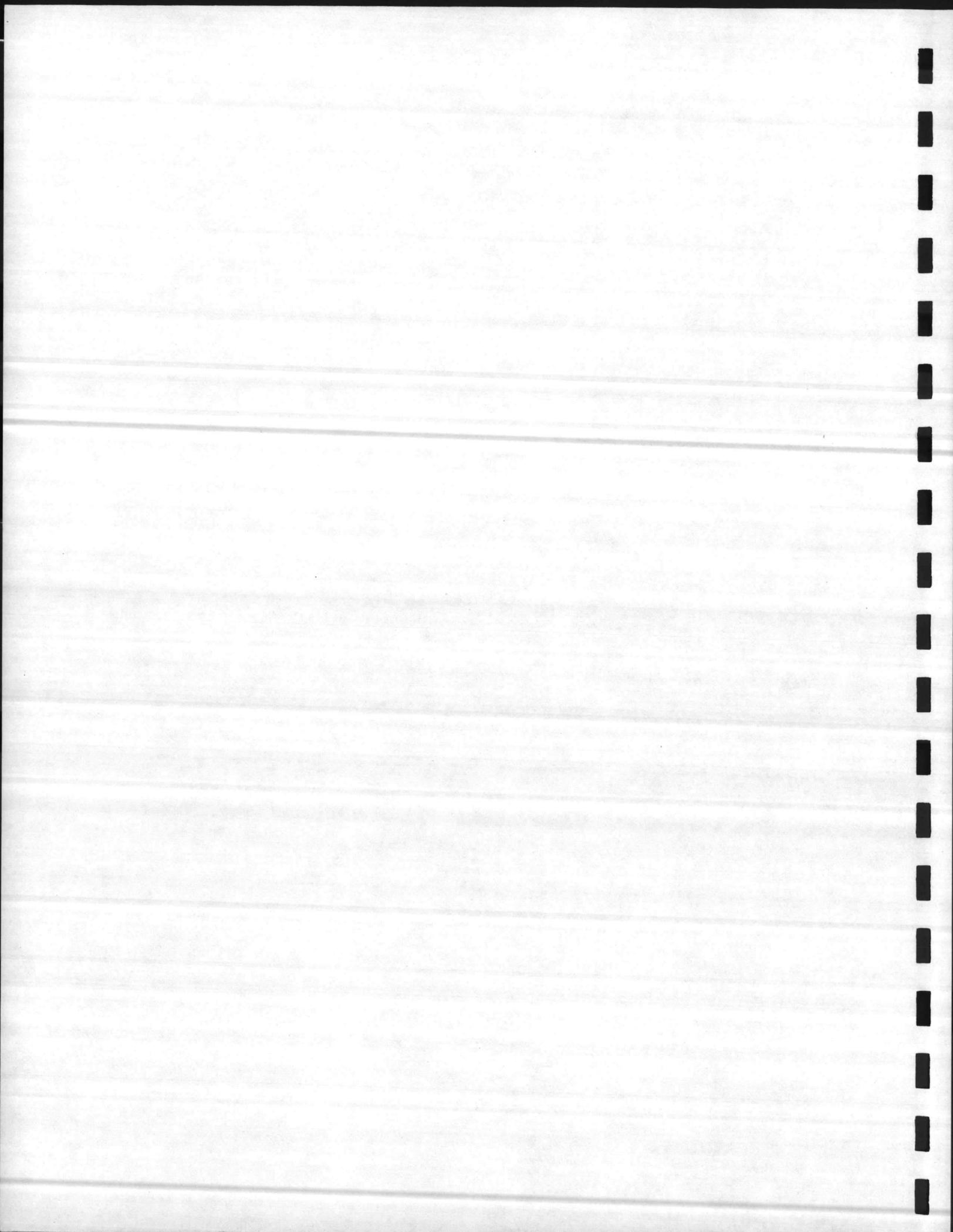
LP010189	Pendleton	210, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	M203, M79, M60, SAW
LP010179	Pendleton	210A, Moving Target Range	Moving Target Range	5.56-mm, 7.62-mm
LP010190	Pendleton	210B, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	7.62-mm, 5.56-mm
LP010175	Pendleton	211, Field Firing Range	Field Firing Range	25-mm cannon, 60-mm illumination, 7.62-mm, .50-cal, MK19, MK19, Dragon, TOW, 105-mm, 155-mm
LP010172	Pendleton	212, Fortified Platoon Defensive Position	Fortified Defensive Position	.45-cal, 5.56-mm, M60, .50-cal
LP010177	Pendleton	213, Pistol Range (Known Distance)	Pistol Range (Known Distance)	.45-cal
LP010176	Pendleton	214, Rifle Range (Known Distance)	Rifle Range (Known Distance)	all caliber
LP010188	Pendleton	215, Offensive Combat Range	Offensive Combat Range	5.56-mm, 7.62-mm, shotguns, pistols
LP010173	Pendleton	216, Field Firing Range	Field Firing Range	5.56-mm, 7.62-mm, 60-mm illumination, 81-mm
LP010174	Pendleton	217, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	LAW, M202, 60-mm illumination
LP010187	Pendleton	218, Defensive Combat Range	Defensive Combat Range	5.56-mm, 7.62-mm, 40-mm illumination, 60-mm illumination, 80-mm illumination
LP010168	Pendleton	219 Demolition Range	Demolition Range	demolitions
LP010167	Pendleton	221 Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	M16A1, 7.62-mm, .50-cal, shotgun, pistol, 60-mm, 81-mm, M72 LAW, M79, M203, SMAW
LP010166	Pendleton	222 Machine Gun Range	Machine Gun Range	7.62-mm, .50-cal, SAW
LP010186	Pendleton	223, Offensive Combat Range	Offensive Combat Range	5.56-mm, 7.62-mm, 60-mm illumination, 81-mm illumination
LP010185	Pendleton	223A, Defensive Combat Range	Defensive Combat Range	5.56-mm, 7.62-mm, shotguns, pistols, 40-mm, 60-mm illumination, 81-mm illumination
LP010228	Pendleton	225, Field Firing Range	Field Firing Range	5.56-mm, 7.62-mm, 60-mm illumination, 81-mm illumination, M202, M72 LAW
LP010229	Pendleton	227, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	rifles, machine guns, recoilless rifles, M202, M72 LAW, 60-mm, 81-mm, 4.2-in, Dragon, TOW, SMAW, artillery
LP010219	Pendleton	233 Demolition Range	Demolition Range	40-lbs demolitions untamped, 100-lb demolitions tamped
LP010232	Pendleton	300, Short Zeroing Range	Short Zeroing Range	rifles, shotguns, pistols, M60
LP010231	Pendleton	304, Conventional Air-to-Ground Rake Range	Conventional Air-to-Ground Rake Range	2.75-in rockets, 20-mm, .50-cal, 7.62-mm
LP010230	Pendleton	307, Hand Grenade Range	Hand Grenade Range	hand grenades
LP010216	Pendleton	307A, Rifle Grenade Range	Rifle Grenade Range	M79, M203
LP010227	Pendleton	308, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	5.56-mm, 7.62-mm, M203, M72 LAW, M202, 60-mm illumination, 81-mm illumination
LP010200	Pendleton	309, Offensive Combat Range	Offensive Combat Range	5.56-mm, 7.62-mm
LP010226	Pendleton	310, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	5.56-mm, 7.62-mm, M203, M72 LAW, 60-mm illumination, 81-mm illumination
LP010225	Pendleton	312, Pistol Range (Known Distance)	Pistol Range (Known Distance)	pistols, revolvers
LP010239	Pendleton	Range 312, Pistol Range	Pistol Range	pistols, revolvers (all caliber)
LP010224	Pendleton	313, Rifle Range (Known Distance)	Rifle Range (Known Distance)	rifles
LP010240	Pendleton	Range 313, Known Distance Rifle Range	Known Distance Rifle Range	rifles (all caliber)
LP010213	Pendleton	314, Night Defensive Range	Night Defensive Range	5.56-mm, 7.62-mm, 1/4-lb TNT demolitions, 40-mm illumination, 60-mm illumination, 81-mm illumination
LP010214	Pendleton	314A, Field Firing Range	Field Firing Range	M73 LAW, 5.56-mm, 7.62-mm, 40-mm illumination, 60-mm illumination, 81-mm illumination
LP010223	Pendleton	314B, Field Firing Range (Infantry Weapons)	Field Firing Range (Infantry Weapons)	M203, LAW
LP010222	Pendleton	315 Squad Combat Intelligence Reaction Course	Squad Combat Intelligence Reaction Course	NA
LP010221	Pendleton	401 Explosive Ordnance Disposal/Test Range	Explosive Ordnance Disposal and Test Range	explosive ordnance under 40 lbs
LP010220	Pendleton	402, Training Range for Crater Analysis	Training Range	NA
LP010119	Pendleton	Range 403, Pistol and Shotgun Range	Pistol and Shotgun Range	pistol, shotgun, revolver (all calibers)
LP010217	Pendleton	407, Field Firing Range	Field Firing Range	rifles, machine guns, recoilless weapons, tanks, 60-mm, 81-mm, 4.2-in mortars, Dragon, TOW, LAW, SMAW
LP010117	Pendleton	Range 407, Field Firing Range (Large Caliber)	Field Firing Range (Large Caliber)	rifles, machine guns, recoilless weapons, tanks,

LP010201	Pendleton	407A, Field Firing Range	Field Firing Range	60-mm, 81-mm, 4.2-in mortars, Dragon, TOW, LAW, SMAW, direct fire artillery, man-portable laser systems, tank-mounted laser systems
LP010171	Pendleton	407B, Field Firing Range	Field Firing Range	rifles, machine guns, recoilless weapons, tanks,
LP010215	Pendleton	408, Offensive Combat Range	Offensive Combat Range	60-mm, 81-mm, 4.2-in mortars, moving tanks, Dragon, TOW, LAW, SMAW
LP010170	Pendleton	408A, Field Firing Range (Support R-408)	Field Firing Range	M79, M203, Dragon, TOW, LAW, SMAW, .50-cal pistols, rifles, machine guns
LP010218	Pendleton	52 Area Combat Town	Combat Town	60-mm, 81-mm, 4.2-in mortars, recoilless rifles, SMAW pistols, shotguns, 7.62-mm blanks, 5.56-mm blanks
LP010169	Pendleton	OP Echo Laser	Observation Post	MULE laser system
LP010064	Kaneohe	W-1 Known Distance Rifle Range	Known Distance Rifle Range	M16A2
LP010065	Kaneohe	W-4 Pistol Range, Building 1578	Pistol Range	.38-cal, .45-cal, small caliber hand-held weapons
LP010066	Kaneohe	W-5 Close Combat Pistol Course	Close Combat Pistol Course	.38-cal, .45-cal, shotguns
LP010067	Kaneohe	W-6 Basic 25-Meter Range	Basic 25-Meter Range	M16A2
LP010068	Kaneohe	W-7 Hand Grenade Range	Hand Grenade Range	fragmentation grenades
LP010069	Kaneohe	W-8 Demolition Range	Demolition Range	1/4-lb demolitions, 3 sticks of TNT, C-4 and other types of explosives
LP010125	Yuma	R-2301W, Panel Stager, Multipurpose Target Range	Multipurpose Target Range	Inert (1,000-lb bombs max), 5-in Zuni (laser designated)
LP010122	Yuma	R-2301W, Rakish Litter Multipurpose Target Range	Multipurpose Target Range	Inert (1,000-lb bombs max), 5-in Zuni (laser designated)
LP010123	Yuma	R-2301W, WCTACTS, Maneuver Area and Air Space	Maneuver Area and Air Space	NA
LP010124	Yuma	R-2301W, Yuma Gunnery Range	Gunnery Range	HAWK
LP010121	Yuma	R-2507N, Chocolate Mountain Impact Area	Impact Area	HE (2000-lb bombs max), no Rockeye or live cluster bombs
LP010120	Yuma	R-2507S, Chocolate Mountain Impact Area	Impact Area	HE (2000-lb bombs max), no Rockeye or live cluster bombs
LP010237	Beaufort	Beaufort Pistol Range	Pistol Range	.45-cal, .38-cal, 12-gauge
LP010236	Beaufort	Boresight Range	Boresight Range	Not used
LP010238	Beaufort	EOD Range	EOD Range	NA
LP010248	Cherry Pt	BT-9 Multipurpose Target Range	Multipurpose Target Range	1 AAA simulator
LP010243	Cherry Pt	BT-11, MAEWR, Atlantic Field	Electronic Warfare Range	
LP010249	Cherry Pt	BT-11, Piney Island Multipurpose Target Complex	Multipurpose Target Range	
LP010242	Cherry Pt	D WEST, Neuse River	Maneuver Area and Air Space	NA
LP010061	Cherry Pt	EOD Demolitions Site	EOD Demolitions Site	demolitions (150 lbs max)
LP010244	Cherry Pt	MCOLF, Atlantic Field	Maneuver Area and Air Space	NA
LP010233	Cherry Pt	NBC Trail	NBC Trail	M7A3 (CS grenade), M18 smoke grenade
LP010245	Cherry Pt	OLF Atlantic, Atlantic Field	Maneuver Area and Air Space	
LP010062	Cherry Pt	Rifle Range	Rifle Range	M16, military shooting team rifles
LP010063	Cherry Pt	Rifle Range	Rifle Range	.38-cal, .45 cal, shotgun
LP010246	Cherry Pt	Sharks Point Team Training Area	Team Training Area	NA
LP010247	Cherry Pt	TACTS	Maneuver Area and Air Space	
LP010002	Dam Neck	Fleet Combat Training Center, Rifle Range	Rifle Range	
LP010001	Elmore	Camp Elmore Indoor Pistol Range, H&S Bn	Indoor Pistol Range	.22-cal, .38-cal, .45-cal, 9-mm, 12-gauge
LP010004	Lejeune	A-1 Pistol/Shotgun Range	Pistol/Shotgun Range	.22-cal, .38-cal, .45-cal, 9-mm, shotgun
LP010025	Lejeune	BT-3 Bombing and Target Range, N-1 Impact Area	Bombing and Target Range/Impact Area	105-mm, 105-mm main tank gun, 155-mm reduced charge

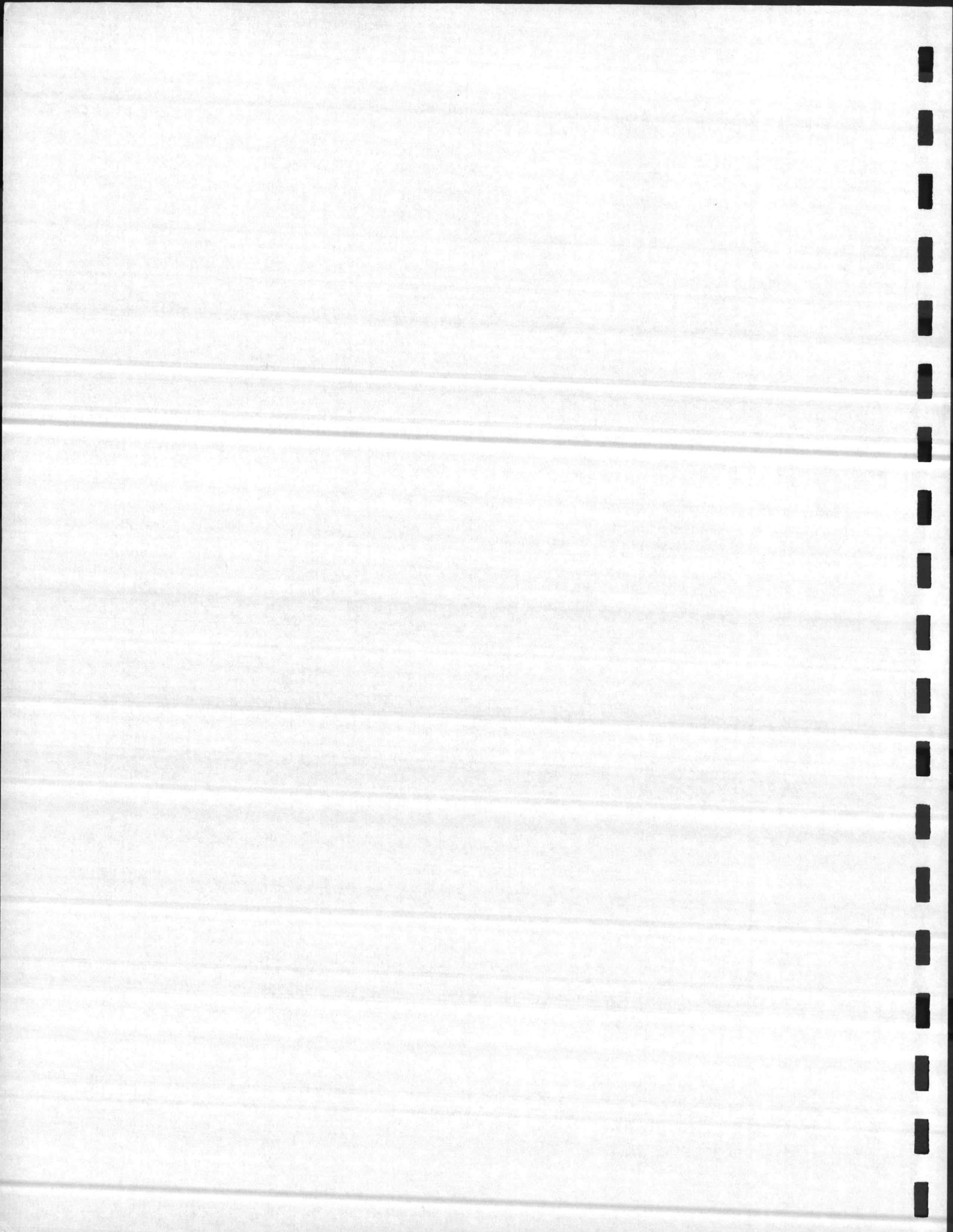
LP010005	Lejeune	B-12 Pistol/Shotgun Range	Pistol/Shotgun Range	60-mm,81-mm,direct fire,indirect fire,CAS (250 lb TNT equiv.),25-mm cannon
LP010006	Lejeune	B-14 Assault of Fortified Position	Assault of Fortified Position	.22-cal, .38-cal, .45-cal, 9-mm, shotgun
LP010007	Lejeune	D-29 Rifle/Pistol/Shotgun Range	Rifle/Pistol/Shotgun Range	M16 blanks, M60 blanks, SAW blanks, M73 LAW, 1/4-lb demolitions
LP010008	Lejeune	D-30 Rifle/Pistol Range	Rifle/Pistol Range	.22-cal, .38-cal, .45-cal, 9-mm, shotgun, M16
LP010009	Lejeune	E-1 Surface-to-Air-Missile Range	Surface-to-Air-Missile Range	.22-cal, .38-cal, .45-cal, 9-mm, M16
LP010010	Lejeune	F-2 Field Firing Range	Field Firing Range	HAWK, REDEYE, STINGER
LP010017	Lejeune	F-3 Field Firing Range	Field Firing Range	.38-cal, .45-cal, 9-mm, shotgun, M16
LP010011	Lejeune	F-4 Fire Control Range	Fire Control Range	.38-cal, .45-cal, 9-mm, shotgun, M16, M60, SAW, M73 LAW, 1/4-lb demolitions
LP010012	Lejeune	F-5 MP Pistol Range	MP Pistol Range	.38-cal, .45-cal, 9-mm, shotgun, M16, SAW
LP010013	Lejeune	F-6 Hand Grenade Range	Hand Grenade Range	.22-cal, .38-cal, .45-cal, 9-mm, shotgun, M16, M40A1 hand grenade
LP010014	Lejeune	F-11 Rifle/Pistol Range	Rifle/Pistol Range	.22-cal, .38-cal, .45-cal, 9-mm, shotgun, M16
LP010015	Lejeune	F-12 Engineer Training Area	Engineer Training Area	demolitions (15 lbs max)
LP010016	Lejeune	F-18 Night Firing/Artillery Subcaliber Range	Night Firing/Artillery Subcaliber Range	M16, 14.5-mm artillery subcaliber, SAW
LP010021	Lejeune	GA-4 Demolition Range	Demolition Range	demolitions (50 lbs max)
LP010018	Lejeune	G-3 Infantry Weapons Range	Infantry Weapons Range	.38-cal, .45-cal, 9-mm, M16, M60, SAW, M40A1, M19, M203, SMAW, M72 LAW, M73 LAW, 60-mm, 81-mm, Dragon, TOW, 1/4 lb demolitions
LP010019	Lejeune	G-3A M257 Smoke Grenade Launcher System Range	Smoke Grenade Launcher System Range	M257 smoke grenade launcher system
LP010020	Lejeune	G-4 Demolition Range	Demolition Range	demolitions (50 lbs max), M68A1 linear rocket
LP010022	Lejeune	G-4A EOD Range	EOD Range	demolitions (500 lbs max)
LP010023	Lejeune	G-5 Mechanized Tank and LAV Gunnery Range	Mechanized Tank and LAV Gunnery Range	.50-cal, M16, M60, Dragon, MOW, M60, 105-mm main tank gun, 25-mm cannon, 155-mm/8-in direct fire artillery
LP010024	Lejeune	G-6 Tank Gunnery Range	Tank Gunnery Range	.50-cal, M60, 7.62-mm coaxial, 25-mm cannon, 105-mm main tank gun, TOW, 60-mm illumination, 81-mm illumination, M40A1
LP010026	Lejeune	G-7 Tank and LAV Gunnery Range	Tank and LAV Gunnery Range	M60, .50-cal, 25-mm cannon, 7.62-mm coaxial, 105-mm main tank gun, 105-mm direct fire, 155-mm/8-in direct fire, 60-mm illumination, 81-mm illumination, MK19, M40A1
LP010027	Lejeune	G-8 M203 Grenade Launcher Range	M203 Grenade Launcher Range	M203
LP010028	Lejeune	G-9 LAAW and SMAW Range	LAW and SMAW Range	SMAW, M72 LAW, M73 LAW
LP010029	Lejeune	G-10 Bombing and Target Range	Bombing and Target Range	TOW, Dragon, Indirect fire, CAS (250 lbs TNT equivalent)
LP010030	Lejeune	G-10A EOD Disposal Site	EOD Disposal Site	EOD operations
LP010031	Lejeune	I-1 Pistol and Shotgun Range	Pistol and Shotgun Range	.22-cal, .38-cal, .45-cal, 9-mm, shotgun, M16
LP010032	Lejeune	I-2 Demolition and Mine Instruction Range	Demolition and Mine Instruction Range	demolitions (50 lbs max), M68A1 linear rocket, land mines
LP010033	Lejeune	J-2 Scaled Target Subcaliber Training Range for AAVs, Tanks, and LAVs	Scaled Target Subcaliber Training Range for AAVs, Tanks, and LAVs	.22-cal, M203, M16A1
LP010034	Lejeune	K-2 Bombing and Target Range	Bombing and Target Range	indirect fire, CAS (250 lbs TNT equivalent)
LP010035	Lejeune	K-211 M203 and MK19 Grenade Launcher Range	M203 and MK19 Grenade Launcher Range	MK19, M203
LP010036	Lejeune	K-212 Infiltration/Individual Movement Range	Infiltration/Individual Movement Range	M16 blanks, M60 blanks, machine gun simulation, 1/4-lb demolitions
LP010037	Lejeune	K-301 LAW and SMAW Range	LAW and SMAW Range	SMAW, M72 LAW, 60-mm illumination, 81-mm illumination
LP010038	Lejeune	K-302 Field Firing and Battlesight Range	Field Firing and Battlesight Range	M16
LP010039	Lejeune	K-303 Fire and Mortar Firing Range	Fire and Mortar Firing Range	M16, M60, SAW, M203, 1/4-lb demolitions, 60-mm, 81-mm
LP010040	Lejeune	K-304 Helicopter Door Gunnery Range	Helicopter Door Gunnery Range	M60
LP010041	Lejeune	K-305 Infantry Weapons Demonstration Range	Infantry Weapons Demonstration Range	.38-cal, .45-cal, 9-mm, M16, M60, SAW, MK19, M203, SMAW, M72 LAW, M73 LAW, 60-mm, 81-mm, Dragon, 1/4-lb demolitions, M40A1
LP010042	Lejeune	K-309 Machine Gun and LAW Range	Machine Gun and LAW Range	M16, M60, shotgun, SAW, 60-mm illumination, 81-mm illumination, M73 LAW
LP010043	Lejeune	K-315 Night and Combat Field Firing Range	Night and Combat Field Firing Range	.38-cal, .45-cal, 9-mm, M16, shotgun

LP010044	Lejeune	K-317 Close Combat Range	Close Combat Range	.38-cal, .45-cal, 9-mm, M16, shotgun
LP010045	Lejeune	K-319 Field Firing Range	Field Firing Range	.38-cal, .45-cal, 9-mm, M16, M60, shotgun, M40A1, 60-mm illumination, 81-mm illumination
LP010046	Lejeune	K-321 Transition Range	Transition Range	.38-cal, .45-cal, 9-mm, M16, shotgun, M40A1, 60-mm illumination, 81-mm illumination
LP010047	Lejeune	K-322 Moving Realistic Target Range	Moving Realistic Target Range	.38-cal, .45-cal, 9-mm, shotgun, M16
LP010048	Lejeune	K-323 Moving Realistic Target Range	Moving Realistic Target Range	M203, MK19
LP010049	Lejeune	K-325 M72 LAW Range	M72 LAW Range	M72 LAW, M73 LAW
LP010050	Lejeune	K-326 EOD Range	EOD Range	demolitions (50 lbs max), small arms ammunition testing
LP010051	Lejeune	K-402 Fire and Movement Range	Fire and Movement Range	M16, M60, 1/4-lb demolitions, SAW
LP010052	Lejeune	K-402A Search and Kill Range (Michelin City)	Search and Kill Range	.38-cal, .45-cal, 9-mm, M60, M16 ball, M16 blanks, HE fragmentation grenades, practice hand grenades
LP010053	Lejeune	K-405 Hand Grenade Range	Hand Grenade Range	hand grenades
LP010054	Lejeune	K-406A Cover and Clear Range	Cover and Clear Range	9-mm, .38-cal, .45-cal, M16, shotgun
LP010055	Lejeune	K-406B Friend/Foe Reaction Range	Friend/Foe Reaction Range	M16, SAW, pistol, revolver
LP010056	Lejeune	K-407 Individual Quick Reaction Range	Individual Quick Reaction Range	9-mm, .38-cal, .45-cal, M16, shotgun
LP010057	Lejeune	K-408 Urban Obstacle Course	Urban Obstacle Course	M16
LP010058	Lejeune	L-5 Advanced Tactics (Fire/Maneuver) Range	Advanced Tactics (Fire/Maneuver) Range	service rifle, pistol, M60, SAW, shotgun
LP010082	Lejeune	GP-1	Gun Position	105-mm, 155-mm, 8-in
LP010083	Lejeune	GP-2	Gun Position	105-mm, 155-mm, 8-in
LP010084	Lejeune	GP-3	Gun Position	105-mm, 155-mm, 8-in
LP010085	Lejeune	GP-4	Gun Position	105-mm, 155-mm, 8-in
LP010086	Lejeune	GP-6	Gun Position	105-mm, 155-mm, 8-in
LP010087	Lejeune	GP-7	Gun Position	105-mm, 60-mm, 81-mm
LP010088	Lejeune	GP-8	Gun Position	No ammunition; Reconnaissance Survey Occupation Preparation (RSOP) of position
LP010089	Lejeune	GP-9	Gun Position	105-mm, 155-mm, 8-in
LP010090	Lejeune	GP-10	Gun Position	105-mm, 60-mm, 81-mm
LP010091	Lejeune	GP-11	Gun Position	105-mm, 60-mm, 81-mm
LP010092	Lejeune	GP-13	Gun Position	60-mm, 81-mm
LP010093	Lejeune	GP-14	Gun Position	105-mm, 155-mm, 8-in
LP010094	Lejeune	GP-21	Gun Position	105-mm, 155-mm, 8-in
LP010095	Lejeune	GP-23	Gun Position	105-mm, 155-mm, 8-in
LP010096	Lejeune	GP-24	Gun Position	105-mm, 155-mm, 8-in
LP010097	Lejeune	GP-25	Gun Position	105-mm, 155-mm, 8-in
LP010098	Lejeune	GP-26	Gun Position	105-mm, 155-mm, 8-in
LP010099	Lejeune	GP-27A	Gun Position	105-mm, 155-mm, 8-in
LP010100	Lejeune	GP-28	Gun Position	105-mm, 155-mm, 8-in
LP010101	Lejeune	GP-29	Gun Position	105-mm, 155-mm, 8-in
LP010102	Lejeune	GP-30	Gun Position	105-mm, 155-mm, 8-in
LP010103	Lejeune	GP-31	Gun Position	105-mm, 155-mm, 8-in
LP010104	Lejeune	GP-32	Gun Position	105-mm, 155-mm, 8-in
LP010105	Lejeune	GP-33	Gun Position	105-mm, 155-mm, 8-in
LP010106	Lejeune	GP-34	Gun Position	105-mm, 155-mm, 8-in
LP010107	Lejeune	GP-39	Gun Position	105-mm, 155-mm, 8-in
LP010108	Lejeune	GP-40	Gun Position	105-mm, 155-mm, 8-in
LP010109	Lejeune	GP-41	Gun Position	105-mm, 155-mm, 8-in
LP010110	Lejeune	GP-42	Gun Position	No ammunition; Reconnaissance Survey Occupation Preparation (RSOP) of position
LP010112	Lejeune	GP-51	Gun Position	105-mm, 155-mm, 8-in
				No ammunition; Reconnaissance Survey Occupation

LP010113	Lejeune	GP-52	Gun Position	Preparation (RSOP) of position only No ammunition; Reconnaissance Survey Occupation
LP010114	Lejeune	GP-54	Gun Position	Preparation (RSOP) of position only No ammunition; Reconnaissance Survey Occupation
LP010115	Lejeune	GP-55	Gun Position	Preparation (RSOP) of position only No ammunition; Reconnaissance Survey Occupation
LP010111	Lejeune	GP-Dove	Gun Position	Preparation (RSOP) of position only
LP010116	Lejeune	GP-Owl	Gun Position	105-mm, 155-mm, 8-in No ammunition; Reconnaissance Survey Occupation
LP010081	Lejeune	OP-1	Observation Post	Preparation (RSOP) of position only
LP010080	Lejeune	OP-2	Observation Post	FO, FAC, TAB
LP010079	Lejeune	OP-3	Observation Post	FO, FAC, TAB, 60-mm, 81-mm
LP010078	Lejeune	OP-5	Observation Post	FO, FAC, TAB, 60-mm, 81-mm
LP010077	Lejeune	OP-6	Observation Post	FO, FAC, TAB
LP010076	Lejeune	Browns Tower Observation Post	Observation Post	FO, FAC, TAB
LP010059	Lejeune	Chemical Dump	Chemical Dump	Undefined
LP010060	Lejeune	Combat Town	Combat Town	NA
LP010003	Little Creek Machine Gun/Shotgun Range		Machine Gun/Shotgun Range	small arms, machine guns, practice hand grenades, smoke hand grenades, practice land mines, pyrotechnics, demolitions



APPENDIX C
MARINE CORPS MANEUVER AREA RESOURCES



UP010096	29 Palms	Sandhill Training Area	INF,ART,ARM,COMB,COMM,LOG,MAGTF,AIR TO GRD,Air Delivery,Assault Landing Zone,Extraction Zone,RPV Launch/recovery Facility	1	10	17
UP010097	29 Palms	West Training Area	INF,ART,ARM,COMB,COMM,LOG,MAGTF,AIR TO GRD,Air Delivery,Assault Landing Zone,Extraction Zone,RPV Launch/recovery Facility	1	10	17
UP010098	Bridgeport	Pickle Meadows Marine Corps Motor Transport Training Area		1 Inf Bn (Rein) 4 to 6		

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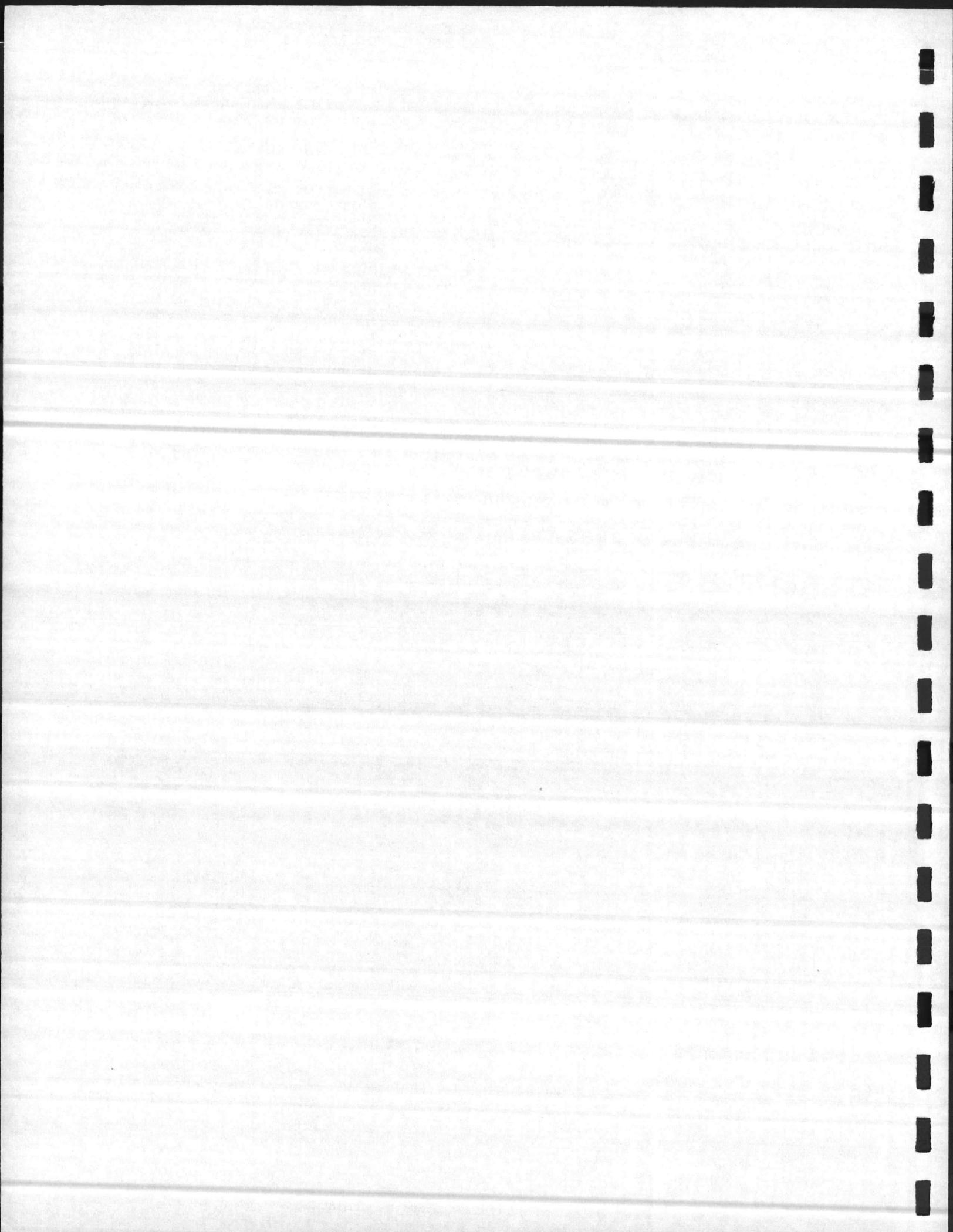
UP010016	Lejeune	TLZ Lark Triangle Outpost TA-QA NAC TACAN 110.0/10.1 nm	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops	Und.	Und.	
UP010017	Lejeune	TLZ Owl LC Area TA-LC NAC TACAN 186.0/7.8 nm	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops	Und.	Und.	
UP010018	Lejeune	TLZ Parrot MB Area TA-MB NAC TACAN 185.0/2.1 nm	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops	Und.	Und.	
UP010019	Lejeune	TLZ Penguin FD Area TA-FD NAC TACAN 118.0/7.9 nm	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.	Und.	
UP010020	Lejeune	TLZ Robin Hubert Area TA-QA NAC TACAN 97.0/11.0 nm	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops	Und.	Und.	
UP010021	Lejeune	TLZ Sparrow DB Area TA-DB NAC TACAN 116.0/5.2 nm	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Other	Und.	Und.	
UP010131	Cherry Pt	Area 1	Evasion Training,Map and Compass Training	20 Marines	0	0
UP010133	Cherry Pt	Area 5	Evasion Training,Map and Compass Training	0	0	0
UP010130	Cherry Pt	Brown Training Area	Evasion Training,Map and Compass Training	0	0	0
UP010132	Cherry Pt	Millis Training Area	Evasion Training,Map and Compass Training	0	0	0
UP010129	New River	Marine Corps Outlying Field, Oak Grove	INF,Airfield	1	384 T&G	0
UP010099	Smith	Rappell Tower	Rappell Tower	1 Co		
UP010094	Kaneohe	W-2/W-3 Maneuver Area and Machine Gun Range	INF,Ground Fire	2 Cos		
UP010128	Pendleton	Alpha 1	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010127	Pendleton	Alpha 2	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010126	Pendleton	Alpha 3	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010123	Pendleton	Bravo	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010125	Pendleton	Bravo 2	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010124	Pendleton	Charlie	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010122	Pendleton	Delta	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010121	Pendleton	Echo	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010120	Pendleton	Foxtrot	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010100	Pendleton	Golf	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010119	Pendleton	Hotel	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010118	Pendleton	India	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010117	Pendleton	Juliett	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010115	Pendleton	Kilo	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010116	Pendleton	Kilo 1	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010114	Pendleton	Lima	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010113	Pendleton	Mike	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010112	Pendleton	November	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010111	Pendleton	Oscar 1	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010110	Pendleton	Oscar 2	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010109	Pendleton	Papa 1	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010108	Pendleton	Papa 2	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010107	Pendleton	Papa 3	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010106	Pendleton	Romeo 1	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010105	Pendleton	Romeo 2	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010104	Pendleton	Romeo 3	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010103	Pendleton	Uniform	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010102	Pendleton	Victor	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010101	Pendleton	Yankee 2	INF,ART,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	1	4	12
UP010095	29 Palms	Range 103, Squad Patrolling Intelligence Reaction Course	INF,COMM,LOG	1		

UP010068	Lejeune	HA	INF,ART,ARM,COMM,LOG,ELEC	3		15
UP010069	Lejeune	HB	INF,ART,ARM,COMM,LOG,ELEC	3	5	15
UP010070	Lejeune	HC	INF,ART,ARM,COMM,LOG,ELEC	3		15
UP010071	Lejeune	HD	INF,ART,ARM,COMM,LOG,ELEC	3	3	15
UP010072	Lejeune	HE	INF,ART,ARM,COMM,LOG,ELEC	2	5	10
UP010073	Lejeune	HF		2		10
UP010003	Lejeune	Hicks (Shark) New River Inlet Authorized Parachute	AMPH,Helo Rasting			
UP010074	Lejeune	IA	INF,ARM,COMM,LOG,ELEC	2		15
UP010075	Lejeune	IB	INF,ART,ARM,COMM,LOG,ELEC,AMPH	2	5	20
UP010076	Lejeune	IC	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	3		15
UP010077	Lejeune	ID	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF	2	8	20
UP010078	Lejeune	IE	INF,ART,ARM,COMM,LOG,ELEC	2		15
UP010079	Lejeune	IF		2	8	15
UP010080	Lejeune	JA		1	NA	5 AAVs
UP010081	Lejeune	JB	INF,ART,ARM,COMM,LOG,ELEC	1 Co		10
UP010082	Lejeune	JC	INF,ART,ARM,COMM,LOG,ELEC	1 Co		10
UP010083	Lejeune	JD	INF,ARM,COMM,LOG,ELEC,AMPH	1 Co		10
UP010084	Lejeune	K	INF,ART,ARM,COMM,LOG,ELEC,AMPH	3	6	10
UP010048	Lejeune	LA	INF,ARM,LOG,ELEC	3		15
UP010049	Lejeune	LB	INF,ART,COMM,COMM,LOG,ELEC,MAGTF,AIR TO GRD	2		10
UP010050	Lejeune	LC	INF,ART,COMM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	3	2	10
UP010051	Lejeune	MA	INF,ART,ARM,COMM,LOG,ELEC	2		15
UP010052	Lejeune	MB	INF,ARM,COMM,LOG,ELEC	2	4	15
UP010053	Lejeune	MC	INF,ARM,COMM,LOG,ELEC	3	5	15
UP010054	Lejeune	MD	INF,ARM,COMM,LOG,ELEC	3		15
UP010055	Lejeune	MF	INF,ARM,COMM,LOG,ELEC	1	2	10
UP010002	Lejeune	Morgan Bay Authorized Parachute Drop Zone	AMPH,Helo Rasting			
UP010056	Lejeune	QA	INF,ART,ARM,COMM,LOG,ELEC	3	5	15
UP010092	Lejeune	QB	INF,ART,ARM,COMM,LOG,ELEC	2		5
UP010091	Lejeune	RA	INF,ARM,COMM,LOG,ELEC	1		10
UP010090	Lejeune	RB	INF,COMM,LOG,ELEC,AIR TO GRD	2		10
UP010004	Lejeune	TLZ Albatross Sallier's Bay TA-IB NAC TACAN Position 147.0/11.0 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.		Und.
UP010005	Lejeune	TLZ Bluebird Mile Hammock Bay TA-ID NAC TACAN Position 155.3/10.8 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.		Und.
UP010006	Lejeune	TLZ Canary Trap Bay TA-IF NAC TACAN Position 157.0/9.1 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.		Und.
UP010007	Lejeune	TLZ Cardinal Verona Loop TA-K NAC TACAN Position 170.0/3.5 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops	Und.		Und.
UP010008	Lejeune	TLZ Condor MF Area TA-MF NAC TACAN 192.0/4.2 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.		Und.
UP010009	Lejeune	TLZ Dodo HB Area TA-HB, HF NAC TACAN 141.0/9.3 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.		Und.
UP010010	Lejeune	TLZ Dove HB Area TA-HB, HF NAC TACAN 149.0/8.5 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops	Und.		Und.
UP010011	Lejeune	TLZ Eagle Ragged Point TA-MC NAC TACAN 141.0/1.5 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.		Und.
UP010012	Lejeune	TLZ Falcon Onslow Beach Road TA-GG NAC TACAN 141.0/11.2 nm,	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.		Und.
UP010013	Lejeune	TLZ Goose Airstrip TA-GG NAC TACAN 136.0/10.6 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops,Parachute Ops	Und.		Und.
UP010014	Lejeune	TLZ Hawk Combat Town Area TA-HE NAC TACAN 136.0/9.3 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops	Und.		Und.
UP010015	Lejeune	TLZ Jaybird HD Area TA-HD NAC TACAN 135.0/7.7 nm	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD,Helo Ops	Und.		Und.

UTMAS-P-0001

FILENAME	LOCATION	MANEUVER AREA NAME	TYPE TRAINING ACTIVITY	CAPACITY PER 8 HOUR DAY		
				BNS/SQDS	ACFT/HELO	AAV/LCAC
UPO10085	Lejeune	322 Building, Combined Arms Staff Trainer (CAST)	CAST	570 Marines		
UPO10087	Lejeune	540 Building, Area 5, Combat Training Tank	Swimming Pool	2 Cos		
UPO10086	Lejeune	934 and 935 Buildings, Base CS Chamber and NBC Training Trail	Base Gas Chamber	2		
UPO10022	Lejeune	ALZ-1 (Not related to training activities)	Administrative Landing Zone		Und.	
UPO10031	Lejeune	ALZ-10	Administrative Landing Zone		Und.	
UPO10032	Lejeune	ALZ-11	Administrative Landing Zone		Und.	
UPO10033	Lejeune	ALZ-12	Administrative Landing Zone		Und.	
UPO10034	Lejeune	ALZ-14	Administrative Landing Zone		Und.	
UPO10035	Lejeune	ALZ-15	Administrative Landing Zone		Und.	
UPO10036	Lejeune	ALZ-15A	Administrative Landing Zone		Und.	
UPO10037	Lejeune	ALZ-16	Administrative Landing Zone		Und.	
UPO10038	Lejeune	ALZ-17	Administrative Landing Zone		Und.	
UPO10039	Lejeune	ALZ-18	Administrative Landing Zone		Und.	
UPO10040	Lejeune	ALZ-19	Administrative Landing Zone		Und.	
UPO10023	Lejeune	ALZ-1A	Administrative Landing Zone		Und.	
UPO10024	Lejeune	ALZ-2	Administrative Landing Zone		Und.	
UPO10041	Lejeune	ALZ-20	Administrative Landing Zone		Und.	
UPO10042	Lejeune	ALZ-21	Administrative Landing Zone		Und.	
UPO10043	Lejeune	ALZ-22	Administrative Landing Zone		Und.	
UPO10044	Lejeune	ALZ-23	Administrative Landing Zone		Und.	
UPO10045	Lejeune	ALZ-24	Administrative Landing Zone		Und.	
UPO10046	Lejeune	ALZ-25	Administrative Landing Zone		Und.	
UPO10047	Lejeune	ALZ-26	Administrative Landing Zone		Und.	
UPO10025	Lejeune	ALZ-3	Administrative Landing Zone		Und.	
UPO10026	Lejeune	ALZ-4	Administrative Landing Zone		Und.	
UPO10027	Lejeune	ALZ-5	Administrative Landing Zone		Und.	
UPO10028	Lejeune	ALZ-6	Administrative Landing Zone		Und.	
UPO10029	Lejeune	ALZ-7	Administrative Landing Zone		Und.	
UPO10030	Lejeune	ALZ-8	Administrative Landing Zone		Und.	
UPO10089	Lejeune	AV-8 Hides for Harrier Landings, off Lyman Road	AIR TO GRD		5	
UPO10057	Lejeune	BC	INF,ARM,LOG,ELEC	1		
UPO10058	Lejeune	BD	INF,ARM,COMM,LOG,ELEC	1		5
UPO10093	Lejeune	DB	INF,ARM,COMB,COMM,LOG,ELEC	2	4	
UPO10059	Lejeune	E	INF,ARM,COMB,COMM,LOG,ELEC,AMPH,MAGTF,AIR TO GRD	3	8	30
UPO10060	Lejeune	FA	INF,ARM,COMM,LOG,ELEC	3		15
UPO10061	Lejeune	FB		2		5
UPO10062	Lejeune	FC		3		15
UPO10063	Lejeune	FD	INF,ART,ARM,COMM,LOG,ELEC	1	4	10
UPO10064	Lejeune	F-17	Dry Net Training	2 Cos	NA	NA
UPO10088	Lejeune	G Street, Helicopter Egress Trainers, 6th Marines Area	Helicopter Egress Trainers	1	NA	NA
UPO10001	Lejeune	Gator Reconnaissance Beach Authorized Parachute Drop Zone	AMPH,Helo Resting			
UPO10065	Lejeune	GF	INF,ART,ARM,COMM,LOG,ELEC	3	2	15
UPO10066	Lejeune	GG	INF,ART,ARM,COMM,LOG,ELEC,AMPH,MAGTF	3	8	15
UPO10067	Lejeune	GI	INF,ARM,COMM,LOG,ELEC	1		5

APPENDIX D
MARINE CORPS INTER-SERVICE/INTER-AGENCY SUPPORT AGREEMENTS



LATAR-A-0001 FILENAME# LOCATION	OFFICE/ORGANIZATION	F/I RESERVE	TO/FROM PARTY	PURPOSE
LAR10128 Albany,GA	I&I Staff/Albany,GA	F R T	Commanding General,Marine Corps Logistics Base Albany,GA 31704-5000	pistol qualification/requalification
LAR10141 Amarillo,TX	I&I,Det,Co C,4th Tk Bn,4th MarDiv	F R T	U.S. Department of Interior	maneuver area for training,navigation,tactics,and subcaliber gunnery
LAR10149 Amityville,NY	Comm Co,6th Comm Bn	F R T	Armed Forces Reserve Center,Amityville,NY (U.S. Army)	provides for firing/requalification only when approved by the host
LAR10136 Battle Creek,MI	I&I,Bridge Co,6th Engr Spt Bn,4th FSSG	F R T	Naval Reserve Center,101 Base Avenue,Battle Creek, MI 49015-1242	administrative,classroom,maintenance,storage areas,and maneuver areas
LA010052 Beaufort	S-3, TAVSD/MCAS,Beaufort	F T	Marine Corps Recruit Depot,Parris Island,SC	requalification and familiarization fire
LA010053 Beaufort	S-3/MAG-31,2d MAW	F T	Federal Aviation Administration (FAA),Jacksonville Air Regional Traffic control Center (ARTCC)	integrated air and ground defense of an airfield and near realistic offense against an integrated defense system
LAR10065 Belle Chasse,LA	Operations/MAG-46,Det B,4th MAW	F R T	U.S. Coast Guard,8th Coast Guard District	confined area landing training
LAR10188 Boston,MA	I&I,Hq Co,25th Mar/Boston,MA	F R T	Fort Devens,MA	qualification with service rifle and pistol,M60 training, command post exercises,communications exercises, and tactical training
LAR10144 Camp Edwards,MA	I&I Staff,1st Bn,25th Mar/Camp Edwards, MA	F R T	Army National Guard Training Site,Camp Edwards,MA	maneuver area to support battalion-size training on live fire ranges to fire most organic weapons
LA010056 Cherry Pt	COMCABEAST	F F	Georgia Air National Guard,Savannah Municipal Airport,Garden City,GA;Ninth Air Force,Shaw Air Force Base,SC	air-to-grd scorable range to conduct practice bombing and strafing ops
LA010057 Cherry Pt	COMCABEAST	F T	Union Pulpwood Co.	lease for the property that encompasses Townsend Range
LAR10178 Columbia,SC	I-1,Co D,8th Tk Bn,4th MarDiv	F R T	Fort Jackson,Columbia,SC	use of training areas and ranges for Marine Reserves on weekends
LAR10190 Detroit,MI	I&I Staff,1st Bn,24th Mar/Detroit,MI	F R T	Camp Grayling Army National Guard,Grayling,MI	provides for range and maneuver area use
LAR10079 Eugene,OR	Engr Plat,Co A,6th Engr Spt Bn/Eugene,OR	F R T	Bureau of Land Management,State of Oregon	MOS training for combat engineers (MOS 1371)
LAR10080 Eugene,OR	Engr Plat,Co A,6th Engr Spt Bn/Eugene,OR	F R T	Military Department,State of Oregon,2150 Fairground Road,NE,Salem,OR 97303-3241	requalification on the M16A2 and .45-cal
LAR10177 Fort Knox,KY	Co A,8th Tk Bn,4th MarDiv/Fort Knox,KY	F R T	Commander,U.S. Army Armor Center and Fort Knox	allows use of maneuver areas,rifle and pistol ranges for requalification, and tank ranges for tank gunnery
LAR10146 Gulfport,MS	I&I,4th Plat (ReIn),Co A,4th AAV Bn	F R T	CBC,Gulfport,MS for use of Camp Hill,MS and Camp Shelby,MS	allows the SMCR unit to conduct live fire and maneuver exercises
LAR10090 Indianapolis,IN	Det,Comm Co,Hq Bn,4th MarDiv	F R T	Military Department of Indiana,Camp Atterbury,IN	annual weapons requalification for rifles and pistols

LAR10147 Jacksonville, FL	I&I, Co B, 4th AAV Bn	F R T	Commanding General, Headquarters, 5th Infantry Division (Mech), Fort Polk, LA 71459	gas, rifle and pistol requalification, and .50-cal and .30-cal firing exercises
LA010021 Kaneohe	G-3, Training/1st MAB, FMF	F T	U.S. Army Support Command, HI	major deployments of MAB ground, air, and support elements
LA010024 Kaneohe	G-3, Training/1st MAB, FMF	F T	Hawaii State Department of Hawaiian Homelands for the Molokai Training Area	infantry tactics including helo ops
LA010022 Kaneohe	G-3, Training/1st MAB, FMF	F T	U.S. Air Force, Bellows Air Force Station, HI	infantry tactics, helo landings, and amphib ops
LA010023 Kaneohe	G-3, Training/1st MAB, FMF	F T	Kekaha Sugar Company for the Kauai Training Area	infantry tactics, particularly battalion ops ashore
LAR10087 Lathrop, CA	Co B, 4th Land Spt Bn, 4th FSSG, 4th MarDiv/Lathrop, CA	F R T	7th Infantry Division, Fort Ord, CA 93941-5000	training support of weapons familiarization firing (including crew-served weapons), gas chamber training, infantry tactics, and helo ops
LAR10085 Lathrop, CA	Co B, 4th Land Spt Bn, 4th FSSG, 4th MarDiv/Lathrop, CA	F R T	Sacramento District Corps of Engineers (Real Estate Division), Grand Island, CA	helo support team ops, beach support area ops, and non-live firing maneuvers
LA010010 Lejeune	BOSMAD/MCB, Camp Lejeune	F T	USDA Forest Service, Asheville, NC User: 2d MarDiv	maneuver area for personnel and vehicles
LA010003 Lejeune	BOSMAD/MCB, Camp Lejeune	F F	Joint Control Group SS 87, NAB, Little Creek, Norfolk, VA	provides support for Solid Shield Exercises every 2 years
LA010009 Lejeune	BOSMAD/MCB, Camp Lejeune	F F	Inspector and Instructor Staff, 4th and 5th Longshoreman Plat, 2d Beach and Port Operations Co (-), 4th FSSG, Wilmington, NC	annual qualification on small arms
LA010004 Lejeune	BOSMAD/MCB, Camp Lejeune	F T	Fort Picket, VA User: 2d MarDiv	tank maneuver and firing
LA010011 Lejeune	BOSMAD/MCB, Camp Lejeune	F T	Fort Bragg, NC User: 10th Mar Regt, 2d MarDiv	range for artillery live-fire from various gun positions
LA010007 Lejeune	BOSMAD/MCB, Camp Lejeune	F T	Fort Bragg, NC User: 2d ANGLICO, 2d FSSG	support of USMC units attached to organizations of the XVIII Airborne Corps of exercises and contingencies
LA010008 Lejeune	BOSMAD/MCB, Camp Lejeune	F T	USDA Forest Service, Asheville, NC User: 2d FSSG, 2d ANGLICO	maneuver areas for training; may be used for airborne corps
LA010013 Lejeune	BOSMAD/MCB, Camp Lejeune	F F	Hq, XVIII Airborne Corps, Fort Bragg, NC	TLZ E-1 Bluebird on a quarterly basis for use by the HAWK Battalion for live-fire exercise for the HAWK missile
LA010005 Lejeune	BOSMAD/MCB, Camp Lejeune	F F	4th Tactical Fighter Wing, Seymour Johnson Air Force Base, NC	provide bombing ranges for F-4s
LA010012 Lejeune	BOSMAD/MCB, Camp Lejeune	F F	3286 USARF School, Garner, NC (Army Reserve)	training Army Reservists in basic MOS skills including land navigation
LA010006 Lejeune	BOSMAD/MCB, Camp Lejeune	F T	U.S. Army Infantry Center, Fort Benning, GA User: 2nd MarDiv, 2d LAV Bn	requalification of 25-mm gunners on shoot and move ranges
LA010029 Lejeune	S-3, Operations/8th Engr Spt Bn, 2d FSSG	F T	Commander, U.S. Naval Station, Roosevelt Roads, Vieques, Pr	train personnel in horizontal and vertical construction without CONUS restrictions
LA010028 Lejeune	S-3, Operations/8th Engr Spt Bn, 2d FSSG	F T	Commander, Naval Base, Guantanamo Bay, Cuba	train personnel in horizontal and vertical construction without CONUS restrictions
LA010002 Little Creek	G-3/4th MAB	F T	Fort McCoy, WI	enables 4th MAB to conduct cold weather training and a brigade-size field training exercise
LA010001 Little Creek	G-3/4th MAB	F T	Volk Air National Guard Base, Camp Douglas, WI	conduct cold weather aircraft/crew training using helos, AV-8s, and air control vans
LAR10102 Lynchburg, VA	I&I, Co C/Lynchburg, VA	F R F	1st Bn, 319th Regt, 2nd Bde, 80th Div, U.S. Army Reserve, Lynchburg, VA	area to perform monthly IADT; indoor range capable of small arms up to .45-cal pistol and .22-cal rifle
LAR10126 Madison, WI	Training, I&I Staff, Co D, 2d Bn, 24th Mar	F R T	Fort McCoy, WI	marksmanship training; individual proficiency training at live firing ranges and maneuver areas

LAR10069 Marietta,GA	S-3/MAG-46,Det C,4th MAW	F R T	Hq,U.S. Army Infantry Center,Fort Benning,GA 31950	air-to-grd weapons training
LAR10074 Memphis,TN	S-3/MAG-24,Det B,4th MAW	F R T	131st Tactical Fighter Wing,Missouri Air National Guard	establishes responsibilities and procedures for control of aircraft to,from,and within the Cannon MOA
LAR10076 Memphis,TN	S-3/MAG-24,Det B,4th MAW	F R T	14th Flying Training Wing,Columbus Air Force Base	establishes procedures between Memphis ARTCC and the using agencies for the activation,deactivation,and use of subject air space
LAR10073 Memphis,TN	S-3/MAG-24,Det B,4th MAW	F R F	Various fixed-wing users (primary users are MAG-42, Det B and 188th TFG)	outlines operational and control procedures for aircraft operating in Shirley MOA/ATCCA
LAR10075 Memphis,TN	S-3/MAG-24,Det B,4th MAW	F R T	188th Tactical Fighter Group,Arkansas Air National Guard	establishes operational and control procedures for aircraft operating in Hog MOAs 1,2, and 3
LAR10175 Miami,FL	AT (TOW) Co,8th Tk Bn	F R T	Homestead Air Force Base	provides pistol range
LAR10082 New Haven,CT	3d Truck Co,6th MT Bn,4th FSSG/New Haven,CT	F R T	Department of the Army,Headquarters,Fort Devens,MA	provides rifle range,familiarization firing range,pistol range,and machine gun range
LAR10081 New Haven,CT	3d Truck Plat,6th MT Bn,4th FSSG/New Haven,CT	F R T	Rhode Island National Guard,1051 North Main Street,Providence,RI	provides rifle range,familiarization firing range,pistol range,gas chamber,bivouac area,and blackout vehicle driving range
LA010058 New River	Station Operations/MCAS,New River,NC	F T	International Paper Company, Lease No. N62470-80-RP-00395	provide an outlying field at which helos can make multiple practice touch and go landings
LAR10059 Pasadena,CA	S-3/4th LAAM Bn,H&S Btry,Det A,4th MAW	F R T	U.S. Army Corps of Engineers	allows set up of the HAWK system to track surrounding aircraft
LAR10203 Pasadena,CA	S-3,Det B,H&S Btry,4th LAAM Bn,4th MAW	F R T	Commanding Officer,Naval Air Station,Alameda,CA 94501	provides pistol range access and scheduling service
LA010077 Pendleton	S-3/1st Tank Bn	F T	Yakima Firing Center	cold weather training and enhanced tank gunnery training
LAR10131 Portland,OR	1&I Staff,6th Engr Spt Bn,4th FSSG	F R T	Oregon National Guard Facility,Camp Riley,OR	live fire for small arms and machine guns,grenade training (practice and live),and small unit maneuver areas
LAR10121 Providence,RI	Transp Co,6th MT Bn,4th FSSG/Providence, RI	F R T	Connecticut Army National Guard,Hartford,CT	provides bivouacs and infantry tactics training
LAR10127 Providence,RI	Transp Co,6th MT Bn,4th FSSG/Providence, RI	F R T	Rhode Island National Guard,1051 North Main Street,Providence,RI	rifle and pistol ranges for familiarization firing,gas chamber,bivouac area,and blackout vehicle driving
LAR10103 Rock Island,IL	Gen Spt Maint Co,4th Maint Bn,4th FSSG/Rock Island,IL	F R T	Department of the Army,Fort McCoy,WI	annual rifle requalification and infantry tactics
LAR10145 San Antonio,TX	Cos A,C,H&S,4th Recon Bn	F R T	Fort Sam Houston,TX	weapons requalification,patrolling,airborne and airmobile operations,artillery call for fire simulator (FY 88)
LAR10148 San Antonio,TX	Co A,Co C,H&S Co,4th Recon Bn/San Antonio,TX	F R T	Fort Hood,TX	patrolling,maneuver area,airborne,airmobile,artillery call fire simulation,Soviet operational forces weapons,and vehicle identification training
LA010038 San Bruno	Planning Office/Facilities Management	F T	Department of the Army	allows access to apron area of spillway at the Prado Flood Flood Control Basin,Riverside,CA
LA010037 San Bruno	Planning Office/Facilities Management	F T	The Irvine Company,550 Newport Center Drive, Newport Beach,CA 92660	access to Confined Area Landing (CAL) Sites 1 and 2 for confined area helo landing training

LA010039	San Bruno	Planning Office/Facilities Management	F	T	The Irvine Company,A Michigan Corporation, Agricultural Division	allows access for practice landing areas in Black Star Canyon
LA010040	San Bruno	Planning Office/Facilities Management	F	T	The Department of Agriculture	allows access to 9 helicopter landing sites (CAL Sites 3 through 12) In the Cleveland National Forest
LAR10083	Savannah,GA	2d Beach and Port Co/Savannah,GA	F	R	T Fort Stewart/Hunter Army Air Field, GA	simulated beach ops,familiarization firing,and helo support team ops
LAR10130	Seattle,WA	H&S Co,3d Longshoreman Plat/Seattle,WA	F	R	T Fort Lewis Army Base/Port of Tacoma,WA	training areas for simulated beach ops,familiarization firing,and helo support team ops
LAR10180	Spokane,WA	Training,Btry A,1st Bn,14th Mar/Spokane,WA	F	R	T Fort Lewis,Fort Lewis,WA Attention AFZH-DIR	artillery/small arms range support approx. 6 weeks/yr for qualification and proficiency training
LAR10153	Tampa,FL	H&S Co,4th AAV Bn	F	R	T MacDill Air Force Base,Tampa,FL	familiarization and qualification fire of the 9-mm service pistol;familiarization fire on the 1,000-in range with the M16A2 rifle
LAR10084	Turlock,CA	Co B,4th Land Spt Bn,4th FSSG/Turlock,CA	F	R	T Non-DOD property with Turlock Sportsman Club, Turlock, CA	training support for units in Infantry tactics and MOS training
LAR10109	Wichita,KS	Elect Maint Co,4th Maint Bn,4th FSSG/ Wichita,KS	F	R	T Nickell Barracks Training Center,Kansas National Guard,Salina,KS 67401	requalification firing on the M16A1
LAR10107	Wichita,KS	Engr Maint/Rep Plat,4th Maint Bn,4th FSSG/Wichita,KS	F	R	T Nickell Barracks Training Center,Kansas National Guard,Salina,KS 67401	requalification firing on the M16A1
LAR10163	Yakima,WA	I&I Staff,Co B,4th Tk Bn,4th MarDiv/ Yakima,WA	F	R	T Headquarters, I Corps and Fort Lewis,U.S. Army	supports live fire tank gunnery and company tactics/maneuver training

LATAR-A-0001 FILENAME	LOCATION	OFFICE/ORGANIZATION	F/I RESERVE	TO/FROM PARTY	PURPOSE
LAR10129	Albany,GA	I&I Staff/Albany,GA	I R T	Commander,U.S. Army Infantry Center,Fort Benning,GA 31950	qualification/requalification of Reserve personnel on a one-time yearly basis
LAR10169	Austin,TX	Co B,1st Bn,23d Mar/Austin,TX	I R T	Fort Hood,Kaleen,TX; Camp Swift,Elgin,TX; Camp Bullis	conduct of company tactics training and live firing
LAR10181	Baton Rouge,LA	Training,Wpns Co,3d Bn,23d Mar/Baton Rouge,LA	I R T	National Guard,Camp Shelby,MS	training for M16/9-mm,81-mm mortars,M60/.50-cal machine gun, Dragons, and MK19
LAR10182	Baton Rouge,LA	Training,Wpns Co,3d Bn,23d Mar/Baton Rouge,LA	I R T	Army,5th Infantry Mech,Fort Polk,LA	training for M16/9-mm,81-mm mortars,M60/.50-cal machine gun, Dragons,and MK19
LAR10143	Billings,MT	Training Office,Co B,4th Recon Bn	I R T	Private owner,Bureau of Land Management,U.S. Forestry Department	provides live fire and maneuver areas
LA010055	Bogue Field	MWSS-271/S-3;MWSG-27	I	F U.S. Navy (JF-101)	provides a simulated CVA deck for night FCLP
LA010054	Bogue Field	MWSS-271/S-3;MWSG-27	I	F U.S. Army	provides an expeditionary airfield (EAF) and tactical environment for U.S. Army aviation units using the USMC EAF
LAR10165	Boise, ID	I&I,Co C,4th Tank Bn	I R T	Idaho National Guard and Idaho Air National Guard	agreement is verbal only
LA010049	Cherry Pt	G-3/2d MAW	I	T U.S. Army,Volk Field,Lacross,WI	cold weather training ops,day and night helo ops, and day and night aircraft ops
LA010048	Cherry Pt	G-3/2d MAW	I	T Fort Bragg,NC,Range Complex,U.S. Army,Fort Bragg,NC,Range Complex,U.S. Army,Fort Bragg,NC	day and night helo ops,navigation training,night vision goggles training,external lift,day and night air-to-grd ordnance delivery,and expeditionary airfield landing training
LA010044	Cherry Pt	G-3/2d MAW	I	T Dawson Army Airfield,U.S. Army,Morgantown,WV	day and night helo ops,training in mountain area landing, and terrain flight
LA010045	Cherry Pt	G-3/2d MAW	I	T 4th TFW,Seymour Johnson Air Force Base,NC	day and night air-to-grd ordnance delivery (inert ordnance only)
LA010042	Cherry Pt	G-3/2d MAW	I	T Bulldog MOA,Shaw Air Force Base,Sumter,SC	day and night all-weather intercept training,low-level navigation,basic aircraft maneuvering,and air combat maneuvering
LA010046	Cherry Pt	G-3/2d MAW	I	T Mosby Army Airfield,Camp Frank D. Merrill,U.S. Army,Dahlonaga,GA	day and night helo ops,terrain flight training,night vision goggle training,mountain area landing training,and confined area landings
LA010051	Cherry Pt	G-3/2d MAW	I	T Georgia Air National Guard,Savannah, GA	day and night air-to-grd ordnance delivery (inert ordnance only),low-level navigation training,and opposed strikes
LA010050	Cherry Pt	G-3/2d MAW	I	T Fort Pickett,VA and Fort Lee,VA	day and night helo ops,terrain flight,external lifts, confined area landing,night vision goggles training,and MAGTF ops
LA010043	Cherry Pt	G-3/2d MAW	I	T 363rd TFW,Slaw Air Force Base,Sumter,SC	day and night air-to-grd ordnance delivery (inert ordnance only)
LA010047	Cherry Pt	G-3/2d MAW	I	T Fort Stewart Tactical Fighter Operations,Annex, 24th Infantry Division,Fort Stewart,GA	day and night air-to-grd ordnance delivery (up to 500 lbs live ordnance) and day and night helo ops including forward area arming and refueling

LA010041	Cherry Pt	G-3/2d MAW	I T	Plattsburgh Air Force Base,USAF,Plattsburgh,NY	day and night helo ops,terrain flight,night vision goggles training,and mountain area landing training
LAR10064	Dallas,TX	Operations/MAG-41,4th MAW	I R T	301 TFW,Carswell Air Force Base,TX for Falcon Range	strafing,bombing with inert ordnance,training with tactical Zuni targets,vehicle convoys,and manned targets with scoring systems
LAR10063	Dallas,TX	Operations/MAG-41,4th MAW	I R T	NAS Dallas (Brownwood MOA/ATCCA)	subsonic air-to-air and all-weather intercepts
LAR10060	Dam Neck	Training/MACS-24,4th MAW	I R T	Fleet Combat Training Center,Damneck,Virginia Beach,VA	full training requirements for M16,.45-cal,and 12-gauge shotgun firearms
LAR10157	Danville,IL	Operations,I&I Staff/Danville,IL	I R T	Commanding Officer,Naval Weapons Support Center, Crane,IN 47522	vegetated area for squad,platoon,and company ops utilizing land navigation to the fullest
LAR10139	Danville,IL	Operations,I&I Staff,Co G,3d Bn,24th Mar/Danville,IL	I R T	Facility Manager,Building 384 ARFTA,Edinburg, IN 46124	area to perform company-sized ops;requalification and company live firing
LAR10138	Danville,IL	Operations,I&I Staff/Danville,IL	I R T	Inter-State Water Company,322 N. Gilbert Street, Danville,IL 61832	training area to perform squad- and platoon-sized ops
LAR10191	Flint,MI	I&I/Flint,MI	I R T	Camp Grayling,MI and Fort Custer,MI	provides for range and maneuver area use
LAR10197	Folsom,PA	10th Bulk Fuel Co (-),6th Engr Spt Bn, 4th FSSG/Folsom,PA	I R T	Fort Dix,Fort Indiantown Gap,NAS Lakehurst	no official agreement;none anticipated
LAR10151	Garden City,NJ	Co D,Co E,Co F,2d Bn,25th Mar/Garden City,NJ	I R T	Fort Dix,NJ	training ranges/materials;storage of Class V(W) training material
LAR10152	Garden City,NJ	Co D,Co E,Co F,2d Bn,25th Mar/Garden City,NJ	I R T	Camp Smith,Peekskill,NY	weekend billeting (open barracks),mess halls,classroom, maneuver areas,live fire ranges,heho ops area,obstacle/ physical therapy courses,and 365-day availability
LAR10113	Grand Rapids,MI	Training,Co A,1st Bn,24th Mar	I R T	Fort Custer Training Center,16850 East M-98, MI 49012	rifle/pistol requalification;maneuver area (blanks only)
LAR10114	Grand Rapids,MI	Training,Co A,1st Bn,24th Mar	I R T	Commander,Camp Grayling,Grayling,MI 49738	maneuver area (for blanks and live fire);all weapons organic to the rifle company may be fired
LAR10066	Green Bay,WI	S-3/WES-47 (-),MWSG-47,4th MAW	I R T	U.S. Army,Fort McCoy,Sparta,WI	Infantry/CSS field exercises;cold weather training;land navigation training
LAR10199	Greenville,SC	Ammo Co,4th Sup Bn,4th FSSG,4th MarDiv/ Greenville,SC	I R T	Fort Gordon,GA	no agreement;training supported upon request
LAR10200	Greenville,SC	Ammo Co,4th Sup Bn,4th FSSG,4th MarDiv/ Greenville,SC	I R T	Pisgah National Forest	satisfies requirement for a maneuver area and a field skill training area
LAR10198	Greenville,SC	Ammo Co,4th Sup Bn,4th FSSG,4th MarDiv/ Greenville,SC	I R T	Parris Island,SC	used for M16 and .45-cal requalification
LAR10158	Harrisburg,PA	I&I,Co E,2d Bn,25th Mar/Harrisburg,PA	I R T	Commander,Fort Indiantown Gap,Annville,PA 17003-5011	NA
LAR10164	Honolulu, HI	I&I,4th Force Recon Co	I R T	U.S. Army Range Controllers,Schofield Barracks,HI	coordinate multi-service user requests and provide support as available
LAR10196	Jackson,MS	Btry C,1st Bn,14th Mar/Jackson,MS	I R T	Camp Shelby,Jackson,MS	

LAR10170	Jacksonville,FL	Co B (-),4th AAV Bn	I R T	Camp Blanding,FL	25-mm M60 machine gun range,.38- and .45-cal pistol range, 40-mm M203 range,.50-cal machine gun range,smoke launcher range,M16 known distance range
LAR10140	Johnson City,TN	I&I,Training,Co H,3d Bn,24th Mar	I R T	Fort Jackson,SC	company fire and maneuver,M60 machine gun fire,40-mm (M203) fire,LAW,hand grenades (fragmentation),60-mm mortar,and M16 fire on pop-up targets
LAR10195	Joliet,IL	Btry E,2d Bn,14th Mar,4th MarDiv/Joliet,IL	I R T	Fort McCoy,WI	currently no agreement
LA010034	Kaneohe	I&I/4th Force Recon Co	I T	U.S. Army,Schofield Barracks	coordinate multiservice user requests and provide needed support if available
LAR10106	Kansas City,MO	SVC Co (-) H&S Bn 4th FSSG	I R T	DCS Operations,ATZL-GOP-OP,Fort Leavenworth,KS	annual pistol requalification,M16A2 and shotgun familiarization firing,and weapons zeroing
LAR10105	Kansas City,MO	SVC Co (-) H&S Bn 4th FSSG	I R T	442 Combat Support Group,U.S. Air Force Reserve, Richards Gebaur Air Force Base,MO	annual pistol requalification training
LAR10104	Kansas City,MO	SVC Co (-) H&S Bn 4th FSSG	I R T	Reserve Support Center,1st Infantry Division,Fort Riley,KS	annual rifle requalification training
LAR10168	Knoxville,TN	Co D,4th Cbt Engr Bn/Knoxville,TN	I R T	Oak Ridge Sportsmans Club,P.O. Box 198,Oak Ridge, TN	provides for known distance requalification and familiarization firing
LAR10086	Lathrop,CA	Co B,4th Land Spt Bn,4th FSSG,4th MarDiv/Lathrop,CA	I R T	Marine Barracks, Naval Support Activity, Mare Island,Vallejo,CA 94592-5022	rifle qualification and familiarization firing and includes table of organization equipment and crew-served weapons
LA010025	Lejeune	S-3/2d Force Recon Co,2d FSSG	I T	Park Authorities,Pisgah National Forest	mountaineering (rappelling, climbing)
LA010026	Lejeune	S-3/2d Force Recon Co,2d FSSG	I T	NAS,Key West,FL	tower training for submarine ops,insert/extract techniques training, and maritime training
LA010027	Lejeune	S-3/2d Force Recon Co,2d FSSG	I T	NAS Roosevelt Roads,PR	maritime amphib ops,long range communications,insert/extract techniques,close air support,and operations in semi-tropical environment
LA010052	Lejeune	S-3/2d Force Recon Co,2d FSSG	I T	South Florida Scuba School,Key West,FL via JFK USFMC,Fort Bragg,NC,NAS,Key West,FL,and Coast Guard Station,Key West,FL	training in SSN lock-out/lock-in mandatory preparation of SSN ops
LA010053	Lejeune	S-3/2d Tank Bn,2d MarDiv	I T	Fort Pickett,VA	tank firing ranges and maneuver areas
LAR10142	Little Creek,VA	I&I Staff,Co A (-),4th AAV Bn,4th MarDiv	I R T	NAB,Little Creek,VA	beach front for amphib ops
LAR10194	Lubbock,TX	I&I Staff,5th and 6th Truck Plat/Lubbock,TX	I R T	Fort Hood,TX live fire ranges (contact through Director of Reserve Component Support (DRSC))	supports annual rifle requalification
LAR10176	Miami,FL	AT (TOW) Co,8th Tk Bn	I R T	Camp Blanding	rifle and pistol ranges for USMCR requalification
LAR10201	Minneapolis,MN	Training,Det A,MMSG-47/Minneapolis,MN	I R T	University of Minnesota,Rosemount Research Facility	combat service support,infantry tactics,and equipment (motor transport and engineer) training
LAR10202	Minneapolis,MN	Training,Det A,MMSG-47/Minneapolis,MN	I R T	Minnesota National Guard,Camp Ripley,MN	combat service support and infantry tactics training,rifle and pistol range requalification,and crew-served weapons training

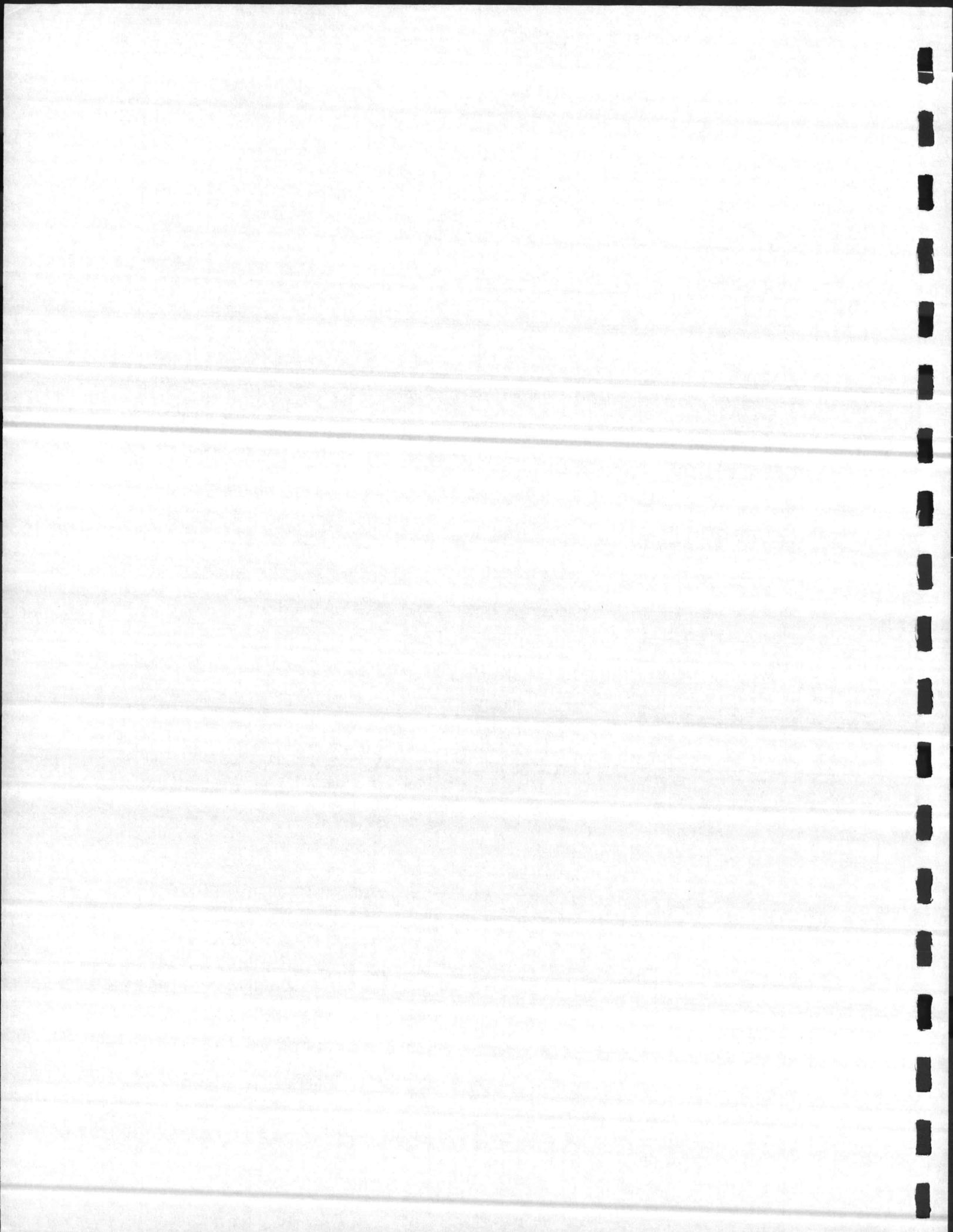
LAR10179	Montgomery, AL	Training Office, Co H, 3d Bn, 23d Mar	I R T	Reserve Components, Army Infantry Center, Fort Benning, GA	use of ranges of all types provided they are not being used by regular Army units
LAR10135	Nashville, TN	Training, I&I Staff, Co I, 3d Bn, 24th Mar	I R T	Commander, 101st Airborne Division, Air Assault, Fort Campbell, Fort Campbell, KY, and Catoosa Area Center, Tunnel Hill, GA	no written agreement with either command
LAR10125	New Haven, CT	3d Truck Co, 6th Maint Bn, 4th FSSG/New Haven, CT	I R T	U.S. Army Corps of Engineers Field Office, Colebrook, CT	bivouac areas and infantry tactics
LAR10124	New Haven, CT	3d Truck Co, 6th Maint Bn, 4th FSSG/New Haven, CT	I R T	Connecticut Army National Guard, Hartford, CT	bivouac areas and infantry tactics
LAR10174	New Orleans, LA	I&I, Training, 3d Bn, 23d Mar	I R T	Camp Shelby, MS	
LAR10101	New Orleans, LA	CG, 4th MarDiv/New Orleans, LA	I R T	Red Castle Gun Club, John Zink Ranch, Sand Spring, OK	requalification in accordance with MCO 3574.2G
LAR10062	Norfolk, VA	Operations/HMM-774, MAG-46, Det A, 4th MAW	I R T	Department of Defense, Camp Peary, VA	night vision goggle training in a light restricted airfield
LAR10189	Oklahoma City, OK	Btry F, 2d Bn, 14th Mar, 4th MarDiv/Oklahoma City, OK	I R T	Fort Sill, OK	provides use of training ranges
LA010078	Pendleton	3d Bn, 7th Mar/1st MarDiv	I T	3d Bn, 7th Mar requests to send companies to use the maneuver areas on San Clemente Island.	conduct heliborne assault and subsequent operations ashore
LAR10068	Philadelphia, PA	Training Office/MWSG-47, Det B, 4th MAW	I R T	Fort Indiantown Gap, PA	use of rifle range and billeting for personnel required to fire
LAR10067	Philadelphia, PA	Training Office/MWSG-47, Det B, 4th MAW	I R T	U.S. Army Base, Fort Dix, NJ	use of rifle ranges and motor transport driving ranges
LAR10184	Philadelphia, PA	Training, Wpns Co, 3d Bn, 25th Mar/Philadelphia, PA	I R T	State of Ohio, Ravenna Army Ammunition Plant (RVAAD)	dismounted maneuvering, partolling, camouflage and concealment training, and tracked vehicles
LAR10185	Philadelphia, PA	Training, Wpns Co, 3d Bn, 25th Mar/Philadelphia, PA	I R T	Camp Perry, OH	firing small-bore weapons for familiarization and requalification
LAR10187	Philadelphia, PA	Training, Wpns Co, 3d Bn, 25th Mar/Philadelphia, PA	I R T	Indiantown Gap, PA	one-day live fire exercise involving 81-mm mortars, Dragons, and small-bore
LAR10183	Philadelphia, PA	Training, Wpns Co, 3d Bn, 25th Mar/Philadelphia, PA	I R T	Michigan National Guard, Camp Grayling, MI 49739-0001	ranges for M60- machine gun, M203, M16, 81-mm mortar, M47 Dragon
LAR10186	Philadelphia, PA	Training, Wpns Co, 3d Bn, 25th Mar/Philadelphia, PA	I R T	Camp Atterbury, IN	live fire ranges for 81-mm mortars, M47 Dragons, M60 machine guns, M203 grenade launchers, and small-bore weapons
LAR10171	Port Hueneme, CA	Wpns Co, 2d Bn, 23d Mar	I R T	Camp Roberts, CA	enhances MOS qualification and infantry tactics
LAR10173	Port Hueneme, CA	Wpns Co, 2d Bn, 23d Mar	I R T	Los Padres National Forest, CA	enhances MILES training and training in heavily wooded, mountainous terrain
LAR10172	Port Hueneme, CA	Wpns Co, 2d Bn, 23d Mar	I R T	Hunter Legget, CA	enhances MOS qualification and infantry tactics
LAR10134	Portland, OR	I&I Staff, 6th Engr Spt Bn, 4th FSSG	I R T	Oregon National Guard Facility, Camp Withycombe, OR	live fire for small arms qualification (M16A2 and pistol)
LAR10133	Portland, OR	I&I Staff, 6th Engr Spt Bn, 4th FSSG	I R T	U.S. Army, Fort Lewis, VA	company defensive tactics training, NBC training, small arms qualification and familiarization firing, machine gun training, and demolitions training
LAR10118	Providence, RI	Transp Co, 6th MT Bn, 4th FSSG/Providence, RI	I R T	U.S. Army Corps of Engineers Field Office, Colebrook, CT	provides bivouacs and convoy defense training

LAR10088	Raleigh,NC	Training Office,SMU/Raleigh,NC	I	R	T	North Carolina Army Reserve National Guard	training in perimeter defense, live firing, and simulation maneuvers
LAR10089	Raleigh,NC	Training Office,SMU/Raleigh,NC	I	R	T	North Carolina Army Reserve National Guard	training in perimeter defense, live firing, and simulation maneuvers
LAR10111	Red Bank,NJ	H&S Co,6th MT Bn	I	R	T	U.S. Army, Fort Dix, NJ 08640	provides requalification and training areas
LAR10112	Red Bank,NJ	H&S Co,6th MT Bn	I	R	T	Naval Weapons Station Earle, Colts Neck, NJ	range for requalification
LAR10192	Sacramento,CA	I&I Staff,2d Auto Contact Maint Plat/ Sacramento,CA	I	R	T	Marine Barracks, Naval Base, Mare Island, CA	provide known distance/B Mod rifle range and pistol ranges for annual requirements
LAR10193	Sacramento,CA	I&I Staff,2d Auto Contact Maint Plat/ Sacramento,CA	I	R	T	California National Guard, Camp Roberts, CA	provide known distance/B Mod rifle range, pistol requalification range, and a maneuver area for annual requirements
LAR10132	Salem,OR	I&I Staff,6th Engr Spt Bn,4th FSSG	I	R	T	U.S. Army Reserve, Camp Bonneville, WA	company defensive tactics training, small arms familiarization fire, and demolitions training
LAR10092	San Diego,CA	I&I Staff,H&S Co,4th Med Bn/San Diego,CA	I	R	T	MCB, Camp Pendleton, CA	training and familiarization firing for support personnel
LAR10159	San Diego,CA	I&I,Co A,4th Tank Bn/San Diego,CA	I	R	T	MCAGCC, Twenty Nine Palms, CA	tank gunnery and familiarization fire for support personnel; CAX,ATD, and higher level exercises
LAR10161	San Diego,CA	I&I,Co A,4th Tank Bn/San Diego,CA	I	R	T	NAS, Miramar, CA	allows for requalification firing of the M16A2 service rifle
LAR10162	San Diego,CA	I&I,Co A,4th Tank Bn/San Diego,CA	I	R	T	San Diego County Sheriffs Department	allows use of Department's pistol range for requalification and familiarization firing
LAR10157	San Diego,CA	I&I,H&S Co,4th Tank Bn/San Diego,CA	I	R	T	NAS, Miramar, CA	allows for requalification firing of the M16A2 service rifle
LAR10155	San Diego,CA	I&I,H&S Co,4th Tank Bn/San Diego,CA	I	R	T	MCB, Camp Pendleton, CA	tank gunnery and familiarization fire for support personnel
LAR10156	San Diego,CA	I&I,H&S Co,4th Tank Bn/San Diego,CA	I	R	T	NAS, Miramar, CA	supports tactics training and support/service support field training
LAR10154	San Diego,CA	I&I,H&S Co,4th Tank Bn/San Diego,CA	I	R	T	MCAGCC, Twenty Nine Palms, CA	tank gunnery and familiarization fire for support personnel; CAX,ATD, and higher level exercises
LAR10097	San Diego,CA	I&I Staff,A Co,4th Med Bn/San Diego,CA	I	R	T	MCB, Camp Pendleton, CA	training and familiarization firing for support personnel
LAR10099	San Diego,CA	I&I Staff,A Co,4th Med Bn/San Diego,CA	I	R	T	NAS, Miramar, CA	requalification firing of the M16A2 service rifle
LAR10096	San Diego,CA	I&I Staff,A Co,4th Med Bn/San Diego,CA	I	R	T	MCAGCC, 29 Palms, CA	training and familiarization firing for support personnel; allows for CAX,ATD, and higher level exercises
LAR10098	San Diego,CA	I&I Staff,A Co,4th Med Bn/San Diego,CA	I	R	T	NAS, Miramar, CA	tactics training and support/service support field training
LAR10093	San Diego,CA	I&I Staff,H&S Co,4th Med Bn/San Diego,CA	I	R	T	NAS, Miramar, CA	tactics training and support/service support field training
LAR10094	San Diego,CA	I&I Staff,H&S Co,4th Med Bn/San Diego,CA	I	R	T	NAS, Miramar, CA	requalification firing of the M16A2 service rifle
LAR10095	San Diego,CA	I&I Staff,H&S Co,4th Med Bn/San Diego,CA	I	R	T	San Diego County Sheriffs Department	requalification and familiarization firing
LAR10100	San Diego,CA	I&I Staff,H&S Co,4th Med Bn/San Diego,CA	I	R	T	San Diego County Sheriffs Department	requalification and familiarization firing
LAR10091	San Diego,CA	I&I Staff,H&S Co,4th Med Bn/San Diego,CA	I	R	T	MCAGCC, 29 Palms, CA	training and familiarization firing for support personnel; CAX,ATD, and higher level exercises
LAR10160	San Diego,CA	I&I,Co A,4th Tank Bn/San Diego,CA	I	R	T	MCB, Camp Pendleton, CA	tank gunnery and familiarization fire for support personnel
LA010018	Smith	Camp Smith Training Facility	I	F		U.S. Army and U.S. Army National Guard	ranges provided as needed
LA010014	Smith	Camp Smith Training Facility	I	F		U.S. Navy	small arms training
LA010015	Smith	Camp Smith Training Facility	I	F		Honolulu Police Department	classroom and open areas for police type training
LA010017	Smith	Camp Smith Training Facility	I	F		National Rifle Association Civilian Rifle and Pistol Clubs	provide ranges only
LA010020	Smith	Camp Smith Training Facility	I	F		Marine Barracks Hawaii	marksmanship training for all leeward based Oahu Marines
LA010019	Smith	Camp Smith Training Facility	I	F		1st Marine Amphibious Brigade	marksmanship training
LA010016	Smith	Camp Smith Training Facility	I	F		Hawaii Department of Land and Natural Resources, Law Enforcement Division	provide ranges only

LA010036	Smith	Operations/Marine Barracks,HI	I T	Submarine Base,Pearl Harbor,HI for 2-point Indoor Pistol Range	familiarization firing of .45-cal pistol
LA010035	Smith	Operations/Marine Barracks,HI	I T	Naval Station,Pearl Harbor for Red Hill Pistol Range	familiarization firing and pistol team practice for small arms
LAR10116	Toledo,OH	I&I,Wpns Co,1st Bn,24th Mar	I R T	Camp Atterbury,Indiana Army National Guard,IN	range and maneuver area use
LAR10117	Toledo,OH	I&I,Wpns Co,1st Bn,24th Mar	I R T	Camp Perry,Ohio National Guard,OH	range and maneuver area use
LAR10115	Toledo,OH	I&I,Wpns Co,1st Bn,24th Mar	I R T	Camp Grayling,Michigan Army National Guard, Grayling,MI	range and maneuver area use
LAR10123	Waukegan,IL	I&I Staff,Wpns Co,2d Bn,24th Mar	I R T	Commander,57th FA Brigade,South Milwaukee,WI 52172	rifle requalification firing
LAR10122	Waukegan,IL	I&I Staff,Wpns Co,2d Bn,24th Mar	I R T	Commander,Fort Custer,Augusta,MI 49012	rifle requalification firing
LAR10119	Waukegan,IL	I&I Staff,Wpns Co,2d Bn,24th Mar	I R T	Commander,Camp Atterbury,Reserve Forces Training Area,Edinburgh,IN 46124	provides live fire exercise of all weapons in unit
LAR10120	Waukegan,IL	I&I Staff,Wpns Co,2d Bn,24th Mar	I R T	Commander,Fort McCoy,Sparta,WI 54564	ranges of all types;maneuver areas for battalion-sized units
LAR10166	West Palm Beach,FL	4th ANGLICO/West Palm Beach,FL	I R T	Camp Blanding Rifle Range	provides for M16 biannual rifle requalification
LAR10167	West Palm Beach,FL	4th ANGLICO/West Palm Beach,FL	I R T	Avon Park Bombing Range,Avon Park,FL	close air support range;artillery live fire range;maneuver area adjacent to impact area for infantry tactics and parachute training
LAR10150	West Trenton,NJ	Btry G,3d Bn,14th Mar	I R T	Director of Range Control,Fort Dix,NJ	pistol and rifle familiarization and requalification fire, MOS training with firing points,and gas chamber training
LAR10110	Wichita,KS	Elect Maint Co,4th Maint Bn,4th FSSG/Wichita,KS	I R T	Hq,89th U.S. Army Reserve Command,3130 George Washington Boulevard,Wichita,KS 67210-1504	requalification firing with the .45-cal pistol and familiarization firing with the M16A1 rifle using subcaliber ammunition
LAR10108	Wichita,KS	Engr Maint/Rep Plat,4th Maint Bn,4th FSSG/Wichita,KS	I R T	Hq,89th U.S. Army Reserve Command,3130 George Washington Boulevard,Wichita,KS 67210-1504	requalification firing with the .45-cal pistol and familiarization firing with the M16A1 rifle using subcaliber ammunition
LAR10071	Willow Grove,PA	Operations/MAG-49,4th MAW	I R T	FACSFAC,Jacksonville,FL,CINCLANTFLT	air-to-air restricted airspace;air-to-grd target ranges
LAR10072	Willow Grove,PA	Operations/MAG-49,4th MAW	I R T	FACSFAC,VACAPES,CINCLANTFLT	air-to-air restricted airspace; air-to-grd target ranges
LAR10070	Willow Grove,PA	Operations/MAG-49,4th MAW	I R T	Fort Indiantown Gap,Department of the Army, Annville,PA	low-level,high-speed training routes and air-to-grd range
LAR10061	Wyoming,PA	S-3,Training/Hqs Sqd-471,Det C,4th MAW	I R T	Fort Indiantown Gap,Annville,PA 17003	annual marksmanship qualification
LA010030	Yuma	Range Control/SOMS	I T	CO,Fleet Area Control and Surveillance Facility, NAS,North Island,San Diego,CA	the scheduling and maintenance activity is MCAS,Yuma,AZ
LA010031	Yuma	Range Control/SOMS	I T	CG,Luke Air Force Base,Glendale,AZ 85309, AV 853-2202	flying area, simulated targets, TACTS

APPENDIX E

STATEMENT OF WORK/LATAR DATA BASE CROSS-REFERENCE



STATEMENT OF WORK/LATAR DATA BASE CROSS-REFERENCE

STATEMENT OF WORK PARAGRAPH		LATAR DATA BASE
2.2.4.1	Units and Weapons Data 1990-2004	PUBS Module
2.2.4.2	Basing of Programmed Force	PUBS Module
2.2.4.3	Range and Maneuver Area Requirements	Requirements Module
2.2.4.4	Deficiencies	Deficiency Function
2.2.4.5	Correction of Deficiencies	Fix Evaluator Function
3.2.2	Active Duty and Reserve Components	PUBSA, PUBSR Submodules
3.2.3	Formal Schools	PUBSS Submodule
3.2.4	CONUS and Overseas Versions	CONUS Filled, Overseas Empty
3.2.6	Other Service Facilities	ISV File in Resources Module
5.2.1.1.2	Site-unique Factors	Resources Module
5.2.1.1.6	Consider Cost, Manpower, etc.	Resources Module
5.2.3.1	Generic LFRTS, UTMAS	Standards Module
5.2.3.2	Site-unique Standards, Requirements, Factors	SUS, SUR Files in Resources Module
5.2.3.3	Compare Training Requirements	Shortfall Function
5.2.3.4	FYDP as Frame of Reference	FYDP Group
5.2.3.5	Data for 1988-2004	17 Yearly Subgroups
5.2.3.6	Inventories	Inventory Function
5.2.3.7	Analysis of Training Requirements	Shortfall and Solutions Function
5.2.3.8.1	Land Area	SHP, SAF Files in Resources Module
5.2.3.8.2	Preferred Terrain	TER, SOI, VEG Files in Resources Module
5.2.3.8.3	Special Soil Requirements	SOI File in Resources Module
5.2.3.8.4	Day Versus Night Training	CAP, OTH Files in Resources Module
5.2.3.8.5	Special Atmospheric Requirements	OTH Files in Resources Module
5.2.3.8.6	Water Sources	FAC File in Resources Module
5.2.3.8.7	Duration of Training Cycle	CAP File in Resources Module
5.2.3.8.8	Vegetation Requirements	VEG File in Resources Module
5.2.3.8.9	Other Natural Resources Requirements	SOI, TER, VEG, OTH Files in Resources Module

STATEMENT OF WORK/LATAR DATA BASE CROSS-REFERENCE

STATEMENT OF WORK PARAGRAPH

LATAR DATA BASE

2.2.4.1	Units and Weapons Data 1990-2004	PUBS Module
2.2.4.2	Basing of Programmed Force	PUBS Module
2.2.4.3	Range and Maneuver Area Requirements	Requirements Module
2.2.4.4	Deficiencies	Deficiency Function
2.2.4.5	Correction of Deficiencies	Fix Evaluator Function
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5.2.1.1.6	Consider Cost, Manpower, etc.	Resources Module
5.2.3.1	Generic LFRTS, UTMAS	Standards Module
5.2.3.2	Site-unique Standards, Requirements, Factors	SUS, SUR Files in Resources Module
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5.2.3.8.6	Water Sources	FAC File in Resources Module
5.2.3.8.7	Duration of Training Cycle	CAP File in Resources Module
5.2.3.8.8	Vegetation Requirements	VEG File in Resources Module
5.2.3.8.9	Other Natural Resources Requirements	SOI, TER, VEG, OTH Files in Resources Module

STATEMENT OF WORK PARAGRAPH

LATAR DATA BASE

5.2.3.8.10 Special Temperature Requirements
5.2.3.8.11 Airspace Requirements
5.2.3.8.12 Access Route Requirements
5.2.3.8.13 Supply
5.2.3.8.14 Communications
5.2.3.8.15 Shape
5.3.1.1 Data Collected in Phase I

5.4.1 Shortfalls 1988-2004
5.4.2 Shortfalls Current
5.4.3 Alternatives

Technical Proposal, Paragraph 3.e., Chapter II,
Reports

Technical Proposal, Paragraph 3.e., Chapter II,
Other Service Facilities

IPR I Inter Service Support

IPR II Formal Schools

IPR II Base/Station Requirements

IPR II Translate CASAT Training Data

OTH File in Resources Module
ACC, SHP Files in Resources Module
ACC File in Resources Module
SUP File in Resources Module
FAC, TEL Files in Resources Module
SHP File in Resources Module
Standards, Requirements, Resources
Modules
Shortfall Function
Shortfall Function
Alternatives Module

Inventory, Query, Shortfall,
Deficiency, Solutions, and
Evaluation Functions Reports

ISV File

ISV File

PUBSS Submodule

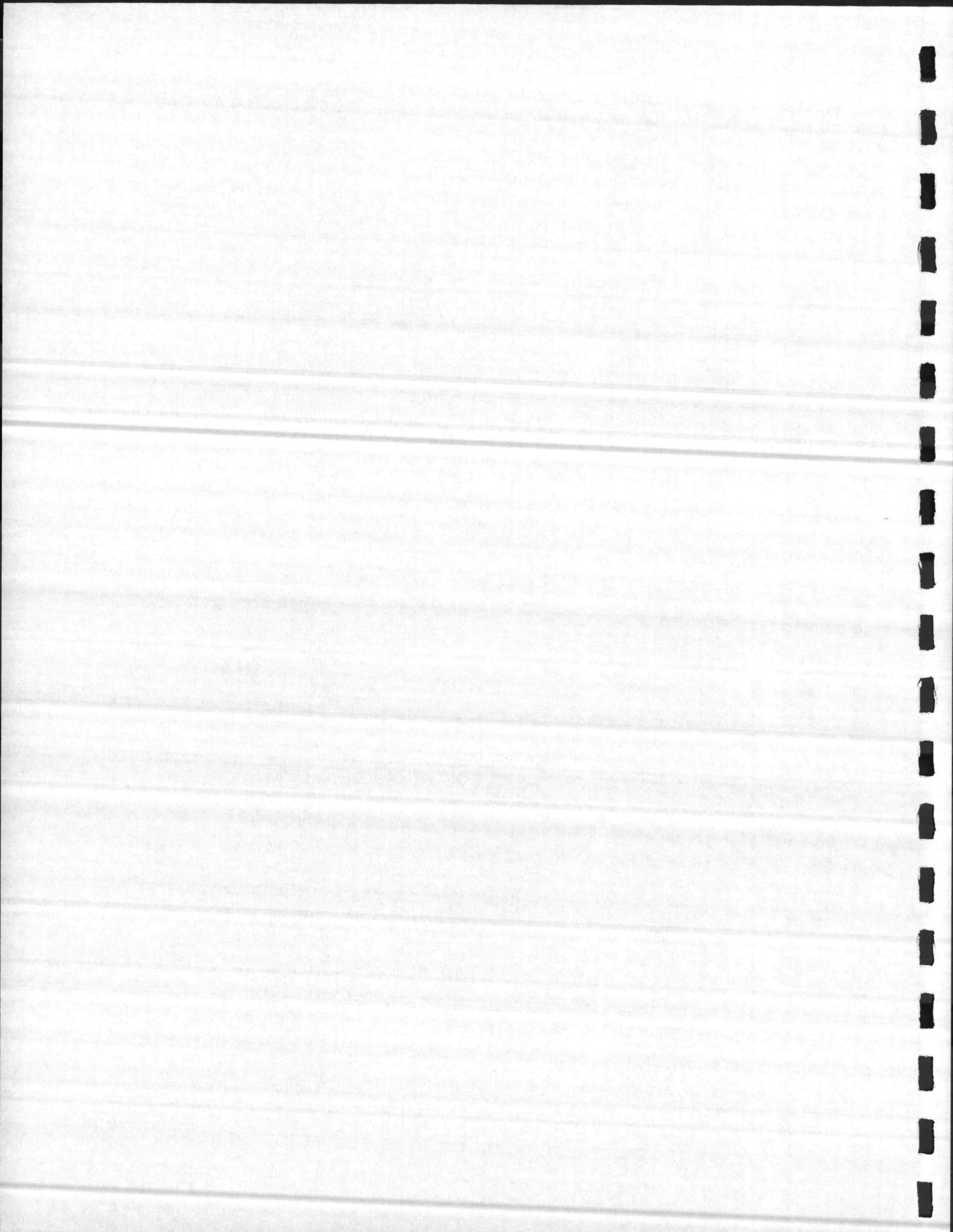
PUBSA Submodule

LATAR Data Maintenance

The Computer Assisted System Approach to Training (CASAT) system does not presently contain all the data elements needed to support the Requirements Module file data elements. CASAT is planned to incorporate information from Marine Aviation Training Management System (MATMS) and the Marine Corps Combat Readiness Evaluation System (MCCRES) which will support the LATAR Data Base data element requirements. If this portion of CASAT is not ready when the LATAR Data Base is developed, the training requirements data collected during Phase I of the LATAR Study, when adjusted and validated by the Training Division, Headquarters, U.S. Marine Corps, will be used for the initial load of the Requirements Module.



APPENDIX F
DATA BASE STRUCTURE



LAND AND TRAINING AREA REQUIREMENTS (LATAR) (CONUS)

MODULES

SUBMODULES

GROUPS

FILES

records

data values

FILE NAME

STANDARDS

LFRTS (Live Fire Range and Training Standards)

1988-1992 (FYDP Years - standards for programmed range facilities)

LFRF#RNG RANGE (index by range type to records in files below)

LFRF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)

LFRF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)

LFRF#DOC DOCUMENTATION (source of standard, requirement, or resource)

LFRF#DWN DOWNTIME (profile)

LFRF#FAC FACILITIES (number of control towers, communications systems, etc.)

LFRF#OTH OTHER CHARACTERISTICS (other physical data)

LFRF#SAF SAFETY (buffer description)

LFRF#SHP SHAPE (facility size and shape description)

LFRF#SOI SOIL (profile)

LFRF#SUP SUPPLY (distance to nearest POL, ammunition, rations)

LFRF#TGT TARGETS (types available or required)

LFRF#TEL TELEMETRY (instrumentation, scoring, reconstruction, etc.)

LFRF#TER TERRAIN (profile)

LFRF#VEG VEGETATION (profile)

LFRF#WPN WEAPONS (types to be trained or supported)

1993-2004 (Out-Years)

LFRO#...

[Structure is the Same as FYDP Years Above]

UTMAS (Unit Training and Maneuver Area Standards)

1988-1992 (FYDP Years)

UTMF#MTA MANEUVER AREA (index by maneuver area type to files below)

UTMF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)

UTMF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)

UTMF#DOC DOCUMENTATION (source of standard, requirement, or resource)

UTMF#DWN DOWNTIME (profile)

UTMF#FAC FACILITIES (number of control towers, communications systems, etc.)

UTMF#OTH OTHER CHARACTERISTICS (other physical data)

UTMF#SAF SAFETY (buffer description)

UTMF#SHP SHAPE (facility size and shape description)

UTMF#SOI SOIL (profile)

UTMF#SUP SUPPLY (distance to nearest POL, ammunition, rations)

UTMF#TGT TARGETS (types available or required)

UTMF#TEL TELEMETRY (instrumentation, scoring, reconstruction, etc.)

UTMF#TER TERRAIN (profile)
UTMF#VEG VEGETATION (profile)
UTMF#WPN WEAPONS (types to be trained or supported)
1993-2004 (Out-Years)
UTMO#... [Structure is the Same as FYDP Years Above]

PUBS

PUBSA (Programmed Units, Bases and Stations - Active Duty)
1988-1992 (FYDP Years)
PBAF#LOC LOCATION (index by location to UNITS)
PBAF#UNT UNITS (index by type to WEAPONS, DOCUMENTATION)
PBAF#WPN WEAPONS (type weapons and number)
PBAF#DOC DOCUMENTATION (organizational and stationing documents)
1993-2004 (Out-Years)
PBAO#... [Structure is the Same as FYDP Years Above]

PUBSR (Programmed Units, Bases and Stations - Reserve)

1988-1992 (FYDP Years)
PBRF#LOC LOCATION (index by location to UNITS)
PBRF#UNT UNITS (index by type to WEAPONS, DOCUMENTATION)
PBRF#WPN WEAPONS (type weapons and number)
PBRF#DOC DOCUMENTATION (organizational and stationing documents)
1993-2004 (Out-Years)
PBRO#... [Structure is the Same as FYDP Years Above]

PUBSS (Programmed Units, Bases and Stations - Forman Schools)

1988-1992 (FYDP Years)
PBSF#LOC LOCATION (index by location to units)
PBSF#UNT UNITS (index by type to weapons, documentation)
PBSF#WPN WEAPONS (type weapons and number)
PBSF#DOC DOCUMENTATION (organizational and stationing documents)
1993-2004 (Out-Years)
PBSO#... [Structure is the Same as FYDP Years Above]

REQUIREMENTS

RNGREQ (Range Requirements)
1988-1992 (FYDP Years)
RGRF#LOC LOCATION (index by location to records in UNT)
RGRF#UNT UNITS (index by type to RANGE)
RGRF#RNG RANGE (index by range type to records in files below)
RGRF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)
RGRF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
RGRF#DOC DOCUMENTATION (source of standard or requirement)

RGRF#FAC FACILITIES (number of control towers, communications systems, etc.)
 RGRF#ISV INTERSERVICE AGREEMENTS (other Service requirements for USMC training facilities)
 RGRF#OTH OTHER CHARACTERISTICS (other physical data)
 RGRF#SAF SAFETY (buffer description)
 RGRF#SHP SHAPE (facility size and shape description)
 RGRF#SOI SOIL (profile)
 RGRF#SUP SUPPLY (distance to nearest POL, ammunition, rations)
 RGRF#TGT TARGETS (types available or required)
 RGRF#TEL TELEMETRY (instrumentation, scoring, reconstruction, etc.)
 RGRF#TER TERRAIN (profile)
 RGRF#VEG VEGETATION (profile)
 RGRF#WPN WEAPONS (types to be trained or supported)
 1993-2004 (Out-Years)

RGRO#...

[Structure is the Same as FYDP Years Above]

 MAREQ (Maneuver Area Requirements)

1988-1992 (FYDP Years)

MARF#LOC LOCATION (index by location to records in UNITS)
 MARF#LOC UNITS (index to type to MANEUVER AREA)
 MARF#MTA MANEUVER AREA (index by maneuver area type to records in files below)
 MARF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)
 MARF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
 MARF#DOC DOCUMENTATION (source of standard or requirement)
 MARF#FAC FACILITIES (number of control towers, communications systems, etc.)
 MARF#ISV INTERSERVICE AGREEMENTS (other Service requirements for USMC training facilities)
 MARF#OTH OTHER CHARACTERISTICS (other physical data)
 MARF#SAF SAFETY (buffer description)
 MARF#SHP SHAPE (facility size and shape description)
 MARF#SOI SOIL (profile)
 MARF#SUP SUPPLY (distance to nearest POL, ammunition, rations)
 MARF#TGT TARGETS (types available or required)
 MARF#TEL TELEMETRY (instrumentation, scoring, reconstruction, etc.)
 MARF#TER TERRAIN (profile)
 MARF#VEG VEGETATION (profile)
 MARF#WPN WEAPONS (types to be trained or supported)
 1993-2004 (Out-Years)

MARO#...

[Structure is the Same as FYDP Years Above]

 TFRFQ (Training Facility Requirements)

1988-1992 (FYDP Years)

TFRF#LOC LOCATION (index by location to records in UNITS)
 TFRF#UNT UNITS (index by type to TRAINING FACILITY)
 TFRF#TFA TRAINING FACILITY (index by training facility type to records in files below)
 TFRF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)
 TFRF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
 TFRF#DOC DOCUMENTATION (source of standard or requirement)
 TFRF#FAC FACILITIES (number of control towers, communications systems, etc.)
 TFRF#ISV INTERSERVICE AGREEMENTS (other Service requirements for USMC training facilities)

TFRF#OTH OTHER CHARACTERISTICS (other physical data)
 TFRF#SAF SAFETY (buffer description)
 TFRF#SHP SHAPE (facility size and shape description)
 TFRF#SOI SOIL (profile)
 TFRF#SUP SUPPLY (distance to nearest POL, ammunition, rations)
 TFRF#TGT TARGETS (types available or required)
 TFRF#TEL TELEMETRY (instrumentation, scoring, reconstruction, etc.)
 TFRF#TER TERRAIN (profile)
 TFRF#VEG VEGETATION (profile)
 TFRF#WPN WEAPONS (types to be trained or supported)

1993-2004 (Out-Years)

TFRO#...

[Structure is the Same as FYDP Years Above]

 RESOURCES

RNGRES (Range Resources)

1988-1992 (FYDP Years)

RGSF#LOC LOCATION (index by location to records in RANGE)
 RGSF#RNG RANGE (index by range type to records in files below)
 RGSF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)
 RGSF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
 RGSF#CFT CONFLICTS (list of other facilities closed)
 RGSF#COR COORDINATES
 RGSF#DOC DOCUMENTATION (source of standard or requirement)
 RGSF#DWN DOWNTIME (profile)
 RGSF#FAC FACILITIES (number of control towers, communications systems, etc.)
 RGSF#ISV INTERSERVICE AGREEMENTS (other Service requirements for USMC training facilities)
 RGSF#OTH OTHER CHARACTERISTICS (other physical data)
 RGSF#SAF SAFETY (buffer description)
 RGSF#SHP SHAPE (facility size and shape description)
 RGSF#SOI SOIL (profile)
 RGSF#SUR SITE-UNIQUE REQUIREMENTS (list of user requirements)
 RGSF#SUS SITE-UNIQUE STANDARDS (list of waivers and exceptions)
 RGSF#SUP SUPPLY (distance to nearest POL, ammunition, rations)
 RGSF#TGT TARGETS (types available or required)
 RGSF#TEL TELEMETRY (instrumentation,scoring,reconstruction,etc.)
 RGSF#TER TERRAIN (profile)
 RGSF#VEG VEGETATION (profile)
 RGSF#WPN WEAPONS (types to be trained or supported)

1993-2004 (Out-Years)

RGSO#...

[Structure is the Same as FYDP Years Above]

 MARES (Maneuver Area Resources)

1988-1992 (FYDP Years)

MASF#LOC LOCATION (index by location to records in MANEUVER AREA)
 MASF#MTA MANEUVER AREA (index by maneuver area type to records in files below)
 MASF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)

MASF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
 MASF#CFT CONFLICTS (list of other facilities closed)
 MASF#COR COORDINATES
 MASF#DOC DOCUMENTATION (source of standard or requirement)
 MASF#DWN DOWNTIME (profile)
 MASF#FAC FACILITIES (number of control towers, communications systems, etc.)
 MASF#ISV INTERSERVICE AGREEMENTS (other Service requirements for USMC training facilities)
 MASF#OTH OTHER CHARACTERISTICS (other physical data)
 MASF#SAF SAFETY (buffer description)
 MASF#SHP SHAPE (facility size and shape description)
 MASF#SOI SOIL (profile)
 MASF#SUR SITE-UNIQUE REQUIREMENTS (list of user requirements)
 MASF#SUS SITE-UNIQUE STANDARDS (list of waivers and exceptions)
 MASF#SUP SUPPLY (distance to nearest POL, ammunition, rations)
 MASF#TGT TARGETS (types available or required)
 MASF#TEL TELEMETRY (instrumentation,scoring,reconstruction,etc.)
 MASF#TER TERRAIN (profile)
 MASF#VEG VEGETATION (profile)
 MASF#WPN WEAPONS (types to be trained or supported)
 1993-2004 (Out-Years)

MASO#...

[Structure is the Same as FYDP Years Above]

TFRES (Training Facility Resources)

1988-1992 (FYDP Years)

TFRES#LOC LOCATION (index by location to records in TRAINING FACILITY)
 TFRES#TFA TRAINING FACILITY (index by training facility type to records in files below)
 TFRES#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)
 TFRES#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
 TFRES#CFT CONFLICTS (list of other facilities closed)
 TFRES#COR COORDINATES
 TFRES#DOC DOCUMENTATION (source of standard or requirement)
 TFRES#DWN DOWNTIME (profile)
 TFRES#FAC FACILITIES (number of control towers, communications systems, etc.)
 TFRES#ISV INTERSERVICE AGREEMENTS (other Service requirements for USMC training facilities)
 TFRES#OTH OTHER CHARACTERISTICS (other physical data)
 TFRES#SAF SAFETY (buffer description)
 TFRES#SHP SHAPE (facility size and shape description)
 TFRES#SOI SOIL (profile)
 TFRES#SUR SITE-UNIQUE REQUIREMENTS (list of user requirements)
 TFRES#SUS SITE-UNIQUE STANDARDS (list of waivers and exceptions)
 TFRES#SUP SUPPLY (distance to nearest POL, ammunition, rations)
 TFRES#TGT TARGETS (types available or required)
 TFRES#TEL TELEMETRY (instrumentation,scoring,reconstruction,etc.)
 TFRES#TER TERRAIN (profile)
 TFRES#VEG VEGETATION (profile)
 TFRES#WPN WEAPONS (types to be trained or supported)
 1993-2004 (Out-Years)

TFRESO#...

[Structure is the Same as FYDP Years Above]

ALTERNATIVES

ALTRNG (Alternative Range Resources)
1988-1992 (FYDP Years)

ARGF#LOC LOCATION (index by location to records in RANGE)
ARGF#RNG RANGE (index by range type to records in files below)
ARGF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)
ARGF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
ARGF#CFT CONFLICTS (list of other facilities closed)
ARGF#COR COORDINATES
ARGF#DOC DOCUMENTATION (source of standard or requirement)
ARGF#DWN DOWNTIME (profile)
ARGF#FAC FACILITIES (number of control towers, communications systems, etc.)
ARGF#OTH OTHER CHARACTERISTICS (other physical data)
ARGF#SAF SAFETY (buffer description)
ARGF#SHP SHAPE (facility size and shape description)
ARGF#SOI SOIL (profile)
ARGF#SUR SITE-UNIQUE REQUIREMENTS (list of user requirements)
ARGF#SUS SITE-UNIQUE STANDARDS (list of waivers and exceptions)
ARGF#SUP SUPPLY (distance to nearest POL, ammunition, rations)
ARGF#TGT TARGETS (types available or required)
ARGF#TEL TELEMETRY (instrumentation, scoring, reconstruction, etc.)
ARGF#TER TERRAIN (profile)
ARGF#VEG VEGETATION (profile)
ARGF#WPN WEAPONS (types to be trained or supported)

1993-2004 (Out-Years)

ARGO#...

[Structure is the Same as FYDP Years Above]

ALTMAS (Alternative Maneuver Area Resources)
1988-1992 (FYDP Years)

AMAF#LOC LOCATION (index by location to records in MANEUVER AREA)
AMAF#MTA MANEUVER AREA (index by maneuver area type to records in files below)
AMAF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)
AMAF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
AMAF#CFT CONFLICTS (list of other facilities closed)
AMAF#COR COORDINATES
AMAF#DOC DOCUMENTATION (source of standard or requirement)
AMAF#DWN DOWNTIME (profile)
AMAF#FAC FACILITIES (number of control towers, communications systems, etc.)
AMAF#OTH OTHER CHARACTERISTICS (other physical data)
AMAF#SAF SAFETY (buffer description)
AMAF#SHP SHAPE (facility size and shape description)
AMAF#SOI SOIL (profile)
AMAF#SUR SITE-UNIQUE REQUIREMENTS (list of user requirements)
AMAF#SUS SITE-UNIQUE STANDARDS (list of waivers and exceptions)
AMAF#SUP SUPPLY (distance to nearest POL, ammunition, rations)
AMAF#TGT TARGETS (types available or required)
AMAF#TEL TELEMETRY (instrumentation, scoring, reconstruction, etc.)

AMAF#TER TERRAIN (profile)
AMAF#VEG VEGETATION (profile)
AMAF#WPN WEAPONS (types to be trained or supported)
1993-2004 (Out-Years)

AMAO#...

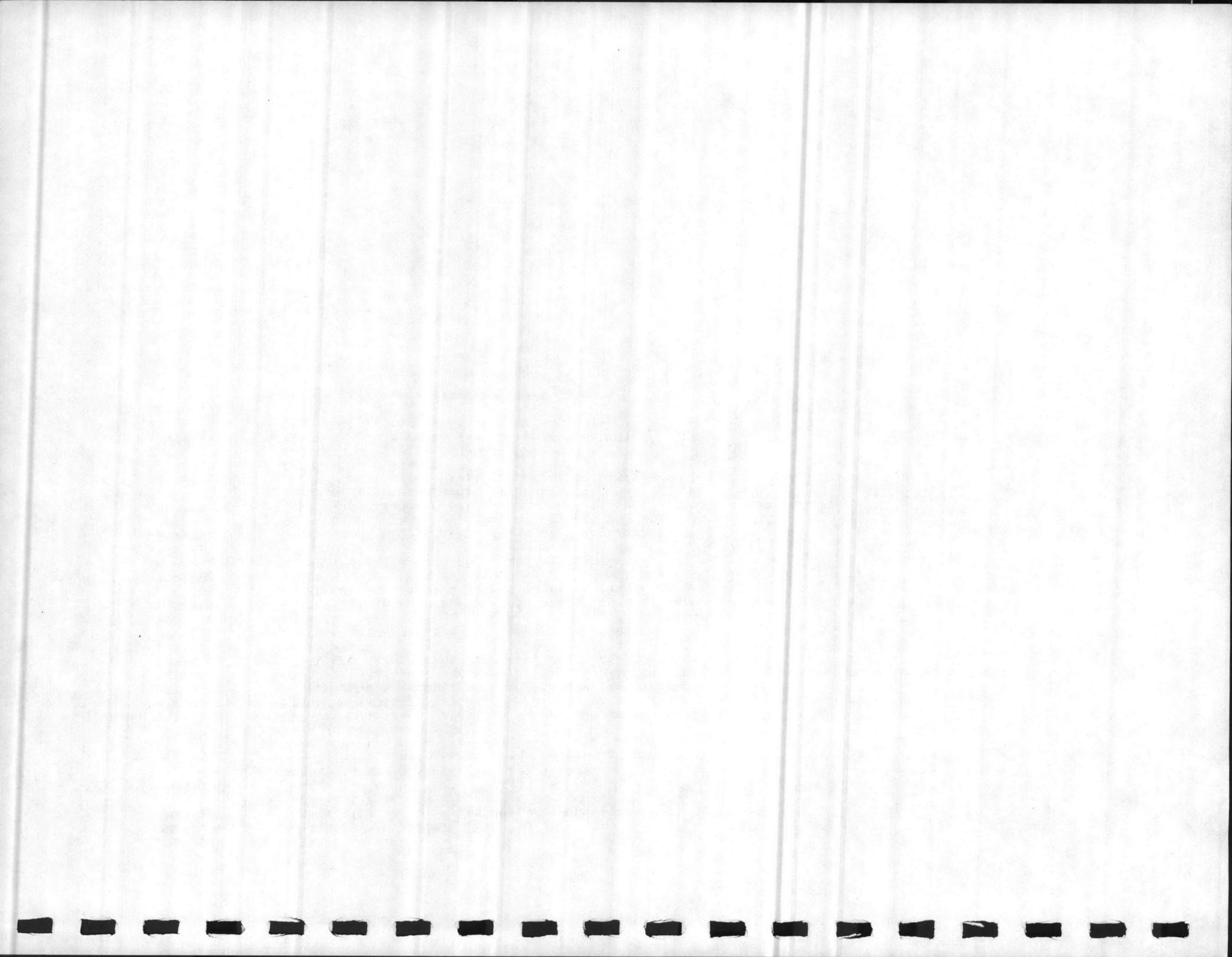
[Structure is the Same as FYDP Years Above]

ALTTFS (Alternative Training Facility Resources)
1988-1992 (FYDP Years)

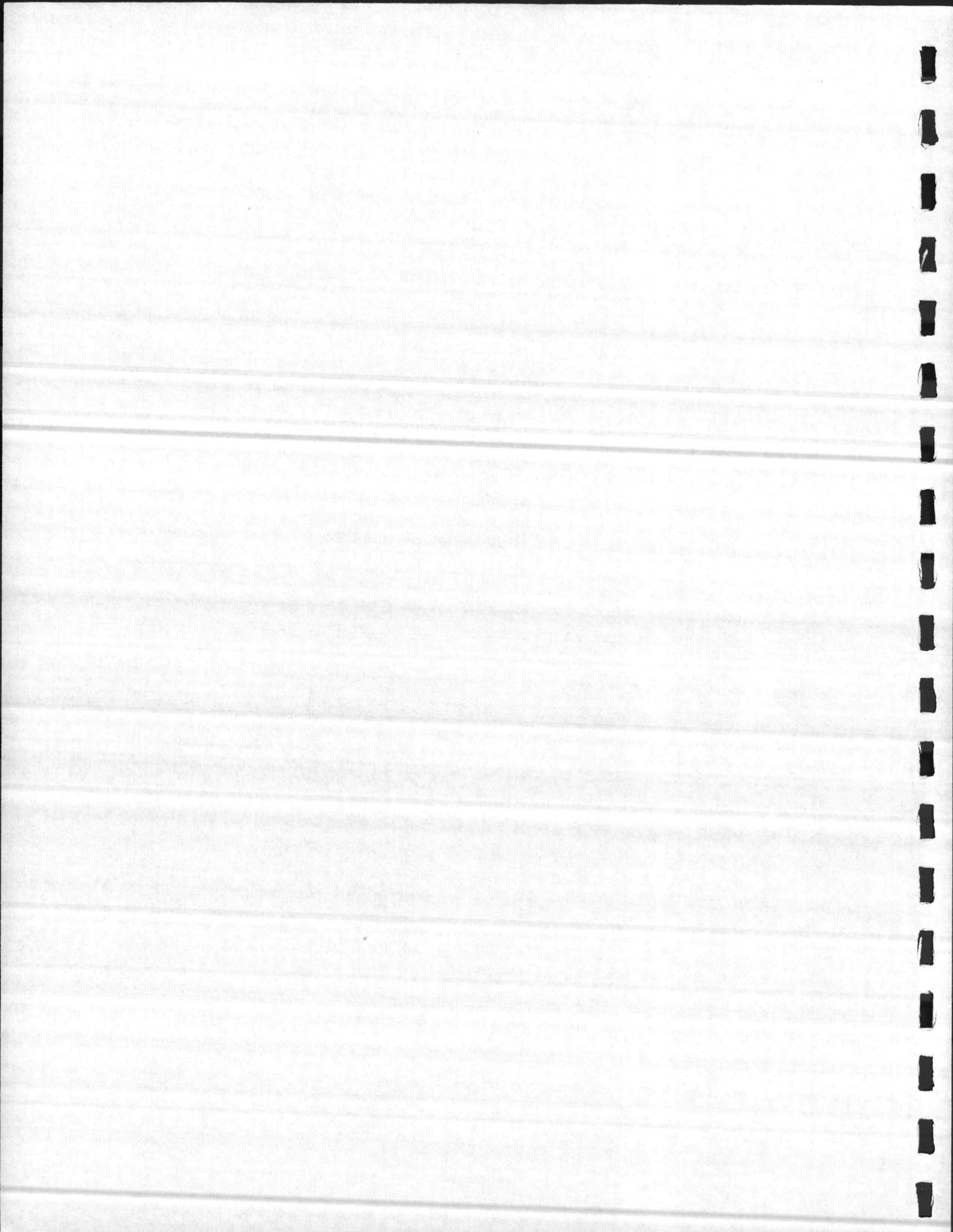
ATFF#LOC LOCATION (index by location to records in TRAINING FACILITY)
ATFF#TFA TRAINING FACILITY (index by training facility type to records in files below)
ATFF#ACC ACCESS ROUTES (number of land, land water, ingress, egress, beach)
ATFF#CAP CAPACITY (daily of aircraft/helos, AAVs/LCACs, individuals, batteries, crew-served weapons)
ATFF#CFT CONFLICTS (list of other facilities closed)
ATFF#COR COORDINATES
ATFF#DOC DOCUMENTATION (source of standard or requirement)
ATFF#DWN DOWNTIME (profile)
ATFF#FAC FACILITIES (number of control towers, communications systems, etc.)
ATFF#OTH OTHER CHARACTERISTICS (other physical data)
ATFF#SAF SAFETY (buffer description)
ATFF#SHP SHAPE (facility size and shape description)
ATFF#SOI SOIL (profile)
ATFF#SUR SITE-UNIQUE REQUIREMENTS (list of user requirements)
ATFF#SUS SITE-UNIQUE STANDARDS (list of waivers and exceptions)
ATFF#SUP SUPPLY (distance to nearest POL, ammunition, rations)
ATFF#TGT TARGETS (types available or required)
ATFF#TEL TELEMETRY (instrumentation, scoring, reconstruction, etc.)
ATFF#TER TERRAIN (profile)
ATFF#VEG VEGETATION (profile)
ATFF#WPN WEAPONS (types to be trained or supported)
1993-2004 (Out-Years)

ATFO#...

[Structure is the Same as FYDP Years Above]



APPENDIX G
DATA ELEMENT DESCRIPTIONS



DATA FILE DESCRIPTIONS

DATA
ELEMENT
DESCRIPTION

Access Routes (ACC File Descriptor)

Record Content

land access routes
land water routes
air ingress routes
air egress routes
beach access routes
updated
source of update

mm/dd/yy
_____text

Capacity (CAP File Descriptor)

Record Content

capacity, daily: maximum number battalions/squadrons simultaneously
capacity, daily: number of aircraft/helicopters
capacity, daily: number of AAVs/LCACs
capacity, daily: number of individuals
capacity, daily: number of batteries
capacity, daily: number of crew-served weapons
capacity, yearly: number of battalion/squadron days available per year
dollars per day operational cost
man hours per day: operational staff
spare
updated
source of update

\$#####

mm/dd/yy
_____text

Conflicts (CFT File Descriptor)

Record Content

number of range records to follow
range name
range location
spare
updated
source of update

num_rcds
_____text
_____text
mm/dd/yy
_____text

Coordinates (COR File Descriptor)

Record Content

number of records to follow
text: records
updated
source of update

num_rcds
_____text
mm/dd/yy
_____text

DATA
ELEMENT
DESCRIPTION

Distance to Supply Points (SUP File Descriptor)

Record Content

distance to supply: POL
distance to supply: ammunition
distance to supply: rations
spare
updated
source of update

km
km
km

mm/dd/yy
text

Downtime (DWN File Descriptor)

Record Content

total
budget
maintenance
weather
fire conditions/weather
weekends/holidays
spare
updated
source of update

mm/dd/yy
text

Facilities (FAC File Descriptor)

Record Content

control tower
communications system
target shed
utilily bldg
aid station
parking area
viewing area
demonstration area
head facility
ammunition bunker
water system
electrical system
classroom
bivouac site
other
spare
updated
source of update

y/n
mm/dd/yy
text

DATA
ELEMENT
DESCRIPTION

Interservice Agreements (ISV File Descriptor)

Record Content

type facility	xxxxxxxxxx
other party	xxxxxxxxxx
name of agreement	xxxxxxxxxx
purpose	xxxxxxxxxx
formal/informal	f or i
start/stop date	xx/xx/xx/xx
time available/required	###
spare	
updated	mm/dd/yy
source of update	text

Other Characteristics (OTH File Descriptor)

Record Content

firing points	###
relays	###
persons	###
usability: day, night, both	d,n,b
climate: seasonal, tropic, temperate, arctic, desert, all weather (indoor)	s,c,t,a,d,i
restrictions: environment, AICUZ, FAA, noise, gas/chemical, pyrotechnics/ flares, time of day, time of year, wildlife, encroachment, other	e,a,f,n,g,p
federal/state/local agency requirements	d,y,w,c,o
associated ranges	text
spare	
updated	mm/dd/yy
source of update	text

Safety Buffer (SAF File Descriptor)

Record Content

buffer size by direction of fire (km)	####
buffer size to rear (km)	####
buffer width on sides (km)	####
buffer size altitude	####
spare	####
updated	mm/dd/yy
source of update	text

DATA
ELEMENT
DESCRIPTION

Shape (SHP File Descriptor)

Record Content

dimensions
orientation (direction of fire azimuth, degress mag)
land area in km2
length along direction of fire in km
firing lane width
target area width
target area length
air space (altitude)
spare
updated
source of update

km x ### km
deg mag
km2
km
m
m
m
m ft

mm/dd/yy
_____text

Site-unique Requirements (SUR File Descriptor)

Record Content

number of records to follow
text: records
updated
source of update

num_rcds
text
mm/dd/yy
_____text

Site-unique Standards (SUS File Descriptor)

Record Content

number of records to follow
text: records
updated
source of update

num_rcds
text
mm/dd/yy
_____text

Soil (SOI File Descriptor)

Record Content

rock
sandy
clay
swamp/marsh
loamy
other
spare
updated
source of update

%

%

%

%

%

%

mm/dd/yy
_____text

DATA
ELEMENT
DESCRIPTION

Targets (TGT File Descriptor)

Record Content
 revolving
 stationary-pop-up
 stationary-stationary
 stationary-moving
 moving-stationary
 moving-moving
 moving-pop-up
 spare
 updated
 source of update

 ###
 ###
 ###
 ###
 ###
 ###
 ###
 mm/dd/yy
 _____text

Telemetry (TEL File Descriptor)

Record Content
 instrumentation, scoring, reconstruction, air launch parameters
 number of records to follow
 text: records
 updated
 source of update

i,s,r,a
 num_rcds
 _____text
 mm/dd/yy
 _____text

Terrain (TER File Descriptor)

Record Content
 mountains
 rolling
 swamp
 desert
 beach
 level
 water
 spare
 updated
 source of update

_____&
 ____&
 ____&
 ____&
 ____&
 ____&
 ____&
 ____&
 mm/dd/yy
 _____text

Vegetation (VEG File Descriptor)

Record Content
 none
 sparse
 moderate
 heavy
 spare
 updated
 source of update

_____&
 ____&
 ____&
 ____&
 ____&
 mm/dd/yy
 _____text

DATA
ELEMENT
DESCRIPTION

Weapons (WPN File Descriptor)

Record Content

type weapon

* number used

** available or required

spare

updated

source of update

_____text

###

yes/no

_____mm/dd/yy

_____text

* field used only in PUBS Module Weapons Files

** field used in Weapons Files in all modules other than PUBS Module

INDEX FILE DESCRIPTIONS

	DATA ELEMENT DESCRIPTION
<hr/>	
Location (LOC File Descriptor)	
Record Content	
Lejeune	pointer
Twenty-nine Palms	pointer
.	.
.	.
(last location)	pointer
<hr/>	
Ranges, Maneuver Areas, Training Facilities (RNG, MTA, TFS File Descriptors)	
Record Content	
Type Range 1	pointer
Type Range 2	pointer
.	.
.	.
Type Range n	pointer
<hr/>	
Units (UNT File Descriptor)	
Record Content	
Type Unit 1	pointer
Type Unit 2	pointer
.	.
.	.
Type Unit n	pointer
<hr/>	

